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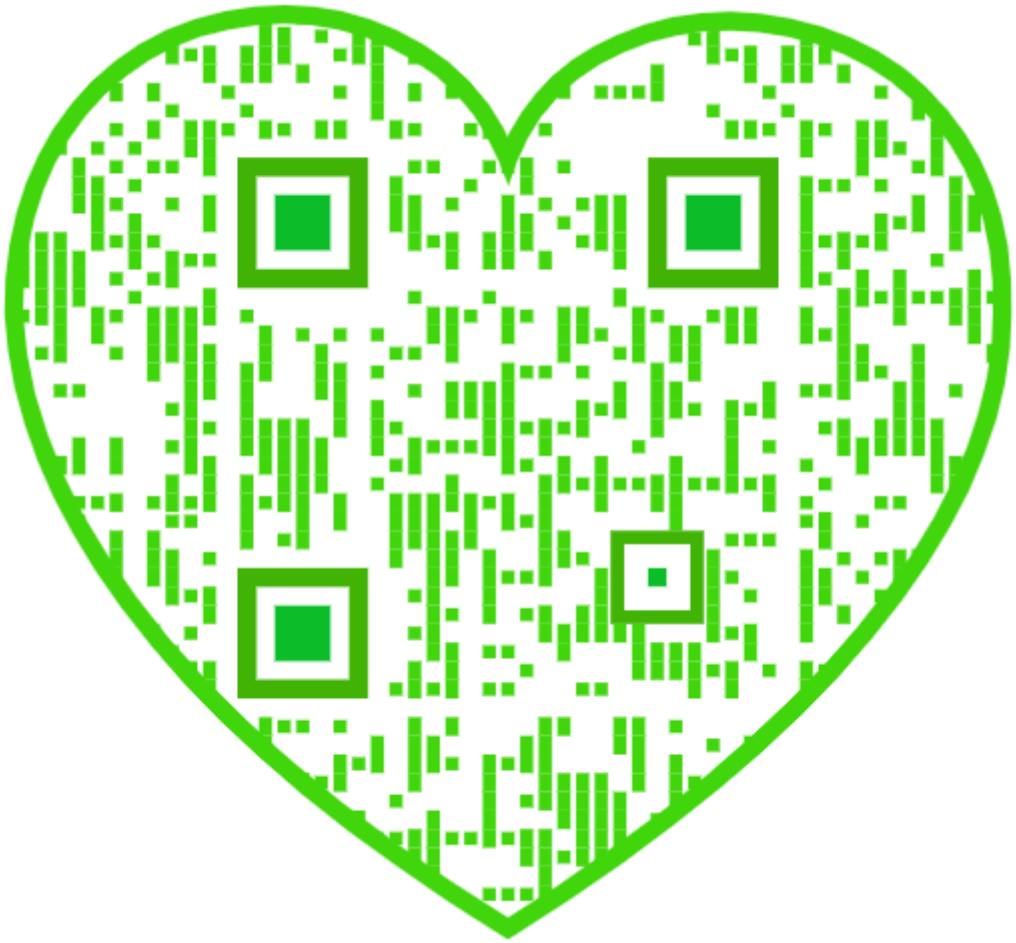

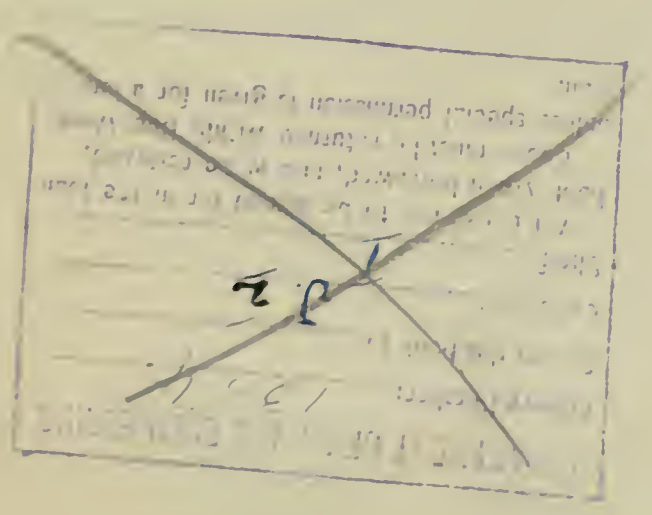

COAL AGE

With Which is Consolidated The Colliery Engineer

DEVOTED TO COAL MINING AND COAL MERCHANDISING

EXTRACTION METHODS, EQUIPMENT AND MINING NEWS
MARKET REPORTS, PRICES AND STATISTICS
OF THE COAL INDUSTRY

ISSUED WEEKLY

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COAL AGE

With Which is Consolidated
The Colliery Engineer

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January—June, 1921

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COAL AGE

The Weekly Journal of the Coal and Coke Industries

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Facts vs. Insinuations

NO ONE is surprised, of course, that coal is being investigated by Congress. When the scenes were the wildest last summer every one in the business was mentally getting ready for what has come to pass. The one regrettable thing about it all is that the investigation should be in such openly hostile and superficial hands. No one can blame the coal-consuming public for turning with hopeful eyes to Congress for some remedy for such outrageously high prices as were charged for both bituminous coal and anthracite last year. The high prices having been charged, no matter how many or how few were culpable, an investigation is in order.

The coal industry has no objection to being examined, but it would like to have a fair and honest taking of the facts and a just verdict. The Calder committee gives no promise of doing either. Every possible effort is made to so construe the acts of the coal operators that they will appear improper. The Senators may dig deep enough with the assistance that is offered to show them the facts in a different light than that under which they are working; they may find that the coal man is not wholly bad, that there are things he can do and things he cannot do—it is conceivable that by persistence they may learn much from their hearings.

But what of the press agent of the committee? Will he not lose his job if he cannot produce headlines for the papers? Of what use will he be if he cannot each day turn the limelight on such dark and deeply-covered deeds as giving assistance to the Geological Survey so that the continuity of certain valuable statistics might be assured or helping the Interstate Commerce Commission—as the officers of the National Coal Association did—in preparing orders to the end that the commission might have its wishes carried out, being of itself without the essential technical knowledge to make its decisions workable?

To prejudge is a serious matter. Can it be denied that the Calder committee has done this very thing? Almost on the opening day of Congress each of three Senators on the committee gave out prepared statements denouncing the coal men as barons, robbers, thieves. Then they started a hearing to prove their statements.

The country is warranted in expecting something more from the Senate committee than mere exposés of graft among officials who used their position for gain in handling government purchases of coal. Such things as well as the high prices charged by shippers of coal are incidents—only the surface effects. What are the causes beneath all these things? The high price was but the fever, the graft but the raving of the patient. What is wrong at the bottom?

Let the committee, having gone thus far, having intimated every possible wrong motive and evil power to the coal industry, get all the facts and then let Congress decide whether the condition is temporary or whether it bids fair to be permanent. If it is likely to occur again, what should be done to prevent a recurrence—shackle the industry, legislate it into bankruptcy or give it and the country sufficient transportation so that competition may have full play and the consumer cheap coal?

Success Dependent on Service

ORGANIZED originally as a war measure to decrease car detention at ports and thereby increase transportation and the production of bituminous coal, the Tidewater Coal Exchange—as now confined to the ports of New York, Philadelphia and Baltimore—has since the war taken on a new significance as a semi-public institution. Financed on a "fifty-fifty" basis by the railroads and a volunteer group of coal shippers—by the railroads, because of its tried and proved value as a means of intensifying the use of coal cars and by the shippers to help accelerate the movement and production of coal, thereby increasing their opportunity to profit—the organization is threatened with disintegration because it has not recognized its public responsibility. An institution dealing in an organized way with the coal of thousands of consumers, and handling the product of hundreds of mines, has many bosses in its management and encounters many complex problems in serving such an extensive clientele.

The present organization will stand or fall on its record of service. It is being judged, in fact, solely by the measure of service rendered and the recognition given to the individual coal shipper and to the public nature of its relationship to coal consumers, who must depend upon its integrity.

Unless the classification of the mines and the inspection of the coal are conducted in such a way as to insure public confidence—unless the pool numbers on coal are given a stamp of authority as to quality—the incentive to work through the exchange will disappear and shippers will withdraw. It is one thing to ship through a pool when the market will take any kind and quality of coal, but it is quite another thing to meet real competition with pool coal not properly classified and inspected.

Supporters of the New York Exchange have recently advanced the idea of a similar organization for the port of Charleston, S. C. (*Coal Age*, this issue, page 25), and it is to be hoped that such a co-operative arrangement can be perfected and that port given added importance as an outlet for American coal Those considering the project should proceed carefully, taking advantage of the experiences of the oldest private exchange and overcoming its obvious shortcomings, as has largely been done by the exchanges at Hampton Roads, three in number.

The management—and by management we mean the Board of Directors—of course, is responsible for such suspicion and lack of confidence as exists in the New

York exchange. We believe all this could have been avoided by a proper spirit of willingness to take into fuller confidence those of the public interested in its work. One cannot refrain from comparing the open, frank methods of conducting business adopted by the Lake Erie Coal Exchange to the star-chamber secrecy of the New York Tidewater Coal Exchange.

The office of the Lake Erie exchange is a gathering place for those using its facilities, every record is open to inspection and its officers are always available for conference. The New York exchange has a policy quite the contrary.

Recognition that an institution presenting the opportunities for good and for abuse offered by an association such as the Tidewater Exchange cannot be conducted like a strictly private business enterprise will be a forward step.

Still Another Burden for the Essential Industry

DECLARING that essentials must be kept in operating condition by the retention of all skillful employees, the Kansas Industrial Court has directed the flour mill that laid off its men for lack of work to grant wages during the period of idleness. Its decision is not based on the needs of the men or the rights of labor but on the necessity that essential industries be kept in condition to work by the retention of their skilled employees.

One cannot but fear that the public will approve the decision, for it has long regarded essential industry as a mule to be restrained by bit and bridle and loaded down by burdens. The public in general has come to the conclusion that the essential industry is established for service and must patiently render it. The other industries are created for profit and not for service and should not for one moment be held to any responsiblity whatever.

The public says in effect "That's the way I feel about it," and leaves the matter there, but, fortunately or unfortunately, the question cannot be so settled. Nor can it be met by asking how the essential industries feel about it. Basally it is not merely a matter of justice but one of economics. At the bottom the problem is, Will the essential industry continue to function and function satisfactorily under this discriminating regulation which fixes its wages, its profits, its manner of doing business and which now would compel it to work at a loss or pay wages to its idle employees?

If there are any industrial rights they rest surely with corporations rendering important public service. If there are any institutions that should be helped by profitable operation to expand and develop, it should be those industries on which others rest. Surely they should not be singled out for special restrictions.

We hear now that the railroads have recently been earning only 81 per cent of the 6 per cent promised them. That is less than 5 per cent on their capital. Their income, moreover, is diminishing. It would be considered an offense against the public to give them an increase in rates to meet the diminishing volume of their business, but when money is quite generally able to earn 8 per cent on industrial bonds the railroads should be allowed to receive at least 6 per cent, especially in view of the fact that 5½ per cent is the limit they are allowed to distribute under the Esch-Cummins Act.

The Heart of a Coal Operator

CERTAIN of the public and that union which is known as the United Mine Workers of America would be disposed to say that he who would write about the heart of a coal operator would write about something which does not exist. But perhaps a comparison may be permitted as a means of arriving at a more correct conclusion.

There are three main employments for the crude labor from Europe—the contracting business, the coal industry and the steel works. In none of the three are men treated better than in the coal industry. Some people have bitterly condemned the housing in the towns that a past generation of coal operators constructed. Rents indeed were high and the habitations sometimes were unfit for human occupation.

As for rents, they are now low even for the shacks of a past generation. All the new houses are eminently habitable. Conditions in mining towns compare most favorably with those in the contracting business, where men are crowded in long sheds, dark and dirty, and without any culinary accommodations. Miners often refer to the method of living in the shacks of contractors as to an existence far below their own.

Then again no boss is more surly and more arbitrary than the boss on the grade or the foreman on a construction job. Nowhere is the theory more ruthlessly accepted that a man must be abused and spurned or the best of which he is capable will not be forthcoming. Bosses on the grade have the manners of slave drivers. Compared with them the mine foreman is urbane and human. It is true that he still lacks—he is still overcome with brief authority—but he is far more responsible than the average excavation foreman.

The mine operator is a peculiar fellow. His head works one way and his heart another. His men may go on strike and their continued occupation of the houses that he has built for the use of actual workers may lay his mines idle, but he hesitates to displace the idlers for active men. In the Ohio strike the men remained in their houses for thirteen months, yet the rent probably never was paid even after the strike was over. In a central Pennsylvania strike the miners, hard pressed to get food, went to the company store and asked for the use of the company delivery wagons and mules so that they could make a house-to-house canvass on the farmers who at that time were sympathetic, for they did not know then, as they do now, that the miners when working make more money than they.

In Mingo County, West Virginia, many of the strikers have been living in company houses for months. They have been paying no rent, and where the company furnishes water and other conveniences before the strike these services have not been discontinued so long as the tenants have paid for them. Some of the companies offered to let the men go into the mines and dig coal for their own use and some even offered to haul the coal with the company teams, and this would have been done, but the idea of the union was to make conditions as pitiable as possible, in the hope that the public would be led to interfere and demand that the "shiver strike" be ended by a capitulation of the operators to the demand of the union.

Much corporational housing has for years been devoid of profit. It is a great shock to the ex-employees of many firms when they rent a home from a private individual and pay far more for less accommodation.

British Oxygen Mine-Rescue Apparatus Is Said to Remedy Many Existent Faults

Oxygen Valve Can Be Reached Only by Key and Cannot Be Turned Inadvertently—Oxygen Flow Regulated by Resistance of Cotton Wool to Avoid Possibility of Clogging by Rust or Dust—Air Comes to Purifier Warm and so Chemically Active—Purifier Walls Are Insulated

BY JAMES COOPER*
Edinburgh, Scotland

AFTER seven years research conducted under the auspices of the British Department of Scientific and Industrial Research, a new breathing apparatus—the Briggs—has been evolved. The experimental work was performed under the directorship of Dr. Henry Briggs, Heriot-Watt College, Edinburgh, Scotland.

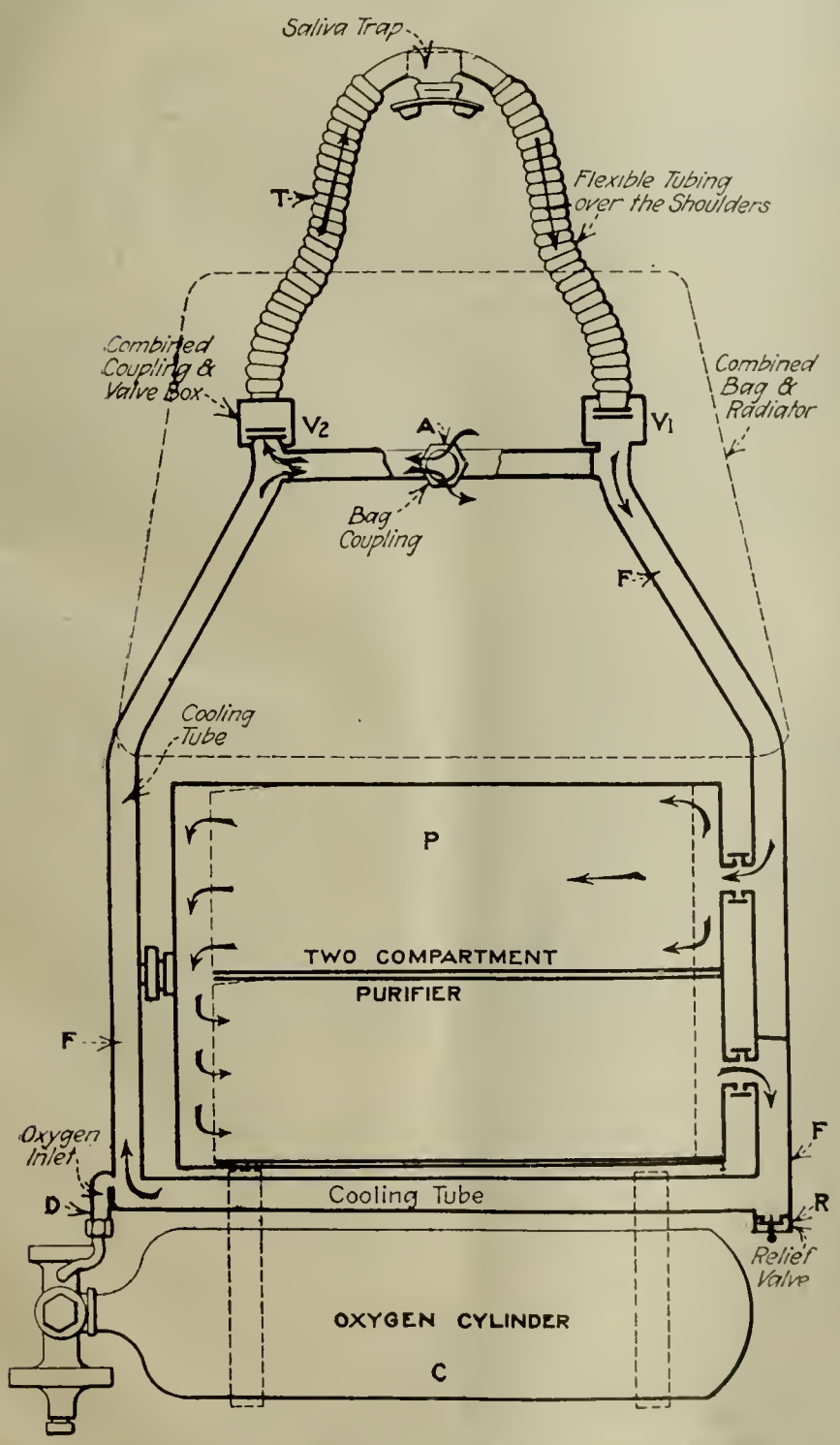


FIG. 1. BRIGGS OXYGEN BREATHING APPARATUS
There is a great similarity in the main lines of all apparatus, so much so that it is hard to tell one from the other by a generalized illustration like that shown. The differences are in the details. The air expired goes to the purifier and is deprived of its carbon dioxide, thence to the cooling tubes, where the heat of purification is removed. Oxygen is added from the oxygen cylinder, and the air then enters the breathing bag, a storage vessel, from which it is drawn by the wearer whenever he fills his lungs.

*Lecturer in mining, Heriot-Watt College, Edinburgh; lately instructor, Central Rescue Station, Edinburgh.

As now developed the apparatus is so constructed as to give an ample supply of air of a high standard of purity at a comfortable working temperature. At the same time the design is such that it insures maximum freedom to the body of the wearer and requires from him a minimum of attention. The main purpose has been to provide an apparatus that satisfies, with a considerable margin of safety, all the stringent requirements set forth in the first, or 1918, report of the Mines Rescue Apparatus Research Committee. That committee consisted of W. Walker, chief inspector of mines; Dr. J. S. Haldane and Dr. Briggs.

The apparatus is described in the recent second report of the Research Committee, from which the accompanying illustrations are taken. Figs. 1 and 2 show respectively the flow diagram of the apparatus and the general arrangement when in place on the wearer.

BYPASS ENABLES WEARER TO SUPPLEMENT SUPPLY

The oxygen supply to the circuit has been fixed for normal working at a uniform rate of two liters per minute, but this can be increased at any time by means of a bypass. The method of supply of this essential element for a breathing apparatus has been subjected to extensive research and the merits and shortcomings of the self-regulating devices of Garforth in England and Gibbs and Paul in America, as well as the device by which the delivery is adjustable by the wearer, have been fully considered. For various reasons the uniform supply, controlled at will by means of a bypass, has been adopted in the Briggs machine.

As with the Tissot and Gibbs, this apparatus is placed entirely on the wearer's back, being supported by a framework built up of light steel aëroplane tubing, 1 in. in diameter and weighing ½ lb. to the foot. This framework is ingeniously designed so as to serve a dual purpose—as a support and as an air circuit. As it forms the major part of the tubing provided for the passage of air, it presents a large cooling surface. The body belt and shoulder straps are composed of infantry belt webbing attached to the frame by spring hooks and adjusted by a simple device.

The mouthpiece, purifier *(P)* and flexible tubes *(T)* (Figs. 1 and 2) make up the other portions of the air circuit. The tubes are of army pattern and highly flexible, with no metal entering into their construction. Air (see Fig. 1) starting from the mouthpiece passes through the valve (V_1), circulates through the purifier, flows along the part marked "cooling tube" and into the bag at *A*. The oxygen enters the circuit at *D*.

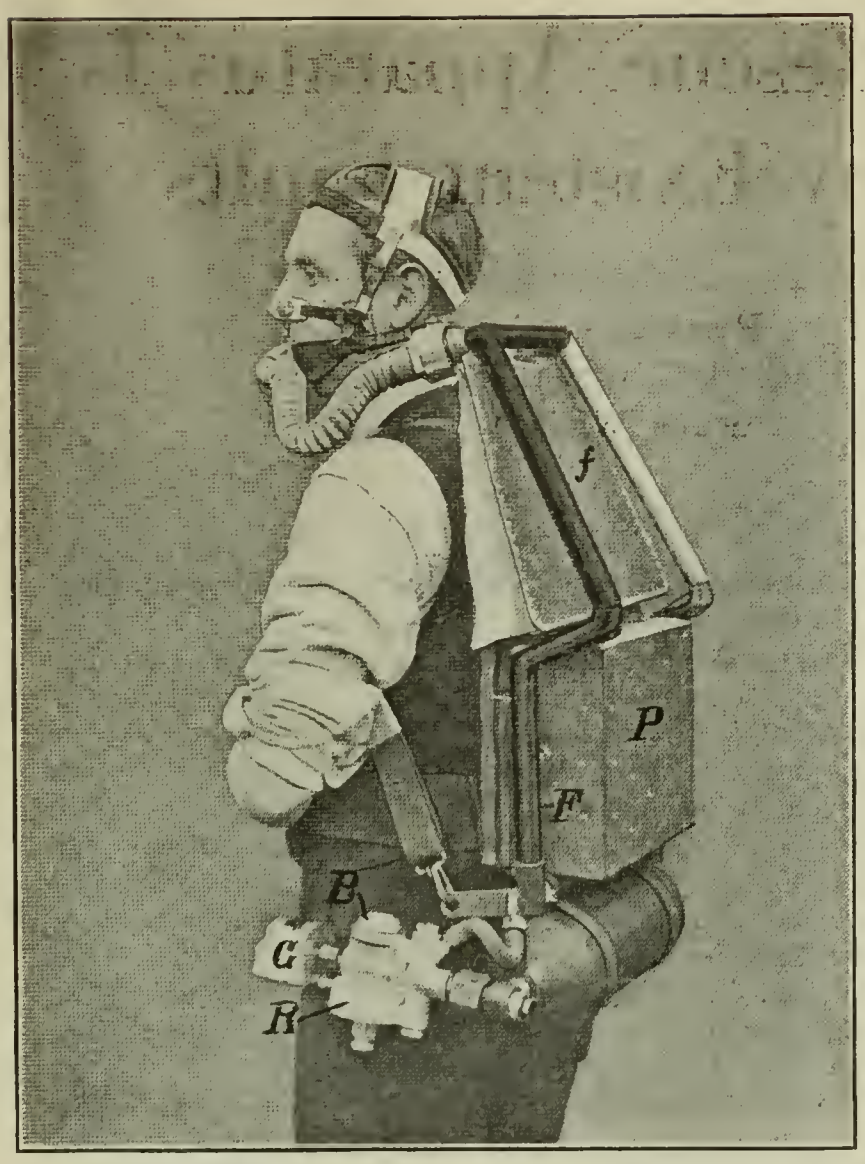


FIG. 2. APPARATUS ON RESCUE MAN

Note the tube on the far side of the apparatus. It connects the flexible expiratory tube with the purifier. Because the caustic absorbs carbon dioxide from warm air more readily than from cold air this tube is kept bright, so that it will not radiate heat unnecessarily but will pass it on to the purifier as near body heat as possible. The other metal tube is a cooler, and it is blackened so as to be of utmost efficiency in reducing the temperature of the air.

The oxygen cylinder is made of a high grade of carbon steel and is constructed to Dr. Briggs' specifications. It is 13 in. long and 4½ in. in diameter with a capacity of 290 liters at 120 atmospheres and 360 liters at 150 atmospheres pressure. It weighs, exclusive of the valve, 7 lb. The larger volume of oxygen can be used in actual rescue operations and the smaller for practice purposes.

The test pressure is 225 atmospheres, and the steel has an ultimate tensile strength of forty to fifty tons and a yield point of twenty-three tons per square inch. Not only its light weight but also the method of attaching the cylinder is worthy of note. This attachment is made by means of two stout leather straps to the lower horizontal tube of the frame. Metal loops prevent it from shifting laterally. This is particularly helpful while crawling in low workings, as the attachment, being elastic, permits the cylinder to fall into contact with the body, thus preventing bumps and jars.

Sunk-Spindle Cylinder Valve with Cap

My own experience in rescue-station work has shown that the wheel type of valve on the oxygen cylinder is both dangerous and inefficient. The adoption of the sunk-spindle valve on this new apparatus, however, has eliminated all trouble from this part of the machine. The valve (Fig. 3) is made compact and light in weight but of ample strength. The leader of the team who carries a key (Fig. 4) unscrews the cap *(A)*, turns the spindle *(C)* to allow the flow of oxygen and then replaces the cap. This insures non-interference, provides against accidental closing and prevents leakage along the spindle.

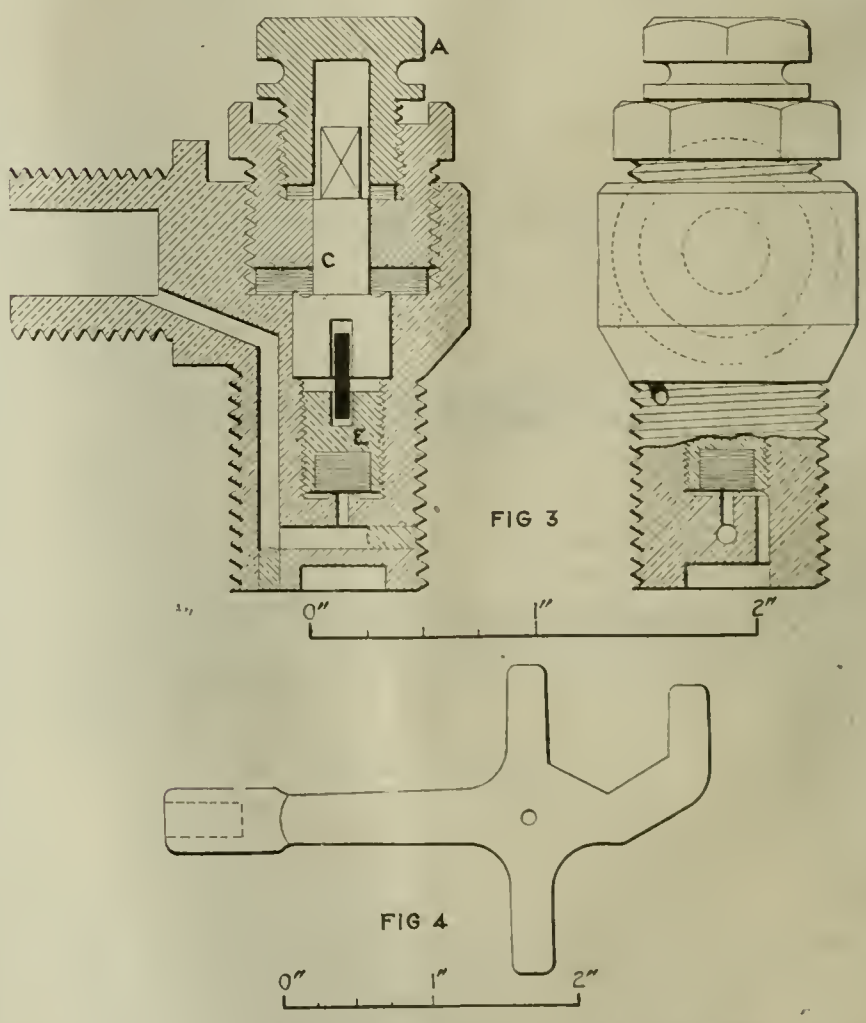
A conspicuous departure from methods followed in all other apparatus is the control of the oxygen. The device proper (Fig. 5) comprises a reducing valve, bypass, pressure-gage and flow-meter. Combining lightness with the necessary strength, the high-pressure part is of gun-metal and the remainder of aluminum. An interesting constructional detail is the casting of the aluminum direct upon the gun-metal center, making a mechanically strong and gas-tight junction of the two metals.

The reducing valve *(R)* is of the single-lever type with a metal diaphragm *(A)*. This is a 2-in. german-silver aneroid diaphragm which, being highly susceptible to pressure changes, allows of a delicate regulation. From the reducing-valve box the oxygen passes through a resistance or into the bypass space and thence through a 4-in. piece of strong rubber tubing into the breathing circuit.

Bypass Operated by Pressure of Thumb

The bypass *(B)* acts instantly; it opens to pressure of the thumb and shuts by means of a spring as soon as pressure is released. This is a marked simplification compared with other machines, as no wheel valve has to be operated. It also has the added advantage of instantaneous opening and closure.

The gage *(G)* has two reading points and a double scale; one registers the cylinder pressure and the other the rate of discharge of oxygen in liters per minute. A non-inflammable celluloid window protects the pointers and scales. To enable the wearer to make readings in darkness the points of the scales at 120



FIGS. 3 AND 4. VALVE AND KEY OF OXYGEN CYLINDER

The spindle of the valve C is sunken and covered by the cap A. By means of the key shown in Fig. 4 the cap can be removed and the spindle turned. In this way the spindle cannot be revolved inadvertently or by anyone who does not have the key, and the cap prevents leakage along the spindle.

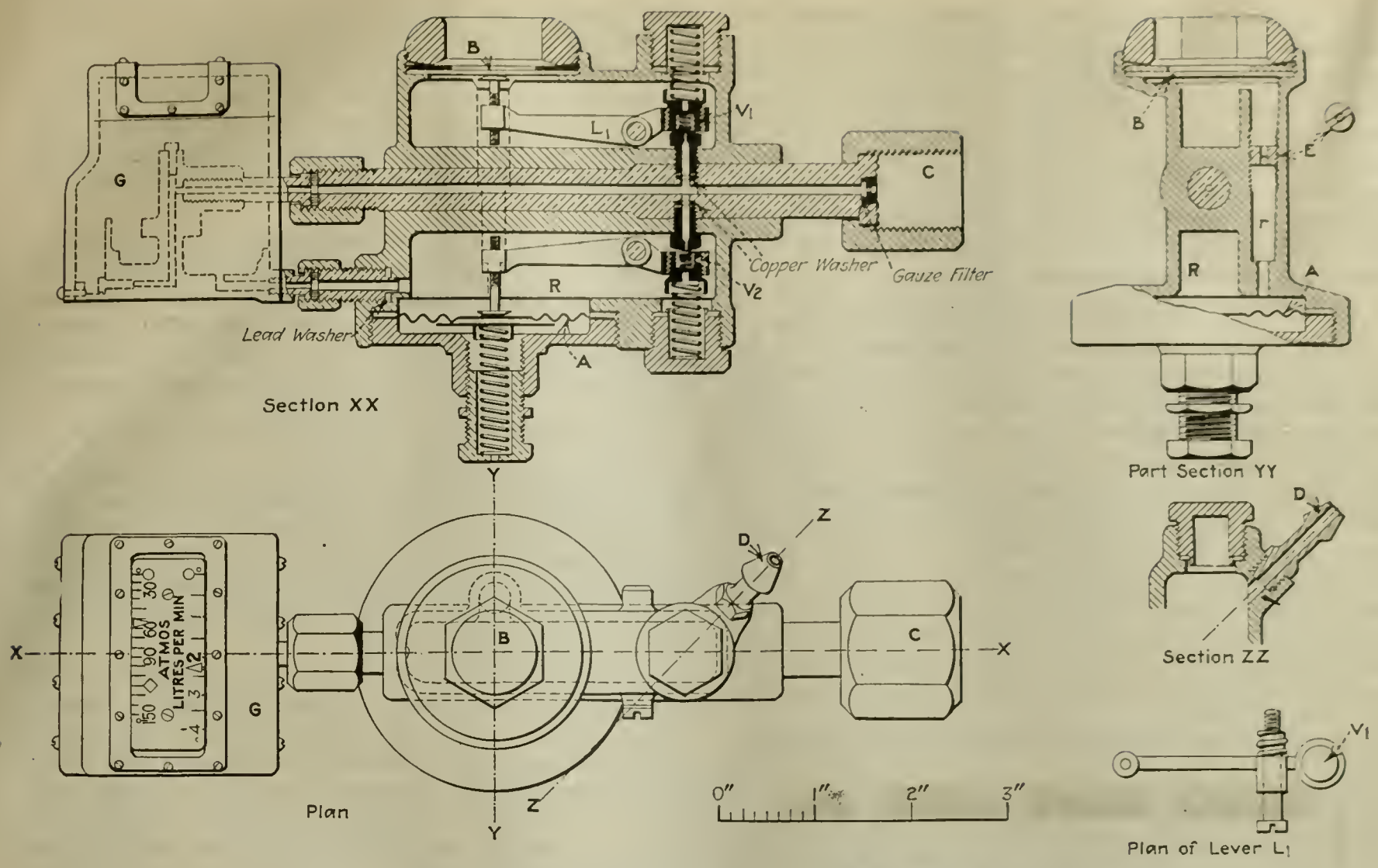


FIG. 5. DEVICE FOR CONTROLLING OF OXYGEN FROM CYLINDER

The small chamber or passage marked *r* on the right-hand side of the cross-section YY in the upper right-hand corner of this illustration is filled with cotton wool. The oxygen filters through this wool, the compression of which is regulated by screw E. This form of obstruction is believed to be of such a character that it is not likely to be made as variable as an ordinary passage, for a small piece of rust or dust cannot close it off. The bypass B is actuated readily by the pressure of the thumb without the use of a wheel valve. By use of illuminated points on the scale and illuminated pointers provision is made for reading the scale in the dark without other light. Fig. 2, on the preceding page, shows the exact position of the gage (G), the reducing valve (R) and the bypass (B) when the breathing apparatus is in use and secured to the person of the wearer.

atmospheres pressure and 2 liters flow and also the extremities of the pointers are tipped with luminous spots. All the parts can be immersed in water without rusting.

The whole of the valve mechanism is attached to the cylinder in one piece and by partaking of its swing, passes back from the arms when the wearer stoops or crawls. In the normal position of standing, however, the pointers can be read easily by the wearer.

Box of Cotton Wool Regulates Oxygen Flow

The resistance *(R)* is of a novel character; it is simply a box packed with cotton wool. The tightness of packing increases or decreases the resistance to the passage of oxygen and may be controlled by the screw *(E)*. This type of resistance provides a great number of paths for the flow of oxygen, and the danger that rust specks or other matter may choke the passage is entirely removed. Furthermore, with such a resistance the volume passing varies almost directly as the pressure, instead of being proportional to the square root of the pressure. For this reason the graduations in the scale on the flow meter are spaced almost equally, which is an advantageous arrangement.

In many forms of rescue apparatus the regenerator is faulty in one or more respects. We may summarize as faults or at least as disadvantages: (1) The absorbent material has to be shaken by the wearer; (2) the air resistance is excessive because the caustic swells and reduces the passage left for air; (3) the air for breathing is supplied in a wet state and at a high temperature; (4) difficulty is experienced in getting a perfectly airtight seal of the cartridge when refilling at the rescue station; (5) only part of the caustic comes into action or the arrangement does not prevent the absorbent from collecting at a particular part of the canister, depending on the position the wearer may temporarily occupy.

In the Briggs purifier all these faults have been eliminated and, as I can testify from experience gained in working tests, it is almost perfect in its action so long as the wearer, even though he be doing the hardest kind of work, does not exceed the period generally stipulated as the proper limit for the wearing of such an apparatus.

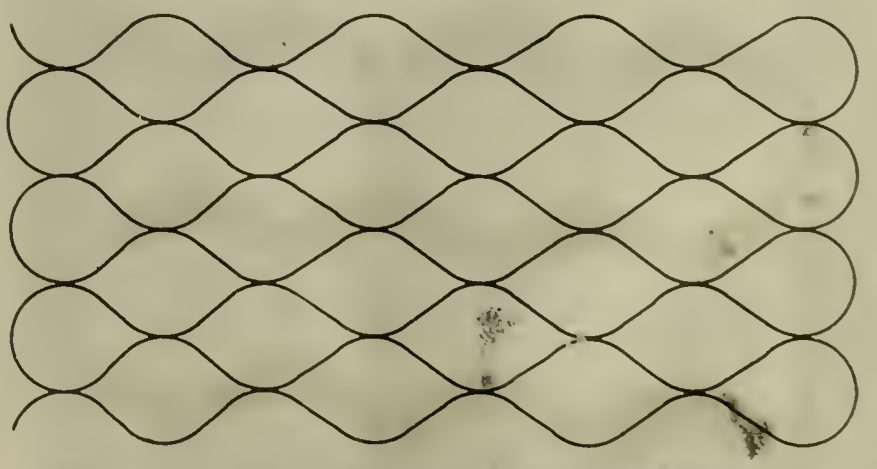


FIG. 6. CRIMP USED FOR CAUSTIC IN PURIFIER

One method of arranging the caustic so as to promote a rapid absorption of the carbon dioxide is to fashion it into thin sticks held in parallel crimps extending the full length of the canister.

The purifier is rectangular in shape and divided into two compartments by a horizontal partition. It is so constructed that no soldered joints come into contact with the caustic. The lid with a flange 1 in. deep fits over one end of the canister (see Fig. 2) and to provide for its sealing a thin strip of tin is soldered over the junction of the can and lid. To open, this strip can be ripped off quickly in a manner similar to that employed with sealed cans such as are used for ordinary commercial purposes.

Hexagonal Depressions Made in Gauze Trays

Several forms and methods of arrangement of the absorbent material have been tried. Thus the caustic has been fashioned into thin sticks in parallel crimps extending the full length of the canister (see Fig. 6). Another method found equally successful is that of imprinting hexagonal depressions in gauze trays (see Fig. 7). By turning the trays alternately end for end when pushing them into the carrier the ridges of one tray fit over a depression of the next. By this means the granules of caustic which lie in the depressions are kept in their proper place no matter how the cartridge may be shaken before use. This is a highly important practical consideration. Each carrier holds twelve trays measuring 7½ x 4½ in. The total weight of the purifier exclusive of charge is 4½ lb.

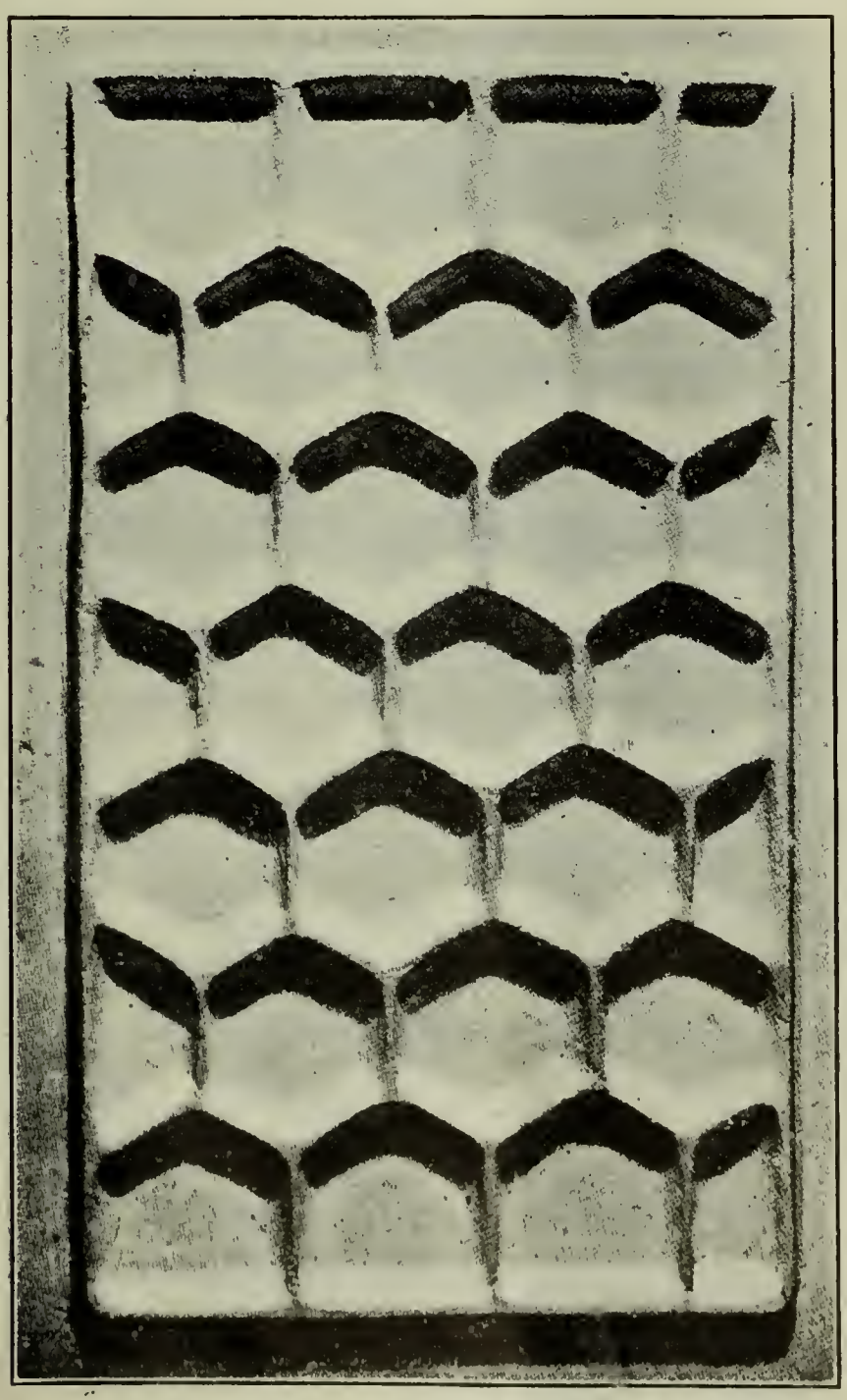


FIG. 7. GAUZE TRAY WITH IMPRINTED CAUSTIC

The trays with their imprinted hexagonal depressions are all alike, but by turning them alternately end for end when placing them in the carrier, a depression on one comes opposite a ridge on another and the expired air is caused to pass between them in a curved path, surrendering its carbon dioxide in its passage.

Three strips of blotting paper are used in each compartment of the purifier, one piece placed at the top and the others placed respectively at one-third and two-thirds of the depth. The latter strips catch and spread any drops of semi-liquid caustic falling upon them.

It readily will be understood that the type of purifier described, which enables the air to pass easily and slowly along a large number of paths of equal resistance and over thin layers of absorbent, will offer a lower resistance to the passage of the air and at the same time be highly efficient in extracting the carbon dioxide.

Two Pounds of Caustic for Nine-Mile Walk

The attachment of the regenerator to the frame is made by means of two strong brass unions fitted with hexagonal nuts. These are tightened by a key and insure a good joint. To prevent side movement of the canister a third point of support is provided at the end opposite to the unions. Here a strong brass pin makes contact with a simple catch.

It may be claimed fairly for this regenerator that its construction has solved a difficult problem in breathing apparatus, namely, the passage of an ample supply of purified air at a comfortable temperature and under an almost negligible pressure. As will be mentioned later, I have worn the apparatus with only 2 lb. of caustic in the can and with this charge have walked a distance of nine miles at a speed of four miles per hour without the least discomfort.

An entirely new departure has been made in this apparatus in the heat insulation of the purifier. The caustic receptacle has to be covered with insulating material so as to minimize the liquefaction of the absorbent. A number of particles in a fluid state dropping away from their proper positions in the trays would eventually create a path along which the air would pass without being properly scrubbed. This would increase the percentage of carbon dioxide in the inhaled air. The insulating medium is a single piece of leatheroid. Its method of attachment is shown in Fig. 8.

Bag of Balloon Fabric and Duralumin

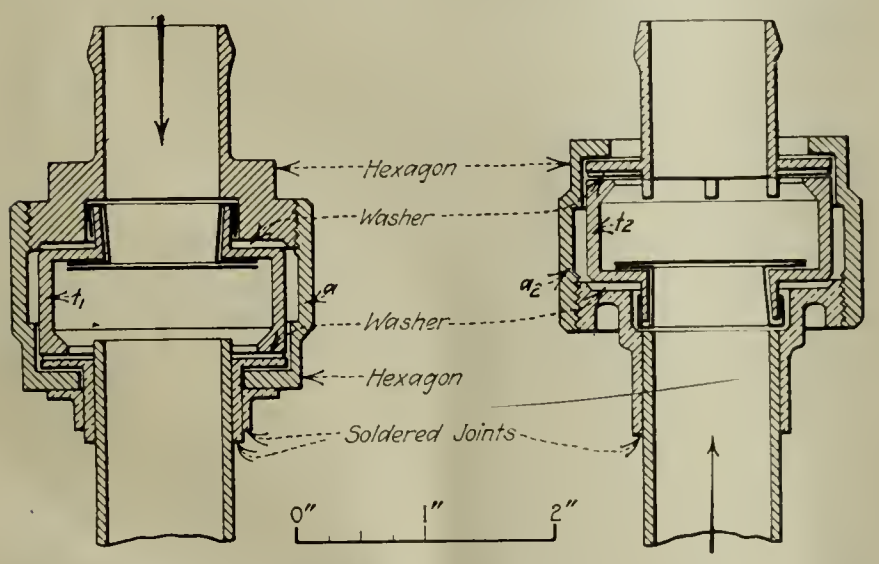
The breathing bag is wedge-shaped and similar to that of the Gibbs apparatus. It has a capacity of six liters. The sides, bottom and back pieces are made of balloon fabric and the remaining side of duralumin* blackened by a chemical process for the purpose of affording a good radiating surface. This metal sheet possesses several advantages: (1) It helps to cool the air after issuing from the purifier; (2) it offers mechanical protection for the bag; (3) the weight of the metal maintains positive pressure in the circuit, except in the case of a large leak, when the bag would become completely deflated. The position of the uprights of the frame prevents the bag from being pressed flat should it come in contact with the mine roof.

Valves controlling breathing in the Briggs apparatus are of the Rosling pattern. Their construction and arrangement make them safe, efficient and foolproof (see Figs. 9 and 10). They are constructed of rubber and are fitted into boxes placed at the top of the frame.

*An alloy of aluminum, copper, manganese, etc. It is an extremely light alloy with the strength of mild steel.—Editor.

These boxes serve also as unions, being tightened by a key. To eliminate danger of tampering with the mouth tubes the connection of each valve can be made in only the correct way and then only if the valves are in place and put in the boxes in the proper manner. The relief valve (*R*, Fig. 2) is fixed near the exit of the purifier and is set to blow off a 4-in. water-gage pressure. It can be operated also by hand. Fig. 11 shows a section of the valve. It is well known that caustic at a low temperature is an inefficient absorbent, while at higher temperatures its efficiency rapidly increases. This property has been utilized in the arrangement of the frame of the Briggs apparatus. This frame is silver-plated and that portion lying between the expiratory valve and the purifier has been left bright. This arrangement reduces the amount of heat radiated by the expired air, and thus increases the chemical action of the absorbent and heightens the efficiency. On the other hand, the remaining part of the frame is sulphided so as to give it a dull

FIG. 8. INSULATION OF PURIFIER



FIGS. 9 AND 10. EXPIRATORY AND INSPIRATORY VALVES.

These valves are marked in Fig. 2 V_1 V_2 respectively and placed at the top of the frame denominated F in the same figure. The boxings of the valves are made so as to serve as unions, being tightened by a key. They are so made that connection can be made only in the right way and cannot be made with the valve omitted or with the valve improperly placed.

black surface. By this means it acts as a cooling tube, thus insuring a supply of air to the lungs at a much reduced temperature.

In many varieties of breathing apparatus it is quite difficult to rid the tubes of saliva. In the present instance the metal portion of the mouthpiece and the saliva trap (see Fig. 12) are made in one, much as in the Tissot apparatus. The saliva trap, being close to the mouthpiece, has the advantage that the wearer can get rid of the saliva at any time by drawing down the conical valve during an exhalation of the breath. An improvement on the French trap is a device that prevents the saliva from passing back to the mouth when the wearer is in certain positions.

Mouthpiece Affords Adequate Air Supply

The rubber portion of the mouthpiece is an important part of any breathing equipment. During my own experience in rescue-station work I have known many cases where the outer flap of the ordinary mouthpiece was too small and also where the teeth lugs have been badly shaped and too thin. To insure a good seal for the mouth the outer flap of the Briggs mouthpiece is of ample size, the lugs are made thicker than is usual and are swelled out and rounded at their extremity. This latter detail is important, for when the lugs are thin and the teeth clenched down on them, the small opening between the teeth offers high resistance to the passage of air when men are working hard and require a large volume. Owing to the nature of mine-rescue work (which is generally performed in a high temperature) the cap adopted is of skeleton pattern. Elastic bands with metal springs in the fabric are employed, so that the cap will fit any size of head. Attached to the cap are cheek plates which by means of hooks carry the nose clip and rubber portion of the mouthpiece. The cheek plates are suspended by bands which are made adjustable for length in order that the mouthpiece may fit closely to the face at all times. A screw nose clip has been adopted in which the metal bridge comes under the nostrils. As the clip is attached to the cheek plates and no part projects from the top of the nose, the clip is not easily displaced by a blow or other mishap.

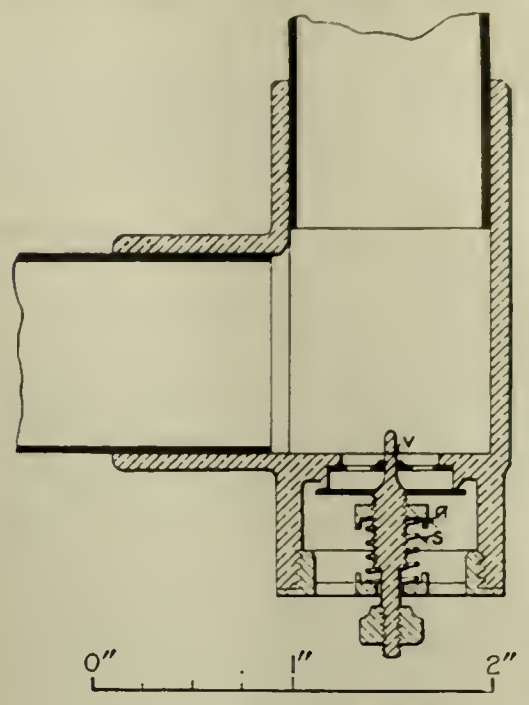


FIG. 11. RELIEF VALVE

This valve is marked R in Fig. 2. Blows off at 4-in. water gage, but can be operated by hand.

Trapped by Fall, Can Live on Reduced Supply

To provide for an emergency such as a team becoming trapped by a fall, the key carried by the leader can be used to adjust the reducing valve so as to give a flow of 0.4 liter of oxygen per minute. This adjustment is made by removing from the valve the adjusting screw and spring controlling the pressure on the diaphragm. With this supply of oxygen the men can rest quietly for many hours until they are extricated. The complete apparatus charged with 3 lb. of caustic-soda granules weighs 29 lb. The apparatus has been subjected to numerous tests, including endurance, climbing and sudden exertion, while special tests also have been carried out involving exhaustion of the purifier. It should be noted that the purifier is regarded as exhausted if it passes more than 2 per cent of carbon dioxide. I have already mentioned that I have taken part in the tests and can justly claim after experience with all kinds of compressed-oxygen apparatus that the

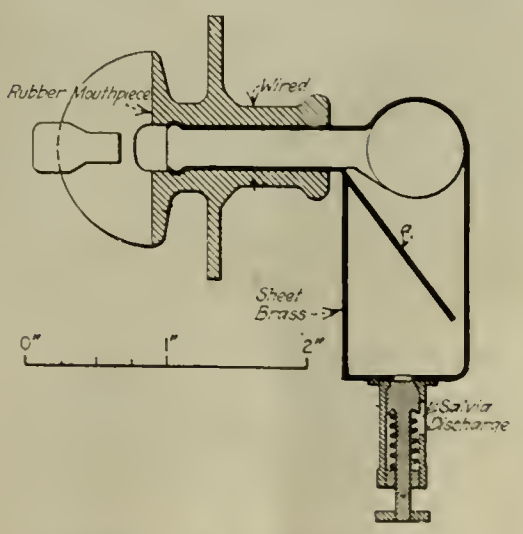


FIG. 12. MOUTHPIECE AND SALIVA TRAP

The sloping diaphragm A collects the saliva and lets it fall into a receptacle from which it cannot return when air is inspired.

Briggs is a big improvement on those in general use.

While wearing the apparatus I was sensible at once of the ample supply of cool air, of the comfort arising from the way in which the load was adjusted and of the freedom of both mind and body. While in its entirety the apparatus is a splendid product of scientific research applied to industrial requirements, the several combining parts testify to the ingenuity, appreciation of essential needs and the skill shown in the direction of the work.

Purifier Eliminates Carbon Dioxide Well

The following are typical of numerous tests conducted on this apparatus:

Endurance Test. Subject H. B. Four pounds caustic soda in purifier. After walking a half hour the temperature rise was 0 deg. F.; after one hour, 11 deg. F.; after 1½ hr., 23 deg. F. and after two hours, 25 deg. F. the carbonic acid at all the four periods mentioned was nil.

The speed of walking was four miles per hour on level ground. The subject then ran 400 yd. at the rate of about five and one-half miles per hour, after which carbon dioxide was found present. The temperature rise was 35 deg. F. The resistance of the whole circuit (mouthpiece to mouthpiece) to a flow of 85 liters per minute was, when measured after the run, only 1.3 in. water gage.

Endurance Test. Subject D. D. The same test repeated, but with a charge of 3 lb. of caustic soda in the purifier. After walking a half hour no carbon dioxide was found and the rise in temperature was 6 deg. F. After walking one hour the carbon dioxide percentage was 0.18 and the rise in temperature 18 deg. F. After a walk of one and one-half hours' duration the percentage of carbon dioxide was 0.41 and the temperature increase 23 deg. F. A walk of two hours' duration brought the carbon dioxide to 0.47 per cent. and raised the temperature to 25 deg. F. After walking for two and one-half hours the percentage of carbon dioxide reached 1.57 per cent and the increased temperature developed was 26 deg. F.

Makes Hard Climb Up Arthur's Seat

Climbing Test. Subject H. B. The test consisted in climbing the hill known as Arthur's Seat in Edinburgh. The climb (involving a vertical rise of 640 ft.) was performed without difficulty in 21 min., the descent to the starting point being made in 9 min. While ascending, the wearer did over 100,000 ft.-lb. of work on an average oxygen consumption of 2.8 liters per min. Owing to a breeze the air in the apparatus proved unusually cool.

On reaching the summit conditions were found to be as follows: Carbon dioxide 0.43 per cent; temperature rise 4 deg. F. On reaching the bottom the carbon dioxide percentage was 0.12 and the temperature rise was 4 deg. F.

Sudden Exertion Test. Subject J. C. In this test no carbon dioxide was found in the inhalation tube. Each trip consisted of a walk of 26 min. duration, a run of 300 yd. followed by a 2-min. walk.

First trip, temperature rise 6 deg. F.; second trip, temperature rise 10 deg. F.; third trip, temperature rise 18 deg. F.; fourth trip, temperature rise 22 deg. F.

Exhaustion Test on Purifier. Subjects D. P and C. R. Four pounds of caustic soda was put in the purifier, and the wearer walked on the level at four miles per hour. The oxygen cylinder was recharged during the test and the intervals of time below do not include the time of recharging the cylinder. The first wearer walked for 1½ hr. and then handed on the apparatus to the second man.

Hours	Carbon Dioxide	Temperature Rise, Deg. F.
½	0.00	4
1	0.00	14
1½	0.00	26
2	0.12	14
2½	0.24	26
3	1.00	36

After walking 3 hr. 6 min. and then running at eight miles per hour for 2 min. the carbon dioxide in the inspired air amounted to 2.24 per cent. The object of this last test was to ascertain the capacity of the purifier and to what extent it will outlast the oxygen supply.

Safety Work in Mines Must Keep Pace with Growth of Coal Industry

THE U. S. Bureau of Mines operates ten mine-rescue railroad cars which travel from mine to mine in the different mining districts of the country, giving training in first-aid and mine-rescue work and assisting in times of mine disasters and fires. In addition the bureau maintains eight fixed mine-rescue stations, seven of which are equipped with auto mine-rescue trucks available in the same manner as the rescue cars.

"This service to the mine and miners has been a real and paying one, accounted only in the number of lives and in the value of property saved," said Director F. G. Cottrell, in a statement Dec. 8. "Its byproducts have been an awakened sense of responsibility of miners and operators alike, resulting in a decided decrease of fatal and non-fatal accidents to miners.

"The movement for safety in the mines is rapidly outgrowing its original position as something quite apart from operating management, and in fact often in conflict with it, to be used only when sentiment dictated; rather, it is proving itself closely interwoven in the economic structure of mining, a part of every drift, every machine and every man's work, and best of all, it is furnishing a common meeting ground and common direction of humanitarian effort for the miner, the operator, the government and the public.

"The mine-rescue and first-aid training work will be continued, with the principle in mind that the bureau organization acts as a teacher and standardizer, not to take the place of self-preparedness and self-help on the part of the individual mine in time of disaster or fire but rather to help organize, encourage and train local men and companies to help themselves. However, that part of our safety work which deals with investigations of safe and dangerous practices, development, use and approval of underground explosives, ventilation methods, mechanical and electrical appliances, and health and working conditions of the miner must grow in proportion to the growth of the industry and the use of more complicated machinery and appliances."

In a speech recently delivered before the American Society of Naval Engineers, Secretary of the Navy Daniels declared: "Has not the time come when oil and coal and water power shall be nationalized? Whether the government shall buy and carry on production of coal, oil and water power, or regulate their production, distribution and price is a question of pressing importance."

Striking miners in the Rhondda coal field district voted Dec. 27 to resume work pending negotiations between their employers and the South Wales Executive Committee. A general strike was reported Dec. 23, following refusal of one company to reinstate eleven dismissed men.

Features That Must Be Borne in Mind in Designing Trucks for Mine Cars

Wheels Fast to Their Axles, Roller Bearings, Exclusion of Grit and Dirt, Provision for Side Thrust and Restriction of All Friction Within a Lubricated Area Are Four Cardinal Considerations To Be Observed in Car Design

By Ira E. Stevens
Pittsburgh, Pa.

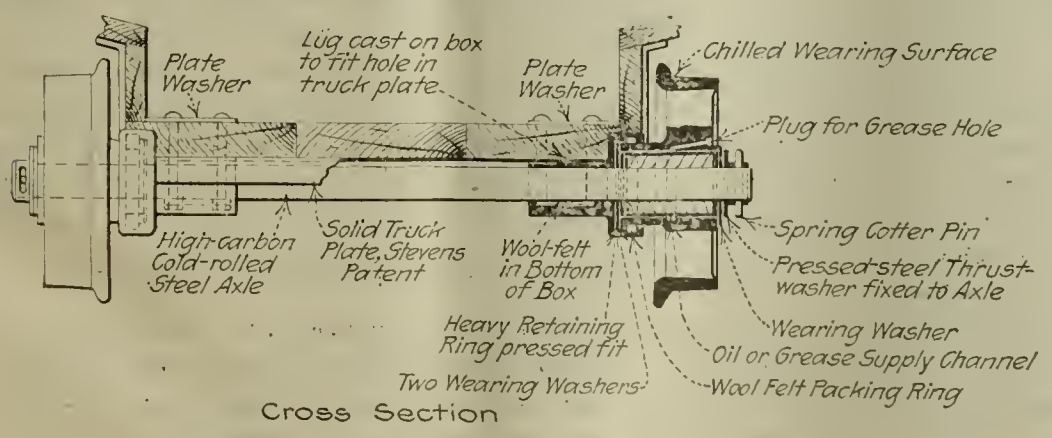
NO ELEMENT entering into the design of mine cars is as important as a proper construction of the truck. To effectively support the car body a truck must be of strong build. It must hold the axles and journal boxes in permanent alignment. It must preserve the wheel gage and form a single unit. The trucks illustrated in this article seek to meet all these several requirements.

The four axle boxes are connected to a heavy steel plate corrugated and flanged at the ends. This construction assures simplicity, rigidity and strength, yet leaves the truck sufficiently flexible to adjust itself to uneven haulage roads. As the plate is a single unit, no unskilled car repairman can appreciably alter the alignment of the axle boxes. This type of truck may be equipped with any style or make of wheels, axles or axle boxes, and may be applied to various shapes of car bodies, old or new.

A self-oiling wheel is used that has positive forced-feed lubrication. Whether a bearing be plain or bushed, fitted with rollers or balls, it should be kept as clean and free as possible from grit and other destructive influences. Grit and dirt will destroy the efficiency and shorten the life of any bearing. Consequently, the self-oiling wheel and axle box are both provided with wool-felt packings, which make them as nearly as can be dustproof. The packing is laid in around the wheel hub, and accurate machining and fitting permit the parts to work with minimum friction.

It must be admitted that the hollow-hub mine-car wheel was an improvement over the old simple type of hub bearing provided merely with an oil hole. It falls short, however, of being more than a step in the right direction. When the wheel is standing still the lubricant settles at one or more points on the axle, but as soon as rotation begins it is thrown by centrifugal force to the periphery of the oil chamber. Lubrication, therefore, ceases, and if the journey be a long one, there is a likelihood that the bearing will be damaged or destroyed.

In the above statement it has been assumed that a fluid lubricant is used. By the use of grease or a heavy oil an attempt has been made to counteract the influence of centrifugal force. The results have not been altogether satisfactory, for the reason that the grease or heavy oil may harden and clog the passages, so that in time the wheel is left without adequate lubrication. It has, therefore, been found advisable to provide a positive method for maintaining an oil circulation through the bearing while the wheel is revolving. In the self-oiling wheel shown in Fig. 3 a specially-designed thrust washer is fixed upon the axle and the wheel is provided with several oil conduits leading from the front end of the hub to a shallow annular chamber adjacent to the axle. An inclosing cap is fitted over the ends of the wheel hub and axle so that a supply of oil or light grease constantly circulates through the bearing while the wheel revolves.



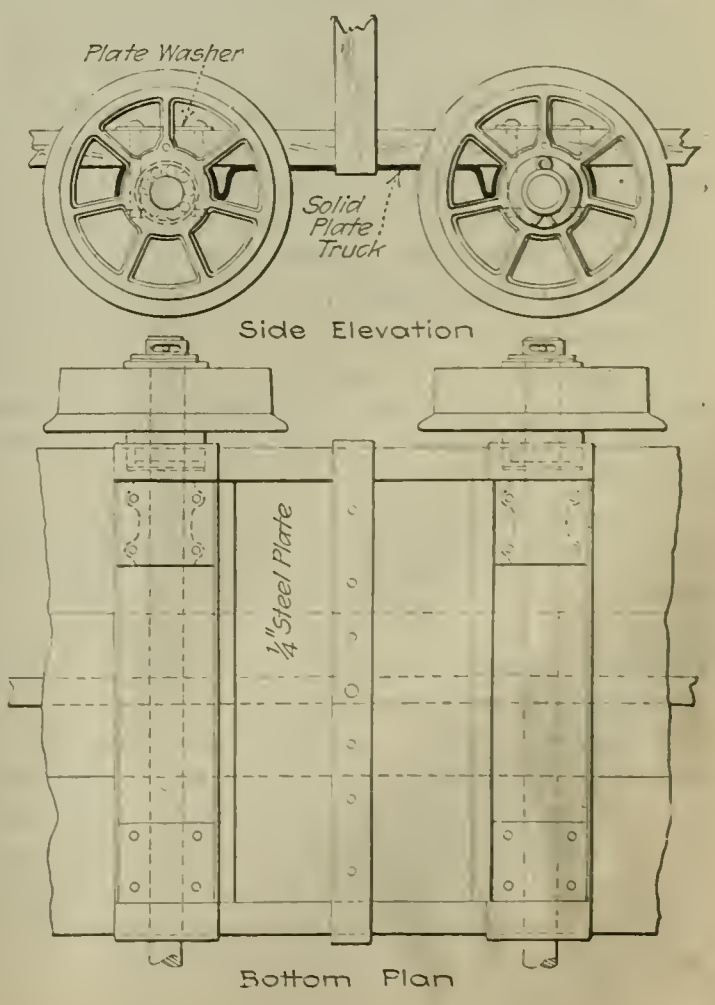
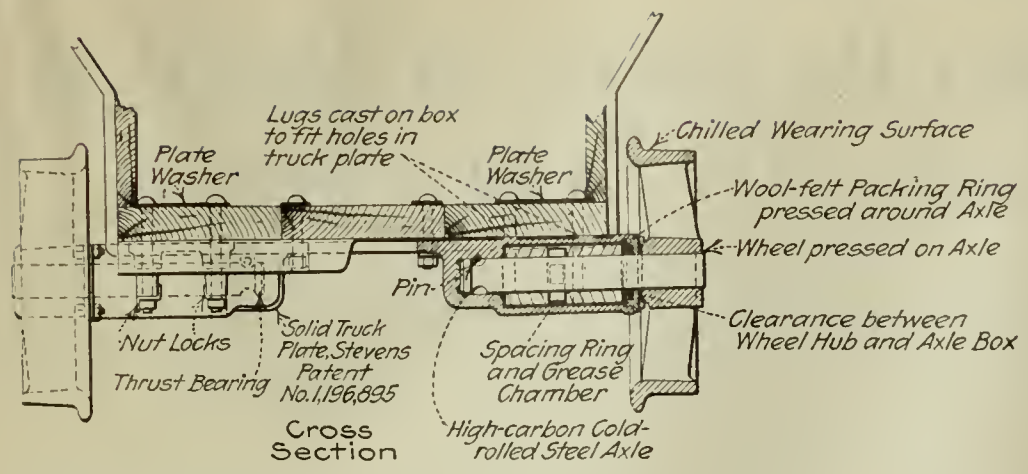


FIG. 1

Solid-Plate Truck with Through Axle

By providing a solid plate corrugated and flanged at the end as the base of the truck, it is made simple, rigid and strong though sufficiently flexible to suit the inequalities in the track. Unless the truck is free from play the stresses to which it is subjected by reason of track irregularities are likely to pull it to pieces.



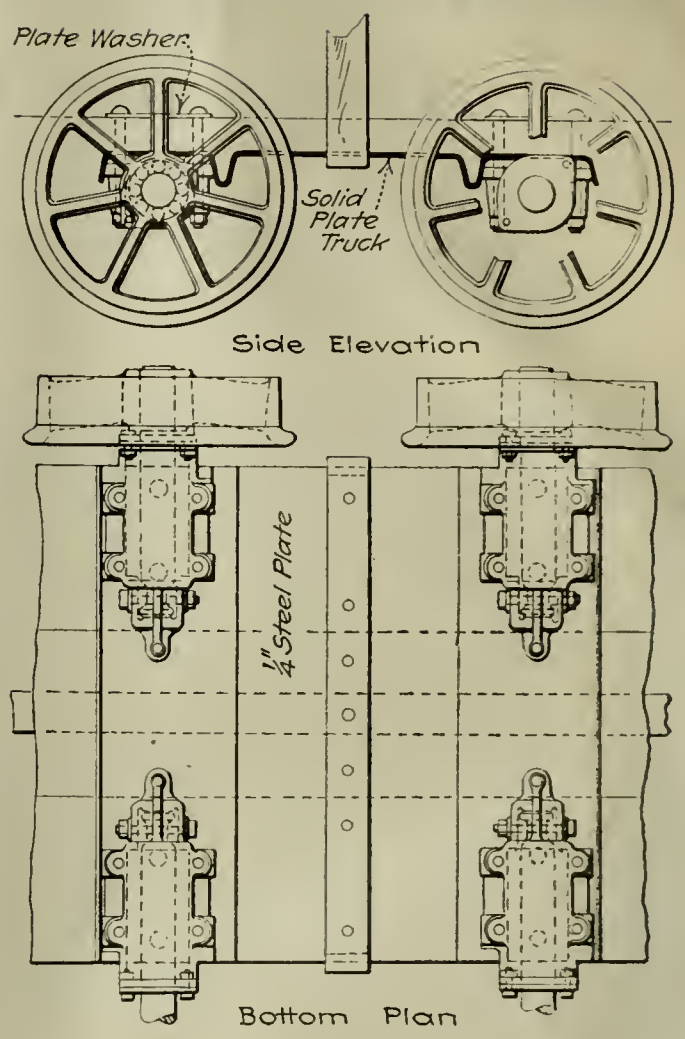


FIG. 2

Same Truck with Divided Axle

Plate washers inside the wagon give a firm grip for the bolts that attach the truck to the car body. This prevents spreading of the bolt holes. A stiffly constructed wagon that will keep its trucks in true alignment with the rails is the great desideratum. A car which wobbles on the track is one that is not only readily derailed but one that requires a needless expenditure of power in moving it from place to place.

Objection often has been made to wheels fitted with caps because cotter pins sometimes wear through, permitting the wheel to come off. This failure of the cotter pin may result in a disastrous wreck or an expensive derailment. It will be observed that in the construction here shown a special force-feed thrust washer in the self-oiling wheel is pinned to the axle, effectively preventing the cotter from being worn or cut off under any circumstances.

Bearing Fails If Boxing Is Not Rightly Made

All that has been said regarding the self-oiling wheel and axle box is true of the roller-bearing wheel and its box. In fact, the only difference between these equipments is that the latter is supplied with roller bearings and such special features as are necessary for easier running and a more perfect type of journal.

Rolling friction is admittedly less than sliding friction. It therefore follows that roller-bearing wheels run easier than those provided with plain or bushed bearings. In the last fifteen years, during which roller bearings have been applied to mine cars, many disappointments have been suffered and many reasons have arisen for questioning the durability of this type of journal.

Experience and observation show that most of the troubles experienced with roller-bearing mine-car wheels have followed improper installations, such as soft-steel axles and hard-steel rollers, or hard rollers working directly in soft cast-iron wheel hubs or boxes with an ineffective provision against the introduction of gritty substances. Many troubles also have resulted from the bearing being too short or from an improper location of the rollers in the wheel hub. This was especially evident when roller bearings were first applied, for they were made too short and in many instances were placed so that the center line of the load would not coincide with the center line of the bearing.

These defects have been remedied in the wheels here illustrated. The roller bearings are properly centered in the hub and are provided with a wearing sleeve and axle of equal hardness. They also are well protected against dirt and grit. All adjacent surfaces in wheels and axles are accurately machined and fitted so that they work together easily and remain in alignment, and the wheels are held on by pressed-steel thrust washers fastened to the axles by cotters that cannot wear off. Several wearing washers are used to reduce the friction of the side thrust. (See Fig. 4.)

Hyatt roller bearings are used because they weigh less than solid rollers, and as they are hollow they provide additional space for lubricant. While these self-oiling wheels will run for several months on one oiling, the roller-bearing wheels will run for six months or more, and it is clear that they possess a lower coefficient of friction.

Crooked Tracks Cause Excessive Thrusts

As mine roads have many curves and are likely to be crooked, car wheels should never turn on their axles, but be fixed to them while the axles themselves revolve in boxes. A number of reasons exist why this principle has not been put into practice. In the first place, the width and shape of mine-car bodies generally have not been suited to outside journal boxes—that is, boxes resembling those used on railroad cars. Track-gage necessities also have prevented the use of tight wheels with inside journals. One tight and one loose wheel have been tried without satisfactory results, for the reason that with inside axle boxes the side thrust caused by track curves and irregularities must be resisted somewhere outside of the lubricated area.

It has been the thrust encountered in rounding curves and in side sway that has caused practically all troubles with mine-car wheels. In the old days when wheels had plain bearings, the bearings wore out faster at one end

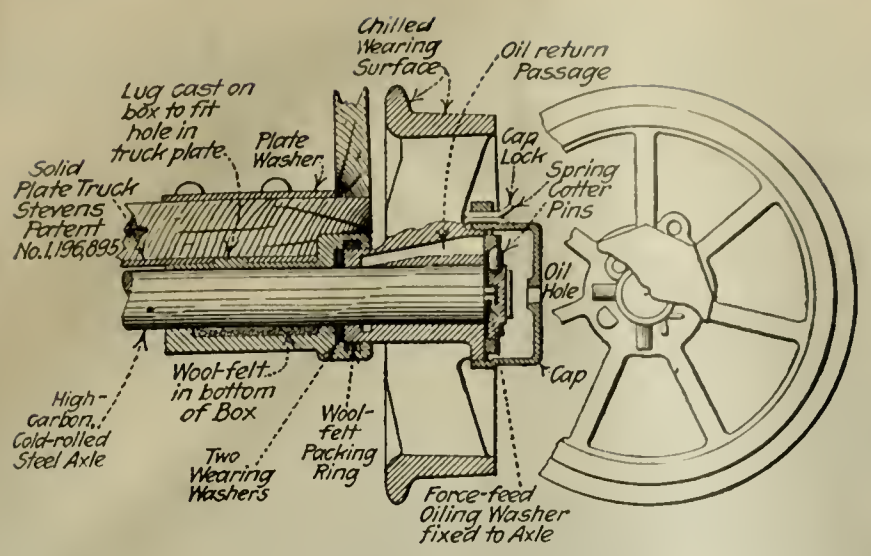


FIG. 3. SELF-OILING WHEEL

A positive feeding system assures regularity in the delivery of oil to the wheel, and careful packing prevents dirt from reaching the bearing surfaces.

than at the other. An attempt was made to cure this trouble by increasing the hub projection—that is, the difference between the line of track gage and the rear end of the wheel hub.

The side thrust produces a direct pressure on the bearing, while the wheel flange in contact with the rail operates as a lever equal in length to half the diameter of the wheel. From this it is easily seen why the bearings in loose wheels wear irregularly or conical. It is this wear that has been so highly destructive. Lengthening the wheel hub was a palliative but not a cure.

Harder Axles and Bearings Are Essential

Another remedy has been to use harder and more substantial material in axles and bearings. Thus roller bearings are made of high-carbon steel, as also are the bearing sleeves and the axles. The principle, however, remains the same and the chief reason that the equipment for roller-bearing wheels is better than its predecessors is that better and more suitable materials are employed and greater care and accuracy are exercised in the processes of manufacture and construction.

Is there a cure for the majority of wheel troubles? Can a wheel and axle box be so designed as to give at all times and under all circumstances the efficiency obtainable from the lowest coefficient of friction and the longest period of service? It is believed that this in large measure can be accomplished. The solid-plate truck makes possible the application of the roller-bearing axle box with independent axle. In this

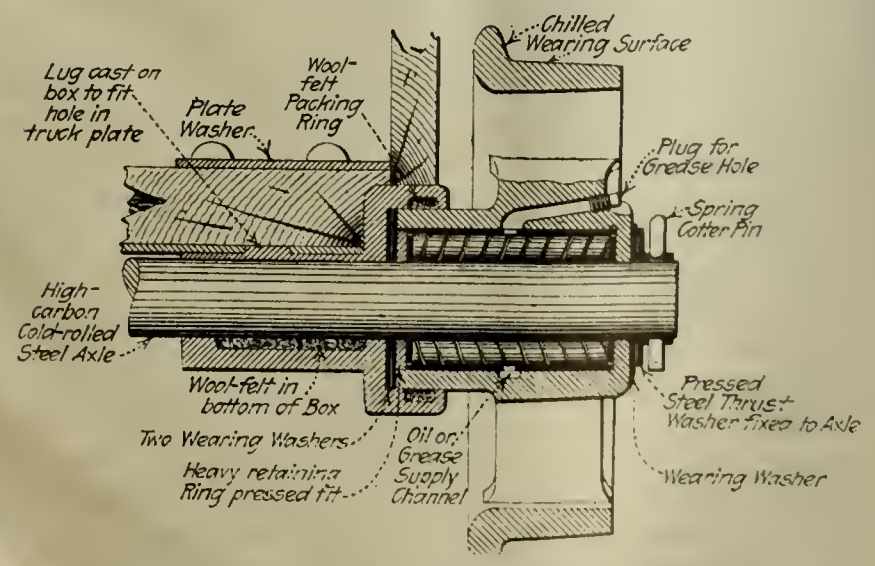


FIG. 4. AXLE BOX WITH ROLLER BEARINGS

A pressed-steel thrust washer pinned to the axle prevents the cotter from being worn or cut off. The axle is made hard and hence the bearing cannot cut into the axle. The center line of the track reaction is the center line of bearing.

equipment the bearings lie entirely within the journal box, the wheel is pressed tightly to place and the short independent axle finds a thrust bearing on its inclosed end, where ample lubrication is available. It is, therefore, clear that as wheel troubles and upkeep expenses have arisen from side thrust, the cure lies in removing this influence from the wheel to some point where it can do no harm. The end of the independent axle inside of the tightly-sealed box receives the thrust, and as this point can be thoroughly lubricated at all times, a difficulty that has been the source of more trouble and expense than any other one detail connected with mine-car operation has been successfully and scientifically overcome. (See Fig. 5.)

Four Principles in Bearing Construction

The following four principles must be kept in mind and applied if best results are to be obtained: (1) Wheels should be fastened to their axles; (2) roller bearings run easier than plain or bushed bearings; (3) the efficiency and durability of roller bearings

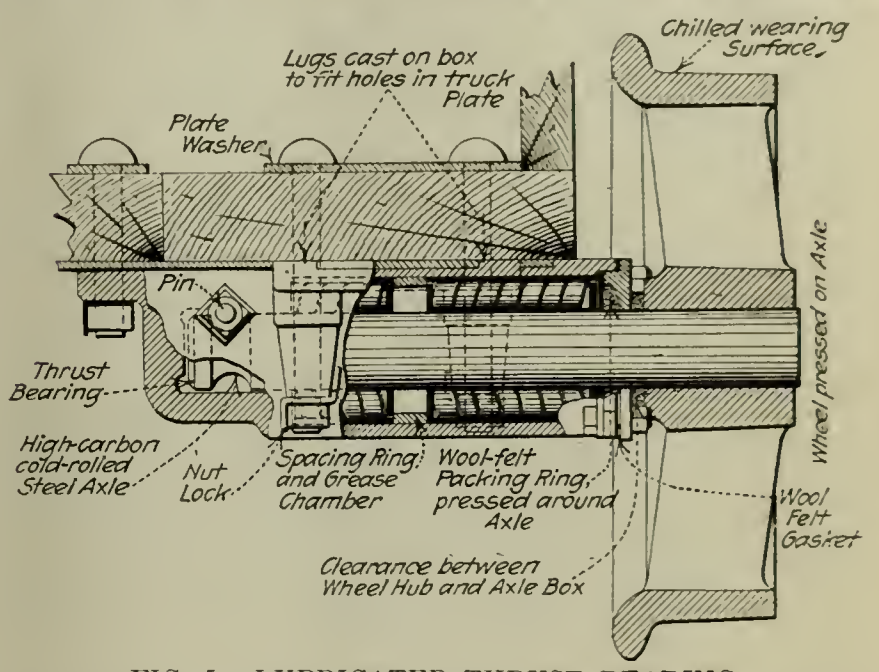


FIG. 5. LUBRICATED THRUST BEARING

Here the thrust as well as the roller bearing receives the benefit of the lubricating grease. This prevents wear. The wheel is pressed onto the axle like a railroad wheel and cannot come off.

depend upon (a) protection from grit and dirt, and (b) freedom from wear incident to side thrust; (4) all friction must be kept within a lubricated area.

The Stevens roller-bearing axle box with independent axle, manufactured by the Fairmont Mining Machinery Co. and illustrated in this article, was designed in conformity with the above principles, and as it will run for a period of at least two years without attention so far as lubrication is concerned its economy in operation is obvious.

Officials of District No. 11, United Mine Workers of America, have been advised of a strike at the Tecumseh mine at Bicknell, where the entire force is idle due to a walkout of the machine operators. The trouble is said to have arisen over a limitation of space alloted the machine men and also to a dispute regarding distribution of cars.

Miners at the Calora Mine No. 2 in the Jasonville field resumed work recently after being idle for several days. The men walked out on strike following some difficulty about shotfiring. The men declared the shotfirer failed on one occasion to explode several shots, and, in consequence, they refused to work.

At the Lens pits during November, the *Colliery Guardian* states, the water level lowered by 23 m. In the No. 5 pit at 35 m., an extensive breach has been discovered in the shaft lining, the work of the German destroyers.

Under the Microscope Coal Has Already Lost Much of Its Former Mystery—IV*

Pyrite Was Formed After Coal Was Deposited, Apparently in Small Crevices—Plant Tissue Is Deflected Around Sand Particles and Resin but Is Discontinuous Where Pyrite Is Found—Conjectures as to the True Chemical Character of Coal

By Reinhardt Thiessen†
Pittsburgh, Pa.

When speaking of the sulphur in coal, it is pyrite that usually is referred to. This appears to the naked eye in the form of balls, lenses, nodules, continuous layers and thin sheets or flakes, which recur in horizontal and in vertical cleavage fissures, and in these forms it for a number of years has received considerable attention. In the hope that it might be possible to eliminate it from the coal before it is used much discussion and experimentation has been expended on it. Unfortunately the microscope shows that the pyrite also occurs as microscopic particles disseminated through the coal.

These particles can be seen only when thin sections are placed under a microscope which gives a high degree of magnification (Fig. 2). When so seen they appear as roughly rounded opaque spots varying in size from about 20 to 50 microns. Occasionally many particles are found to have coalesced into rows or groups, in that case forming larger aggregates. When isolated from the coal they are seen to be more or less globular with a rough surface. Under high magnification it is observed that the roughness consists of the edges and corners of extremely minute cubes. In making a thin section these particles frequently break up into still more minute fragments. At a still higher magnification it will be noticed that these particles are themselves minute cubes.

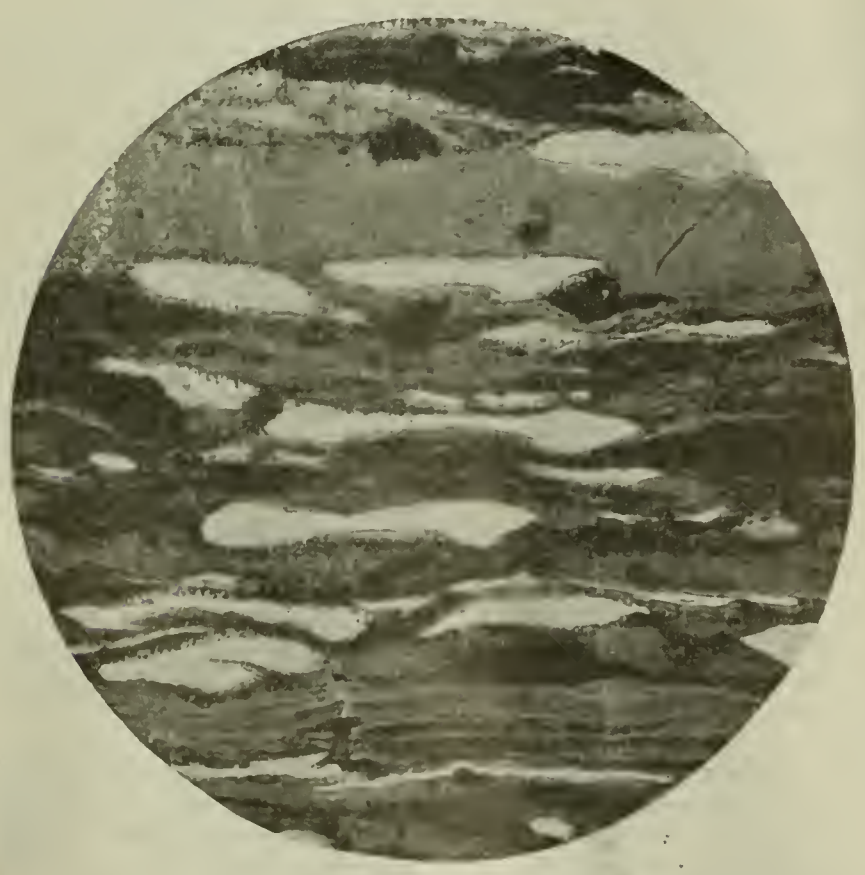


FIG. 1. VERTICAL SECTION OF YAGGER COAL

At a magnification of 1,000 diameters shows characteristic spore-exines and other details.

*Fourth installment of article entitled "Recent Developments in the Microscopic Study of Coal," read at the meeting of the Coal Mining Institute of America, Dec. 9, at Pittsburgh, Pa.

†Research chemist, U. S. Bureau of Mines.

Pyrite Clearly Formed After Coal Was Made

The particles of pyrite evidently were formed after the coal had been laid down. Wherever located they seem to take the place of the coal, as if a hole had been eaten out of the mass and filled with pyrite. Any plant structures or striæ are discontinued at the particle and continue on the other side, whereas in the case of sand, resinous or carbonaceous particles the plant structures and striæ are bent over them.

The amount of microscopic pyrite varies considerably in different parts of the same section and in different sections from the same bed, as well as in different beds. Hardly a section is made in which no such particles are found. Some coals like those from the Pittsburgh seam contain relatively few; others, like those from the No. 5 bed near Vandalia, Ind., contain enormous numbers of such particles. Samples taken from the No. 5 bed at La Salle, Ill., also contain large numbers, while those from some parts of the No. 6 bed of Illinois contain relatively few. In other parts again, as at the Middle Fork mine, quite large numbers are present. Microscopic pyrite particles are found in greatest number in the anthraxylon, or bright coal, which is that part of the bed derived from wood (Fig. 2).

Float-and-Sink Separation Our Only Hope

In view of the extremely small size of the pyrite particles and their general dissemination through the coal it seems hopeless to attempt to separate this form of pyrite by means of ordinary washing processes. If the float-and-sink methods ever prove expedient there may be some hope. By taking advantage of their greater specific gravity, those parts of the coal containing pyrite in larger amounts may be separated from parts containing none or relatively few, all other characteristics being equal.

Sulphur also exists in coal in an invisible form called organic sulphur; at least it exists in forms which the eye cannot identify even with the aid of the microscope. It is not known in what combination this sulphur occurs. Wormley, of the Ohio State Geological Survey, first called attention to the fact that sulphur in coal was not all in the form of pyrite, and M'Creath, of the Pennsylvania Geological Survey, showed that there was more sulphur in coal than the pyrite would account for. Kimbal first and Drown later concluded that sulphur must exist in coal as organic sulphur.

Little work has since been done to ascertain the real nature of this form of sulphur. Parr and Powell resumed work on the subject a few years ago, and at

present the latter is continuing this work in the U. S. Bureau of Mines, mainly with the object of finding how to eliminate sulphur from gas and coke. That sulphur does exist in coal as indicated is certain, and it is highly probable that, like nitrogen, it forms a part of an organic compound derived directly from the plants from which coal originates. In plant life the nature of sulphur is quite well known.

Microscope Helps Determine Coal Chemistry

The structure of coal has now been worked out quite satisfactorily. From what is known of plant chemistry, it is quite clear what plants have contributed to coal. From a microscopic study of its structure it is now also fairly clearly seen what parts of the plants have remained, but as to the real chemical nature of their remains we can as yet only draw inferences. These inferences, aided by chemical tests, will in the near future enable us to determine the chemical composition of coal.

It has been made clear that the largest part of the dry matter of plants as a whole consists of ligno-cellulose and cellulose, and so coal is derived principally from those substances. Unfortunately, we know too little about the decomposition products of these compounds. In natural peat all the matter which by its structure and nature is shown to be of woody origin consists no longer of cellulose, ligno-cellulose or lignin. What that matter is has not yet been determined.

In coal we are still farther away from the answer, and yet if the coals were derived solely from the woody matter of plants, its study would be relatively easy. Many other plant products enter into its composition, and although on the whole these form by far the smaller proportion of the whole coal, yet they serve to make more difficult the study of its composition.

Celluloses Mixed with Many Other Compounds

A large number of plant products besides cellulose are present in modern plant life and in all probability were constituents of the plants of the Carboniferous age. The chemistry of these in the living plant, however, is much better known than that of the celluloses. Some of the more important are proteins, resins, waxes, fats, oils, starch, sugars, gums, alcohols, tannins, glucosides, terpenes, camphors, phytosterines and alkaloids. While some of these are present in the plants in only small proportions, like the glucosides, phytosterenes and others, a number, like the resins, fats and waxes, are found in considerable quantities.

Many plant products occur in small quantities, but whenever they belong to the aromatic or ring compounds and their derivatives they are of great significance. Hydrocarbon compounds that contain either a single or compound benzol ring are quite stable. Oxidizing reagents, for example, will not attack the benzol ring, but any hydrocarbon of the paraffin group which is attached to that ring, as an end group or side chain, is readily changed or removed.

Compounds with a group of closed rings, that is, compounds with the naphthalene, anthracene or phenanthrene nucleus and their derivatives, behave in like manner. These compounds are waste products of plant assimilation—that is, they are not foodstuffs—and are thrown off or deposited in certain parts of the tissues. Because they are not foodstuffs they are not usually attacked by organisms like bacteria.

For this reason many of the plant products that occur in but small quantities in plants, like benzols, phenols, chinones, aromatic alcohols, ketones and aldehydes and their derivatives, terpenes, camphors and phytosterines, alkaloids and others that may have remained in the coal-forming débris, may have been accumulated or concentrated (as we have seen that the resins have been) and thus are found in considerable quantities in coal, as is clearly revealed when coal is distilled.

Microchemical Tests Reveal Ring Compounds

In peat the presence of many of the ring compounds found in plants may be shown by means of microchemical tests. In the lignites some of these compounds can still be detected. In bituminous coals, however, none can be revealed by such means, but when coal is subjected to distillation, many of those compounds or their derivatives appear in the distillates.

During the whole process of the transformation of plant substances into coal there is a gradual loss of oxygen. More correctly, there was a loss also of carbon and hydrogen, but relatively the oxygen suffered a greater loss than the other two elements. This is what geologists call deoxygenation. What other changes have taken place in the organic compounds besides the loss of oxygen is not exactly known. It may be polymerization, dehydrogenation, or both. It is certain that in some cases dehydrogenation takes place.

An example is found in retene, a fossil resin found in peat, lignite and in fossil conifers. It is a hydrocarbon having three rings with only one hydrogen atom attached to each free-carbon atom. It may be derived by distillation from the two constituents of resin—abietinic acid and pimaric acid—as has been shown by Vesterberg and Tschirch, and it is, therefore, related to these. But abietinic and pimaric acid have two hydrogen atoms attached to each free-carbon atom instead of one.

There has been not only a removal of the oxygen but also a removal of one of each of the two hydrogen atoms attached to the carbon atoms in the change from the resin acids to retene. Chemists call this dehydrogenation. Fichtelite is another fossil resin, also found in peat, lignite and fossil wood and sometimes associated with retene, and it also is supposed to be derived from either abietinic or pimaric acid. But in this case each side group containing oxygen has been replaced by two hydrogen atoms, and in every place where retene has one hydrogen atom attached to a carbon atom, fichtelite has two. Fichtelite is among the most stable organic compounds known. Amber and succinite also are fossil resins with a similar history. Those examples are given to convey an idea as to what in all probability has happened to the many well-known compounds which are contained in plants.

What was said concerning the aromatic or ring compounds and their derivatives is true also to some extent of the aliphatic or chain compounds and the compounds derived from them, although these are not as stable as the ring compounds. It should be emphasized that the aliphatic compounds constitute by far the largest part of the plant substance. The cellulose, gums, oils, fats, starch, alcohols, proteins, sugars and acids belong in that classification.

Their radical or nucleus is a paraffin chain to which are attached various end groups containing oxygen, that make them what they are. Some of the plant substances, like starch, sugar and protein, may decompose

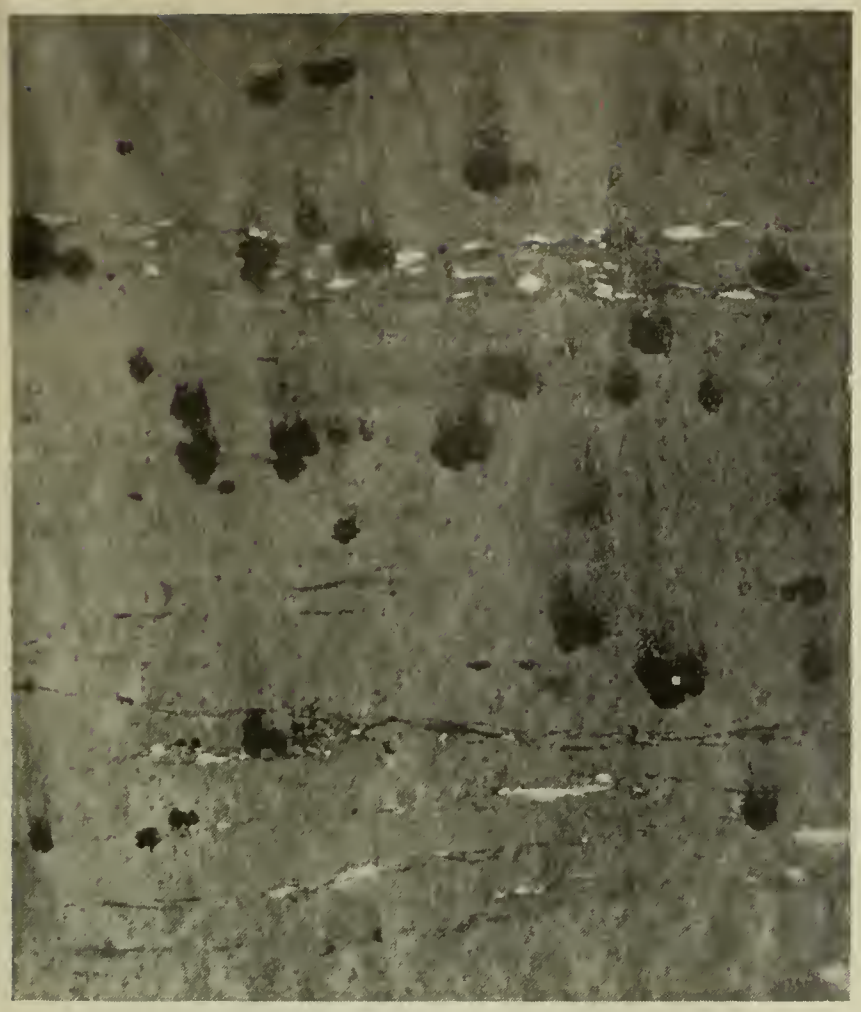


FIG. 2. BRIGHT COAL FROM MIDDLE FORK, ILL.
This thin cross-section clearly shows the finely disseminated pyrite particles in the No. 6 bed of Illinois. The magnification is 200 diameters. It will be noted how grinding has smudged the pyrite crystals into crystals of still finer size.

readily, but not without leaving some of the decomposition products behind. Others, like fats, waxes and cellulose, are relatively stable. Their end groups—that is, that group that makes a fatty acid or an alcohol, or whatever it is, out of a paraffin—are more easily removed and a paraffin remains.

Fats Less Permanent Than Ring Compounds

Supposing the root stocks of one of the coal-forming plants had contained in a part of its tissue 20 per cent

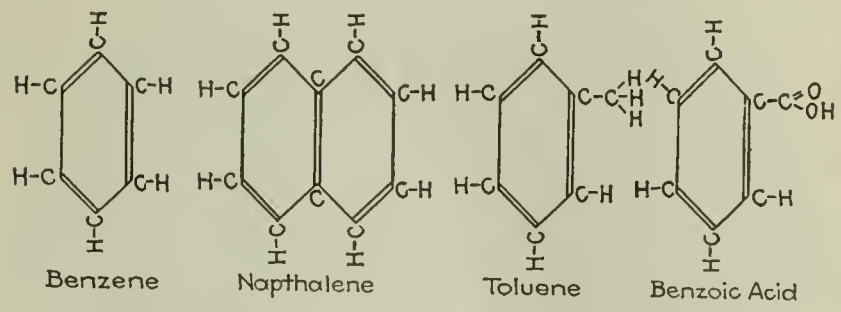


FIG. 3. BENZENE RING AND DERIVATIVES
Benzene, C_6H_6, a single ring; naphthalene, $C_{10}H_8$, a double ring; toluene, $C_6H_5CH_3$, benzene ring with side chain; benzoic aid, $C_6H_5CO_2H$, ring the same with the side chain oxidized.

of fat, consisting of palm and Japan oils, as in one of the living plants of today; those oils would split into their respective fatty acids and glycerin. During the coal-forming period, the fatty acids, as well as the glycerin, would, to some extent at least, be deprived of the end groups containing the oxygen, and two corresponding paraffins would be formed. It is a well-known fact, as already stated, that the coal-forming process is accompanied by the loss of oxygen.

All plants contain more or less fats and oils, ranging from a fraction of 1 per cent to as much as 75 per cent in certain parts of the plant. There is hardly a living plant cell that has no fat or oil in it, but it is more concentrated in certain tissues, as seeds, fruits and roots. In the peats some of the fats and oils may still be detected.

In the lignites also they may yet be discovered, although with difficulty on account of their changed nature. In the coals neither the fats nor the oils are recognized as such by the microscope except in the spores and cuticles which yield oil. But we cannot imagine for a minute that they have been lost completely

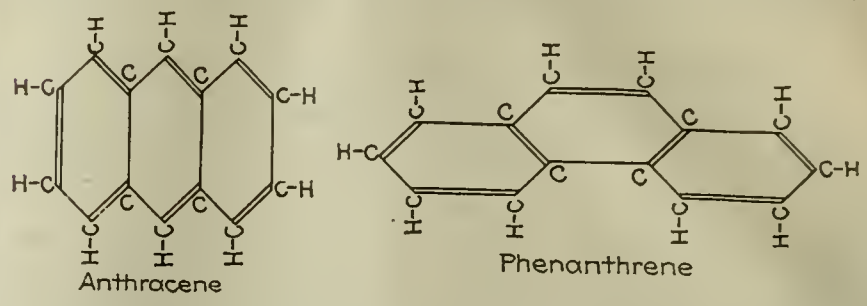


FIG. 4. ANTHRACENE AND PHENANTHRENE
Anthracene is represented by three benzol rings. Its formula is $C_{14}H_{10}$. The ring compound which represents phenanthrene is different but the formula is still $C_{14}H_{10}$.

in coal, and aside from spores they should be present either as oils or as "kerogens"—that is, oil-yielding substances.

The leaves, young stems, petioles, fruits and often older stems are covered with a protective layer called cuticle. This covering is composed of oils and waxes as is also the outer covering of spores and pollen grains, which, as has been said, are characteristic constituents of peat, lignites, oil shales, coal and especially cannel coal. In Europe there are certain deposits, known as pyropissite,* that are of great value by reason of the oils and waxes that may be distilled from them. These deposits consist largely of spore matter, which is the source of the large quantities of oil and wax which

FIG. 5. ILLINOIS OIL SHALE
Thin cross-section magnified 1,000 diameters. This section was taken from a place just below the big spore-exine shown in Fig. 11 of the second installment. It shows that the organic matter of the mass between the large spore-exines also is largely composed of spore matter. The black areas represent pyrite particles.

*Friable coaly substance which forms a layer 6 to 9 in. thick on brown coal at Weissenfels, near Hallé. On distillation it affords 62 per cent of paraffin—Dana's "A System of Mineralogy."

they contain. We have not developed such industries in this country, although deposits consisting largely of spore matter are known. One at Lester, Ark., has been utilized in a crude way for the distillation of oil and a relatively large yield has been obtained. The cannel coals were quite extensively used for the same purpose before petroleum was discovered in the rock. Today, when the oil wells are waning, attention is again being turned to the oil shales. Owing to the spore matter of which the organic material is largely composed they promise an almost inexhaustible supply of oil.

Schedule-Rating Rules as Applied to Distance of Timber from Face

ON DEC. 16 the coal-mine section of the Pennsylvania Compensation Rating and Inspection Bureau held a hearing to determine, if possible, whether it would be practicable to change the distance between the last row of props and the working face from 6 ft., as at present, to 3 ft. Under the arrangement proposed the props would, before shooting, be set 3 ft. from the face. Dr. Downey, who presided at the meeting, addressed the fifty or so mining men present, calling particular attention to the fact that half the total accident loss comes from falls of roof, mostly at the face and between the last set of timbers and the coal.

In the four-year period 1916-1919 there were 879 fatal accidents from this cause and 490 happened while the men killed were mining or loading coal. In drilling the coal 21 men were killed, 24 men were fatally injured when going back to inspect the result of their shots, 18 were killed while testing roof, 69 when setting and 75 when pulling props. While pulling down slate 28 were killed, 11 lost their lives when working on tracks, 14 while traveling on roadways and 127 in ways not specified. Two were killed by falling props. Besides this, 97 men were killed by falls of coal. Of the total number of men killed 323 lost their lives on pillar work, 507 in rooms, and 144 on entries.

Seeks Greater Safety for Workers

The doctor thought that some method of timbering might be devised whereby the deaths from this source could be materially decreased, and the desire to find out if this were possible led him to call the hearing. He pointed out that practically every operation connected with the actual mining of the coal is done under the roof which stretches between the face and the last set of timbers and that according to the present standards this distance was 12 ft. By decreasing this distance to 9 ft. he thought that the safety of the men would be enhanced, but he desired to find out if the idea was practicable.

A couple of months before the meeting was called the Compensation Bureau had appointed two committees to make actual tests in the field to see what effect on the mining a closer placing of the props to the face would actually have. From these tests results were obtained that showed that props set 3 ft. from the face would continue to stand despite the shooting of the coal and that wherever the props were shot down, black powder had been used.

It was further shown that with the props placed 3 ft. from the face before shooting, sufficient space was allowed for the sumping of a shortwall machine, but there was not sufficient room to use a breast machine unless the props were removed. Dr. Downey did not think that this was of importance, as he stated that there were only a comparatively few breast machines in use. It was shown, however, that in 1919 there were more than 1,448 and in 1920 more than 1,496. Approximately 25 per cent of all the machines in the state are breast machines. With a 3-ft. clearance there also would be insufficient room for the operation of arcwall and straight-face machines.

It was shown that the timbers set by the committee were set tight to prevent their being dislodged. This, however, is bad practice, for a timber should be placed in position so loosely that when the weight comes upon it, it will not snap as it will when it has been wedged tightly into place.

The mining officials declared in their turn that with props so near the face, the men, being compelled to work in close quarters, would be likely to be killed if the coal started to roll. They declared that the records obtained by the Compensation Board were not complete enough to fully determine the actual causes of accidents. The fatalities might be caused by actual roof falls or by falls of draw slate or by the rolling of coal or by some combination of these occurrences, and they felt that the board ought to make such an investigation of these causes as would determine exactly what they were and that upon that knowledge they should fix their standards.

At a meeting of the committee after the hearing was finished it was decided to postpone action on this suggested standard and to try the old one for another year and meanwhile obtain better data, so that more exact action could be taken. At the same meeting some minor changes in the electrical standards at mines were adopted.

IN ITS ANNUAL REPORT the Bureau of Standards says its mine-scale investigation has been delayed due to resignation of scientific men and the necessity of training new men for the work. The bituminous coal strike also curtailed the work. A total of 221 mine scales were investigated, 72 being found to be within the allowed tolerance, which is 0.4 per cent. The Bureau says that conditions under which mine scales are installed and operated are unfavorable to continued accuracy, but that no injustice results by allowing the tolerance. Where scales were found accurate, distrust and suspicion were allayed in the minds of the workers and operation continued with better feeling on both sides. Where scales were found inaccurate, corrective measures were applied and both parties were satisfied. The mine scales investigations were in new mining regions in the bituminous fields of Kentucky, Tennessee, Ohio, West Virginia and Georgia.

ESTIMATES OF THE LIGHTHOUSE SERVICE of the Department of Commerce submitted to Congress include 50,000 tons of bituminous coal and 9,000 tons of anthracite.

CLOSING OF THE Soo locks Monday, Dec. 27, officially marked the close of the 1920 navigation season in the Upper Great Lakes. It was the latest closing in the history of the Soo Canals.

MORE THAN six and a quarter million dollars will be required to pay the fuel bill—coal and oil—for the various city departments of Greater New York in 1921, according to the budget adopted by the Board of Aldermen. Of this amount the Board of Education will require $1,738,548.87 to pay for heating the various school buildings and the other buildings controlled by it, while the Department of Plant and Structures will require $1,033,877 to pay its fuel bills.

Engineers Afforded Latest Information on Powdered Coal and Briquets

Results of Pulverized-Coal Tests at Lykens Colliery—Low Carbon Dioxide Not Inconsistent with Efficiency—Anthracite Dust in Streams Is a Total Loss—Briquetting Anthracite Fines—Bethlehem Steel Has for Years Used Pulverized Coal to Advantage

By R. Dawson Hall
New York City

SOME of the interesting discussions which closed the meeting of the Engineers Club of Philadelphia, the early part of which was reported in *Coal Age* Dec. 23, 1920, on pages 1280-1282, are worthy of publication as they represent the latest advances in the arts to which they make reference.

I. R. Wyllie, of the M. A. Hanna Co., stated that in his experiments with pulverized coal under boilers at Lykens Colliery he got the highest efficiency with 10 to 11 per cent of carbon dioxide in the stack gases. When 14 to 17 per cent of carbon dioxide was obtained he could not get such a high rating from the boilers as he did with lower percentages of dioxide. The greater efficiency with the use of larger quantities of air was contrary to theory but seemed to be proved in actual practice. The larger quantity of air admitted decreased the heat of the fire but apparently that was compensated by the greater velocity of the gases. Mr. Wyllie passed around the interesting table which is included in this article and which will be found on the following page.

Mr. Savage, of the Combustion Engineering Co., said that powdered anthracite coal was not suited to low ratings and intermittent loads. He said that high efficiencies could be obtained but not high boiler ratings.

R. H. Vail on being asked what sizes of material usually were fed to fine grinding mills replied that it was usual in the West to reduce the material to from ¼ in. to ⅜ in. before putting it through the final stages. Asked by William Griffith, of Scranton, whether a better result would be obtained if material running between ⅛ and 3/32 in. before final pulverization were used, Mr. Vail said that it would. Mr. Griffith presented fine material obtained by collecting dirty water from a stream flow in the anthracite region. He said that he believed that there were prodigious quantities of coal in the rivers of the anthracite regions and that the coal the dredging companies were trying to save was barely one-twentieth of the whole quantity of coal that the rivers were conveying.

Briquetting with Starch and Asphaltum

J. H. Kennedy spoke on the briquetting of anthracite. He said that the briquets must be waterproof and hard but they must not be so hard as to be brittle. They must also not melt down in the fire. This company was using the C. E. Hite process, the binder used in which was composed of one part of starch, twelve parts of water and two parts of asphaltum. The starch was mixed in cold water because with hot water it will become lumpy. The mixture is added to boiling water.

The binder is 8 per cent of the mixture, the other 92 per cent being culm. The briquets, or boulets, are made on a Belgian press. The briquet when made is soft; to get a hard briquet the water must be taken out and this must be done carefully. It would not do to harden the outside of the briquet, making the steam generated within break its way to the surface as the heating continued, thus disrupting the briquet. The briquet is passed through a tube 100 ft. long and 8 ft. in diameter. The first compartment is heated to 210 deg. F. and the second to 350 to 400 deg.

This latter temperature dextrinizes the starch and hardens the briquet, but care must be taken not to heat the briquet to a higher temperature, as the starch is likely to carbonize at 450 deg. F. and the briquet will then be brittle. After that the briquets are allowed to harden for a while at atmospheric temperature. In burning such briquets clinkers rarely form. It is necessary to use less draft in burning them than when burning anthracite coal. The briquets weigh 2½ oz. each.

The culm used is that from the Lykens Valley, which is low in ash. The only preparation is drying and screening. The coal is not washed. An analysis shows: Moisture, 1.17 per cent; volatile matter, 13.38 per cent; fixed carbon, 75.29 per cent; ash, 10.16 per cent; sulphur, 0.64 per cent. Calorimetric tests show a heating capacity of 14,090 B.t.u.

No Trouble Till Anthracite Is Pulverized

W. W. Pettebone, of the Bethlehem Steel Co., said that his company had been using pulverized bituminous coal for fifteen or sixteen years, it being a pioneer in the use of this form of fuel. Fuller mills were used and they had given unfailing satisfaction. In March, 1920, an attempt was made to change over from bituminous to anthracite river coal and in ten days the Fuller mills had broken down, though no trouble had been experienced in operating with bituminous coal.

Properly pulverized anthracite can be burned very successfully. His experience with bituminous coal showed that when too much speed is used in pulverization oversize may be formed. This may be burned by turning compressed air on the fallen material, which raises it into the flame under the boiler. It is, however, possible to use too much compressed air, in which case there is a burst of flame which almost amounts to an explosion.

He found that he obtained a monthly efficiency of 80 per cent, but in figuring this he deducted nothing for the use of air in the fan, which, of course, reduced the net efficiency. In obtaining a steam production considerably over the rating of the boiler there was a risk of burning out the furnace. He could not say what excess boiler rating it would be safe to seek in the burning of pulverized anthracite.

Results of Boiler Trials Made at Pulverized Fuel Plant, Lykens, Pa.

TYPE OF BOILER: B. & W. INCLINED HEADER, 3 PASS, 7 HIGH x 16 WIDE

		Feb. 21	Feb. 23	Feb. 28	Mar. 4	Mar. 5	Mar. 12	Mar. 13	Apr. 8	Apr. 29	Aug. 4	Apr. 23
Date of trial												
1 Number of boilers tested		1	1	1	1	1	1	1	1	1	1	1
2 Duration of trial	Hr.	5	5	3	2.75	4	8.83	3 417	4 95	4 28	5 88	6 20
Dimensions and Proportions:												
3 T tal water heating surface per boiler	Sq.ft.	2,357	2,357	2,347	2,357	2,357	2,357	2,357	2,357	2,357	2 357	2,357
5 Kind of furnace (Hanna)	.....	No. 3	No. 3	No. 3	No. 3	No. 3	No. 3	No. 3	No. 4	No. 4	No. 4	No. 4
11 Height of stack above dead plate	Ft.	64	64	64	64	64	64	64	64	64	64	64
12 Size of stack (diameter)	.....	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.
Pressures:												
13 Steam pressure in boiler by gage	Lb.	118 7	119 8	120.9	117 6	117 0	115.7	117 0	117.2	112 4	107.1	116 6
14 Draft in flue behind boiler	In.	0.456	0 415	0.398	0.378	0.371	0.365	0.374	0.362	0 388	0 350	0 329
15 Draft in furnace at bottom	In.	0.161	0 184	0.163	0.156	0.148	0.212	0.178	0.201	0.172	0 154	0.196
16 Draft in furnace at top	In.	0.040	0 050	0.041	0.028	0.028	0.044	0.041	0.050	0.048	0 033	0.054
17 Draft in boiler at top 1st pass	In.	0.037	0.046	0.053	0.032	0.032	0.087	0.061	0.054	0.036	0.021	0.049
18 Draft in boiler at bottom 2nd pass	In.	0.108	0.099	0.144	0.108	0.129	0.158	0.143	0.130	0.104	0.085	0.111
19 Draft in boiler at top 3rd pass	In.	0.161	0.151	0.240	0.147	0.202	0.201	0.204	0.144	0.124	0 096	0.116
22 Blast at riser on pipe	In.	1.70	1.495	2.20	1.84	2.06	2.025	3.775	2.60	2.02	2.29	1.71
Temperature :												
31 Of feed water entering boiler	Deg.	193	192	195	189	190	194.5	195.6	194	192	197	194
32 Of escaping gases	Deg.	625	620	627	633	633	676	825	627	617	630	562
Fuel:												
34 Kind of fuel (pulverized)		Lykens slush	Lykens slush	Lykens slush	Lykens slush	Lykens slush	Lykens slush	Lykens slush	Lykens slush	Lyk. Seam Dirt	Lyk. No. 2 & 3 Bwt.	Coke Braize
35 Moisture	Per cent	0.60	0.50	0.57	0.45	0.35	0.60	0.51	0.78	0.60	1.25	0.99
36 Volatile matter	Per cent	8.33	8.55	8.31	8.56	8.52	8.65	9.34	8.67	8.09	8.55	9.89
37 Fixed carbon	Per cent	77.80	79 35	77.65	78.78	79.73	78.27	77.70	79.60	80.11	78.30	73.76
38 Ash	Per cent	13.27	11.10	13.47	12.21	11.40	12.48	12.45	10.95	11.20	11.90	15.36
40 Calorific value per lb., dry	B.t.u.	13,120	13,426	13,124	13,170	13,310	13,194	13,302	13,509	13,407	13,289	12,190
41 Weight of fuel as fired	Lb.	5,492	5 084	5,208	3 550	5,003	18,837	8,254	8,105	3,963	6,564	6,918
42 Weight of dry fuel	Lb.	5,459	5,059	5,248	3,534	4,985	13,754	8 212	6,117	3,939	6,482	6,850
Size of Fuel:												
46 Through 100 mesh	Per cent	96.42	93 94	95 00	93.00	94.00	96.80	97.00	96.00	97.90	99.36	98.30
47 Through 200 mesh	Per cent	86.73	79.80	82.50	77.80	79.50	84.43	85.70	85.80	89.50	90.68	92.60
Calorimetric Data:												
50 Quality of steam (dry steam equals 1.00)	.....	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1 00	1.00
51 Factor of evaporation	.....	1.062	1.063	1.060	1.065	1.065	1.060	1.059	1.061	1.062	1.056	1.060
Water:												
52 Water dumped to boiler	Lb.	53,970	46,277	39,863	28,150	41,634	112,566	63,616	60,532	40,863	67,848	61,303
53 Equivalent evaporation into dry steam from and at 212 deg. F	Lb.	57,316	49,192	42,255	29,980	44,340	119,320	67,369	64,224	43,396	71,647	64,981
54 Equivalent evaporation into dry steam from and at 212 deg. F. per hr	Lb.	11,463	9,838	14,085	10,902	11,085	13,513	19,716	12,975	10,139	12,185	10,481
Horsepower:												
55 On basis of 34.5 lb. evaporation per hour from and at 212 deg. F	Hp.	332.3	297	408	316	231.3	391.7	57.15	376	293.9	353.2	303.9
56 Builder's rating	Hp.	250	250	250	250	250	250	250	250	250	250	250
57 Per cent of rating developed	.....	133	114.7	163	126	128.5	156.7	228.6	150.4	117.6	141.3	121.6
Economic Results:												
58 Water pumped to boiler per lb. of fuel as fired	Lb.	9.83	9.10	7.55	7.93	8.32	8.14	7.71	9.82	10.31	10.33	8.86
59 Equivalent evaporation per lb. of dry fuel	Lb.	10.5	9.72	8.05	8.48	8.89	8.67	8.20	10.49	11.02	11.05	9.49
60 Total heat absorbed per lb. of dry fuel.	B.t.u.	10,189	9,432	7,812	8,229	8,627	8,413	7,960	10,180	10,694	10,723	9,209
61 Combined efficiency of furnace and boiler	Per cent	77.7	70.2	59.5	62.5	64.8	63.8	59.9	75.3	79.7	80.7	75.5
Rates of Evaporation and Combustion:												
62 Equivalent evaporation per sq.ft. of water heating surface	Lb.	4.86	4.17	5.93	4.62	4.70	5.73	8.36	5.50	4.34	5.17	4.44
66 Dry fuel burned per hp. per hour	Lb.	3.27	3.55	4.28	4.07	3.88	3.98	4.21	.....	3.13	3.12	3.53
Analysis of Gases Top 1st Pass												
67 Carbon dioxide	.....	14.0	9.50	12.4	10.0	11.7	17.3	18.2	12.4	10.8	10.0	11.96

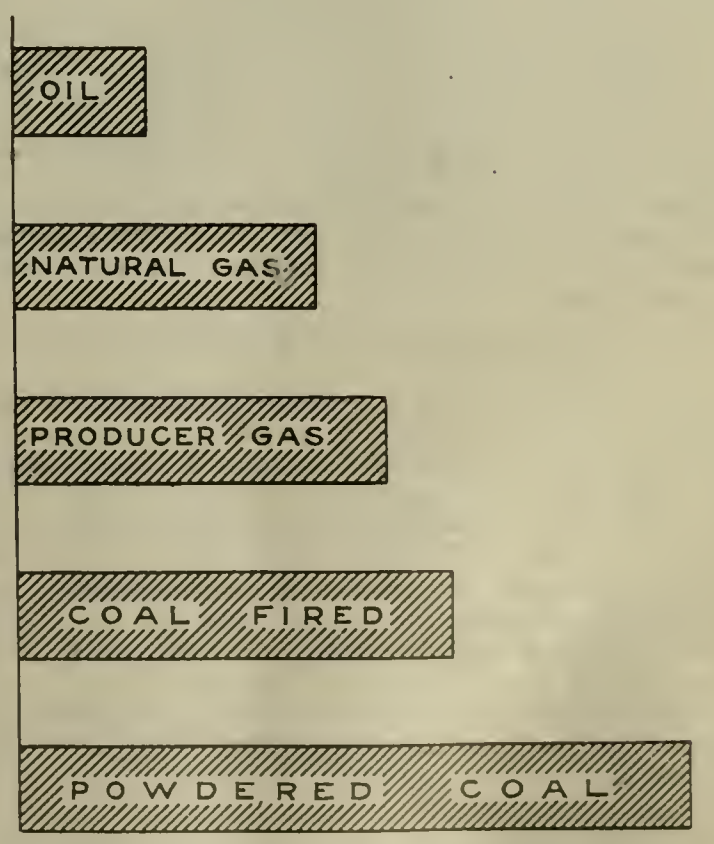
NOTE.—Item 41 was taken from revolutions of screw conveyor and is not considered to be very reliable.

Future of Oil as Boiler Fuel is Doubtful Even in Stationary Service

IN A paper on "Burning Coal at 100-Per Cent B.t.u. Efficiency" read at the Fuel-Economy Symposium held in New York, Sept. 21, 1920, W. O. Rendel exhibited a chart demonstrating the relative number of British thermal units that can be purchased for a cent at present fuel prices. It will be noted, however, that, in Mr. Rendel's opinion, coal, whole and powdered, distances its old opponents producer gas, natural gas and oil.

Powdered coal leads the procession as the latest and best form of fuel. Oil has its advantages in marine service, because it is readily loaded and can be stowed in inaccessible corners, but, on the whole, powdered coal may, even in this particular, be made equally available and with its greater efficiency be found of equal or greater service.

Mr. Rendel mentioned that in one plant the fuel consumption per ton of material produced was reduced from 244 lb. hand-fired to 60 lb. with powdered coal as fuel. Yet a coal of much poorer grade was used for the powdered material than was furnished for hand-firing. At another plant the reduction was from 440 lb. stoker-fired to 185 lb. when the firing was with powdered coal. A new era in steam generation is on its way, and it would seem that coal men should prepare for it by supplying the market with the new size—impalpable dust.



RELATIVE THERMAL EFFICIENCY FOR ONE CENT AT PRESENT PRICES

Unmanufactured coal properly fired had no successful rival for boiler use till powdered coal appeared. Now that the value of coal dust is established the coal operator should see that the business of manufacturing it does not escape him.

Why the Export Coal Business of America Should Be Built Up—III

British Good Will, Gained Through Long Pre-eminence in the Trade, a Handicap to Newcomer—English Financial Control Shaken by the War—America Has Large Reserves, Rich Seams, Machine Production and Low Costs Per Ton

By Erich W. Zimmermann, Ph.D.*

IN THE preceding installment was shown what coal exports have meant to Great Britain. There now remains the task of demonstrating in what way and to what extent the British lesson may be applied to our own conditions. It should be understood from the outset that coal exports can never again mean to any country quite as much as they meant to England around the beginning of the twentieth century. At that time there hardly was a portion of the globe where British coal could not be found. But since then important changes have occurred. World supply and world demand of coal have been almost revolutionized.

To take up the question of the demand first, ship construction and ship operation have been altered so as to reduce the value of coal exports to shipping as ballast cargo. In the days when ships had to buy sand or stone or similar material to serve as ballast and then had to rent lots upon which to dump their ballast, a cargo of coal was worth a good deal more than today, when the double bottom, allowing the use of water ballast, has done away with this practice.

Then the increasing use of fuel oil for ship propulsion has—at least relatively speaking—reduced the importance of coal exports for the merchant marines of the world. Only a few years ago practically all merchant steamers plowing the seven seas depended on coal and a considerable portion of the coal exported from Great Britain was destined to the numerous coaling stations that dot the sea lanes of the world. There it was sold to the steamers which called to replenish their bunker supply. Today, according to a recent statement of Admiral Benson, chairman of the U. S. Shipping Board, about 75 per cent of our entire merchant fleet burns oil for fuel, as compared with about 15 per cent for all foreign shipping. This rapid advance of oil as marine fuel naturally has cut into the demand for coal, but it should be remembered that the merchant marine of the world is growing, so that in absolute figures the demand for coal for marine purposes has not lessened to the same extent, if at all.

Coal Production Now More Widespread

More serious are the changes which have affected the production of coal. Generally speaking, we may say, world coal production is more diffused than it was twenty years ago. Such countries as Japan, Australia, Natal, Chile and Australia, which during the nineteenth century contributed but little to the fuel supply of the world, have not only become large-scale producers but are successfully competing for international coal trade with the older coal producers, England and America. Instead of British coal being sold at Cape Town and Bombay, Indian and South African coals not only supply their own territories but even invade the Mediterranean market.† England feels this competition severely, and there is no reason why we should be immune from its effects.

The next question is: To what extent can the United States compete with England for these restricted overseas markets? Do we enjoy the same advantages as Great Britain in regard to the exportation of coal? The remarkably favorable position of Great Britain was well described in a French official report on the position of the coal trade in 1859 as follows:

> England is the most favored country in Europe in the extent and richness of its coal fields. Its superiority is confirmed by the varied and generally excellent quality of its coal, and by the regularity of its strata, which are very favorable to the working of the coal mines. Lastly, as if nature had striven to unite in these coal fields all the circumstances most favorable to mining and trading in coal, the two richest basins—those of Wales and Newcastle—are intersected by the sea. The coal owners can load and ship their product in the most economical manner, and then assign them to any point of the home or Continental coasts. Oversea conveyance, too, is the cheaper because in English commerce the outward voyage may be considered as a voyage in ballast, and the return freight covers the chief part of the expense. A like union of favorable circumstances does not present itself at any other part of the globe—a natural privilege with which no other country can entertain the notion of contending in regard to industry formed upon the working and trading in coal. Any attempt at competition of the kind would necessarily be followed by defeat.

America's Trade Opportunity in Coal

The quotation is interesting both because of those features which still hold true today and those which have altered. The American counterpart to this eulogy of the British coal export situation may be found in the Federal Trade Commission's report on co-operation in American export trade. Here we read:

> Coal is one of the most promising commodities for the future development of a heavy export trade from the United States. This country has the greatest deposits of coal of any in the world. Its reserves are estimated to be greater than those of all other nations combined. It has an abundance of coals of especially fine quality for all the uses to which this mineral is put, from household purposes to the most exacting metallurgical and steam demands. Immense producing fields are near enough to tidewater to facilitate export business. Suitable coal-handling equipment is already in use at many ports. The production of coal has been developed on a larger scale with a greater use of mechanical equipment and at a lower average cost per ton than in any of the important European coal-producing countries.

England's advantages as a coal exporter may be summed up as follows:

(1) High quality steam coal, particularly Welsh coals coming from mines on the Admiralty list; (2) proximity of coal fields to tidewater; (3) proximity to the European market; (4) control of transportation, storing, docking and distributing facilities throughout the world; (5) long experience in international coal trade; (6) established good will; (7) financial control over foreign coal consumers (*e.g.*, Argentinian or Egyptian railroads); (8) world leadership in shipping; (9) heavy bulk imports and almost complete lack of heavy bulk exports other than coal.

On the other hand, our advantages are:

(1) Large reserves; (2) richer seams (more regular strata); (3) machine production; (4) proximity to Caribbean and South American market (southern section of the east coast of South America excepted); (5) lower cost of production.

On the face of it, it seems as if the United Kingdom held the trump cards, but further study renders this conclusion problematic. At any rate, one fact is certain, namely, that our

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*Professor of commerce, the James Millikin University, Decatur, Ill.

†A recent press dispatch reported a cargo of Chinese coal for Newcastle, England—"carrying coals to Newcastle"!

A Coal Dock at Cardiff

A large number of tramp steamers dock at and clear from the Welsh coal port, the craft depicted herewith being of that class. On the pier at the right are shown a number of coal loaders.

advantages tend to become more pronounced, while those of the United Kingdom are losing significance. Of course, the quality of Welsh coal can scarcely be said to change, but the reputation of Welsh coal is today no longer quite as formidable as it used to be. For a time it was reputed to be the best coal in the world. Today much of that splendor has paled, and other coals rank equal with the best Admiralty coal. Nor is the proximity of British coal fields to tidewater adversely affected or the nearness to the European market reduced, but, for the present at least, the European market, because of financial weakness or general chaos, is no longer what it used to be.

The next three items on our list—control of transportation, docking, storing and distributing facilities, experience and good will—are valuable assets which a newcomer cannot readily duplicate. And, if we are to believe the words of an American writer‡ who under the title of "Sabotage in Our Coal Trade" analyzed the situation in a leading commercial paper, the British are exhausting every possibility, are using every means to hold on to these valuable assets. This writer asserts that much of our present coal exports pass through British hands, British firms using their middleman's position for the purpose of keeping intact their trade connections, and abusing it to prevent the building up of good will toward American coal exporters. Nevertheless, it seems doubtful whether experience can be kept fresh, good will unimpaired and control undiminished if because of changing cost of production here and abroad the actual trade originates in an American and not in a British mine. The ultimate outcome will depend upon the length of time during which British coal exports fall below the minimum requirements of her customers.

Foreign Securities Acquired by Americans

The financial control which Great Britain exercises over some of her foreign coal buyers certainly has not increased as a result of the strain to which the war has subjected British finances. Indeed considerable amounts of foreign securities previously held by British interests have found their way into American hands or others. The same story applies to British maritime supremacy. As yet England is the proud mistress of the seas, but her lead has been cut down considerably. While in 1913 the British merchant marine represented more than 40 per cent of the world's merchant shipping, her share was reduced by 1919 to about one-third of the world's tonnage. It should be remembered, however, that her share of coal-burning vessels and of coal-carrying tramps is greater than this figure indicates.

Before we take up the all-important question of coal as a tonnage equalizer let us turn to the United States and see how our country fares in regard to the items discussed so far. Generally speaking, we find that with us the trend of evolution is just about the reverse of the tendencies just described for Great Britain. Possibly the first two items should be excepted from this statement, for our reserves do not grow larger nor do our seams become thicker and more regular. To the contrary, our coal resources are wasting assets. But the date of the approaching exhaustion is still so far off that we hardly notice its effect while Great Britain does to a considerable extent.

Machine mining is the first factor which gives to this country a decided and increasing advantage.

Machine mining naturally results in a large output per man—that is, a large quantity produced per miner employed.

Labor is the most important cost item in coal mining, and the significance of this item of machine production increases to the extent that the general wage scale as a result of the war has risen more rapidly in Great Britain than in the United States. The result has been that American coal can be offered in European markets at a lower price than English coal of equal quality.

The cost of production is so important in international competition that as to the other minor items discussed above we content ourselves with the statement that on the whole England's loss has been our gain. We have become more prominent in international finance, our banks are expanding to foreign countries, our insurance business is being put on its feet, our merchant marine has grown as no merchant marine ever has in history, so all seems to point in our favor.

Coal an Equalizer of Tonnage in British Trade

As we have seen in the previous installment of this article, however, the most important factor in building up the British coal trade was and is the nature of British imports and exports, the ratio of their respective weights, which lends to coal exports the character of a great tonnage equalizer. There, one might say, America loses out. Indeed at first sight the case looks hopeless. For, as the following table shows, our excess weight—not counting coal exports—lies on the export side and that of Great Britain on the import side.

WEIGHT BALANCE OF FOREIGN TRADE OF UNITED STATES AND UNITED KINGDOM*

	United States (In Million Tons)				United Kingdom (In Million Tons)			
Year Ended June 30	Exports Excl. of Coal	Coal Exports	Imports		Calendar Year	Exports Excl. of Coal	Coal Exports	Imports
1914.....	52.2	....	28.7		1913.....	14.3	73.4	59.3
1918.....	62.8	25.9	29.7		1917.....	7.6	37.8	35.8
1920.....	70.5	27.7	47.5		1919.....	7.7	38.5	41.5

The difference between the weight balance of British foreign trade and that of our own trade is so striking that further comment seems almost superfluous. Great Britain

‡Richard Spillane in "Commerce and Finance."

* All those familiar with government statistics know that the official compilations do not give the weight of imports and exports, so a word should be said about the sources from which our data were obtained. As far as Great Britain is concerned, the Liverpool Steamship Owners' Association and the Chamber of Shipping of the United Kingdom have made the necessary calculations. The information for this country was obtained from two sources. The United States Shipping Board, through its Division of Planning and Statistics, issued a series of bulletins entitled "Trade and Shipping Between the United States and the Principal Regions of the World in 1914 and 1918," which contain much material helpful for our purpose. Then the National City Bank of New York in "The Americas" under date of October, 1920, in an article entitled "Is Our Foreign Trade Prosperity Fictitious —1920 Compared with 1914" has made a careful calculation for 1914 and 1920 of the weight of all articles having a valuation of more than one million dollars in 1914 for which weight—expressed in pounds—could be ascertained. The commodities are said to represent approximately 70 per cent of the total trade of the country. Supplementing this material with that supplied by the Shipping Board we arrived at the figures given in our table.

without coal exports would have an enormous excess of imports over exports, amounting to 45,000,000 tons in 1913. On the other hand the case of the United States is just the reverse, the excess of our exports over imports—without coal—amounting to 23,000,000 tons in the year ended June 30, 1920. The casual observer would immediately jump to the conclusion that therefore we have no business to export coal, at least not for the sake of providing a tonnage equalizer and thus helping our merchant marine by improving the load-index* of our tonnage movements.

But the matter is not so simple. We have to look more closely before we can draw conclusions from these figures. In the first place there is one important difference between the foreign trade of Great Britain and the United States. Because of the insular nature of Great Britain all foreign trade is *ipso facto* sea-borne trade. The same, however, does not apply to the United States. To bring the two sets of figures under a common denominator we have to deduct the rail-borne exports and imports from the totals given for our foreign commerce. The weight of our overland and Lake trade with our neighbors, Canada and Mexico, is not given in the official statistics of the Department of Commerce, but by using certain data furnished by the Shipping Board, estimates of the quantities moving in this way are possible. We have compiled the results of our calculations in the following table:

RELATION OF SEA-BORNE TO TOTAL FOREIGN COMMERCE OF THE UNITED STATES

Fiscal Year	Weight of Total United States Exports	Weight of Sea-borne Exports in Million Long Tons	Weight of Total Imports	Weight of Sea-borne Imports
1914	52.2	30.9	28.7	21.1
1918	62.8	34.4	29.7	20.6
1920	70.5	38.6	47.5	34.2

It appears from this table that a much larger portion of our exports moves overland than is the case as regards our imports. This means that as far as sea-borne trade is concerned the excess of our exports over imports is considerably reduced. Before definite conclusions can be drawn which will enable us to estimate the economic value of coal exports as a tonnage equalizer further calculations are necessary. These will be given in the concluding installment.

CONTRIBUTIONS TOTALING MORE than $35,000 have been received by William Green, international secretary of the United Mine Workers of America, for a memorial to John Mitchell, ex-international president, Mr. Green made known Dec. 13. Of this amount $25,000 has been given by the Illinois district. More than $10,000 has been received from locals throughout the United States. A resolution authorizing the memorial was passed at the international convention at Cleveland last spring, and the matter was turned over to the International Executive Board. At a meeting of the board in Indianapolis last summer a special committee was appointed to consider plans for raising money and erecting the memorial. Mr. Green was appointed chairman. Mr. Green said that the form of the memorial has not been considered. Not until contributions are all in will this be decided.

IN NOVEMBER, 1920, there was moved down the Kanawha River a total of 2,040,000 bushels of coal, or 81,600 tons, as compared with 1,068,500 bushels, or 43,700 tons, during November, 1919. Despite dull market conditions Kanawha River coal shipments in November were 7,520 tons in excess of October shipments, which amounted to 1,852,000 bushels, or 74,080 tons.

A CARGO OF AMERICAN coal was sold by public auction during the week ending Dec. 11 at Stockholm at prices ranging from £2 to £3 10s. per ton, according to the *Colliery Guardian*.

*By the term "load-index" is understood the ratio of the deadweight tonnage required for the movement of goods in one direction to the deadweight tonnage required to carry the goods moving in the opposite direction. The ideal "load-index" for a trade route is 1.00.

State Laws on Use of Electricity in Coal Mines Issued by Bureau of Mines

TECHNICAL Paper 271, "Mining Laws on Use of Electricity in Coal Mines," by L. C. Ilsley, electrical engineer of the U. S. Bureau of Mines, was recently issued by the bureau. This report, which presents the results of a study of the different state codes, has a threefold purpose—to show by comparison the relative attention given by lawmaking bodies of the different states to the safe use of electricity in coal-mines; to list and explain the object of the more important regulations and to cite examples of regulations now in effect.

The laws or rules relating to electricity are in this report grouped under three main heads: (1) Rules relating to general safety in use of electricity underground; (2) rules relating to underground electrical apparatus; (3) rules relating to underground circuits.

Thirty of the states in the Union have coal mines and twenty-eight have regulations prepared by commissions or have passed laws governing the operation of coal mines. The codes may be grouped as follows: Twelve that are distinctly coal mining, eight that are essentially coal mining but also apply to other mines, five that refer partly to coal mines, and four that are essentially metal mining but apply in whole or in part to coal mining. Pennsylvania has separate codes for the anthracite and bituminous fields. It was the first state to have a coal-mining law of any kind, in 1869. By 1890 thirteen states had coal-mining statutes. Before that year electricity was little used in mines, and these early codes contain practically no provisions regulating its use. Since that date, however, the application of electricity has made such progress that now there is hardly a task or operation connected with coal mining that is not directly or indirectly concerned with electricity—for example, lighting, drilling, undercutting, shotfiring, hauling, hoisting, signalling and pumping.

Most of the mining codes have been changed by amendment or complete revision and now twenty-one states make some reference in their coal-mining codes to the use of electricity. The rapidity with which electrical equipment has entered into the many phases of mining has greatly exceeded the advance of regulations governing its use. Even the best electrical mining codes in force need modernizing.

Electrical equipment for mines, in order to be safe and efficient, must be properly designed, carefully installed, inspected at regular intervals by competent men, and maintained in good working condition. In general, the best way to obtain satisfactory electrical equipment for mine service and to insure its proper installation, inspection and maintenance is for each coal-mining state to make and enforce fundamental rules and regulations relating to the use of electricity and electrical equipment in and about coal mines.

THE SENATE JUDICIARY COMMITTEE on Dec. 20 considered the bill passed recently by the House repealing the war laws, including the Lever Food and Fuel Control Act. Sentiment was divided on the Lever law repeal, some Senators favoring its repeal while others thought some portions of the law should remain in force. The committee referred the war repeal bill to a subcommittee for further consideration and report, which is not expected until some time in January. The subcommittee consists of Senators Sterling, South Dakota; Brandegee, Connecticut; and King, Utah.

THE SALE BY THE Secretary of Interior under regulations to be approved by him of the remainder of the segregated coal deposits in the Choctaw and Chickasaw Nations of Oklahoma, estimated at 379,284 acres, valued at $11,273,715, is provided for in a bill reported from the House Committee on Indian Affairs.

REPRESENTATIVE SINCLAIR, OF NORTH DAKOTA, has presented to the Senate a petition of the Commission of the City of Fargo, N. D., advocating legislation to place control of the coal industry under the Interstate Commerce Commission.

Problems of Operating Men

Edited by James T. Beard

Cutting and Loading Machines in Working Low Coal

Handling and Loading the Coal by a Coal Loader at the Working Face in a Low Seam, is an Important Factor in Keeping Down the Cost of Operation—In the Use of That Machine Combined with the Arcwall Coal-Cutter, the Work of Mixing a Thin Seam Is Greatly Expedited

HAVING followed with deep interest the discussion regarding the best method of mining a 35-in. seam of coal, I beg to offer a few suggestions that may prove helpful where the room-and-pillar system of working is adopted and the conditions are such that the method I am about to propose can be employed.

The best results are obtained when the rooms are driven about 24 ft. wide and the coal is cut by means of an arcwall machine having an offset cutter-bar. This machine will cut about double the amount of coal that can be cut with a shortwall machine, because of the fact that the machine does not have to be loaded and unloaded but stays on the track while cutting the coal. The offset bar enables an arcwall machine to cut the coal at or near the bottom.

Requires No Loading or Unloading

The fact that this machine requires no loading or unloading is a prime feature in the working of low coal. While its price is considerably higher than that of the shortwall coal-cutter, the investment in cutting machines would be no greater but probably less, owing to the greater capacity of the arcwall machine for cutting coal and fewer machines being required for the same work.

In Fig. 1 are shown two views of a Jeffrey car loader. On the left of the figure, the machine is shown entering a room in a low seam of coal and propelled by its own power. Only the rear or loading end appears in this cut. Lying in the conveyor by which the coal is carried back into the car, will be observed the rope, block and jackpost used when hauling the scoop by which the coal is dragged along the floor till it falls into the trench where it is caught by the conveyor and carried back into the mine car standing on the track back of the loader.

Operation of the Loader Is Simple

On the right of the figure, the same machine is shown in operation. Here one man is seen guiding the movement of the scoop or scraper. Back, at the side of the machine, is a second man holding the rope taut that passes over the capstan or driving pulley on the machine. This affords an easy means of operating the scoop backward and forward when pulling the coal to the machine. The same man also operates the machine, while a third man not seen in the figure trims the cars, removing each as loaded and setting an empty in its place.

In Fig. 2 are shown three cuts, the upper one representing an arcwall machine, starting to cut a rib of coal on the right. Just below is a second cut showing the coal in the end of the conveyor of a coal loader, about to be dumped into a mine car standing on the track in the rear of the loader. Below this, again, in a third cut, is shown the broken coal being scraped along the floor and dumped into the loading end of the conveyor in the bottom of the trench. In the use of this loader in a thin seam, the best plan is to take up from 10 to 12 in. of bottom, which will give the required headroom on the road.

As shown in Fig. 2, the track is laid in the center of a room and the coal cut on either side to a depth of 3 yd. The use of steel track ties not only gives greater headroom, but is an advantage otherwise. The mine cars should be made low and as wide and long as conditions will permit. The loading end of the car should not be over 24 in. high.

A manila rope is used to operate the scraper to which one end is attached. The rope then passes through a block that is made fast to a jackpost set firmly between the roof and the floor. The operator gives the rope one or two turns around the capstan at the rear end of the machine and, by holding the loose end of the rope more or less taut, he is able to control the movement of the scraper at will.

The Arcwall Coal Cutter

Where the track is well laid and other conditions favorable a single arcwall machine can cut twenty places in an 8-hr. shift. The amount of coal produced will, of course, depend on the thickness of the seam and other local conditions. In any case, the work should be planned on the basis of units, each unit consisting of one cutting machine and a sufficient number of loaders to load the coal broken down, whether the shooting is done between shifts or follows up the cutter while the machines are at work.

The work of drilling, shooting, timbering, tracklaying, etc., should be done by men employed for the purpose so that everything will be in readiness for the machines, which must not be kept waiting. Under favorable conditions, each loader can load from 70 to 75 tons of coal in an 8-hr. shift. Assuming conditions such that a single cutter can

FIG. 1. SHOWING THE MINE-CAR LOADER ENTERING A ROOM AND ITS OPERATION AT THE FACE

keep five loaders busy, the output of coal from a single unit would be, say 5 x 70 = 350 tons per shift.

In the adoption of this system of cutting and loading coal, the entire work must be planned to suit conditions in the mine. It may be found practicable and preferable to drive the entries ahead and use the arcwall machines to cut out the ribs only, instead of taking a full sweep of the face in driving each face forward.

When drawing back the pillars, it is possible to load the coal on the same track as when driving up the room.

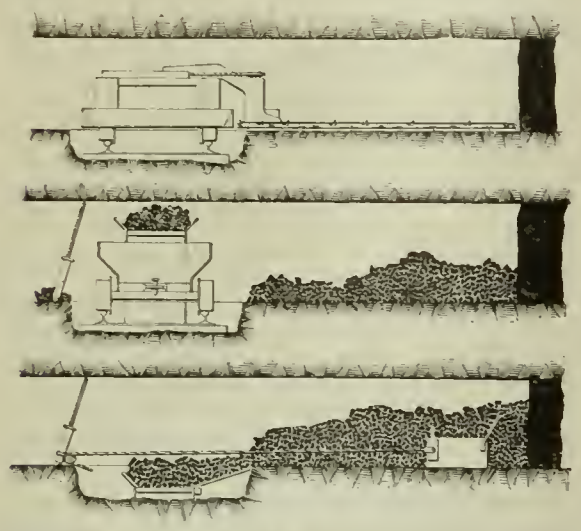


FIG. 2. DIAGRAMMATIC SECTIONAL VIEW OF CUTTER AND LOADER AT WORK IN THIN COAL

In that case, however, it will be necessary to stow all refuse on one side of the track and keep the other side clear for the operation of the scoop in dragging the pillar coal over to the trench at the center of the room.

Fig. 2 shows only a half cross-section of each room and a portion of the pillar separating that room from the one next adjoining. There will be required one or two gathering locomotives for handling the cars and hauling the empty and loaded trips in and out of the mine as the work proceeds. Where conditions favor the adoption of this method it has been possible to increase the daily tonnage of the mine and reduce the cost of production in a remarkable manner.

N. D. LEVIN, Chief Engineer,
The Jeffrey Mfg. Co.
Columbus, Ohio.

Engine-Plane Haulage

(Correction)

A miscalculation in answer to inquiry estimated the size of wire rope required in engine-plane haulage as one-half inch, instead of one inch.

ATTENTION has been kindly called by George S. Whyte, president Macwhyte Co., Kenosha, Wis., to an obvious slip in the calculation of the size of wire rope required to haul a load of 25 tons up a 15½ per cent incline 365 ft. long, *Coal Age*, Nov. 18, p. 1049.

Beginning with the fourth paragraph in the reply to this inquiry, the text should read as follows: Without serious error in this case, the grade resistance can be taken as 20 lb. per ton for each per cent of grade. Allowing, say 1,000 lb. (½ ton) for the weight of the rope, the total load hauled when the trip is at the bottom of the incline will be 25½ tons. Then, for the sum of the track and grade resistances, or the load on the rope, we have 25½(20 + 20 × 15.5) = 8,415 lb., say 4.2 tons.

Using a factor of safety of 5 in determining the size of rope required, gives a breaking strain of 5 × 4.2 = 21 tons. Then, since the breaking strain of a 1-in., cast-steel, six-strand, seven-wire haulage rope is 32 tons, the diameter of rope required in this case is

$$d = \sqrt{21/32} = \sqrt{0.656} = 0.81 \text{ in.}$$

But to allow for the wear of the haulage rope, we will use a one-inch, cast-steel wire rope.

In his letter, Mr. Whyte prefers to use a factor of safety of 7 instead of 5, in order to make allowance for the wear of the rope in mine haulage. Though he arrives at the same result, we believe it is better to use a normal factor of safety of 5, and make the allowance for the wear and tear on the rope the final item. Our thanks are due Mr. Whyte for drawing attention to this matter.—Editor.

Loose and Torn Clothes Often Cause Accidents

One of the generally unsuspected causes of accidents is the loose or torn clothes of the worker. Another cause almost as frequent is his unfamiliarity with the work to be performed.

WHILE no one will deny the fact, so often stated in *Coal Age*, that the largest number of accidents in mines are due to the fall of slate and coal at the working face, it is equally certain that there is a large number of preventable accidents that result from mine workers not being dressed in a manner suited to their work.

That being true, it is more than ever the duty of mine officials to give close attention to the fact. For instance, I could mention several accidents that have occurred as a result of drivers and brakemen wearing a glove with a large cuff. This style of glove is often sold at company stores.

GLOVES AND TROUSERS MUST FIT TIGHT

The attractive feature of the glove with a large cuff is that it gives a little wild-west appearance to the wearer. It is more fancy than a glove with a short knit wristband, but the latter is safer and more convenient for the worker. Storekeepers should be induced to discontinue the sale of the large cuff gloves to mine workers, and recommend in their place the glove with a short knit wristband.

Equally dangerous is it for a worker to wear loose or torn clothes, particularly a loose jacket or torn trousers legs. No one employed about cars or chain machines should allow his pants to become ragged, or wear trousers with large baggy legs that are liable to catch in the cars, switch rails or other machinery. To avoid that trouble some workmen wear high shoes and leggins, although these are heavy and tire one who has to do much traveling about.

When a miner is called from the face, or a tracklayer or timberman is taken off the road to fill the place of a brakeman or runner, the foreman should caution the man to tie up the bottom of his trousers or tuck them inside of his socks, and put his loose jacket or coat inside of his overalls. He should have nothing loose or hanging about him that is liable to catch when he is at work.

HOW ACCIDENTS HAPPEN

Accidents frequently happen to men who are taken from the working face or other place in the mine and asked to do work with which they are not familiar. A green man will tire quickly and, in that condition, he is not as sure-footed and does not think as quickly as a man who knows the job.

The average man will not care to admit that he is tired and, urged by the motorman who is anxious to get cleaned up and out of the mine, the fellow will do his best to hurry and, perchance, meet with an accident that would not have befallen a man more accustomed to the work.

Another matter worth mentioning is having a good set of signals. Light signals are generally better than shouting, which is apt to be confused with the shouts of other workmen. With proper training, light signals should be well understood by everyone working in the mine.

When gathering cars it is a bad practice to attempt to push several cars back into a room over a poor track. Not infrequently such a practice will result in accidents. Again, drivers and brakemen should insist on the clearance space at the side of all haulage roads being kept clear and free from refuse or other obstructions. Foremen and assistant foremen who are interested in mine safety should do the same.

G. E. DAUGHERTY.
Pikeville, Ky.

Make the Mine Safe

Where the law fails to specify all that is required to make the mine safe, the responsibility for safety rests heavily on the mine officials in charge.

NOT long ago, I remember the question was raised by a correspondent in regard to whether or not a certain fireboss violated the mine law when he allowed the air returning from the head of a pair of entries generating gas to pass through a number of rooms in which miners were working with open lights, while locked safety lamps were required at the face of each of the headings.

To my mind, the question is more one of making the mine safe, regardless of what the mining law requires. In this particular instance, it would have been better to have constructed a temporary overcast for the purpose of conducting the intake air across the return into the rooms, thus ventilating them by a separate air split, instead of running

the risk of permitting the use of open lights on the return current of a place generating gas.

Consider for a moment the chances of these live entries striking a large gas feeder, which is quite possible, particularly where the seam contains clay veins or spars. The Bituminous Mine Law of Pennsylvania (Art. 25, General Rule 18) alludes to the danger that exists in cutting clay veins, spars and faults. The rule requires, in such cases, that a drillhole be kept 3 ft. in advance of the coal face or of any shothole.

The Law Specifies One Danger

This is one instance where the mine law makes a specific reference to a possible danger. But, in many other cases, the law does not specify what is required to make the operations in the mine safe, and it is then more than ever important that the mine foreman and his assistants shall use every precaution for safety, and adopt rules and regulations to suit the peculiar conditions in the mine of which they have charge.

Every practical mine foreman of experience knows that there are many things lacking in our mining laws, and it goes without saying that it is up to the mine officials to supply this deficiency and establish such rules as are necessary for the guidance of all employees in making their work safe. It cannot be expected that the mining law will be complete in every respect, as conditions vary in almost every mine. There are of necessity many points that must be left to the supervision and judgment of the men in charge.

Open Lights in a Gassy Mine

Speaking of conditions varying in different mines, I remember working in a mine, in the Pittsburgh district, where open lights were used throughout the mine. At the same time, when making my rounds in that mine I could run my cap lamp along the rib of the coal and light small jets of gas coming from the pores. The circulation of air was such, however, that I never found any stratified gas at the face of any of those workings.

In the instance just mentioned, a great responsibility rested on the shoulders of the management to supply the equipment and power required to maintain the necessary circulation of air in the mine. The mine foreman and his assistants were responsible for seeing that the air current was properly conducted through the mine so that no accumulations of gas were possible. It is not so much a question of providing air sufficient to comply with the requirements of the law; but the circulation in the mine must be such as to keep the places free from gas and safe for work at all times.

In respect to lights, whether the mine is gaseous or non-gaseous, I strongly favor the use of electric cap lamps, and hope the time will soon come when they will be more universally adopted.

Gans, Pa. R. W. Lightburn.

Inquiries Of General Interest

Operating a Fan at Normal Capacity

Does the Obstructing of the Air Current or Short-Circuiting the Same Produce An Effect on the Volume of Air and Water Gage Produced That is Dependent on the Operation of the Fan at What is Said to Be Its "Normal Capacity?"

WE desire to ask the opinion of the editor of *Coal Age* regarding certain alleged characteristics of centrifugal fans when operating at what is said to be "normal capacity," or above or below that point. Answers to the following questions will no doubt throw some light on the action of centrifugal fans under varying conditions common in mining practice:

1. What is understood by the expression "normal capacity," as applied to the operation of a centrifugal fan?

2. Assuming a fan is operating below its normal capacity, how is it claimed that any obstruction to the air current circulating in the airways of a mine will not increase the water gage?

3. Again, assuming a fan is operating below its normal capacity, how is it claimed that the water-gage reading is not decreased when the air is short-circuited, at least until sufficient air is passing to bring the fan up to its normal capacity?

4. Finally, assuming a centrifugal fan is working at or above its normal capacity, how is it that any short-circuiting of the current is accompanied with a decrease in the water-gage reading, while an obstruction of the current produces an increased reading?

In asking these questions, I have reference to an electrically driven mine fan, operated by a constant-speed motor and giving a constant speed (r.p.m.) to the fan. I want to ask, also, would these alleged characteristics apply equally to a fan operated by steam power? Can you refer me to any authorities on this subject? Observer.

Gary, W. Va.

Before attempting to reply to the questions asked, we would refer our correspondent to an inquiry on this subject, published and answered in *Coal Age*, Mar. 5, p. 606, which will assist in a clearer understanding.

1. The expression "normal capacity," as applied to centrifugal fans, was evolved in the investigation of the action of this type of fan made by the engineering department of the Jeffrey Manufacturing Co.

In its operation, the point at which a fan develops its highest mechanical efficiency marks what is designated as the normal capacity of that fan. It is claimed that this depends on the intake and discharge areas of the fan being properly proportioned to its other dimensions. When this is the case the fan, it is said, will operate at normal capacity and running at a constant speed will give a constant water gage, regardless of whether or not any air is passing, which depends on the airway being open or blocked so as to impede or wholly prevent the passage of air.

2. We assume that a fan is operated below its so-called normal capacity, when the equivalent orifice of the mine is comparatively small and the theoretical pressure due to the tip speed of the fan, relatively high. This corresponds to a condition in which the airway is obstructed and the quantity of air in circulation not commensurate with the volumetric capacity of the fan or its volume per minute. It is claimed that under that condition any further obstruction of the airway will not increase the water gage appreciably.

3. Again, assuming the fan is operating under the condition just explained, the equivalent orifice of the mine being comparatively small and the volumetric capacity of the fan relatively large, the claim is that short-circuiting the air current will not appreciably decrease the water-gage reading.

The fact of the matter is that in each of these two cases the fan is throttled to such extent that changes in the airway have an almost imperceptible effect on the water gage, which is practically determined by the fan and not by the airway. It is admitted, however, that some slight change does take place in the water-gage reading.

4. We assume that when a fan is operating above its so-called normal capacity the condition corresponds to a comparatively large equivalent orifice of the mine or airway, and a relatively low volumetric capacity of the fan. This is the reverse of the condition in the two previous cases. Now, instead of the fan being throttled, it is running under a light resistance. In this case, any change in the mine or airway, either obstructing the flow or short-circuiting the air, produces a relatively large effect on the water-gage reading.

The correspondent has assumed a constant-speed motor driving the fan, and asks what difference would be manifest if the fan was operated by steam power instead. In that case, ob-

servation has shown that any obstruction to the flow of air in the mine or airway has the effect to reduce the quantity of air passing through the fan and the mine. But, since the power varies as the cube of the quantity of air in circulation, it is clear that the power absorbed and lost in the fan varies rapidly. For example, if the volume of air passing is reduced one-half, by the obstruction of the airway, the power absorbed in the fan and lost is but one-eighth of the previous amount and, as a consequence, the fan runs faster than previously.

On the other hand, a short-circuiting of the air current has the effect to increase the quantity of air passing through the fan and the mine. In that case, if the volume of air is doubled, by short-circuiting the current, the power lost within the fan is 8 times what it was previously and, as a consequence, the fan runs slower.

Likewise, a similar effect is produced on the water gage, which is increased when the flow of air is obstructed and the fan runs faster, but is decreased when the air is short circuited and the fan runs slower.

Examination Questions Answered

Examination for Mine Foremen Twelfth Anthracite District

(Slected Questions)

QUESTION—*A breast is driven 150 ft. in length, 24 ft. in width, the thickness of the seam being 10 ft.; how many tons of anthracite should the breast yield, after deducting two-tenths of the cubic contents as refuse and assuming that one cubic yard of anthracite weighs one long ton?*

ANSWER—Allowing two-tenths of the cubic contents as refuse, we can call the thickness of the seam 8 ft., instead of 10 ft., which gives for the net cubic contents,

$(150 \times 24 \times 8) \div 27 = 1{,}066\frac{2}{3}$ cu.yd.

Then, estimating a cubic yard as one long ton, the weight of coal obtained from this breast would be $1{,}066\frac{2}{3}$ long tons.

QUESTION—*If the quantity of air circulated in a coal mine is 90,000 cu.ft. per min. when the water gage is 2 in. what quantity of air would be circulated by a water gage of 3 in.?*

ANSWER—Assuming there is no change made in the circulating system in the mine, the quantity of air passing will vary as the square root of the pressure or water gage. In other words, the quantity ratio is equal to the square root of the water-gage ratio. Therefore, calling the increased quantity of air x, we have

$$\frac{x}{90{,}000} = \sqrt{\frac{3}{2}} = \sqrt{1.5} = 1.2247$$

$x = 90{,}000 \times 1.2247 =$ say 110,200 *cu.ft. per min.*

QUESTION—*What is the principal purpose of the law in requiring the employment of a practical and competent mine foreman?*

ANSWER—The Anthracite Mine Law makes it unlawful for "any person or persons to act as mine foreman, or assistant mine foreman of any coal mine or colliery, unless they are registered as a holder of a certificate of qualification or service under this act; or unless, in the judgment of the employer, he is a person possessed of qualifications which make him equally competent to act in such position." (Art. 8, Sec. 1.)

The wording of this section certainly gives a very wide meaning to the words "equally competent," which is left to the "judgment of the employer." It would be a wild guess to say what is the purpose of the law in requiring this degree of competency. The law is more specific, however, in its requirement that the holder of a certificate of competency to act as foreman or assistant foreman of a mine, must have had "at least five years practical experience as a miner" (Sec. 4), and the "equally competent" proviso can hardly change these figures, however slack the judgment of the employer.

The purpose of requiring "five years practical experience as a miner" is to insure that each candidate for the position of foreman or mine foreman shall have had the opportunity to become thoroughly familiar with mining conditions and work. What use he has made of his opportunities, however, is unfortunately, left to the judgment of his employer, instead of being determined by a regularly authorized examining board.

QUESTION—*What are the chief factors of danger in coal mines?*

ANSWER—It can be said that the principal source of danger in mining coal is the possible fall of roof, slate and coal. Next to this follow the movement of cars, ignition and explosion of gas and dust, the presence of electric wires and, finally, the absence of or disregard for safety rules, regulations, appliances and danger signs and signals.

QUESTION—*If there is a water gage of 2 in. indicated on a door measuring 5 ft. 3 in., by 3 ft. 9 in. and located between the intake and return in a mine; what is the total pressure on the door?*

ANSWER—A water gage of 2 in. corresponds to a pressure of $2 \times 5.2 = 10.4$ lb. per sq.ft., which is the unit pressure exerted on each square foot of the surface of the door. The area of the door is $5.25 \times 3.75 = 19.6875$ sq.ft. The total pressure on the door is, therefore, $10.4 \times 19.6875 = 204\frac{3}{4}$ lb.

QUESTION—*How would you timber the foot of a plane 30 ft. in width, in a seam 22 ft. in thickness, the rock above the vein at this point having fallen at various times, leaving a space of 15 ft. above the coal and making the total height from the floor to the roof of the cave 37 ft.? The pillars at this point are somewhat shattered from a previous squeeze.*

ANSWER—This is a dangerous situation, in respect to making the place safe for future development. A span of 30 ft. is too great for any unsupported crossbeam. Also, the shattered condition of the pillars on either side of the plane makes it impracticable to depend on these for support. The first step is to build two solid cribs or cogs one on each side of the plane, putting in temporary supports and removing a portion of each pillar if necessary, for that purpose. The remaining portion of the pillar and the surface of the ribs should then be protected with a coating of "gunite." In addition to these two cribs, one on each side, there should be built two like cribs between and on line with the first two, making three spans, each about 10 ft. center to center. Over these cribs and supported by them, steel girders or heavy timber crossbeams should be placed and the space above built up by cribbing to the roof of the cave.

QUESTION—*What precautions would you use in flushing a district of a mine where men are working in a lift below?*

ANSWER—Before this work is begun, strong dams must be built that will control the flow of water in the proper channels and make sure that it will not flood the lower workings. When flushing is started, the work must be carefully watched to see that the water drains off and there is no accumulation of water that would endanger the men working below. Should there be any doubt in this regard the men should be promptly withdrawn and the work of flushing discontinued for a time, or till all danger is past.

QUESTION—*(a) To what extent does the barometric pressure vary? (b) The height of the barometer being given, how do you find the air pressure per square foot?*

ANSWER—(a) In this country, there is a considerable variation of barometric pressure, commonly included within a range of 2 in. of mercury, depending on the near approach or proximity to atmospheric storm centers. Though quite exceptional, there are records, however, showing a range of 3 and even $3\frac{1}{2}$ in.

(b) To find the atmospheric pressure, multiply the reading of the barometer expressed in inches by 70.7. Thus, the atmospheric pressure corresponding to a barometric pressure of 30 in. is $30 \times 70.7 = 2{,}121$ lb. per sq.ft. Since 1 cu.in. of mercury weighs 0.491 lb., each inch of mercury column corresponds to a pressure of $0.491 \times 144 = 70.7$ lb. per sq.ft.

Southern Operators Plan Organization of Tidewater Coal Exchange at Charleston

STEPS toward the organization of a Tidewater Coal Exchange at Charleston, S. C., were taken at a meeting in Washington, Dec. 29, of various coal and railroad interests with Vice President Green of the Southern Ry. Dr. Henry Mace Payne, consulting engineer of Andrade-Eyre, Inc., of New York, who has taken an active part in the work preliminary to the organization of an exchange at Charleston and who issued invitations for the meeting, presided and explained the advantages to be gained by Southern rail and coal interests through the new organization. After an exchange of views a committee was appointed to prepare rules and plans for the organization of the exchange, which will be considered at a later meeting.

Appoint Committee; Dr. Payne To Assist

The committee is composed of J. E. McCoy, secretary of the Southern Appalachian Coal Operators Association; Gibbs L. Baker, Washington, D. C., attorney for Tidewater Coal Exchange, Inc., and F. C. Koenig, of the Alden Coal Mining Co., Export Coal Co., Harlan Coal Co. and A. McNeil & Sons Co. Dr. Payne will assist the committee.

In explaining the desire to establish an exchange at Charleston, Dr. Payne stated that the facilities at Hampton Roads, Va., were taxed to their capacity and the establishment of an exchange at Charleston would open up a greater market for coal on the Clinchfield and allied lines. Charleston had piers and other facilities capable of handling the coal and operators and shippers had asked that the matter of an exchange at Charleston be considered.

Would Insure Saving in Demurrage Charges

Dr. Payne said that an exchange would be advantageous in the matter of quick turnover of cars; would benefit the railroads in the use of rolling stock, and that the facilities afforded to operators for classification and inspection would insure the loading of ships without undue demurrage. The Tidewater Coal Exchange, Inc., now operating at Baltimore, New York and Philadelphia was friendly to the organization of an exchange at Charleston, and was willing to aid it in every way, either as a branch of the present exchange or as an independent exchange. He invited fifty-three of the large coal companies which might be interested in Charleston shipments to attend the meeting, and received replies from forty-eight showing a general interest in the plan.

The present unfavorable export situation, Dr. Payne said, would not last, and he predicted that there would be more or less exportation of coal for the next nine or ten years, according to information from the Bureau of Mines, Geological Survey and Department of Commerce. This trade would be principally with the Mediterranean and South American points, and generally there would always be an export market for coal. He said the Andrade-Eyre company was ready to go in a transshippers association or a tidewater exchange which would give the general benefits of pooling at Charleston. Referring to the benefits of an exchange in classification, he said the present exchange had demonstrated that coal can be classified and pooled and properly inspected, and when the difference in car and ship demurrage cost was considered the value of an exchange was apparent. He favored the establishment of an exchange at Charleston by February or March next.

J. W. Howe Cites Advantages of an Exchange

Mr. Green, vice president of the Southern Ry., said the coal dealers and shippers desired a coal pool at Charleston, as they realized that it would be to their advantage. He was impressed with a statement by J. W. Howe, commissioner of the Tidewater Exchange, that that organization had reduced classifications from 1,150 to 50. Mr. Howe gave the following figures as to the advantages of the exchange:

Tonnage dumped, 48,785,000; number of cars dumped, 967,800; car days saved on gross detention basis, 1,747,600; saving on per diem basis, $1,045,5[illegible]; cost of operating exchange, $470,844; number of cars saved, 47,0[illegible]

Mr. Green and others familiar with the Charleston situation said there were sufficient facilities at Charleston to handle coal, as there are now 175 cars of coal in the port and some days there are 800 cars, but that there were not sufficient boats and the present tipple was not adapted to loading boats in the export trade. Dr. Payne said the capacity of the dumping facilities at Charleston is now 75,000 tons a month, but he thought that an enormous coal business could be built up at Charleston through an exchange. His company was ready to contract for a large tonnage in the coal region tributary to Charleston if it could be assured of classification and shipment of coal from the port.

Mr. Howe gave the average cost per ton of handling coal at the present exchanges at less than 1c. a ton and the exchanges were operated with a detention of less than three days from 1917.

Would Assist in Developing Export Trade

Mr. McCoy said the operators on the main line of the Southern Ry. were not interested in the export of coal, but that there were some on other lines who were interested in developing exports. He thought, however, that some tonnage on the Southern would move to export if there was a demand for it and he believed that operators in that region could be interested in the benefits of an exchange.

Dr. Payne in pointing out further advantages of an exchange said that at exchanges now only 5c. per car is allowed for demurrage while at Charleston and other points without exchanges the allowance would be $1 because of the possibility of the coal being held up without exchange facilities.

Mr. Koenig said there was no question that the railroad facilities at Charleston could handle the coal situation under an exchange, which should be established to guarantee foreign purchasers that the coal was of uniform quality. Without an exchange there was no inspection and classification to prevent bad coal from being exported and thereby reflecting on American coal. The exchange would save demurrage and embarrassment. He thought the Southern Ry. would co-operate. John A. Gerety and others also favored the exchange.

Mr. Green asked if all the coal companies could be brought into the exchange and Dr. Payne pointed out that when the present exchange was organized it represented only 17 per cent of the coal men, while now it included more than 60 per cent. Mr. Green said he would take up the matter with other railroad officials and that the Southern was in sympathy with the movement.

Prominent Coal Operators Represented

Those in attendance or who accepted invitations to attend the conference were H. C. Bates, representing C. W. Hendley & Co.; John A. Gerety, of the Ainesworth Coal & Iron Co.; J. E. McCoy, secretary of the Southern Appalachian Coal Operators Association; G. Santi, of the American Coal Exchange; F. C. Koenig representing the Alden Coal Mining Co., Export Coal Co., Harlan Coal Co. and A. McNeil & Sons Co.; Guy Darst, of the Bewley-Darst Coal Co.; Howard Adams, of the S. M. Hamilton Coal Co.; William Curran, representing the B. & O. R.R. Kentucky operations; Dr. Henry M. Payne, of Andrade-Eyre, Inc.; E. R. Thompson, of the Federal Coal Co.; J. G. Morris, of the South Atlantic Coal Co.; K. W. Dyas, of the Stearns Coal & Lumber Co.; H. W. Oswald, of Coale & Co.; Mr. Doll, of the Tuttle Corporation; B. W. Shenlin, of the Lake & Export Corporation; J. W. Howe and Gibbs L. Baker, representing the Tidewater Coal Exchange, Inc.; J. L. Graves and J. E. Fitzwilson, of the Southern Ry.; R. L. Maxey, of C. M. Emmons Co., and Paul Delaney, secretary of the Benedict Coal Corporation.

Coal-Mine Power Rates To Be Discussed

A MEETING of the local sections of the American Institute of Electrical Engineers and the American Institute of Mining and Metallurgical Engineers will be held in the Bureau of Mines Building, at Pittsburgh, Pa., Jan. 21, 1921, beginning with a technical session in the afternoon lasting from 2 to 4:30 p.m. Between 4:30 and 6 p.m. the members will visit the Bureau of Mines Building and the Carnegie Technical School and in the evening some form of entertainment and a dinner will be provided. The technical program will cover two or more papers, one on "Gathering in Coal Mines" and one on "Power Rates for Coal Mines," the latter paper to be read by F. W. C. Bailey, consulting engineer, of Columbus, Ohio. President Hoover of the A. I. M. E. and President Beresford of A. I. E. E. have both promised to be present.

What Labor Seeks from Indiana Law Makers

BILLS changing the present workmen's compensation laws of Indiana, introducing old-age pensions, prohibiting labor injunction, modifying or rewriting the garnishee law, creating an industrial court similar to that in Kansas and providing a state constabulary are among those which will be presented in the Legislature during the coming year. The first four will have the approval and support of the United Mine Workers, according to William Mitch, secretary-treasurer of District No. 11, the largest district in Indiana. The last two will be fought to a finish.

The miners say the rate of compensation as designated in the present compensation law is as originally enacted in 1915, when conditions were greatly different from those now existing. They say this rate is inadequate and an effort will be made to raise it from 55 per cent of the average weekly earnings to 65 per cent and to advance the minimum computing basis from $24 a week to $30 a week. According to Mr. Mitch the law at present does not provide that all hazardous occupations come under its provisions, and this will be one of the features for which a change will be asked.

With regard to the anti-injunction law, Mr. Mitch said in a recent interview: "The anti-injunction has always been favored by labor, because of the abuse of injunctions in labor controversies, and labor will endeavor to have such a law enacted. It is recognized that in this period the tendency is to pull labor down, and while no doubt there will be legislation proposed that will be antagonistic to the views and rights of labor, such as the Kansas Industrial Court law, the workers certainly will fight such freak legislation with all vigor and power.

There has been much activity to obtain the passage of a bill creating a state constabulary similar to that in Pennsylvania, but as Mr. Mitch views it the agitation is camouflage. He says the law is ostensibly written to protect the former, but its specific purpose is to fight for the open shop.

U. S. Chamber of Commerce Committee to Study State Control of Prices

STATE control of prices as provided in statutes now in effect in Montana and Indiana is to be made the subject of study by a special committee of the Chamber of Commerce of the United States, appointment of which was announced Wednesday, Dec. 22, by Joseph H. Defrees. The constitutionality of both statutes involved is being tested before the U. S. Supreme Court.

Charles Nagel, of St. Louis, formerly secretary of the Department of Commerce and Labor, is chairman of the committee. Other members are Max W. Babb, Allis-Chalmers Co., Milwaukee; John M. Crawford, Parkersburg Rig & Reel Co., Parkersburg, W. Va.; Clyde C. Dawson, Dawson & Wright, Denver, and Theodore F. Whitmarsh, Francis H. Leggett Co., New York.

Although the same in principle, the two statutes differ considerably. The Montana law is much more general in its application. It makes the state's railroad commissioners a Montana trade commission and gives the board power to license all persons engaged in buying and selling commodities in the state. The power to regulate carries with it the power to establish maximum prices or reasonable margins of profit.

The Montana Trade Commission thereupon ordered that all articles offered for sale be marked with the invoice price and the sales prices per unit. The State Merchants' Association of Montana took the case into the Federal District Court, which held the law in violation of the fourteenth amendment of the Federal Constitution. The Attorney General of the State appealed. The U. S. Supreme Court will hear the case in April.

The Indiana statute refers chiefly to coal and expires in the spring. Immediately after enactment this law was taken before the Federal District Court by Indiana coal operators. The decision of the Court was that the case was brought too soon, as the operators had not yet reason to complain against any attempt of the Coal Commission, created by law, to deal with their business. From this dismissal of the complaint the coal operators appealed to the U. S. Supreme Court.

Men Want Ten Million Dollars Back Pay

DECLARING that the Hillside Coal & Iron Co. and the Pennsylvania Coal Co. had been paying the miners for gross weight instead of net weight, the insurgent unions are demanding a refund of the shortage in wage. It is declared that if the demands are not complied with a strike will take place Jan. 2, 1921. The amount demanded covers the operation for six years and would total $10,000,000.

The mine workers also demand that after Dec. 16, 1920, 12 per cent be added to the weights recorded on the scales so as to compensate for the fact that the weigh beam is graduated in long tons instead of short. They also call on the company to discharge all its weighmen. The company has recently changed the districts of its district superintendents and the mines of its foremen in order that the miners may be better satisfied.

WORK OF THE Council of National Defense in handling coal matters in connection with the recent Bituminous and Anthracite Coal Commissions is reviewed by the director of the Council in the annual report for the year ended June 30 last, just made public.

It is stated that the information collected and co-ordinated by the Council concerning the coal situation in the country was of assistance to the Bituminous Commission in obtaining data upon which to make its award. As a result of the co-operation of the Council with the Bituminous and Anthracite Commissions the Council co-ordinated important information concerning both bituminous and anthracite coal throughout the country.

The Council says the files of its Committee on Coal Production include correspondence with coal-producing companies and railroads, principally with regard to the movement of coal from the mines.

ADVISABILITY OF INCREASING production of coal in the Philippine Islands has been considered by the War and Navy departments and the Shipping Board, which have, however, decided that it is not desirable for them to enter into the mining of coal as operating agencies. They are, however, actively interested in seeing the production of coal increased in the islands and in conserving to their use the necessary quantity of coal. Secretary of War Baker has requested the Philippine Government to include in leases granted to Government lands in the islands a provision to the effect that the U. S. Army, Navy and Shipping Board shall have a preferential right to purchase all coal, oil and gas or any products thereof growing out of concessions granted, upon payment to the producer of the current field or market price of all coal, oil and gas or other products so purchased.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

IMPROVEMENT of business activity, according to the *Commerce Monthly* of the National Bank of Commerce in New York, awaits adjustment of retail prices to a level satisfactory to the public. This necessary readjustment of prices to consumers is now under way, and will be expected to make more rapid progress in the future. Its progress will be hastened by the coming into the market of goods which are already being produced on lower cost levels for labor and material.

"The fundamental relationship of banking and business," the report continues, "now becomes clearly apparent. Both are concerned in the present situation, and the interests of both demand that the readjustment be gone through with in orderly fashion, so that business activity may be resumed on a sound basis.

"Sentiment respecting forward conditions, which until lately had been almost uniformly depressed, is now noticeably improving in many directions. This better feeling does not go to the point of optimism, but there is evident a degree of confidence, which was previously lacking, in the ability of commerce and industry to meet the future successfully and to conduct business with reasonable profit.

"What is now required is courage and respect for fundamental economic principles. Artificial palliatives which are being urged with a view to obviating the difficulties of the adjustment—particularly proposals involving further inflation and cheapening of credit—must be avoided. Such measures, if adopted, could only result in the impairment of the strength of the credit structure and in prolonging and increasing the difficulties of an adjustment which world-wide conditions have made inevitable."

Railroads Drop More Men

Following the announcement Dec. 27 by Samuel Rea, president of the Pennsylvania R.R. system, that present business conditions would "necessitate further reduction in the number of employees and in the working expenses and capital expenditures until the situation improves," that company began a drastic cut in its working force in the Southern Grand Division. It is estimated that from 1,700 to 2,000 men will lose their jobs. This amounts to approximately 10 per cent. of the working force. The Southern Grand Division comprises the Delaware, Maryland, Baltimore and Norfolk divisions, employing slightly less than 19,000 men. Maintenance of way, shop, office and transportation workers are affected. Several hundred men employed in the car and motive power shops of the Chicago, Burlington & Quincy R.R. at various places in Nebraska have been laid off, it was announced Dec. 29. George Loomis, assistant general manager, said a satisfactory condition of rolling stock and business depression were responsible. Orders had been issued Dec. 28 to lay off 25 per cent of the employees of the latter company's shops at Aurora, Ill., effective Dec. 31. About 2,000 men are employed there.

Automobile Factory Takes on Men

Since the beginning of September the H. H. Franklin Manufacturing Co. has added two hundred men to the force working at its motor car plant in Syracuse, according to a statement on Dec. 28 by the head of the corporation. Shipments and orders in hand indicated that the sales for December would be the largest in number in the history of the company. Shipments for the week ended Dec. 18 were the largest in any week since June 12. Production during that week ran at a rate of thirty-three cars a day, which was approximately 85 per cent of the average daily production for the year ended Aug. 31, 1920.

Boston & Albany Shops Reopen

The Boston & Albany R.R. car repair shops in West Springfield, Mass., which were closed indefinitely Monday, Dec. 27, throwing nearly 100 men out of work, announced Dec. 29 that they would reopen Monday, Jan. 3. Eighty per cent of the employes were to be taken back. The reason for the change of policy is not announced.

Brooklyn Navy Yard Lays Off More

More than 2,500 workers at the New York Navy Yard, Brooklyn, will lose their places within the next month according to an announcement Dec. 30. Fifteen clerks and several of the drafting force were dismissed Dec. 29.

Silk Mills Resume on Full Time

The Brainerd & Armstrong Co., manufacturers of silk goods, announced Dec. 27 that beginning Jan. 3 the mills would resume operation on full time, forty-eight hours a week, although under a 15 per cent wage reduction.

Ford Motor Plant Closed Till Feb. 1

The Ford Motor Co.'s plant at Highland Park, Detroit, which normally employs from 50,000 to 60,000 men, will remain closed until Feb. 1. The intention was for a suspension of operations during the regular midwinter inventory period of two weeks when the plant closed Dec. 24, but after a conference of officials it was decided to shut down until Feb. 1. Although the plant has been working at full capacity for the last three months, it is known that there had been a considerable falling off in the demand for Ford cars.

N. Y. Central Placing Rail Orders

On the heels of the big order for steel rails by the Pennsylvania R.R. which was announced a short time ago comes the report that the New York Central is in the market for 175,000 tons, 82,000 tons of which have been placed. Of the latter amount 71,000 tons have gone to the Illinois Steel Co. and 11,000 tons to the Carnegie Steel Co. The balance of 93,000 tons is still being negotiated.

Edison Phonograph Works Close

It was announced Dec. 28 that the phonograph works of Thomas A. Edison, Inc., at West Orange, N. J., would close Wednesday evening, Dec. 29, and remain closed indefinitely. The phonograph record department will continue to operate as usual. Approximately eight hundred persons are affected by the shutdown. In the preceding six weeks about 1,200 were laid off.

Merchants Oppose Proposal That Coaling Pier Be Built on Staten Island

THE Committee on Harbor Docks and Terminals of the Merchants' Association of New York in a report opposes the proposal of Dock Commissioner Murray Hulbert that a coaling pier be constructed at Rosebank, Staten Island. The committee asserts that the proposed pier is not required by the public interest and would have little utility.

In a letter to the New York Sinking Fund Commission the committee says that steamship operators and coaling companies are emphatic that bunkering from a pier involves considerable and costly delay, which is avoided by bunkering from lighters, the latter method being therefore much more economical. As to tramp steamships, they can buy their coal so much more cheaply at Norfolk and other ports near the point of production that in many cases it pays them to move there solely for bunkering, in preference to buying coal in New York.

New York Coal Merchants Believe Conditions Are Returning to Normal

AT THE annual meeting of the Coal Merchants Association, Inc., of New York, held on Dec. 14, W. A. Leonard was re-elected president; Arthur F. Rice, secretary, and J. W. Vought, treasurer. The Board of Directors, also re-elected, consists of J. W. Bellis, M. F. Burns, W. D. Butts, G. D. Curtis, T. F. Farrell, H. J. Lange, W. A. Leonard, Frederick Rheinfrank, G. F. Sinram, Olin J. Stephens, N. L. Stokes and L. J. Weber.

Commissioner Rice in his annual report said that the preparation of certain coals has been and still is poor, while the extensive shortage in shipments, very little coal being weighed at the Tidewater ports and everything lost or stolen in transit coming directly out of the pockets of the retailers, has caused no end of trouble and financial loss. He said there has not been a day this year when the dealers could get enough coal to fill the orders they had taken. He believes, however, that the turning point has been reached and that a return to something like a normal state of affairs may be expected in the not distant future.

Committees Named at Executive Meeting of Federated Engineering Societies

HERBERT HOOVER, president of the Federated American Engineering Societies, presided at the Executive Board meeting of the American Engineering Council of that organization, held in New York on Friday, Dec. 17. Every member of the council was present with the exception of A. M. Greene, and two new members of the board were elected: W. B. Powell, of the Buffalo Engineering Society, representing District No. 1 (New York and New England States), and Gardner S. Williams, Grand Rapids Engineering Society, representing District No. 2 (Michigan, Wisconsin and Minnesota).

The president appointed standing committees on Procedure, Constitution and By-laws, Publicity and Publications, Membership and Representation, Finance, and Public Affairs.

In discussing the program of the council immediately ahead Mr. Hoover stated that he had called engineers together in various cities he had visited lately, and that he found that the general desire of engineers everywhere was to join in the Federation movement, but that the general trend was for territorial organization, as distinguished from national organization. One of the stumbling blocks in the way of these territorial organizations joining the national organization was the question of dues. Another complexity was that individuals hold memberships in more than one society.

As a step toward co-ordinating various inter-society activities already established the necessary action was taken to make it possible for certain of the activities of the Engineering Council to be taken over by the new organization. As soon as the United Engineering Societies have passed officially upon the proposed action of the Engineering Council to transfer and continue the work of the Engineering Council's committees who have not yet completed their work, the president will appoint the necessary committees of the American Engineering Council to take over this work.

October Railroad Earnings Short of Estimates at Time of Increase

A TABULATION from figures reported by the railroads to the Interstate Commerce Commission show that the net railway operating income for October of the Class 1 carriers totaled $91,761,090, which is approximately $20,674,000, or 18.4 per cent, below the amount expected to be earned under the increased rates fixed by the commission in accordance with the Transportation Act. The compilation is based on reports received from 203 railroads with a total mileage of 235,837.

On the basis of the net operating income for October, the railroads of the country would earn annually 4.9 per cent on the value of their properties as tentatively fixed for rate-making purposes at $18,900,000,000 by the Interstate Commerce Commission. This is an increase of 0.75 per cent over that for September as computed from the net operating income for that month. To realize a return of 6 per cent on their valuation as provided by the act, the railroads should have earned $112,435,000 in October.

Operating revenues for the 203 railroads totaled $642,341,119, or an increase of 26 per cent over October, 1919, while operating expenses were $522,877,298, or an increase of 28.8 per cent compared with the same month last year. The net income is an increase of 20.2 per cent over that for October last year.

Compilations show that the net operating income in every district fell below a 6 per cent basis, the Eastern district being 29.7 per cent below, the Southern district 16 per cent, and the Western district 9.2 per cent.

Reports show that the net operating income of the 203 carriers for October was 81.61 per cent of the amount expected to be earned by them under the rates fixed by the commission, while the net income for both September and October was 75.37 per cent of the amount expected for both of those months.

Compared with September, the net operating income for October of the Class 1 railroads is an increase of $16,450,779, increases being shown for the Eastern district of $6,576,668, Southern district $1,809,564, and the Western district $8,064,547.

Appropriation Asked for Coal Inspection

THE U. S. Bureau of Mines has recommended an appropriation of $750,000 for effecting the following plan of coal inspection, which it suggests:

"The Secretary of the Interior is hereby authorized and directed to establish through the Bureau of Mines a fuel-inspection system for the purpose of giving to consumers and producers of coal accurate information concerning the quality of coal purchased for domestic and industrial uses and for foreign commerce. Authority is granted the Secretary of the Interior in connection with the establishment of such a fuel-inspection system to provide coal-sampling systems at such points as he may deem desirable, procuring by lease, purchase, condemnation or donation the land or equipment necessary therefor; and to utilize such agent or agencies for obtaining representative fuel samples and make such rules and regulations as he may deem necessary to accomplish this purpose."

THE POINDEXTER ANTI-STRIKE BILL, recently passed by the Senate, according to the report of the Senate committee accompanying it, would apply to coal mines where such coal is essential to the operation of trains and in other industries incidental to and necessary to the maintenance of transportation. The bill makes it a felony punishable by heavy fines for interference with commerce. An effort to reconsider the bill will be made, as it was passed during the absence of the opposition from the chamber.

Economists Study the Bituminous Coal Situation

Industrial Progress Based Upon the Soft-Coal Industry—High Prices Attributed to Consumer's Failure to Realize His Power—Irregular-Operation Losses Ascribed to Unlimited Development of Mines

COAL was given a hearing by the American Economic Association at its meeting in Atlantic City Dec. 27-29, 1920. The papers and discussions were limited to bituminous coal but the interest shown and the breadth of the discussion indicated that this part of the industry has been much in the minds of the members during the last year. James A. Field, vice-president of the association and of the faculty of the University of Chicago, was responsible for the sessions devoted to coal and presided at the meeting. The papers that were read, as pointed out by the chairman, had been prepared by specialists in the field of coal rather than by special economists, and the purpose of the program—a purpose fully realized—was to bring to the college men and professional economists a fuller understanding and closer approach to the problems of this important industry.

The first speaker was C. E. Lesher, editor of *Coal Age*, who spoke on the subject of "An Introductory Survey of the Bituminous Coal Industry." He described the bituminous coal industry of today and of the last thirty years as the "foundation of modern industrial progress, touching the daily life of nearly every individual in the country—simple almost as agriculture in its basic elements, as unorganized as the retail grocery business, limited on the one hand by an almost inelastic market, on the other by transportation, over neither of which has it control."

All Industries Using Coal Essential

He emphasized the importance of the coal industry and said that the fallacy that we can distinguish between essential and non-essential users of coal had been exploded. All use of coal is essential, not necessarily because the product made in every plant is essential but because the continuous and uninterrupted operation of every plant is necessary. Whole communities are often dependent for their existence and livelihood on single industries within their borders and the operation of those industries is dependent on power—that is, on coal.

Coal is not the last thing required, it is the first, yet coal is treated in our national thinking as are such commonplace things as sand and gravel, slag, refuse and waste products. Nowhere is this better shown than in the treatment of coal as traffic by the railroads.

"Freight rates on the railroads," he said, "have been designed to give the operators in each field a wide latitude in markets. There is scarcely a consumer who has not the opportunity to choose his coal within a wide range. The coal deposits are so bountiful, the number of mines so great and it is so easy to increase productive capacity that monopoly in the bituminous coal industry is not possible today.

"The real reason why, with all its associations, the coal industry is unorganized is that the law prohibits combined action with respect to the vital concerns of the trade—price and distribution.

"Consumption of coal in the United States is inelastic. No more coal is consumed than is needed to perform the work at hand or to give the necessary heat. No considerations of price will induce a manufacturer to burn more coal than is required to produce the goods for which he has a market. The consumer today holds the balance of power. The high prices of this year were made by the consumer, and had he exercised his power there would have been no such prices. It was not combination among the coal producers or shippers that caused $10 coal this year, nor was it lack of mines and miners to produce all the coal for which there was demand."

Irregular operation of the bituminous coal industry was the subject of the paper by F. G. Tryon, of the U. S. Geological Survey. Following is an abstract of this paper:

"Bituminous coal mines of the United States have a developed capacity and a present labor force about 30 per cent in excess of what is required to supply the demand. In consequence, the labor and capital engaged in the industry have been idle during the past thirty years an average of ninety-three working days a year, and there is little evidence that the condition is improving. Irregularity of working time is injurious to the miner because it means direct loss of earning power; to the operator because it means higher costs per ton; to the railroads because it means seasonal demand for transportation; and to the consumer because it increases the cost of coal.

W. F. McKENNEY

Due to the increasing amount of coal statistics which the U. S. Geological Survey has been called upon to supply, F. C. Tryon has been furnished an experienced assistant in the person of W. F. McKenney. Mr. McKenney has had long experience as a Government statistician.

"Fluctuations in production may be grouped as (1) annual, resulting from business depressions over which the coal industry has no control; (2) seasonal, reflecting the influence of climate on consumption and therefore on demand; (3) daily, reflecting irregularities in car and labor supply. Remedies which have been proposed to overcome irregularity in operation include (1) dovetailing work with other seasonal industries, (2) the 30-hour week, and (3) increasing transportation facilities. The first of these is not possible on a large scale and the last two would not raise the working time over the year as a whole, although they might affect the distribution of the demand from month to month.

"To overcome the seasonal character of demand storage facilities at the point of consumption must be provided. Proposals have been made to induce storage by the consumer by (1) offering summer discounts in mine prices; possible only if producers are allowed to agree on prices; (2) establishing a sliding seasonal wage scale; (3) establishing seasonal freight rates. Of these, the last offers greatest promise, although many practical difficulties would arise in applying the principle. Even supposing that the demand could be equalized, however, the excess of mine capacity over requirements would remain.

"There appears little hope of eliminating excess mine capacity and excess labor force as long as no check upon the opening of new mines or the expansion of old ones exists. The small extent of the deposits of anthracite in the United States has limited the development in the anthracite region and permitted demand to overtake mine capacity. The vast areal extent of bituminous coal lands sets no such limit and, as a result of recent high prices for coal, new development has proceeded on such a scale that the discordance between mine capacity and requirements has never been greater than at present."

Relations of Transportation to Coal Industry

A. G. Gutheim, manager of the public relations section of the car service division of the American Railway Association, spoke on the relations of transportation to the bituminous coal industry.

He contended that "So long as regulatory power exists to force coal production at the expense of other industries, similar power should exist to compel proper distribution of such production."

Four years of "rather harsh experience," he said, point to these indications:

"Our railroad facilities are probably adequate today to handle our necessary annual bituminous output produced with fair uniformity of rate throughout the year, and will certainly be adequate when post war rehabilitation of the properties is completed.

"Railroad facilities are not, and without great waste of investment never can be, adequate to handle currently our necessary bituminous coal production when obtained by weekly peaks of 13,000,000 tons and valleys of 7,500,000 tons in a twelve-month period, as has been the case the last two years.

"While the powers of the Interstate Commerce Commission are sufficient to force transportation for such extremes of production, the exercise of such powers necessarily involves discrimination against other traffic and should be avoided if at all possible.

"While our present railroad regulation can force production it can control distribution but slightly and prices not at all.

"Extreme variation in rates of production not only unduly burdens the transportation machine but invites further overdevelopment of mining, with the consequence of greater irregularity in miners' working time.

Advocates Compilation of Complete Statistics

"Provision should be made by additional legislation if necessary for the securing and compilation by proper governmental authority of current and complete statistics of production, distribution, consumption and stocks of bituminous coal.

"Let it be kept in mind that production, transportation, distribution and consumption are the four big factors in the bituminous coal industry and should be reasonably well balanced. Under ordinary conditions proper co-ordination of these four big factors is possible and the results should be better conditions of mining and railroading, lower costs of production and transportation and better prices and distribution to the consumers."

Mr. Gutheim was followed by David L. Wing, formerly of the Federal Trade Commission, who at considerable length reviewed the history of Federal attempts to collect data on cost of production in the bituminous coal industry. He outlined the nature of bituminous coal prices, the Fuel Administration price-fixing policy and program and described the course of the coal market after Federal regulation was lifted. After a brief résumé of the meager data available as to profits in the bituminous coal industry he stated as his conclusion that "the diversity of conditions found to exist between different fields in the same state is such as to militate against broad generalization."

George Cushing, managing director of the Wholesale Coal Trade Association, spoke on the selling of coal. He made a special plea for recognition of a difference between mining and merchandising of coal and for a separate profit for each. He said:

A Profit for Each Risk, Investment and Effort

"Personally I cannot see any reason to believe that a man who is a good producer must for that reason alone be also a good merchant. My experience with men leads me to think exactly the other way. Therefore, I say: Leave production to the producer and selling to the merchant, or every man to his trade. But the public holds that if a man gets a producer's profit he will want no merchant's profit; and thus the public will get its goods cheaper.

"We, here, are not studying popular psychology but general economics. It is one of the implied rules of general economics that for each distinct risk, investment and effort there should be a comparable compensation. If we follow that theory we must say that since the production effort is one and the wholesaling effort another, they constitute two businesses. Each, therefore, should be compensated commensurately even though both are housed in the same edifice and officered by the same men.

"The coal produced within no state is sold wholly in that state. It is probably true that on the average the market for coal of one state is in seven states. The task of the producer who wants to sell all of his own coal is to get enough tonnage to pay the expenses of a sales organization large enough to cover seven states.

"It is a matter of common knowledge that in the days of competition freed from Government control the selling margin ranged close to 7½c. per ton of mine-run coal. I venture to believe that there is not to exceed 75 companies in the United States which could, if they were so disposed, stand the financial strain of selling all of their own coal. All of the others depend in whole or in some part upon independent selling organizations.

"My second conclusion is that the narrow selling margins per ton and the limited tonnage available to each company have necessarily thrown the merchandising work into the hands of organizations wholly independent of the producer.

Some Results of Keen Competition

"As competition in the coal business became keen, the operators who control large tonnages came to set themselves solidly against independent merchants. In the fierce struggle for existence which ensued, the tendency was for the producers to advocate the destruction of the independent merchants and for the independent merchants to throw their support to the small competitor of the bigger operator. The result, of course, was to increase competition, which already was ruinous, and to reduce the already extremely narrow sales margin.

"It is apparent that the one thing which has stood in the way of a real merchandising program in coal has been the insistence of coal men in the past that the selling expense should be subtracted from the mine price rather than added to it. It has been my theory for years and still is that the coal industry will never develop a merchandising policy that is worthy the name until it separates production from wholesaling and attaches a commensurate margin to each.

"I am firmly convinced that we will never develop a proper export coal program without coal merchants. I am equally convinced that we will never develop coal merchants unless we set out studiously to create merchants by adding a merchandising price to the mine price."

Anthracite Mine Workers to Reopen Discussion with Operators—No Strike Likely

WHEN the operators on Dec. 23 declared their readiness to discuss scale inequalities in the contract of Sept. 2 the mine workers regarded that offer as a loophole and have accordingly thrust their whole corporate body in the breach. They still hold that by inequalities may be meant not slight oversights on the part of the board of arbitration but the whole body of the award. The chairman of the Anthracite Scale Committee, Thomas Kennedy, stated late on Dec. 28 that none of the demands of the hard-coal workers will be dropped and that committee on Dec. 28 instructed its sub-committee "to meet with representatives of the operators and endeavor to work out a basis of settlement that will be in general satisfactory to the anthracite mine workers."

The union asserts that as the industry is working steadily, demand being good, the operators can and ought to increase their employees' pay and it denies that because other industrials are accepting decreases and working irregularly the anthracite workers should be satisfied with their recently raised pay. Yet that same union claimed some time ago that because the bituminous mine workers did not work steadily their pay ought to be increased. This claim was conceded, but how about this one which is in direct variance with the other?

It is not thought, however, that there will be any strike. The operators will, perhaps with but one exception, feel satisfied that the public is so strongly set against wage advances that the operators will be backed to the limit in opposing them.

On Dec. 29 the Anthracite Board of Conciliation awarded an 8-hour day and a wage increase in the following terms:

"To the rate paid hoisting engineers in April, 1916, for a twelve-hour shift, shall be added $2 a day plus 17 per cent in the case of inside employment and $1.80 per day plus 17 per cent in the case of outside employment, and the new rates thus derived shall be paid for an eight-hour day.

"Provided, that if any rate established by this method for engineers changed from a twelve- to an eight-hour day shall be in excess of the rate now being paid at said colliery for similar hoisting service, such higher rate shall be without prejudice from the standpoint of the operators in the study of uniform rates by the Board of Conciliation."

J. D. A. Morrow and F. S. Peabody Named For International Commerce Board

AMERICAN participation in the International Chamber of Commerce became fully organized Jan. 3 with the appointment of an American committee composed of fifty-seven of the leading business men of the country. Members of the committee were appointed by Joseph H. Defrees, president of the Chamber of Commerce of the United States. They were chosen from the main divisions of the business of the country. A. C. Bedford, chairman of the board of the Standard Oil Company of New Jersey, is chairman.

The coal industry is represented by J. D. A. Morrow, vice president of the National Coal Association, Washington, D. C., and Frank S. Peabody, chairman of the Board of Directors of the Peabody Coal Co., Chicago, Ill.

The direct representative of the International Chamber in the United States is the American section. The section's headquarters at Washington is the point of contact between the membership in this country and the International headquarters in Paris.

The International Chamber was created at Paris last June. In the form of organization adopted each country holding membership has a national bureau as headquarters of its section, its national committee and an administrative commissioner of its own resident at Paris. The American section headquarters began operation in the fall with Lacey C. Zapf as secretary. The American administrative commissioner, Dr. Frederick P. Keppel, has taken up his duties at Paris.

Colorado Coal Operators Withdraw from National Coal Association

THE Colorado Coal Operators Association has withdrawn from membership in the National Coal Association, for the reason that "Colorado is remote from the Eastern territory" and the "activities of large coal interests back there control the policies of the national organization," according to D. W. Brown, vice president. Mr. Brown also is president of the Rocky Mountain Fuel Co.

The association of Colorado and New Mexico operators, it is understood, has come to the conclusion that "the service received was not sufficient to justify the expense incurred as the result of the membership relations."

Unofficial comment seems to be to the effect that the dissatisfaction of the Colorado operators centers in the inability of operators in the East to successfully establish the open-shop system of employment in mines. Colorado's largest mines are controlled by the Rockefeller interests and are operated on what union officials say amounts to an open-shop system.

One advantage that operators in Colorado may gain by severance of relations with the members in the National Coal Association is that they need not necessarily be bound by action taken in Eastern coal fields, where conditions are altogether different from those prevailing in Colorado.

It is understood that the local association hereafter will be conducted only as a traffic bureau and that Mr. Kerr, the secretary, has resigned to engage in private business.

The Colorado Retail Coal Dealers' Association withdrew from the National Retail Coal Merchants' Association about a year ago on similar grounds—that too often the "parent organization is concerned with problems that do not concern Colorado merchants."

Trade Commission Report Says Coal Industry Cost Accounting Is Chaotic

IN its annual report issued Monday, Dec. 27, the Federal Trade Commission reviews its work in collecting cost data on coal production and reviews the court litigation which has suspended such activity. The commission in the main body of its report defends the right to collect the information, declaring that the usefulness of such data is undeniable in meeting national problems. The legal division and the economic division, in separate parts of the report, also review the cost accounting work. The commission says that $35,000 was expended in the coal cost accounting surveys and work thereon.

Declaration is made that the cost reports are of value to the operator, miner, large industrial consumers of coal and household consumers, as they afford the public exact understanding of the coal situation as far as production costs and amounts realized by the companies are concerned.

The legal division bases its discussion of the cost reports on the authority given by various Congressional enactments and declares that cost accounting in the coal industry is chaotic. Explaining why it did not further contest the Maynard Coal suit the legal division says it was because the commission desired to test its right to require the cost reports in a suit which did not involve collateral issues as involved in the Maynard case, which was the argument that the commission's power had been transferred by the President to the Fuel Administration. The commission is now relying on the outcome of the suit instituted by steel companies involving its right to require reports.

New Federal Grand Jury Investigation to Begin Jan. 17; To Postpone Trial of Conspiracy Case

INVESTIGATION of the bituminous coal business by the present Federal Grand Jury probably will begin in Indianapolis Jan. 17. L. Ert Slack, special assistant U. S. Attorney in charge of the prosecution of the cases against the 125 miners and operators indicted last March on charges of conspiracy to violate the Lever Act, began issuing subpoenas Dec. 30 to witnesses who will be called to appear before the Grand Jury. The investigation, Mr. Slack says, will continue for two or three weeks. The investigation is to be practically as comprehensive as the one in which the special Grand Jury returned indictments last March.

Less time will be required for this second investigation, it is intimated, because the officials are better acquainted with the general situation in the coal fields and are therefore in a position to choose witnesses more intelligently. The investigation, as disclosed by U. S. Attorney Frederick Van Nuys at the hearing in open court regarding the relation of Attorney General Palmer to the pending cases, will be made with a view to returning indictments against additional defendants and probably against additional classes of defendants.

Mr. Slack says the investigation will cover the production of coal in 1920 as well as in 1919. It is expected also to include the operations of retail coal dealers and coal trade bureaus. The investigation of the production of coal in 1920 is expected to reveal matters of unusual interest inasmuch as all published information has shown that prices for coal reached their highest point last year, while at the same time the amount of coal produced was perhaps the largest except in 1918 in the history of the industry, according to men who are familiar with the case. Federal officials have intimated they believe the coal trade bureaus have been responsible for the uniformly high prices in the face of an increasing production.

The case against the 125 operators and miners is on the court docket for trial Jan. 10. Mr. Van Nuys has announced that a continuance will be asked at that time for an indefinite period pending the adjournment of the present Federal Grand Jury session. Arrangements made for the court proceedings on that date are that the defendants need not appear, but that they may be represented only by their counsel. Mr. Van Nuys says he does not know at this time just when the cases can come to trial inasmuch as the length of time the Grand Jury will be in session is uncertain. The jury convened again Jan. 3 after a holiday recess of eleven days. Because of the large number of exceptionally important cases before the jury, a part report is to be made to the court about Jan. 8, according to Mr. Van Nuys.

H. Foster Bain Is Appointed Head Of Bureau of Mines

H. FOSTER BAIN, of California, has been nominated by the President to be director of the U. S. Bureau of Mines. He succeeds Dr. F. G. Cottrell, who leaves the bureau to become the head of the division of chemistry and chemical technology of the National Research Council. During the war Mr. Bain was assistant director of the Bureau of Mines and takes over the direction of the bureau with an intimate knowledge of its functions.

Mr. Bain was educated and trained as a geologist and mining engineer. He was one of Herbert Hoover's assistants in London in Belgian relief work during the war. Before that he was editor of the *Mining and Scientific Press*, of San Francisco, Cal., and later was editor of the *Mining Magazine*, of London, England. He made some important mining investigations in south and central Africa and later undertook similar investigations in China. At one time he was a mine operator in Colorado and once was connected with the U. S. Geological Survey. Subsequently he was the first director of the Geological Survey of Illinois.

For a time during the war Mr. Bain was assistant director of the U. S. Bureau of Mines, following up production and manufacture of metal products, explosives and other chemical substances for war purposes. At the close of the war he returned to private life.

Mr. Bain was born at Seymour, Indiana. After being graduated from Moore's Hill College, Indiana, in 1890, he spent two years at Johns Hopkins University and later received his doctor's degree from the University of Chicago. He has been for many years a prominent and active member of the American Institute of Mining and Metallurgical Engineers, the Mining and Metallurgical Society of America, and the American Mining Congress.

The first thing Mr. Bain did after taking his doctor's degree was to obtain employment as a shift boss in a mine with the idea of gaining first-hand experience in that phase of practical operation. He took charge of a gold-silver operation known as the Franklin mine, in Clear Creek County, Colorado.

In addition to Mr. Bain's contact with English mining affairs during his residence in England as editor of the *Mining Magazine*, he has engaged in consulting work in the Rand, the Belgian Congo, and other mining regions of Africa. He also has had considerable experience in the Far East. During the two-year trip from which he has just returned he made mining examinations in ten Oriental countries.

H. FOSTER BAIN

F. T. Miller Blamed for Making a Fiasco of Calder Coal Investigation

WASHINGTON CORRESPONDENCE

ANYTHING but a favorable impression has been created in the minds of business men and many students of the coal situation by the tactics of the Calder committee. Apparently there is widespread resentment on account of the methods of the committee, which are held not to be those of a tribunal but those of the muckraker.

Most of the blame for the committee's methods of procedure is laid at the door of Franklin T. Miller, the committee's adviser. Senators Calder, Edge and Kenyon, the active members of the committee, are generally known to be above many of the proceedings which have been conducted in the name of the committee. It is well known that the demands on the time of Senators are such as to preclude any great amount of attention to the details of such an investigation. In several instances, however, the principals to the investigation have not leaned over backward to be entirely fair.

If ever a fact was made clear, it was that the National Coal Association made no effort to influence improperly the figures of the U. S. Geological Survey. It is so evident that the Geological Survey did only the sensible thing in the course it took with the Illinois figures that it is hard to understand how Senator Calder could have stood on the floor of the Senate—especially after having had the cordial talk with Dr. George Otis Smith, the director of the U. S. Geological Survey, in which the correctness of the relationship was thoroughly explained—and referred to the influencing of the Survey's figures without having said something to offset the widely published erroneous deductions at first made by the committee.

CONSTRUCTIVE RESULTS CONSIDERED UNLIKELY

While the public has come to take for granted that a certain amount of baiting of big business is a natural complement of this type of investigation, it is apparent to most of those interested that nothing particularly constructive is likely to come out of efforts to find out just who profited during the high prices of coal or who were the advisers of the Interstate Commerce Commission.

The efforts to discredit the National Coal Association and the unjustifiable thrusts at Colonel Wentz are examples of some of the apparent objectives of the committee. The failure to get above that type of work and delve into broad, constructive phases of the situation is causing disappointment. There is a failure to see the forest because of the trees.

It is apparent that the committee's investigation has aroused again the desire to provide definite machinery for the handling of any future coal shortage. Despite the fact that the average price for coal increased less than did the price of most other commodities, the public gives evidence of declining to think of high coal prices as it does of other costs. In the face of that widespread demand it is freely predicted that some definite machinery will be provided to handle such situations as arose during the present coal year.

SPECULATION AS TO LEGISLATION TO BE PROPOSED

The Calder committee has not made public any of its ideas as to the legislation it expects to recommend. It is expected that at least two amendments to the Transportation Act will be proposed. One would limit the discretionary powers of the Interstate Commerce Commission, while the other would prevent the dilution of car supply by the entry of wagon mines into the field during an emergency.

Senator Frelinghuysen's coal commissioner bill seems more likely to be the basis of legislation than any bill which results from the Calder investigation. It is believed that some legislation is certain to be enacted to provide for any period of emergency in coal. It is expected that such a bill would place in the hands of the President the power to fix prices during the period that the government attempts to regulate distribution. It would not be surprising if provision should be made for sweeping commandeering powers during such an emergency, which would enable the government to take control of coal at the mines and handle it in a way that would greatly simplify the regulation of wholesalers and retailers' margins. The general impression among legislators seems to be that the economic situation now is such that competition can be relied upon to regulate coal prices for many a day to come, unless there be labor troubles, either in the mines or on the railroads, which would retard production for an extended period. The increasing possibility of such trouble is recognized and is one of the reasons why it is believed that machinery should be provided to regulate coal during any period when the supply is greatly less than the needs.

Judge McGee's suggestion that the Calder committee recommend a hard and fast type of contract probably will not be enacted into law, as members of Congress realize that operators would not enter into contracts not to their liking, thereby adding materially to the instability of the industry.

To date, none of the disclosures of the committee is regarded as damaging to the National Coal Association. In fact, the raid on its offices bids fair to redound greatly to the benefit of the association. The spectacular way in which the representatives of the committee swooped down upon the coal association's office, the carting away in the middle of the night of many of the association's papers, the long delay in listing these papers and in receipting for them are very generally regarded as unfair tactics, if not in direct violation of constitutional rights.

Some further disclosures as to spectacular prices charged by individual members may be expected. As it will not be difficult to demonstrate that such prices covered an insignificant portion of the tonnage, nothing of moment is likely to be revealed.

Calder Committee Holds Private Hearings

A NEW policy has been put into effect by the Calder committee of the U. S. Senate. Instead of proclaiming its ideas on coal in advance to the world, the committee is now holding executive sessions and receiving information privately. Dr. H. A. Garfield saw Senator Calder on Thursday, following which Mr. Calder said the anthracite situation and the activities of the Department of Justice had been discussed. Dr. Garfield may testify in public later. It is also announced by Senator Calder that the anthracite price situation will be investigated and the hearings may be prolonged. D. W. Simms, formerly special assistant to the Attorney General, told the committee of his disagreement with Attorney General Palmer in the conduct of the case against miners and operators in Indianapolis, and Mr. Palmer will be requested to explain his department's attitude in the matter of "coal profiteering."

A. W. RILEY, SPECIAL ASSISTANT to the Attorney General in coal cases, is reviewing the testimony before the Calder committee in regard to profiteering and any evidence that may be made the basis for indictments or prosecutions will be placed before Assistant Attorney General Nebeker, in charge of coal cases. Secretary Baker said he did not believe army coal purchases had enabled dealers to make $8,000,000 profit. The War Secretary explained that because of the high prices the department had not placed its annual contracts for coal but when a pressing necessity for coal arose the army was forced to go into the open market and buy at spot prices. The army, unlike the navy, did not resort to commandeering orders, he said, because it was felt that such action would place the burden of payment upon the general public.

Foreign Markets and Export News

Japanese Market Eases; Depression of Exchange

Japan's coal market, according to Wheelock & Co.'s market report issued at Shanghai, Nov. 18, is somewhat easier but not enough to compensate for the recent fall in exchange. Since the preceding report negotiations have been going on with regard to next year's contracts but the continual downward trend of exchange during the past few weeks has made it difficult for sellers to fix a price forward which will cover the whole of the year, but in any case it is expected that something definite will have to be settled during the course of the next few days.

No change is reported in the Fushun market.

In the Kaiping market there is nothing new of general interest to report but the question of next year's prices may be touched upon in the next report.

Coal prices are quoted as follows:

JAPAN COAL

	Packs per Ton ex Wharf
Miike Lump, Miike Small, Miike Dust	Contracted for
Kishima Lump	15.00
Shakano Lump	13.00
Arate Lump	12.00
Shimoyamada Kirigomi	11.00
Shin Shakano Kirigomi	11.00
Yoshinotani No. 1 Lump	12.00
Yoshinotani No. 2 Lump	10.00
Oshi Lump	12.00

KAIPING COAL

No. 2 Lump	13.50
Washed Nuts	13.50
Washed Slack	10.50
No. 1 Slack	9.00
No. 2 Slack	8.50

FUSHUN COAL

Dust	11.00
Dust Kirigomi	Contracted for
Dust Lump	No stock

Netherlands Coal Imports Fall Below War Average

Imports of coal into the Netherlands for the first nine months of the current year and last year, according to Consul General G. F. Anderson, Rotterdam, were as follows:

Countries of Origin	Jan.-Sept. 1919 *Metric Tons*	Jan.-Sept. 1920 *Metric Tons*
Germany	650,631	1,105,130
United States	362,272	662,280
Great Britain	112,816	193,165
Canada	4	182,199
Belgium	1,338,854	23,426
Other	90	24,579
Total	2,664,697	2,190,979

Of these imports there was exported in bunker coal for departing ships a total of 62,830 metric tons, of which 11,831 went to shipping for Norway, 8,699 to Great Britain, 8,695 to Sweden, and 8,631 to American shipping. A total of 887,860 tons went to bunker Netherlands ships. This makes 400,690 metric tons for bunker supplies out of the 2,190,979 tons imported, leaving a total of 1,790,289 tons.

At this rate imports of coal into the Netherlands available for domestic consumption will amount to not more than 2,400,000 tons during the current year. To this amount should be added 3,400,000 tons as the estimated output of the Netherlands mines, making a total of 5,800,000 metric tons of coal available for domestic consumption. This amount compares with 6,451,567 tons in 1919, 4,224,789 tons in 1918, 5,390,883 tons in 1917, 8,786,000 tons in 1916, 9,537,000 tons in 1915, 9,206,000 tons in 1914, and 9,921,000 tons in 1913. Unless, therefore, the rate of import of coal into the country in the last quarter of the current year is greatly increased over the rate for the first nine months, the total supply available for Dutch railways and factories and for other domestic uses will fall about 15 per cent below the average for the years 1915-1919 inclusive.

It should be noted that the coal now available for consumption in the Netherlands is of comparatively poor quality, especially that taken from the Dutch mines. The quality of the coal sold for bunkers in Dutch ports at the present time—usually a mixture of Dutch and imported fuel—is such as to have a marked influence upon the voyage of vessels from these ports.

To the figures given reporting the amount of fuel available for local use in the Netherlands should be added a fair allowance for lignite and peat, but the amount of fuel thus available is not as large as usual.

Foreign Freight Market Better; Rates Easier

The demand for steamers to carry coal to European ports, according to W. W. Battie & Co.'s coal trade freight report, is decidedly better than it was a week ago although freight rates are a trifle easier and during this period a number of steamers have been chartered at the rates quoted below:

To West Coast South American ports, rates are a trifle firmer and to West Indian ports are slightly easier to some destinations. While the charter of a few boats both to South American and West Indian ports is reported, orders are still limited to both destinations.

	Dec. 13, 1920	Dec. 27, 1920	Tons Discharge Daily
Malmo	$8.00 $8.50	$6.50 $7.00	1,000
Copenhagen	8.00 8.50	6.50 7.00	1,000
Stockholm	8.00 8.50	7.00 7.50	800
Gothenburg	8.00 8.50	6.50 7.00	1,000
Antwerp Rotterdam	5.00 5.50	4.25 4.75	1,000
Hamburg	Aboht 6.50	5.25 5.50	1,000
Fr Atlantic ex Rouen	5.25 5.50	5.00 5.25	700
Lisbon		5.00 5.25	700
Algiers	About 7.00	About 6.00	800
West Italy	About 7.00	About 6.00	1,000
Marseilles	About 7.00	About 6.00	1,000
Piraeus	9.00 9.50	About 7.00	1,000
Trieste/Venice	About 9.50	About 7.00	1,000
Port Said	8.50 9.00	About 6.50	1,000
Constantinople	About 10.50	About 7.50	500
Gibraltar	6.50/7.00	5.25 5.50	1,000
Teneriffe		5.00 5.50	500
Pernambuco	About 7.50	About 6.00	500
Bahia	About 7.50	About 6.00	500
Rio	6.50 7.00	5.25 5.75	750
Santos	7.00 7.50	5.50 6.00	500
Buenos Aires or Montevideo or La Plata	6.50 7.00	5.25 5.75	500
Para	About 7.50	About 6.00	500
Rosario	7.00 7.50	5.50 6.00	750
To Nitrate Range	About 6.25	About 6.00	500
Havana	About 4.00	3.50 4.00	500
Sagua or Cardenas	About 5.25	4.75 5.00	500
Cienfuegos	About 5.25	4.50 4.75	500
Caibarien	About 5.00	Aboht 4.75	500
Guantanamo	5.00 5.25	4.50 4.75	500
Manzanillo	About 6.00	About 5.25	500
Bermuda	About 5.00	About 4.00	500
Bermuda p. c. and dis. free		p. c. and dis. free	
Kingston	About 5.25	4.00 4.25	400
Barbados	About 5.50	4.50 4.75	500
St. Lucia	About 5.50	4.50 4.75	500
Santiago	About 5.00	4.50 4.75	500
Port of Spain, Trin	About 5.50	4.50 5.00	500
Curacao (free p.c.)	About 5.25	About 4.50	500
St. Thomas	About 5.00	About 4.25	500

All above rates are gross from charter

Coal Production Costs and Profits in Great Britain

Costs of production, profits and other statistics of the British coal industry for the first nine months of 1920 are given in the following table, recently compiled by the Mines Department:

	Three Months Ended Sept. 30, 1920		Three Months Ended June 30, 1920		Three Months Ended March 31, 1920	
Output:	Gross Tons		Gross Tons		Gross Tons	
Tonnage raised	59,222,000		58,144,000		62,057,000	
Mine consumption and miners' coal	5,969,352		5,883,268		6,376,122	
Tonnage disposable commercially	53,252,648*		52,260,732		55,680,878	
Costs of Production:	Amount	Per Ton Disposable Commercially	Amount	Per Ton Disposable Commercially	Amount	Per Ton Disposable Commercially
Wages	£ 69,908,316	26s. 3.06d.	£ 66,570,490	25s. 5 72d.	£ 63,220,756	22s. 8 50d ¶
Stores and timber	£ 14,563,512	5s. 5.64d.	£ 13,638,605	5s. 2.63d.	£ 12,758,171	4s. 6 99d
Other costs †	£ 6,689,601	2s. 6.15d.	£ 6,250,094	2s. 4.70d.	£ 4,569,566	1s. 7 70d.
Royalties	£ 1,690,734	0s. 7 62d.	£ 1,662,763	0s. 7.64d.	£ 1,747,653	0s. 7 53d.
Total costs	£ 92,852,163	34s. 10.47d.	£ 88,121,952	33s. 8.69d.	£ 82,296,146	29s. 6.72d.
Deduct proceeds of miners' coal‡	£ 381,274	0s. 1.72d.‡	£ 371,957	0s. 1.7d. ‡	£ 413,307	0s. 1 78d. ‡
Net costs	£ 92,470,889	34s. 8.75d.	£ 87,749,995	33s. 6.98d.	£ 81,882,839	29s. 4.94d.
Proceeds:						
Commercial disposals	£ 105,413,807	39s. 7.08d.	£ 95,658,036	36s. 7.30d.§	£ 96,260,541	34s. 6 91d.
Balance: ‖						
Debits						
Credits	£ 2,942,918	4s. 10.33d.‡	£ 7,908,041	3s. 0 32d. ‖	£ 14,377,702	5s. 1 97d
Number of workmen employed	1,186,946		1,178,614		1,168,659	
Tonnage raised per person employed	49 89		49 33		53 10	
Earnings per person employed	£ 58 17s. 10d.		£ 56 9s. 8d.		£ 54 1s. 11d.	

* Of the 53,252,648 tons disposed of commercially, 9,437,465 tons were shipped for export and foreign bunkers, mainly from South Wales and Monmouthshire, Northumberland and Durham.

† Management, salaries, insurance, repairs, office, selling and general expenses, etc.

‡ The proceeds of miners' coal, so far as it is supplied at special prices, are treated as a reduction of the cost of producing the coal disposed of commercially, and the deductions in the "per ton" columns have been calculated by dividing the proceeds of miners' coal by the tonnage disposable commercially.

§ On May 12, 1920, the price of coal sold for home consumption was raised as follows: (*a*) Coal for domestic use by 14s. 2 d. per ton; (*b*) Coal for industrial use by 4s. 2d. per ton.

‖ Out of the balance shown provision has to be made for depreciation, interest on debentures and other loans; capital adjustments under the Finance Acts and the profit to which the coal owners are entitled to under the Coal Mines (Emergency) Act, 1920.

¶ An advance in wages operated from March 12, 1920.

Fuel Control Cost U. S. $4,824,681

FUEL control during the war cost the Federal Government $4,824,681, according to the final report of the business manager of the Fuel Administration, made public in Washington, Wednesday, Dec. 29. This sum represents all expenditures, national and state, by the Fuel Administration from its organization in September, 1917, to June 30, 1919, when the administration virtually was disbanded.

Appropriations made for fuel control totaled $5,813,818 and Lawrence Mitchell, assistant business manager, who prepared the report, said there was a balance of $909,137 on hand on June 30 last year.

Expenditures by the headquarters in Washington totaled $2,706,479 and by the states $1,948,618. By far the largest sum was spent in New York State, the total being $212,012, while in New York City $51,675 was spent. Pennsylvania was the second state in the list of expenditures with $84,025, while Illinois was third with $66,849. In the New England States as a whole the cost was $99,812.

PRODUCTION OF COAL AT 192 mines in Indiana during the week ended Dec. 25 is reported as 449,264 net tons, as compared with 638,314 net tons the week preceding. These mines operated 58.52 per cent of full time, with lack of market responsible for 21.68 per cent of time lost. Of the remaining causes of lost time mine disability was responsible for 8.70 per cent, labor trouble for 6.66 per cent and car shortage for 3.82 per cent.

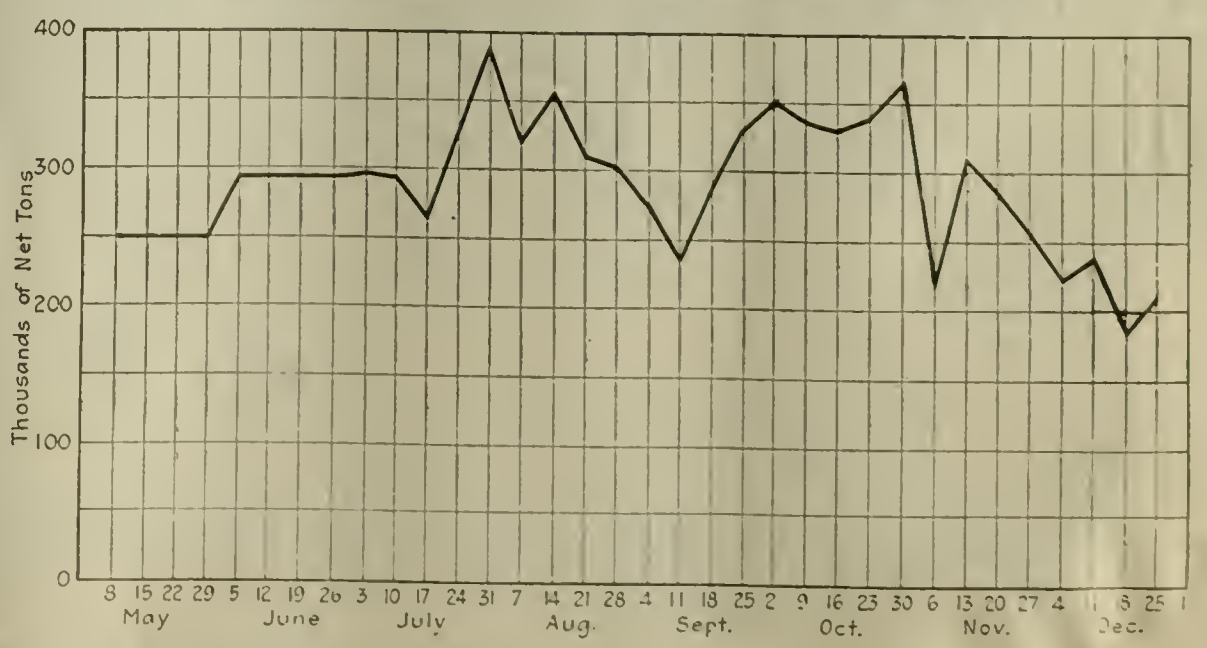
INCLUDED IN SUPPLEMENTAL ESTIMATES of appropriations required by the Bureau of Immigration, Department of Labor, during the fiscal year ending June 30, 1921, referred to the Committee of Appropriations of the House of Representatives Dec. 21, was one for $130,000 to be expended on the immigrant station at Ellis Island, divided as follows: For necessary alterations in power plant for substitution of oil for coal, and necessary storage tanks, $100,000; extension of coal hoist and furnishing new runway and handling apparatus (substitute estimate), $30,000.

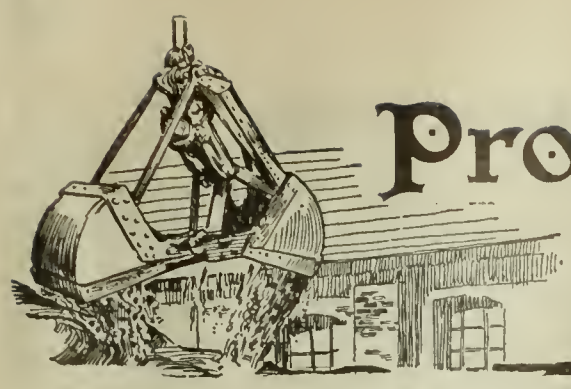
Export Dumpings by Ports

(NET TONS)

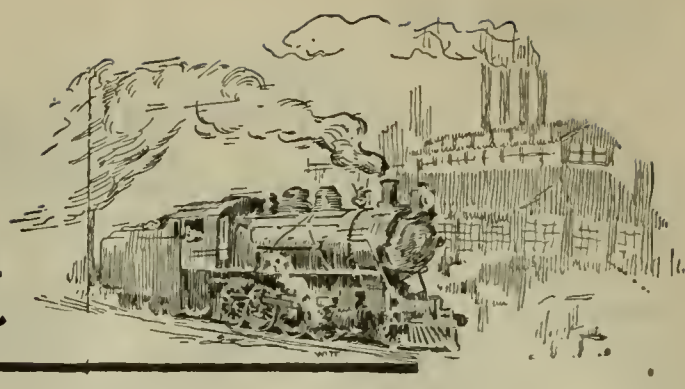
	Week Ended Dec. 25	Dec. 18
Philadelphia ..	7,000	45,000
Baltimore	32,000	59,000
Norfolk	204,000	189,000
Charleston	3,000	.....
Total	246,000	293,000

Export Coal Dumped at Hampton Roads





Production and the Market



Weekly Review

PRODUCTION of bituminous coal during the holidays continued at a high rate. Output in Christmas week was 9,725,000 tons, an average of nearly 2,000,000 tons a day for the five-day week, and New Year's week output approximated 8,000,000 tons, or at a rate of about 1,600,000 tons per working day. As for the last few weeks, very little spot coal has been moving either at home or for foreign account and the coal that has been shipped has been in fulfillment of contracts.

There is no interest in the spot market and prices are very weak, quotations ranging as much as a dollar below the free coal market of last April, immediately after the lifting of Government control of prices. Consumers with stocks of coal on hand, accumulated during the panic of last year and at high prices, are busy this week writing off losses in view of the contraction in value of the same coal.

Advisable to Place Small Contracts Now

Prices, in place of declining by 25c. jumps, have so nearly reached bottom that variations—all downward—are reported in 5, 10 and 15c. intervals. So little free coal is being sold today that the spot market is not a true index of the basis upon which large-quantity business can be closed. For this reason now is an excellent time for consumers with modest tonnage requirements to get a cheap supply.

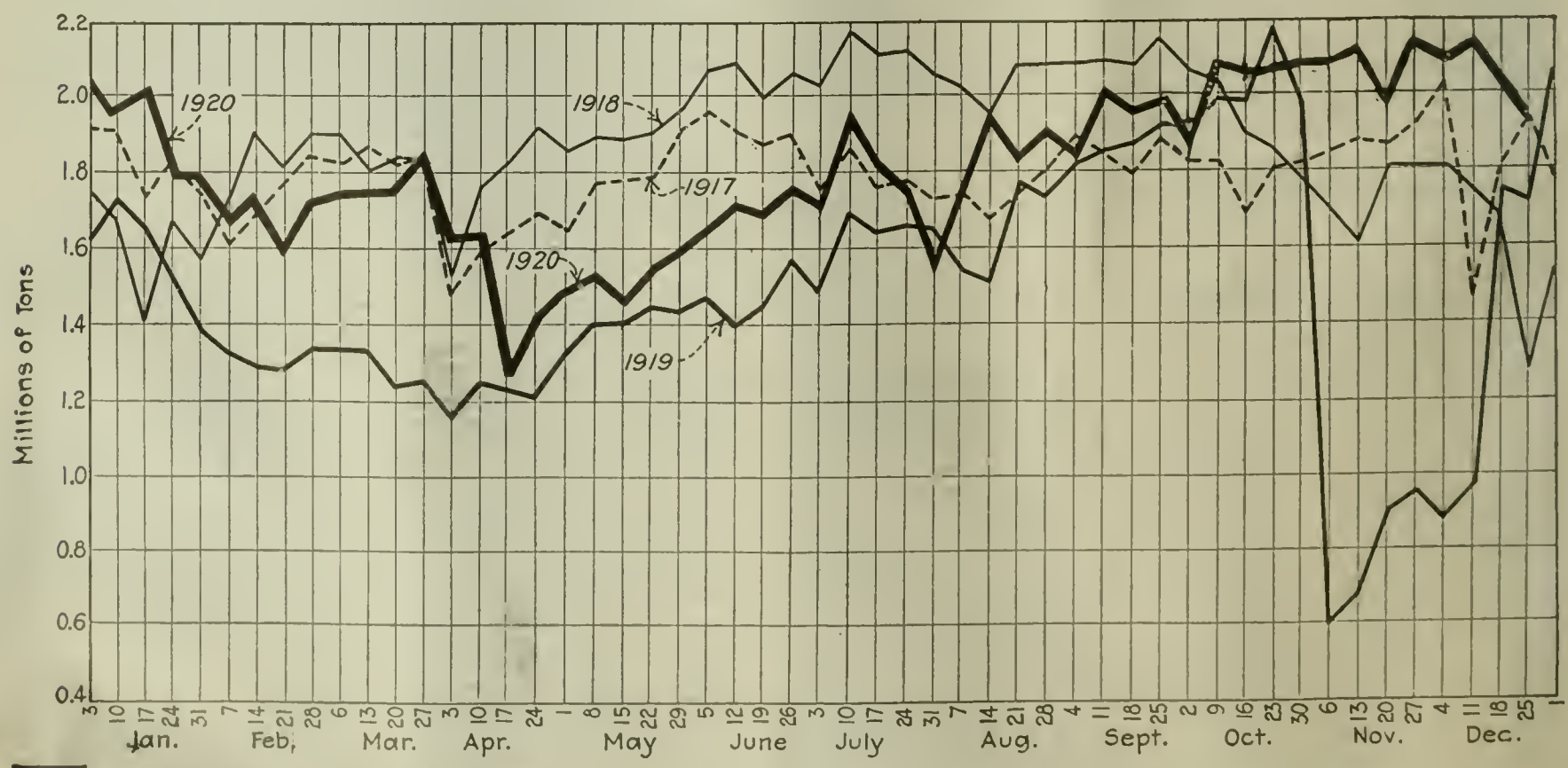
Despite the short week there were large additions to the list of mines reporting operations closed because of lack of market in the last half of December. That this list will continue to grow and that "no market" will shortly be the chief factor limiting output is made evident by reports of extensions of the industrial shutdown for the holiday period to include January. This is particularly true in the Middle West and in New England.

From now on interest will center on the contract market for next year, but it is not likely that consumers will be as much interested as the operators and shippers. The next sixty days will represent the most favorable period for buyers to close contracts—of course, with provisions for wage revision downward. Contracts in the East have been closed in the last two weeks at prices 25c. below those for the same coals entered into Dec. 1. The outlook now is for contract prices to be below those of a year ago, but there is no assurance that conditions will not change by April 1.

One factor that will permit the continuance of present or lower prices from some districts, as central Pennsylvania, is the abolition of wage bonuses to mine labor. This practice was more or less generally indulged in when prices were high, but it has been announced that it has been discontinued as of Jan. 1.

Production of anthracite continues good despite the

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

holidays. There is evidence of a break in the independent market, as continued mild weather has decreased consumption and production has been maintained at a high rate. There have been no changes in the company circular prices on prepared sizes and none is expected this coal year. It is reported that for the first time since the spring of 1919, Western agents of the anthracite interests are on the road and actively seeking business in the Middle West, particularly in Chicago.

BITUMINOUS

Holiday idleness cut the production for the week ended Dec. 25. According to the Geological Survey the output was 9,725,000 net tons, a decline of 2,430,000 tons from the figure for the preceding week. Christmas week was a five-day working period and the daily average of 1,945,000 tons mined shows that a high rate is being maintained. Production for the last week of the year was even further curtailed, the output being approximately 8,000,000 tons as indicated by preliminary reports of loadings. Many mines were closed down entirely from Christmas until after New Year's and some of them are in no hurry to resume business, as the present market holds no inducement for pushing production.

Car Supply and Load Movement Are Good

Good car supply featured operating conditions during the week ended Dec. 25. Of course the short week was a factor in holding down any losses from car shortage, even in some sections of the Middle Appalachian region where losses have been appearing lately. Movement of loads also was very satisfactory, as railroads experienced a considerable decline in general freight due to the industrial inactivity.

Labor shortage losses are at a minimum. So many industries have either suspended operations entirely or are going on short hours with reduced wages that former miners and unskilled labor are turning to the mines for employment. It is only a question of a short time until the saturation point will be reached. Already many applicants for work are being turned away from some of the Illinois and Indiana operations. Central Pennsylvania producers have abrogated the bonus system which was instituted last summer as a stimulus to production.

Low Spot Prices Force Out Produces of Poor Coal

Spot prices have dropped to and in some cases have even gone below production costs. This has forced the small, high-cost operations to close and means that consumers will soon find only "quality coal" on the market, as these temporary operations produced the poorest grades that were thrown on the market during the period of high prices.

Shipments are largely confined to contracts and only the best grades are finding ready disposition on the spot market. Reserve stocks, purchased during the "shortage panic," are being drawn on heavily and what little spot coal is purchased is on a day-to-day consumption basis only. Overseas demand is in the same category—little new business is being done for immediate delivery and charter rates as low as $4.75 were reported last week for Rotterdam and French Atlantic ports.

The following table shows the trend in the spot steam market (mine run basis, net tons, f.o.b. mines):

	Nov., 1919*	May, 1920	Aug. 5, 1920	Dec. 23, 1920	Dec. 30, 1920	Jan. 6, 1921†
Pittsburgh steam	$2.35	$4.00	$10.00	$3.25	$2.75	*$2.60*
Pittsburgh screened gas	2.35	4.50	12.00	3.75	3.25	*3.15*
Hocking	2.50	4.75	9.00	3.00	2.50	2.50
Franklin, Ill.	2.35	3.75	6.50	3.40	3.40	*3.00*
Indiana 4th vein	2.35	3.40	7.50	3.25	3.25	*2.75*
Eastern Ohio, No. 8	2.35	4.50	10.50	3.40	3.00	*2.75*
Fairmont	2.50	6.75	13.50	3.00	2.75	*2.40*
Kanawha	2.60	6.75	14.00	3.50	3.00	*2.80*
S. E. Kentucky	3.00	6.00	10.50	4.00	3.40	*2.90*
Western Kentucky	2.35	3.50	5.25	3.75	2.75	*2.60*
Clearfield	2.95	6.25	12.00	3.75	3.75	*3.25*
Cambria and Somerset	2.95	6.75	13.50	4.75	4.65	*4.35*
New River / Pocahontas	2.70 / 2.35	6.50	14.00	5.00	4.75	*4.50*

*Government prices.
†Advance over the previous week shown in heavy type, declines in *italics*.

Estimates of Production

From the Weekly Report of the Geological Survey
(Net Tons)

BITUMINOUS COAL

Total bituminous, including coal coked

	1920 Week	1920 Calendar Year to Date	1919 a Week	1919 a Calendar Year to Date
Dec. 11	12,853,000	525,371,000	5,800,000	431,091,000
Daily average	2,142,000	1,797,000	967,000	1,469,000
Dec. 18d	12,155,000	537,553,000	10,431,000	441,522,000
Daily average	2,026,000	1,799,000	1,738,000	1,470,000
Dec. 25d	9,725,000	547,278,000	8,621,000	450,143,000
Daily average	1,945,000	1,804,000	1,724,000	1,479,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (d) Subject to revision

ANTHRACITE

	1920 Week	1920 Coal Year to Date	1919 a Week	1919 a Coal Year, to Date
Dec. 11	1,915,000	62,939,000	2,120,000	65,594,000
Dec. 18	1,979,000	64,918,000	1,727,000	67,321,000
Dec. 25	1,626,000	66,544,000	1,856,000	69,177,000

(a) Less 2 days' production during first week of April, to equalize number of working days covered for the two years.

BEEHIVE COKE

United States Total

Week Ended Dec. 25c 1920	Week Ended Dec. 18c 1920	Week Ended Dec. 27 1919	1920 to Date	1919a to Date
280,000	333,000	323,000	20,554,000	19,349,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (c) Subject to revision.

Tidewater movement during Christmas week amounted to 645,000 net tons, according to the Geological Survey, a decline when compared with the preceding week's movement of some three hundred thousand tons. The coal moving to tide was destined as follows:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England	33,000	12,000	13,000	73,000	.....	131,000
Exports	.....	7,000	32,000	204,000	3,000	246,000
Bunker	59,000	3,000	9,000	46,000	.....	117,000
Inside Capes	.....	26,000	13,000	6,000	.....	45,000
Other tonnage	101,000	.....	.....	4,000	1,000	106,000
Totals	193,000	48,000	67,000	333,000	4,000	645 000

All-rail New England shipments via the five-rail gateways were 4,633 cars during the week ended Dec. 25, or 589 cars less than the movement during the preceding week.

ANTHRACITE

Hard-coal production reflected the shorter working time with an output of 1,626,000 net tons, as reported by the Geological Survey. Distribution of anthracite is progressing satisfactorily and while supplies are not heavy enough to permit any general stocking, all communities are now well taken care of. The Middle West is no longer apprehensive of a shortage, as receipts have been materially increased of late. All domestic sizes at company schedules find ready markets but some price concessions are necessary to move independent coals. The latter's steam product is being moved with difficulty at prices that in some instances are lower than the company figures.

COKE

Beehive coke production was greatly curtailed during the week ended Dec. 25, 280,000 net tons being the figure reported by the Geological Survey. This is a decline of 53,000 tons, compared with the preceding week. There is no demand for spot furnace coke and scarcely any for foundry, while consumers are taking no interest in contract figures. Connellsville quotations on the spot market are $5.25@$5.50 for furnace and $7@$7.50 for foundry per net ton at ovens.

Reports From the Market Centers

New England

BOSTON

No Improvement in Demand — Spot Sales Infrequent — Forced Sales Lower Spot Prices — Tidewater Movement Is Light — Anthracite Domestic Sizes Already in Better Supply.

Bituminous—The trade feels no appreciable change this week in the steam market. None of New England's industries has shown any improvement that would hold out the least encouragement. The newsprint manufacturers are a possible exception to this, but even in their case current consumption is being amply taken care of by deliveries on old contracts.

Receipts at the Hudson River gateways are being maintained remarkably, considering all the adverse conditions. It is convincing evidence that a larger proportion of daily shipments through the season were on yearly contracts than was generally assumed to be the case. Confiscations by railroads have practically ceased and it is to be hoped that what has proved to be a source of irritation has now been removed for a long time to come. Spot sales are much restricted. Pressure to move coal standing at the Philadelphia piers and the relatively low prices on coal carrying demurrage charges has some bearing on the lack of interest in spot deliveries all-rail but no very considerable tonnage is involved.

There have been vague rumors of a few buyers of quality grades from central Pennsylvania being urged to renew last year's contracts but these we have not yet been able to verify. Among some operating interests, there is a disposition to argue that spring opening figures should be no lower than present invoice prices where contracts are still in force, the ground being that it is not open to producers to agitate any change downward in the present wage scale. This, however, would seem hardly a ripe time to urge any such doctrine upon consumers in this territory who have stocks almost as large as those of the fall of 1918.

The holiday week has disclosed no price movement worth mentioning. In a few instances, there have been forced sales where figures as low as $2.35@$2.50 per net ton at the mines have been realized. Operators are turning and twisting with what contract business they have open to ship in the effort to avoid entering the market with spot coal until later in January, hoping inquiry will improve if only very slightly.

Tidewater movement is light. At Philadelphia there has been a small increase coastwise, but at New York there are reports of cargoes "on consignment" and at Hampton Roads dumpings have decreased notably.

Current prices on bituminous at wholesale range about as follows:

	Clearfield	Cambrias and Somersets
F.o.b. mines, per net ton	$2.50@4.00	$3.25@5.40
F.o.b. Philadelphia, per gross ton	5.45@7.15	6.29@8.70
F.o.b. New York, per gross ton	5.90@7.60	6.75@9.10

Pocahontas and New River are quoted $7.40@$8 per gross ton f.o.b. Norfolk and Newport News and at $10.75@$11 alongside Boston, Providence, or Portland.

Anthracite—Domestic sizes are now fast improving in supply. It is not so much that production has increased as the perceptible relaxing in demand both wholesale and retail. January figures are certain to show increasing movement to New England both by rail and water.

The Massachusetts Fuel Administrator, E. C. Hultman has publicly warned retail dealers in communities where prices are not justified to reduce these within a reasonable compass.

Tidewater—East

NEW YORK

Anthracite Situation Improving Slowly —Independent Quotations Dropping— Steam Grades Slump—Dull Bituminous Market—Movement Is Slow—Quotations Drop.

Anthracite—Conditions continue to improve. Supply is rapidly nearing normal. Demand remains strong but not urgent. A few weeks more of favorable temperatures will put the local market on a substantial basis. Most shippers believe the crisis is past and do not look for further trouble this winter unless transportation difficulties interfere with shipments. Weather conditions continue to play an important rôle in the situation.

The situation in the surrounding towns shows considerable improvement. Coal is badly needed to fill bins but no one is in want. The companies are distributing their tonnages as evenly as possible and are re-entering unfilled orders on their books. Shippers of independent coals are facing many cancellations because of the falling prices. Quotations for the larger coals are slightly below last week's figures—around $11—and there are some of the trade who venture the opinion that within the next 6 or 8 weeks independent coals will be offered at concessions from the company schedules.

Pea coal is the longest of the domestic sizes and hard to move. Independent product is quoted $8.50@$9 by some shippers. The bottom appears to have dropped out of the steam market so far as the independent coals are concerned. All sizes are long and quotations below the company schedules are heard. Buckwheat is $3.25@$3.75; rice, $2@$3, and barley as low as 75c.

Bituminous—The year ended with the market quiet. Local docks held heavy tonnages and there was said to be many cars on demurrage. The threatened strike of the marine workers did not have the usual effect of stimulating trade and boat owners said they saw no hurry on the part of consumers to lay in extra stocks.

Many of the smaller openings in Clearfield and other fields are closed down, the owners not being willing to sell their coal at prices, in some cases, below the cost of mining. Others are endeavoring to continue operations by abolishing the payment of bonuses to their workmen. These conditions are proving a benefit to the larger companies, giving them more help and a larger car supply. The line trade is active. Dealers are grasping the present opportunity to fill their bins.

In this harbor empty boats are numerous, while loaded boats are hard to move even at concessions. While it was reported that local firms had been quoted good coals f.o.b. Baltimore docks at around $5, quotations here were somewhat better. Local Tidewater prices f.o.b. piers were on the basis of the mine quotations, which ran about as follows:

Pool 9, $3.50@$4; Pool 10, $3.25@$3.75; Pool 11, $2.50@$3; Pool 34, around $3, and Pool 44, Sewickley vein, $2.50@$2.75. Pools 1 and 2, New River and Pocahontas coals, were fairly strong, with quotations ranging $4.75@$5.

PHILADELPHIA

Anthracite Demand Continues Strong —"Break" Is Looked For, but Not Yet Evident—Steam Sizes Give Trouble— Bituminous Buying Lightest in Years —Prices Unstable — Contract Opinion Changes—Coke in Little Demand.

Anthracite—The market has varied but little from conditions prevailing for the past month. There is still a strong consumer demand for all sizes, yet judged by the tonnage represented on dealers' order books it would not take very heavy shipments to satisfy them. The week just past held the coldest weather so far and this had a tendency to boom business for a while.

The preference as to sizes is still centered on stove and nut, with egg but little behind, and pea strongly called for. All dealers continue to urge shipments of the larger sizes and while they are still willing to accept pea, many do not seem to be particularly anxious about it. Some dealers report a growing demand for briquetted fuel and the

boulettes seem to have made considerable progress this season.

Throughout the trade generally there seems to be an air of anticipation as to when a "break" will occur. It is fully realized that the anthracite industry is the only one not affected by present industrial conditions and is still moving along at top speed, both as to price and production. The first sign would naturally be shown in the dropping of the independent prices, but it can be stated positively that there is not the least indication of this at the moment. Independents are bothered with their steam sizes, but the other sizes are as firm as they have ever been. It is believed there may be some change not later than Feb. 1 and perhaps earlier.

Even the big companies are puzzled at times to know where to place buckwheat. They have about gotten through without storing up to this time, but with the industrial conditions unimproved it will be a serious question in a few weeks.

Bituminous—The market is the quietest it has been for years. Buying has been extremely light the past week, for many plants that had been expected to resume after the holidays have continued their idleness. It is unsafe to say that prices quoted represent the market exactly, for the reason that they are usually the quotations of the reputable concerns who are endeavoring to keep their plants moving at a fair margin of profit. One frequently hears of figures much less and we are inclined to believe they represent small quantities or else are quotations of concerns enabled to work on a lower operating cost than the average. We have heard Pool 9 offered at $4.50, and other good steam coals, such as Pool 10, at $3.75@$4. Pool 11 has been offered freely at $3.25@$3.75. As an evidence of the disparity of prices we know of some quotations on Pool 10 as low as $3 and on Pool 11 at $2.50. On Fairmont coals, while some of the larger concerns are asking $3 there have been shadings all the way down to $2 and in one instance we know of $1.50 being offered. This latter must have been due to coal standing on demurrage.

Due to the unstable market the consumer is rapidly changing his mind as to contract prices. On this account there is little contract business being closed, as the idea of a contract on good coal is slipping from the $4.50-mark of a few weeks ago until large consumers are beginning to hesitate at a price of $4 net ton at mines. There is no doubt that the bituminous business is going through a process of great change and it may run right into spring before real stability is attained.

Coke—Prices are as unstable as soft coal. For 72-hour $7.25 has recently been quoted, with $6.50 for 48-hour and some quotations made less than these. On prepared sizes figures are about $7.50 for egg, stove, small stove and nut. Due to the lower prices of coke this fuel is beginning to regain something of the gas trade that was lost during the war.

BALTIMORE

Close of Year Brings New Low Price Levels—Many Forced Sales—Tidewater Movement Light—Export Rates Are Lower—Anthracite Receipts Are Good.

Bituminous—The old year was ushered out and the new year brought into being while the coal trade here was in a state of depression. Sales of soft coal were made during the closing week of 1920 on a low record basis for that year.

The poorest grades of steam coals, such as Pool 18, were sold here in a few cases for the actual freight charges. Best grade steam coals, such as run to Pools 9 and 71 were sold on a basis of $4@$4.25 a net ton f.o.b. mines. Pool 10 coal brought $3.50@$3.75 during the closing days of the year and Pool 11 was freely offered at $3.50@$3.75. Gas coals were in very poor call and were offering freely for medium to best coals all the way from $2.50@$3.50 a net ton f.o.b. mines.

The car supply picked up greatly because of the holiday lay-offs and the run was close to 100 per cent in many regions. At Tide there was little doing, the piers having closed for several days at a time recently because there were no ships astream to load.

The loadings last week to Christmas were only about 28,000 tons of export cargo coal, and the entire month up to Christmas recorded only 189,980 tons of export cargo coal, with 17,434 tons more taken as bunker fuel. Charter rates are still lower, Rotterdam and French ports having been quoted as low as $4.75.

Anthracite—The run of anthracite here continues good. The Christmas and New Year holidays have brought some break, but no more than expected. As a whole the situation is pretty good and no one is complaining of a shortage, although some are dissatisfied at not getting enough company coal or coal of a particular size. This, however, is the usual mid-winter ailment. Prices will now undoubtedly remain constant over the balance of the coal year.

BUFFALO

Bituminous Prices Apparently at Bottom—Coal Moved with Great Difficulty—Coke Is Slack—Anthracite in Better Supply.

Bituminous—Prices seem to be about as low as they can go, for a good many mines are running at a loss. How long they can do so is hard to say. Possibly the miners would accept some reduction rather than see work stop, for they could hardly get other occupation this winter.

Shippers are getting next to no orders, but are deluged with requests from the mines, asking them to make an effort to relieve the situation by selling some cars of coal on track. For a while the Buffalo yards were filled up with unsold coal, but that practice has now dropped off, as there was too much loss connected with it.

Cars are plentiful everywhere. They are still moving liberally in most branches of the carrying trade, as is shown by freight trains on the roads. At the same time they are accumulating at a good many points. Bituminous prices are just what one can get, but a fair figure is $5 for Youghiogheny gas, $4 for Pittsburgh and No. 8 lump, $3.50 for all mine run and $3 for slack. Allegheny Valley thin-vein mine run is a little stronger than Pittsburgh. To this add $2.51 freight for Pittsburgh and $2.36 for the Valley coal.

Anthracite—The winter is on, and people who had depended on natural gas are asking for coal, as the gas supply is low. Dealers are giving everybody coal, at least a load apiece and if that continues the shortage will not last long. The escape from a bad shortage has been much more narrow than even the best posted thought possible, for slow mining late in the fall cut the lead over the amount a year ago and things began to look bad.

The new source of shortage made it impossible to flood the Buffalo retail trestles at the close of Lake navigation, which has commonly been done, and it will be some time before coal is as plentiful as was expected. Independent mines are getting about $4 premium for their coal, though it is claimed that this section does not buy much of it.

Coke—The demand is exceedingly light, jobbers reporting that a single car now and then is all they have been selling lately.

All furnaces are running at a slow rate and some of them have big piles of coke on hand. Quotations remain at $7 for 72-hour Connellsville foundry, $6.50 for 48-hour furnace and $5.50 for off-grades and stock. Domestic sizes are also dull at $7.75 for beehive furnace sizes, $10.50 for byproduct stove and $1 for breeze, to which add $3.64 for freight to Buffalo except the stove sizes, which are mostly locally produced and pay only about 52½c.

Northwest

MINNEAPOLIS

Colder Weather Braces the Market—All-Rail Receipts Are Good—Calder Investigation Leads Buyers To Expect Even Lower Prices.

The turn of the weather has come, and this had the prompt effect of bracing the steam market, which was badly demoralized. How long it will endure is almost wholly a weather proposition. And in view of the general attack upon the coal trade, originating with the Calder Committee, there will be an unusually strong effort on the part of buyers to hold for lower prices.

So far as the dock trade is concerned, the prospects for lower prices are not good. On the basis of the known facts, the coal on the docks cost practically the amount asked, less only a moderate profit, and cannot be sold for less without someone taking a loss.

For the present, the market seems to be sustained on the basis of the ruling prices, $9@$12 for Eastern bituminous. On Illinois coal, there was quite a slump in a number of grades, and prepared sizes, Franklin County coal, sold around $5@$5.50 at the mine, to which must be added freight of $3.75, handling charges and profit. Screenings have been a drug on the market. With wintry weather prevailing there will be a much better support from the buying trade.

Just now the trade is experiencing the usual result of an attack upon the business. Buyers of coal are taking mine prices and assuming that they should be the local cost, despite full knowledge that there is a heavy freight charge to be added as well as other costs. It is likely to be kept up for some time, for the charges and countercharges keep the subject before the public. The latter is irritated over the advanced costs and is very ready to believe that the increases were wholly manipulated. Although every article has had to take an increased cost, due to heavier freights, coal seems to catch the brunt of the blame.

The new year opens with a fair prospect for a well supported market for a time, but is likely to be weakened within a month or two, as the demand falls off early on the more Southern fields and this means an additional supply of coal which is generally offered to the trade of the Northwest. So long as the car supply is sufficient and transportation is reasonably good, the chances seem to favor an early weakening of the steam coal market—in fact, of all coals from the all-rail fields.

MILWAUKEE

Wintry Weather Injects Life Into Coal Trade—Deliveries Freely Made — Liberal Receipts of All-Rail Coal — Coke Held Firmly.

A spell of sub-zero weather has injected considerable animation into the coal trade by stimulating local deliveries and increasing the demand from interior points. Orders are being filled without restriction, as stocks of all grades of coal are deemed sufficient to last until spring, under a fair volume of replenishment by rail. Indications are that, aside from an occasional zero wave, the winter will prove to be mild.

Anthracite is selling $17@$17.20, with an addition of $1 per ton for carrying-in service. There is a good inflow of Illinois and Pocahontas coal. The former is held at $11.25. Screened Eastern steam coal sells for $12.25 shoveled off. The Illinois coal now coming by rail costs about $2 less than the latter figure.

The import of Illinois coal is bound to increase unless the holders of Eastern soft coal meet the situation. Notwithstanding the fact that the bottom has dropped out of the coke market in the East, the byproduct companies here are charging $17.25 for this class of fuel, which is about $1.25 higher than the prevailing rate in Chicago.

Inland West

CLEVELAND

Dullness Characterizes the Ohio Coal Trade — Better Demand Looked for After First of Year — Anthracite and Pocahontas Prices Higher—Bituminous Unchanged.

Bituminous—The reopening of a considerable number of industrial plants and a better rate of operation in others, expected after the first of the year, provide a basis for an optimistic feeling.

The question of supply is no longer a problem in this district, as coal is coming in ample quantities. The car supply, although still below normal, is sufficient to meet all needs, especially as some of the eastern Ohio mines are now closed.

Retailers during the past week have received a multitude of small orders, stimulated somewhat by a brief period of cold weather. The domestic demand, however, is falling somewhat below early estimates.

Railroads are now buying quite heavily and at some eastern Ohio mines are taking a large portion of the output. Industrial and manufacturing plants that have definite orders to begin work on early in January are expected to come into the market soon for steam coal in considerable amounts.

Steam prices now range $2.60@$3.25 for slack, with lump coal $3.25@$4.50. Prices for slack are as low as $2.50. Cancellation of contracts goes on, complaints as to quality usually being seized upon as an excuse for evading acceptance of shipments.

Retail prices of domestic coal have remained practically unchanged but continued mild weather is likely to cause some softening, signs of which are even now beginning to appear.

Anthracite and Pocahontas—Anthracite continues to come in slowly and dealers are still behind in deliveries. Retail prices have been advanced from $15.30 to $15.45 for all grades while shoveled Pocahontas has been increased from $12.25 to $12.35. Screened grades are practically unobtainable.

Retail prices of coal delivered in Cleveland are:

ANTHRACITE — Egg, chestnut and stove, $15.45.
POCAHONTAS—Shoveled lump, $12.35.
DOMESTIC BITUMINOUS — West Virginia splint, $11.50; No. 8, Pittsburgh, $9@$9.30.
STEAM COAL—No. 6 and No. 8 slack, $8@$9; No. 8 ¾-in. lump, $9@$9.30.

Receipts of bituminous coal for the week ended Dec. 25 were very light. Industrial receipts amounted to 1,221 cars, domestic 471 cars.

CINCINNATI

Cold Weather Strengthens Domestic Demand—Little Trading on Spot Market—Operations Closed Over Holidays.

Unusual quietness, due mainly to the current holiday season, was in evidence during the past week. Very little trading, save that of filling contract orders and those for domestic fuels, which have been on file for some time, were reported.

Return of severe cold weather has tended to strengthen the demand for domestic. Presence of this cold spell and the low pressure of gas have caused a somewhat stronger demand for steam coals.

A number of the mines supplying the Cincinnati market have practically shut down until after the holidays. Sufficient coal is in the market and the railroads daily are better able to ship coal as a result of the improving car supply.

A large quantity of coal from the West Virginia fields which is received in the Cincinnati market by way of the Ohio River is daily being shipped by this route, the river being free of ice and navigation conditions being normal.

No change in the wholesale prices of coal quoted f.o.b. mines is noted in the prices following: Bituminous lump, $5.50@$6; mine run, $4@$4.25. While the demand for Pocahontas lump is still strong, no exact quotations have been received. Pocahontas mine run was quoted at $5@$5.50 for contract orders while quotations for this grade on the open market were around $5.

Retail prices, as quoted by dealers, delivered to the consumer were: Bituminous lump, $9.25@$10.50; mine run, $8.50@$9.25; smokeless lump and egg, $11.25; mine run, $10@$10.50; anthracite egg, $15@$16.25; domestic egg coke, $14.50@$15.

DETROIT

Limited Steam Demand Continues—Domestic Better with Colder Weather—Prices Weaken Further — Anthracite Receipts Inadequate.

Both steam and domestic are in light demand, though indications of a broader inquiry for domestic stock are noted. The depression that for some time past has pervaded industrial and business lines is making its influence felt in both divisions of the trade.

With a large proportion of the manufacturing plants closed for inventory and others being operated on part time, requirements have been cut to a very narrow limit. Quite a number of factories are receiving no coal except consignments that may be coming to them under long term contracts.

Wide price reductions that have been made within the last few weeks are apparently ineffective in awakening a more active buying interest, which reflects an unwillingness to tie up working capital until a clearer idea is obtained of the probable trend of business during the coming year.

Weather conditions and lack of employment have had a weakening influence on the domestic market. Until the last few days the weather has been comparatively warm, enabling domestic consumers to reduce consumption to a low margin. This has discouraged liberal buying by the retailers. Dealers are not yet able to get anthracite in adequate supply.

Coals from Ohio and West Virginia

mines are now selling on about the same price level. Domestic lump is quoted at the mines at $4.75@$5. Mine run is selling about $3.25 and nut and slack bring $2.75. Despite the lessened buying there is apparently no excess supply coming to Detroit as jobbers and wholesalers are taking no chances with consignment coal.

COLUMBUS

Weakness Still Characterizes the Trade — Steam Prices Lowest in Months — Lump Is Fairly Active—Production Reduced During Holidays.

Slack demand continues, especially for the steam sizes. With many manufacturing concerns closed down either for the holidays or indefinitely, consumption has fallen off to a large degree. Railroads are taking some tonnage but their requisitions are curtailed because of slack freight movement,

Reserve stocks have been built up to a large extent and there is no marked tendency to buy for the future. Slack is a drag on the market and extreme low quotations are heard. Slack sells $1.50@$2 while mine run is $2@$2.75.

Domestic trade is holding up quite well. Lower temperatures have stimulated buying and dealers are still in the market. Arrival of the recent cold wave stopped the wholesale cancellations. The retail trade is in a generally healthy state with prospects for a fairly good run of business during the early part of the year. There is now no scarcity of domestic and dealers are catching up with their old orders.

Retail prices are still on the downward grade. Hocking and Pomeroy lump retails $7.75@$8.50. West Virginia lump sells for $8.50. Pocahontas is still rather scarce although a larger tonnage is coming in and retails $10 @$11. Kentucky grades are selling around $8.50.

Production was reduced by the Christmas holidays as well as because of low demand. Quite a few of the larger mines were closed. Car shortage is still one of the potent causes for reduced output. Labor shortage is disappearing as miners are more anxious to work than formerly. It has been the rule that when business begins to slump the miner becomes more industrious.

The Southern Ohio Coal Exchange for the week ended Dec. 18 reports an output of 291,821 tons from the 386 mines reporting, with a capacity of 624,679 tons. Of the shortage, 161,803 tons was due to car shortage; 69,209 tons to labor shortage; 4,725 tons to a strike; 31,483 tons to mine disability; 10,342 tons to no market and 55,296 tons from other causes.

Prices at the mines of the principal coals used in central Ohio are

Hocking lump	$4 00@$5 00
Hocking mine run	2 25@ 2 75
Hocking screenings	1 50@ 2.00
Pomeroy lump	4 25@ 5 00
Pomeroy mine run	2 25@ 2.75
Pomeroy screenings	1 50@ 2.00
West Virginia Splints, lump	4 25@ 5 00
West Virginia Splints, mine run	2 50@ 3 00
West Virginia Splints, screenings	1 75@ 2 25
Pocahontas lump	4 50@ 5.75

MIDWEST REVIEW

General Resumption of Industrial Activity Is Postponed—Many Mines Closing Because of Low Prices — Poorer Grades Reduced Further.

The coal market is still quiet. In the early part of the week, the Middle West experienced a cold wave but it was of such short duration that its effect was not felt on the coal market. Prices on high grade domestic such as Franklin County and Indiana Number Four remain firm but coals from other places are being reduced. There has been no change for the better in the steam market and it is getting to be a very serious problem as to where to move the poorer grades.

The industrial situation is worthy of note. A few weeks ago every one thought that industries on the whole would start up again shortly after the first of the year. We are now advised that a large number of factories who had planned on opening after the holidays will remain closed all during January and perhaps February. The pace has again been set by the Ford Motor Co. Early in December it was said that this factory would be closed only during the holidays, but have just been advised, on very good authority, that they would remain closed until Feb. 10.

The writer had occasion a few days ago to personally interview a number of factory owners in the Middle West. The prevailing impression obtained from these interviews was uncertainty on the part of every one. No orders are coming in and prospects for orders are light, therefore, no industrial activity is planned until orders are received and until the buying public once more gets back on the job. This uncertainty has permeated right down through the ranks so that factory labor now realizes that the high wages and bonuses prevailing a few months ago cannot continue. It is a wide-spread opinion that when it will become necessary to lower wages, but little opposition will be encountered from labor.

The attitude of the buying public toward the coal man is now somewhat changed. The average purchasing agent, who buys steam coal in large quantities, now believes that the coal man has done his part in reduction and consequent readjustment. Coal in some cases is now being sold at prices below cost, but that this is an unhealthy condition is not denied. Operators very largely, are realizing this and are closing their mines rather than operate and sell their product at a loss.

Railroads are in a position to supply mines with far more cars than they can use and coal is being moved through to destination promptly and satisfactorily. December freight tonnage for practically all of the railroads will prove to be abnormally light.

How long this period of inactivity will continue is a question that is engaging the best brains in this part of the country. There is one thing sure and that is that the public is anxious to see a renewal of industrial activity just as soon as it is possible and it is thought that there will be a buying rush and strong propaganda for renewed industrial activity on receipt of the faintest encouragement.

Current prices are as follows:

Southern Illinois (Franklin, Saline and Williamson Counties):	
Prepared sizes	$3.50@ $5 00
Mine run	2 75@ 3 25
Screenings	2 25@ 2 75
Central Illinois (Springfield District)	
Prepared sizes	$3 25@ $4 25
Mine run	2.00@ 3 00
Screenings	1.50@ 2.25
Northern Illinois:	
Prepared sizes	$4 00@ $4 75
Mine run	3.25@ 3.75
Screenings (washed)	2.75@ 3.25

Indiana (Clinton and Linton, Fourth Vein):	State	Outside State
Prepared sizes	$3.45	$4.00@ $4 50
Mine run	3.20	2.50@ 3.00
Screenings	3.00	2.00@ 2.25

Indiana (Knox County, Fifth Vein):	State	Outside State
Prepared sizes	$3.25	$3.25@ $4.50
Mine run	3.00	2.00@ 3.00
Screenings	2 80	1.50@ 2.75

Pocahontas and New River:	
Prepared sizes	$5.25@ $6 00
Mine run	4.25@ 5.00
Hazard and Harlan (Southeastern Kentucky):	
Block	$5.50@ $6.50

ST. LOUIS

Warm Weather and Increasing Overproduction Gradually Wrecking Market —Steam Sizes Impossible to Move— Domestic Demand Easy.

A few days of cold weather helped the local trade a little in domestic sizes, but the market keeps on slipping. Steam sizes are down below cost, and the demand both locally and for outside shipments continues to diminish. Chicago shipments are almost unknown and nothing moves to the Northeast market that nearly all local operators were catering to three months ago.

The Northwest continues to take some domestic tonnage and a little moves up the valley, but in size it is a huge disappointment. Railroads are doing fine in helping with storage coal. The Missouri Kansas & Texas R.R. has its capacity in storage, and other roads are nearing theirs.

In the Standard field commercial mines get from one to two days per week. No-bills are on hand every night. Cars are plentiful and movement good. Somewhat similar conditions prevail in the Mt. Olive field with a little better working time.

In the Carterville field a few mines are idle for "repairs." Nearly all producers have no-bills every working day. This field is far ahead of the others in finding favorable markets and for the most part in nursing them for times like the present. Railroad tonnage is good.

The day of reckoning is here for operators who "flunked" on contracts and regular customers last summer and fell for the joys of temporary high prices. Mines are idle with lost markets as bitter enemies, and little hope of anything in the future.

Circular prices are still maintained, with a few exceptions, in the Carterville and Mt. Olive fields. The Duquoin and Standard fields lead in the effort to

see who can give the most for the least. Prices f.o.b. mines range as follow:

Carterville lump, egg and nut	$4.00@$4.75
Carterville mine run	2.75@ 3.25
Carterville screenings	2.00@ 2.50
Duquoin lump, egg and nut	3.25@ 4.25
Duquoin mine run	2.25@ 2.75
Duquoin screenings	1.50@ 2.00
Mt. Olive lump, egg and nut	4.00@ 4.25
Mt. Olive screenings	2.00@ 2.25
Standard 6-in. lump, 3x6 egg	3.25@ 3.75
Standard 2-in. lump, 2x6 egg and nut	2.50@ 3.00
Standard mine run	2.25@ 2.50
Standard screenings	1.15@ 1.50
Carterville rate to St. Louis	$1.52
Duquoin rate to St. Louis	1.40
Mt. Olive and Standard rate to St. Louis	1.35

St. Louis retail prices, effective Jan. 1, were reduced 75c. on Carterville, 50c. on Standard, and 25c. on Mt. Olive, while gas coke dropped $2 a ton and by-product $1.

CHICAGO

Spot Purchases Very Limited — Stocks Are Entirely Adequate — All Coals Offered in Excess of Demand.

Those having coal for sale are not trying to dispose of their product in Chicago as the whole situation in this city today is most unsatisfactory. The spirit of uncertainty which has prevailed all through the Middle West appears to be intensified in Chicago and but few companies are making any purchases.

Dealers have more stocks than they want and are being offered good coal every day at reduced prices, as some operators are still following the mistaken policy of shipping their coal on consignment. This has lead to some coal being held on demurrage and as this is a most expensive proposition, it can easily be understood how it affects prices to the public once shipments begin to draw demurrage.

Eastern coals continue to flood the market and it is a common thing to have smokeless as well as good splint coal from West Virginia go begging.

Prices of hard coals continue to be fairly firm although there have been some signs of weakening. There is no shortage of anthracite in Chicago now, as Western sales agents of some of the Eastern houses are looking for business.

South

BIRMINGHAM

Coal Market Subject to Usual Holiday Dullness—Good Movement of Contract Coal—Prices Are Unchanged.

The coal trade is reported as exceedingly dull, with very little demand. Inquiry tends to indicate that lower quotations will be in order after the first of the new year, which will probably have the effect of stimulating the market for steam fuel. Consumers evidently expect further price concessions and are remaining out of the market as far as possible to await developments. Unless the demand for commercial coal picks up considerably in the near future the influence of the heavy production now being maintained will have a tendency to cause a further slump in price schedules, which have been practically unchanged for the past several weeks.

Owing to the large tonnage covered by contract agreements the movement continues steady and heavy and it will require pretty regular operations at contract mines for several months to come to properly care for these contract obligations.

Domestic operations have ample orders in hand to warrant maximum schedules through to April 1 when conditions of the industry will probably warrant stability of prices and producers will be in position to take on contracts for the new coal year.

Reports from the coal fields are to the effect that many commercial operations are yet idle, the mine workers not having returned to their duties as yet following the Christmas holidays, but full working forces are expected by the first of next week. Output for the week ended Dec. 25 shows a heavy loss in tonnage compared with the preceding period, as most of the mines operated only four days and crews were normal during that time.

LOUISVILLE

Demand Dull for All Grades—Prepared Sizes Showing Up Better as Result of Cold Weather — Forced Sales at Low Figures.

Following colder weather, demand for domestic improved a little. However, orders for most part are for ton lots, and many buyers would prefer taking half-tons if they could, figuring that lower prices will be available later.

Retailers are out of line on prices, and some of them admit it. Some are asking $11.50 for eastern Kentucky lump, which can be had at mine prices ranging from $4.50 a ton upward carrying a freight rate of $2 or less. New concerns are springing up like mushrooms, and cutting the present quotations in order to get ready business.

Prices at the mines are weaker, as industrial demand is very dull, and railroads and public utilities are not buying. Cincinnati and Ohio appear to be overloaded. In fact, prices South and West are better today than East and North. Movement from eastern Kentucky over C. & O. rails eastward, is moving for less money than the same grade of coal coming to Louisville and beyond over the L. & N.

Quotations received show: Lump, Hazard, $4.50 and upward; Harlan, $5 @$5.25. The average eastern Kentucky field price on lump is very uncertain, being around $5. Mine run coal is quoted $3@$3.50; screenings, $2@ $2.50. Some eastern Kentucky screenings selling in competition with West Virginia have been offered at $1.75 on the Cincinnati market.

It's hard to figure a market today, as it is not a question of what the mine is asking, but what it is forced to accept, and on spot coal and cancelled shipments the operators are taking some very low figures, and the low figures are the ones that are remembered.

West

DENVER

Cancellations Continue, but Colder Weather Brings Steadier Market — Production Declines.

Colder weather has brought a more steady market, but cancellations of orders by retailers and refusal of jobbers to accept contract shipments is not yet ended. The output for the week ended Dec. 18 shows 10,961 tons lost through "no market" conditions. Production was 226,149 tons of a possible full time output of 272,376 tons, equal to 83.2 per cent of mining activities. Uncertainty of retail markets caused some of the loss.

The previous week had a "no market" item of 4,591 tons, and the week prior to that 3,680 tons. Domestic coal prices are tightening a bit and steam grades show slight reductions at the mine, but no change on the market.

Trinidad bituminous coking steam dropped from $3.50 to $3@$3.25, f.o.b. mines. Denver dealers were stocked with the old shipments, and the decline came before they had disposed of all old stocks.

Straight bituminous steam remains $2.50@$3, retailing at $6.75, while lignite steam continues at $2.40 at the mine. Routt bituminous lump is $6.50, retail $13, while Rockvale lump is $6, and $11.50 retail. Although there is only a difference of 50c. in the mine price, the retail difference is represented in freight charges.

Bituminous lump in the Trinidad district was $5.50, and the advance by the Colorado Fuel and Iron Co. to $6.50 at the mine conforms to the general price in the district.

Southwest

KANSAS CITY

Mine Prices Firm — Production Curtailed by Holidays — Cold Weather Stimulates the Trade — Retail Prices Are Lower.

Conditions in the Southwest coal market remained practically unchanged last week. Production was about equal to the demand. Colder weather stimulated buying and checked any further decline in mine prices.

The usual holiday labor idleness cut into the production somewhat, but this was not noticeable because of the easy market situation.

Operating conditions were good, both labor and car supply being adequate.

Dealers are working off old stocks in an endeavor to start the new year with current priced coal. There has been some recession in the retail prices for coals of the higher grades, such as Arkansas and anthracite, and the lower temperature has been reflected in a better call from domestic consumers.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Demand Diminishes Further—Industrial Consumption Is Light — Spot Prices Slightly Easier—Mild Winter Cuts Domestic Needs.

There has been a further slight decrease in demand for coal, but there was not room for much of a drop as demand had already become very light. Consumers who only a short time ago were anxious to obtain extra coal for stocking purposes are now indisposed to stock, not so much from lack of confidence in the coal market as from the change in industrial conditions whereby they are doubtful whether they will need a great deal of coal during the remainder of the winter.

Many industrial plants were practically closed during the last week of the year, including a large number of the independents in the steel industry, while the Steel Corporation, which is not a buyer of coal, has been running practically full, and at a better rate than a couple of months ago.

Demand for gas coal keeps up moderately well but offerings are such that the premium on gas coal over steam is somewhat reduced. Demand for byproduct is very light. The spot market is quotable at about $2.50@$2.75 for steam mine run, $3@$3.25 for screened gas or byproduct.

CONNELLSVILLE

Unprecedented Market Dullness—Production Much Curtailed—No Additional Contracting—Furnace Prices Recede Further.

There is no demand for spot furnace coke and scarcely any for foundry, while consumers are taking no interest in contract coke. The market could hardly be duller than it is. Certainly it never was so dull on this date in the year, as the Christmas holidays usually give the market at least a slight upturn and make the situation interesting.

Prices do not recede as much as would be expected in view of the lightness of demand, and that fact is ascribed to there being a new condition among the operators. Formerly, when conditions became unfavorable some of the operators, if not all, were desirous of operating in order to maintain their credit. At this time, on account of the recent large profits, all producers are very comfortably fixed financially and are quite willing to go through a period of idleness. Production has been curtailed week by week until it is now at a very low rate. Until last week the furnace oven production showed an advancing tendency, on account of the Steel Corporation producing more coke, but now even the furnace oven production is decreasing as so many of the independent steel interests have blown out blast furnaces and do not need as much coke as formerly.

There has been no additional contracting for furnace coke, and it does not look as though there will be. Contract business already reported amounted to something like 75,000 tons a month, for the first half of the year, generally at a ratio of 5 to 1 against basic pig iron, which is likely to open January with a $30 price, whereby the coke would be billed at $6. The spot market is quotable at $5.25@$5.50 for furnace and $7@$7.50 for foundry, per net ton at ovens.

The *Courier* reports production in the Connellsville and lower Connellsville region in the week ended Dec. 25 at a decrease of 33,900 tons, furnace oven production being 125,990 tons and merchant production 38,780 tons, a total of 164,770 tons.

CENTRAL PENNSYLVANIA

"No Market" Losses Cut Production—Cars Are Plentiful — Bonus System Abolished—Spot Market Quiet.

Coal operators are optimistic despite the greatly reduced prices. Some contend that coal has reached the low level and assert that there will be a rally after Jan. 1, when cold weather and the predicted revival of industry creates a bigger demand.

All the mines are well supplied with men and many operators could spare some were it not for the difficulty of getting them back again in case business picks up. Beginning with the new year, the bonus allowed miners will be dropped by all operators in the district. This will effect quite a large saving to the operators.

With practically no new orders for coal during the week ended Dec. 25, car supply far exceeded the demand. About the only mines shipping coal at present are those with big contracts. No new contracts are yet being made.

Prices for the past week ranged $3.25 @$4 at all the leading mines. In a few instances, coal was sold as low as $2.50 but only in small quantities where cars were loaded and on track.

EASTERN OHIO

Production Declines With Holiday Idleness—Spot Prices Recede—Lakes Contracts Being Negotiated.

Production for week ended Dec. 25 is estimated at 340,000 tons, which is little better than 50 per cent of capacity for a full week's operation. In addition to being a five work-day week because of the Christmas holiday, operating time lost account of labor shortage during the week amounted to 15@20 per cent. Car supply averaged around 68 per cent for all loadings and 50 per cent for commercial.

There are a few mines down account "no market," those being certain operations without screening facilities and turning out strictly mine run, for which the demand has been considerably less than for other grades. It is not expected that this situation will continue or be increased to any extent as an improvement in demand is anticipated. Some buyers of Lake coal for the Northwest are now coming into the market and negotiating for contracts on next season's supply. Operators express the opinion that as these negotiations are some six weeks earlier than usual this fact when it becomes generally known will have a tendency to stimulate local buying for present and future needs.

The holidays, accompanied by further curtailment in industry, has developed greater apathy in the demand, resulting in some spot coal being available at the following prices, which are slightly under those of last week; slack, $2.50; mine run, $2.75 and some lump $3@$3.25. However, on orders for future delivery or large quantities and contract coal, price range is, mine run and slack $2.75@$3.25 and lump $3.50@$4.25 f.o.b. mines. Domestic lump is $4.50@$5.

UNIONTOWN

Demand Still Falling — Operations Curtailed Over Holidays—Much Coke on Track.

Demand for both coal and coke seems to be falling to a greater degree each day. That situation is especially true of furnace coke which has no market at all at any price. While unconsigned cars in substantial numbers are on many sidetracks, neither operators nor their jobbers are able to find a buyer. Most of them "don't need the money," and the tonnage being on private tracks is not piling up demurrage charges. Therefore, those who have loads of coke on track have shown a disposition to hold cars until they secure their price for it.

Some few well-informed operators are holding the opinion that the shortage talk of last summer must bear its share of the responsibility for the extreme dullness of the present market. The panicky talk resulted in many consumers buying huge surplus stocks, even at the high prices. In many instances the surplus stocks cover needs of big consumers for the entire winter and for that reason they are not in the market for tonnage at any price.

Operators here seized upon the Christmas holiday to extend the curtailment policy. The holiday lay-off in many instances was extended into several days without complaint from the men. The Greek Christmas will be celebrated next week and it is expected that most operations will not do much until after that event has

passed. That will give the regions practically a two weeks' period of more restricted production than has prevailed in several years.

Coal is quotable at $2.50@$2.75 here but the market continues off and much difficulty is encountered in disposing of any tonnage.

FAIRMONT AND PANHANDLE

Many Operations Suspended Over New Year's — Demand Is Dull — Prices at Low Levels—Holiday Production Losses Are Heavy.

Fairmont

In the face of a steadily declining demand there was a general tendency among many companies to close down until after the first of the year. It was announced in many cases that there would be no resumption of operations until Jan. 3 for operators were of the opinion that there would be few orders on hand until that time. Low prices were determining factors in leading to a suspension of operations over the holidays, taken in conjunction with the fact that there was at least a 50 per cent decrease of contract orders covering the holiday period.

There were at least 45 mines on the Monongah Division of the B. & O. without orders during Christmas week, as well as a large number on Scotts Run and Robinson's Run in the Monongalia field. With coal at $2.35@$2.40 it was impossible for producers to dispose of their spot coal at a profit. Pool 44 coal was entirely out of the market, in so far as the spot demand was concerned. While low-sulphur coal was quoted at about $3 a ton there was little of it available.

Cars were hardly as plentiful as they had been during the preceding week on the B. & O. at least, yet there was little idleness at the mines on that road until about Thursday. By noon Thursday most of the mines in northern West Virginia were closed down for Christmas.

There was a marked tendency among some of the Eastern trunk lines to reject fuel on the plea that it was of inferior quality, operators declaring that was simply a part of an effort to secure lower prices.

Northern Panhandle

There was the usual light loading during the holiday season, beginning about the middle of Christmas week. Before the usual suspension, however, mines were not able to obtain a full car supply except from the Pennsylvania. On the B. & O. the supply was exceedingly short, mines having a placement not over 40 per cent of mine rating.

Demand for spot coal was largely at a standstill. As nearly as such prices could be determined mine run and slack were about $3. Even screened grades could not be sold at more than $3.25@$3.50. While few mines in the district were in idleness because of "no market" yet it was considered highly probable that the ability to continue daily operations was doubtless due to the usual light loading during the holiday season.

Middle Appalachian

LOW-VOLATILE FIELDS

Production Curtailed—Holiday Idleness Closes Mines—Demand Very Weak but Little Free Coal Sold—Contract Shipments Absorb All Production.

New River and the Gulf

December ranked as one of the worst months of the year from a transportation standpoint in the New River district. Car supply was unimproved in the week ended Dec. 25. Placements were not sufficient to move even the light tonnage required on the present sluggish market, being entirely too small for contract shipments alone. Production loss was all the more pronounced by the holiday shut-down.

Eastern markets secured the bulk of production, Western points manifesting very little interest in the New River product. Mine run remained at $5, domestic sizes $5.50@$6.

Spot business was lacking, but operating conditions would have made immediate delivery impossible. Contract business was not being curtailed to any great extent.

Between the shortage of cars and a short week, Gulf production in the week ended Dec. 25 was much curtailed. During the four days of operation, the car supply failed to average 50 per cent, the scarcity being nearly as marked on the Virginian as it was on the C. & O. Many contract orders remained unfilled so that Gulf mines were losing ground at a time when there was little or no spot demand. Current quotations averaged $5 a ton.

Pocahontas and Tug River

As mines in the Pocahontas region were not operated more than half of the week ended Dec. 25 there was a further reduction in the output. Even with the shorter working time there would have been a larger production had cars been more plentiful. A placement of 70 per cent by the N. & W. was wholly inadequate to fill contract orders so that the car shortage made a material difference, notwithstanding the fact that the spot market was dull.

Very little coal was being shipped to Western markets. On the few spot sales made mine run ranged $4.50@$5 with domestic $1 in excess of these figures.

While cessation of operations at mines in the Tug River field during the latter part of the week ended Dec. 25 made cars less necessary, nevertheless, a shortage still existed. The supply of empties was still limited to 60 or 70 per cent. Of course, Friday brought an end to operations for the week, some mines taking the opportunity presented to close down until after New Year's.

There was need of more equipment in order that mines might have kept contract shipments going more regularly for that kind of business was not much affected, although a few contracts made at higher figures during the peak of prices were being cancelled.

Whatever spot demand there was came largely from Eastern markets and even this was very feeble. The average quotation on mine run ranged $4.50@$5. Egg and lump were in somewhat better demand and were quoted around $6.

HIGH-VOLATILE FIELDS

Production Declines With Poor Market and Holiday Losses—Mines Closing Till Jan. 1—Prices Weaken Further—Car Supply Still Inadequate.

Kanawha

A number of operations have closed, not only over the holidays but until market conditions justify a resumption of work. Cars were still scarce, however, for those mines which continued operations, being estimated at 50 per cent of normal for the week ended Dec. 25.

The usual holiday cessation of buying, combined with the prevailing weak demand, further depressed prices, $3 for mine run being the top of the market, with slack $2.50@$2.75 and domestic sizes $5.50@$6. Numerous contract cancellations were still being received. Tidewater shipment was largely confined to contract. Western movement was fair:

Logan and Thacker

Several sales agencies in Huntington have shut up shop until such a time as there may be enough demand to justify their reopening. The holiday sluggishness in the market augmented the general stagnation of demand, which was not offset by many Logan operations closing down over the holidays. In the four days working time there was a slightly better car supply for the week ended Dec. 25, yet it is doubtful if the week's run of cars averaged over 50 per cent.

Shipments were largely on contract, many cancellations were being received and spot sales were very few, steam being sold $3@$3.25, and screenings $2.50.

Mingo mines were less affected by general market conditions. More plants which had been closed in the strike zone were getting ready to again produce coal, while other mines already in operation were adding to their working forces. Spot business was rather scarce but orders on hand were sufficient to insure operation for some time to come, especially since mines were just beginning to catch up after the enforced idleness due to the strike. The car supply was favorable to large production, as Mingo mines appeared to have first call on empties coming from western interchange points on the Norfolk & Western R.R.

Due to the presence of Federal troops, efforts to stop non-union miners from working were at a minimum. Contract obligations were being well filled and the few spot sales that were made went on a basis of $3.25 for mine run. Contracts were holding very well.

NORTHEASTERN KENTUCKY

Car shortage and dull market conditions caused heavier production losses during the week ended Dec. 25. Of the total loss of 56 per cent, car shortage caused 45 per cent. Some of the mines closed down early in the week until after the first of the year, owing to prevailing dullness in the market and to observe the holidays. Prices were hardly sufficient to justify operation of the higher-cost mines, with steam $3@$3.50 and slack down to $2.

Demand for domestic was somewhat stimulated by colder weather but steam grades were a drug on the market. Cancellations continued to be frequent and further contributed to the general inactivity. Gas and byproduct sold a little more readily than steam coals.

VIRGINIA

Aside from the customary idleness over the Christmas period, losses were running light and production heavy. Car service conditions were fairly satisfactory and the labor situation was excellent. Combined losses for the week did not exceed 35,000 tons.

Slackening of operations at snowbird mines is not taken seriously as these mines do not ship coal on a competitive basis. The larger producers are running full time, with spot prices steady at $3.50@$4.

Middle West

WESTERN KENTUCKY

Production Declines With Holidays—Both Steam and Domestic Demands Are Weak, but Prices Are Unchanged.

As a result of Christmas some of the mines are down and production has eased off slightly. Prices are a little steadier. Demand for prepared sizes is expected to improve if the present near-zero weather continues a few days.

Jobbers and producers say that one reason for the present slow movement of prepared sizes is that in many instances retailers have not reduced prices in conformity with mine reductions, which has made the public hold back. This is resulting in markets being unable to accept any great amount of prepared coal. Industrial buying is very light as a whole, and public utilities are overstocked. Railroad buying is also light.

It is believed that after the first of the year, regardless of weather conditions and movement of prepared sizes, there will be a better demand for steam coal, as various plants will then be running low on coal, and will have to start buying for replacement.

Principal quotations show the western Kentucky field average for the week ended Dec. 25: Prepared sizes, $5.35; mine run, $3.35; screenings, $2.70. Most of the sales showed lump, $4.25@$5.25; mine run, $2.75@$3.75; screenings, $2.50@$3.25. It is reported that the quotations on prepared sizes this week are $4.25, but some mine run is offered at $2.50, and screenings can be had around $2.25 and up.

DUQUOIN

Good Production Still Maintained—Labor Is Plentiful—Market Is Quiet—Prices Steady.

Mines are still working about 85 per cent of full time. However, there is nothing in sight to insure a continuation of this condition. No mines are reported as having shut down on account of market conditions as yet. The output is rather small this week, largely due to the holiday season, many of the miners laying off.

Labor conditions are unusually good and many men are reported on their way to the southern Illinois fields from industrial centers where factories and plants are closing down. One mine in Franklin County had seventy-five men and boys apply for employment but were unable to use any of them. Most of the men were from the northern industrial centers. It is predicted that by the first of April the mines will have had to turn out many of their men.

Prices during the week remained the same as last week with scarcely no more demand noted even with the cold wave and snowfall. Screenings were plentiful and were quoted $1.50@$2.25; lump, $4@$5; mine run, $3.50@$4.50.

INDIANA

Steam Prices at Bottom — Domestic Weakens—High-Cost Mines Closing—All Demands Are Sluggish.

Prices on industrial grades have reached the lowest point in several months. The downward trend on domestic has not been as marked as the drop in steam price, but there have been reductions in the prices the Indianapolis consuming public have paid for coal in the last few weeks.

Few mines have storage facilities, and with the lessened demand for steam coal and the continued call for domestic, operators have been hard put to dispose of steam sizes. The good demand for domestic has made it possible for them to make up at least part of their losses.

Within the last two weeks, steam prices have dropped $1 a ton. Mine run is quoted $3 at the mines, and an offer of a quantity of screenings at $1.75 has been made. The price has hovered at $2 for several days. Mine run coal from other fields, both East and West, has dropped in price 75c.@$1.50 a ton in the last two weeks, with the exception of Pocahontas and New River coal, still quoted at $5 at the mines.

Domestic sizes of Indiana Fourth Vein are selling at about $8 a ton in Indianapolis. The best grade of Illinois domestic is $9.25, while what Pocahontas lump is obtainable sells at $13.50.

Mines whose whole output is mine run, sold to industrial users, are facing hard times, unless the demand picks up after the first of the year. Some are glad to sell their output at cost. Most of these are high-cost mines, which started operation when the coal market began its skyward climb.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Continued Decline in Prices—General Production Slump Over Holidays—Car Supply Improves.

Prices continue downward, with apparently no bottom in sight. Considerable coal is being offered at a price that will not allow a margin of profit to the operator, but the present disposition seems to be to cling on until after the holidays in a hope that the market will again swing upward.

Many mines have closed down for the holidays, and the tonnage produced will be far below the average weekly production. The few mines that are trying to run this week report very low daily tonnages, due to the unwillingness of the miners to work during the holidays.

Continued efforts of operators to force the L. & N. R.R. to give a better quota of cars seems to be having some effect. The car supply has been better in this field for the week ended Jan. 1 than for many months.

Price quotations are around $5 for block, $4.50 for egg, and $1.75@$2.50 for steam.

West

UTAH

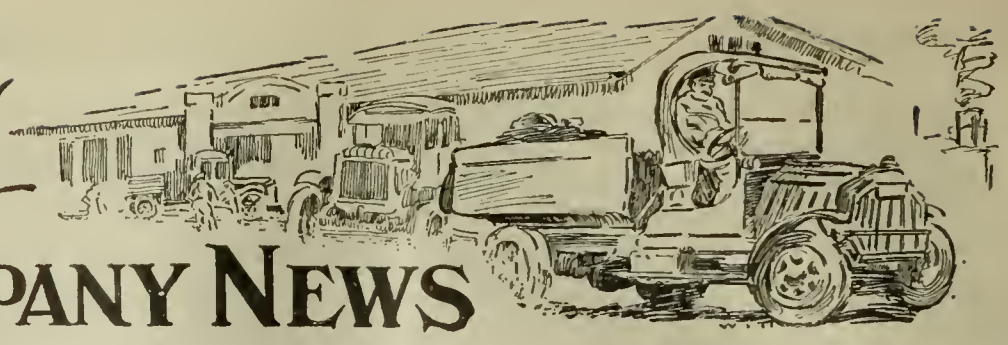
Market Becomes Quiet—No Domestic Demand — Labor Conditions Are Excellent.

Instead of there being a shortage of coal in Utah this winter, as was feared a few months ago, some of the mines have not been working full time during the past week or two on account of quiet market conditions.

The cold weather which set in about ten days ago has caused the demand for coal to increase somewhat, but so successful has the summer sales campaign, conducted by retailers, proved to be that consumers seem to be well stocked for some time yet. Movement to the coast is not yet affected by the more seasonable weather.

Labor conditions continue to be excellent. Men are available in any number and are working better than for some time. The industrial depression is causing the return of much mining labor.

MINE And COMPANY NEWS



ALABAMA

Fire of unknown origin recently destroyed the hospital building of the **Sloss-Sheffield Steel & Iron Co.**, Birmingham, at Flat Top Coal Mine, entailing a loss of from $20,000 to $25,000.

ILLINOIS

One of the largest deals in the history of southern Illinois coal mining recently took place when the **Bickett Coal & Coke Co.**, of Chicago, owning extensive operations in Indiana, took over the entire property of the **Royalton Coal & Coke Co.**, at Royalton, Franklin County. Included in the sale were 7,000 acres of undeveloped coal land and the two mines now in operation. The mines are the largest in the vicinity, having a daily tonnage of from 4,500 to 5,000 and make five sizes of prepared coal.

The Carlinville and Berry mines of the **Standard Oil Co.** in Macopin County were closed down recently when a break down put the electrical hoisting machinery out of working order temporarily.

Donk Bros. Coal Co. of St. Louis, now operating several mines in the Standard field, are preparing to sink a new mine north of Coffeen. A switch will be constructed from the Big Four railroad to the site where the mine will be located.

The property of the **Lerner Coal & Mining Co.** at French Village has been placed in the hands of a temporary receiver, Wm. T. Barnett of St. Louis. Harry W. Lerner, president of the concern, alleges that the company is insolvent and that creditors are threatening to sue. The mine has not been working since early in November when the miners quit because they had not received their pay.

INDIANA

The **Big Three Coal Co.**, Evansville, has struck coal in its shaft at bank No. 2, near Bradley Station in Spencer County, a few miles east of this city. The vein runs from 4½ to 5½ ft.

KENTUCKY

The C. L. Ryley Coal Co., mine agents and wholesale dealers, has been incorporated for $200,000 in Lexington. The concern has been operating as an individual. **Paul Allais**, of Chicago, general manager of the Columbus Mining Co. was elected vice president of the company. C. L. Ryley will continue as president of the company, but the administration will be left in the hands of his son, C. Reginald Ryley, first vice president, and Mr. Allais.

Articles were filed recently increasing the capital of the **Fayette Coal Grain and Feed Co.**, of which C. L. Ryley is president, from $10,000 to $50,000. The company operates an electrically-equipped wholesale and rotail coal, grain and feed dispensary in Lexington. **Number Four Superior Coal Co.** will henceforth work with a capital of $200,000 instead of $80,000 and the **Trace Fork Mining Co.**, with $200,000 instead of $100,000. C. L. Ryley is president and C. Reginald Ryley vice president of both companies. John R. Pates is secretary-treasurer of number 4 Superior.

The Elkhorn-Cumberland Coal Co., Praise, Ky., operating at Elkhorn City, near Praise, is planning for the construction of a new coal tipple at its properties. A new power plant will also be constructed, as well as a housing development to consist of an initial allotment of about 25 homes.

The Creech-Duffy Coal Co., Calvin, Ky., recently organized at Pineville, Ky., will soon commence the construction of a tipple at its local properties. Considerable mining machinery will also be installed at the workings.

The **Elkhorn, Jr., Coal Co.**, Millstone, Ky., is planning for the construction of a new coal tipple at its properties; a number of miners' homes will also be erected.

The See-See Coal Co., Pineville, Ky., recently organized with a capital of $150,000, is planning for the construction of a new power plant at its properties. A new steel coal tipple will also be erected.

The **Coil Coal Co.**, Madison, Ky., will soon commence the rebuilding of its tipple, recently destroyed by fire.

The Columbus Mining Co., McCormick Building, Chicago, Ill., plans for the development of a large tract of coal land at Lenut. Four mines will be established on a 4,000-acre tract, and machinery installed for a capacity of over 2,500 tons of coal per day. J. B. Hilton is secretary and treasurer.

MARYLAND

The Old Colony Coal Co., Cumberland, Md., has been formed with a capital of $200,000 to operate properties in this section. The company is headed by G. Albert Sell, Jesse A. Hoover and William E. Glick, all of Cumberland.

MINNESOTA

The **City Council of Minneapolis**, is still considering constructing unloading facilities in connection with the docks on the Mississippi River. The problem of handling coal from the river barges is one which calls for consideration, since that is one of the big points in favor of river development.

OHIO

The C. R. Cummins Coal & Mining Co. of Cleveland, was recently authorized by the Secretary of State to increase its capitalization from $15,000 to $15,000,000. The main office of this company is in Cleveland, and they are developing a stripping operation near Oakland City, Ind., on the Southern Railway, St. Louis division, where they expect to produce about 30,000 tons per month. The officers are: C. R. Cummins, president; H. T. Sympson, vice president; W. E. Beaumont, treasurer, and S. M. Paxton, secretary. The company has a branch office at Oalkand City, Ind., with Messrs. F. I. Conyers and P. J. Watson as district officers in direct charge of operation.

The **Glen Valley Coal Co.**, Nelsonville, has been chartered with a capital of $25,000 to mine and sell coal. Incorporators are D. N. Postlewaite, J. W. Bricker, H. H. Orr, R. Hade and E. Rauck.

Papers have been filed with the Secretary of State increasing the capital of the **West Virginia and Ohio Coal & Coke Co.**, Cleveland, from $15,000 to $50.000.

Ohio farmers have saved $17,325,000 during the past year by burning wood instead of coal. This is the estimate placed on the saving by the Ohio Farm Bureau after making a survey of the state.

PENNSYLVANIA

The Citizens Coal Co. of Nant-y-Glo, Cambria County, has leased two hundred acres of C vein in Jackston Township and Nant-y-Glo Borough, from the John Lloyd estate.

The **Bowers Coal Mining Co.** is rushing operations through to completion on the new mines at Clearfield and the grading of 1,650 ft. of road bed.

The **J. S. Wentz Coal Co.**, Hazleton, Pa., has construction under way on its new breaker and expects to have the plant ready for service in about 30 days. The structure will provide for an increase in output of from 800 to 1,500 cars a day, and it is proposed to operate at this capacity. The extra tonnage will be secured from the Porter Swamp tract, near Hazle Brook, operated under a lease with the **Lehigh Valley Coal Co.**

The **Maher & Graff Coal Co.**, Pittsburgh, Pa., is being organized to operate coal properties in this district by Paul C. Maher, Robert C. Maher and Hyett P. Armstrong.

The **Upper Lehigh Coal Co.**, Hazleton, Pa., is planning to resume operations at its No. 6 property, abandoned some time ago. Electric pumping machinery will be installed at once to clear the property, and it is expected to commence active mining at an early date.

Anxiety to put enough coal on the market to meet the pressing demand for anthracite, is leading coal companies to again draw upon the big culm banks here, recently the **Herbein colliery banks**, Pottsville, which are said to contain nearly 1,000,000 tons were opened up. Big steam shovels are lifting the culm into chutes from which it is run into the washeries. A number of other banks, equally as big, are to be developed at once.

The Island Creek Coal Co. at the close of this year will report earnings of approximately $20 a share, or nearly three times as great as in 1919, according to interests in close touch with the company. It is said that these increased earnings have not been based on any such high prices for coal as have recently aroused so much criticism, and that a return of prices to lower levels will not materially interfere with the company's profits. Net quick assets at present amount to over $3,800,000, of which nearly $3,000,000 is in cash or the equivalent.

At a meeting of the stockholders of the **Atlantic Coal and Iron Co.**, Real Estate Trust Building, Philadelphia, Pa., the following officers were elected: Williams H. Bilyeu, president, Philadelphia, Pa.; Hon. Adam C. Littlepage, vice-president, Charleston, W. Va.; Wm. C. Yerkes, assistant to the president, Philadelphia, Pa.; Chas. Gesing, Jr., secretary and treasurer, Philadelphia, Pa.; G. M. Davis, assistant secretary and treasurer, Charleston, W. Va.; F. D. Enney, general manager, New York City, N. Y. The company has also opened a branch office in the Charleston National Bank Building, Charleston, W. Va. It is the intention of the company to operate its own mines in the near future in the Charleston district.

The Consolidated Fuel Co., Pittsburgh, have contracted for the installation of equipment for their shaft tipple at Francis Mine.

The Alicia No. 2 mine of the **Pittsburgh Steel Co.**, up the Monongahela River from Brownsville, has been shut down for an indefinite period owing to curtailment of operation at the mills of the company. The Alicia No. 1 coal and coke plant is still operating on a reduced output.

The **H. C. Frick Coke Co.** are employing many of the men laid off by other coal and coke operations and increasing their output and firing additional ovens.

The Scranton Coal Co., Scranton, Pa., is said to have plans under way for the rebuilding of its Raymond colliery and washery, near Peckville, recently destroyed by fire with loss estimated at about $200,000, including machinery and engine plant.

The fire in the **Union Connellsville Coke Co.** mine at Simpson, Fayette County, is still burning, despite the efforts made to smother it by sealing the shafts.

WEST VIRGINIA

The Diamond Coal Co., Fairmont, is erecting a two-story office building at its operation along Scott's Run in Monongalia County. This is reputed to be one of the largest mines on the run, having some of the very best in quality in that section.

The **Fowler Branch Coal Co.**, Ltmann, W. Va., is having plans prepared by H. B. Wright, chief engineer, for the construction of a new coal tipple and a number of mechanical buildings at its properties, to include machinery shop and machinery parts plant.

Operations of the **Fairmont and Boulder Coal Co.** will be in Barbour County, near Boulder on the Grafton and Belington division of the Baltimore & Ohio R.R. This company has only recently been organized, its capital stock being $25,000. The office of the company will be in Fairmont. W. D Reed, J. W. Poling, Seymour McIntire, W F. McKain and Charles E. Hawson of Fairmont are interested in the company.

Further development of coal lands in Nicholas County will be undertaken by **R. C. Corman** who has leased a tract of 500 acres from A. L. Craig, E. E. and J. W. Deitz, this land being on Cherry River between Fenwick and Holcomb. The work of developing the tract under lease will be begun at once. The coal is in the New River seam.

E. C. Minter, Beckley and associates have organized a new coal sales agency with headquarters to be known as the **E. C. Minter Fuel Co.**

Carl W. and R. A. Brannell of Pittsburgh, Pa. having leased a large tract of coal land on Little Laurel River near Cornith, in Preston County from David B. Reger, J. K. Buchanan, Louis Core, Carl Reger, Roy Reger and J. B. Chevront, will develop the tract so leased by sinking a 100-ft. shaft and installing electric power equipment at an estimated cost of $200,000.

The Fowler Branch Coal Co., Farrelsburg, W. Va., recently organized, has leased about 70 acres of local coal properties and plans for extensive developments. Considerable machinery will be installed and a new tipple constructed.

Owning a tract of 155 acres near Sand Run on the Charleston division of the B. & O. the **Crown Coal Co.**, Blaine, just organized, will erect a plant on the tract and, with that end in view, has started driving an opening and general development work.

The **Wheeling Quality Coal Co.** Wheeling, W. Va. is planning for the development of extensive coal properties at its holdings, and will install machinery for this purpose. It is planned to build a new coal tipple, install electric hoisting equipment, etc. H. W. Campbell is secretary.

Organization of the **Pigeon-Thacker Coal Co.**, Huntington, presages development work on a very extensive scale in the Pigeon Creek section of Mingo County, made possible by an extension of the Norfolk & Western, this land having been leased to the new company, which was a capital stock of half a million. Largely interested in the new company are G. M. McLaughlin, Walter M. Parker, W. J. Wolfe, Philip P. Gibson and Dudley R. Porter.

The Brewer Coal Co., Morgantown, will operate in Cass District of Monongalia County having just been organized by Morgantown people with a capitalization of $100,000. Offices of the company are to be in Morgantown. Active in effecting a preliminary organization of the company were: David S. Brewer, R. D. Barrickman, Julius Baur, John B. Barkert and C. M. Barrickman.

Holdings of the **Mapletown Coal Co.** Morgantown, including about 1,000 acres of coal land, together with the mining plant of the company named have been acquired by the **Rosedale Coal Co.** at a cost of $500,000. Among those principally interested in the Rosedale company are: E. G. Donley, Morton Van Voorhis, C. L. Lantz, J. L. Hatfield and Asa Sterling.

McDowell County is to be the scene of operations of the **Vera-Pocahontas Coal Co.** which is capitalized at $80,000 having just been organized and chartered. Active in organizing this concern were: V. T. Strickler, J. W. Johnson, S. E. Ward and C. I. Bridges, of Iaeger, W. Va.; G. G. Kellar of Berwind; S. E. Clendennin, Bluefield, W. Va.

Business men behind the Pigeon-Thacker Coal Co., Huntington, are also the leading spirits in the **Logan-Thacker Coal Co** which will have an operation in Mingo County, among those so interested being G. M. McLaughlin, Walter M. Parker, W. J. Wolfe, Philip P. Gibson and Dudley R. Porter of Huntington. The company has a capitalization of $500,000.

Development of Logan County coal lands in the Chilton and Eagle seams will follow the organization of the **Chilton-Eagle Coal Co.** of Logan, this new concern having a total capitalization of $300,000. Closely identified with the new corporation are George D. Miller, R. C. Thurmond, E. H. Butts, all of Huntington; S. A. McCallister and Hunter Green of Hughey, where the new company will operate.

Word was received of the consummation of two deals at Uniontown, Pa., involving the **purchase of West Virginia coal lands**, aggregating $3,000,000. The sales were made by Uniontown companies. **The Maher Colleries Co.** of Cleveland purchased 15,000 acres of coal land in Monroe County. **The Ruth Coal & Coke Co.** sold 3,000 acres in Marshall County to the **General Development Co.**

ALASKA

A line of steamers between Portland and Alaska is to be installed next year in connection with the opening and operation of the old Cunningham coal mine located inland from Controller Bay, Alaska, according to announcement made by J. P. Jaeger president of the **Alaska Coal & Coke Co.**, a Portland concern, which has a lease on the mine.

Traffic News

The Wheeling & Lake Erie R.R., which has some 60 mines on its rails, expects to begin receiving delivery by Jan. 1 of a 2,000-lot of new 50-ton all-steel gondolas at the rate of 25 cars per day.

Investigation and Suspension Docket 1199. —Report also embraces I. & S. Docket 1219, Absorption of Terminal Charges at Galveston, Tex. The I. C. C. decision rendered is that increases in the through charges on export, import, and coastwise traffic to and from ship side at Galveston, Texas City, Port Bolivar, and Beaumont, Tex., under proposed tariff rules limiting the amount of terminal charges absorbed, found not justified. Orders of suspension vacated as to certain schedules which do not have the effect of increasing charges.

In the case of the **Roundup Coal Mining Co. vs. the B. F. and I. F. R.R.** a tentative report of an I.C.C. examiner recommends that the rates on coal from Roundup and Geneva, Mont., to destinations on the Chicago & Northwestern; Chicago, St. Paul, Minneapolis & Omaha and Minneapolis & St. Louis railroads in North and South Dakota are unreasonable and prejudicial and that reasonable and nonprejudicial rates be prescribed for the future.

The Denver and Rio Grande R.R. has agreed to cut the coal rates from the Baldwin field to Santa Fe after negotiations between the railroad and the corporation commission. The reduction is effective Jan. 1.

The Interstate Commerce Commission has approved a loan of $3,759,000 to the Chesapeake and Ohio Ry. Co. one of the principal coal carrying roads of the country, to assist it in purchasing one thousand 100-ton steel coal cars.

The **Interior Department** has received applications from Peter O. Sundberg for a lease of 320 acres and from John C. Murphy for lease of 1,200 acres of coal land in the Matanuska, Alaska, field.

In a complaint to the I. C. C. the **St. Louis-San Francisco Ry. Co. vs. the East St. Louis and Suburban Ry. Co.** attacks as unreasonable the rates on coal from stations in Illinois to St. Louis, and requests reasonable rates and equitable divisions of joint through rates and adjustment of charges collected.

In the complaint of the **Gillespie Coal Co. vs. the Illinois Traction System**, an I. C. C. examiner recommends that the rates on coal from the Gillespie mines at Gillespie, Ill., to certain interstate destinations be declared to be unduly prejudicial, and that the undue prejudice be ordered removed.

The Commission has decided, upon petition of tidewater coal exchanges, for modification of the **96-hour credit rule on demurrage** charges on tidewater coal, that the period of 96 hours for the payment of transportation rates and charges be computed from the first 4 p.m. after the time when such exchanges present to individual shippers the demurrage bills.

Justice Van de Vanter denied the claim of the **Minneapolis, St. Paul and Sault Ste Marie R.R.** to recover freight rates on coal in excess of rates established by the state of North Dakota, which rates had been nullified by a prior Supreme Court decision. In the case of the railroad vs. the **C. L. Merrick Co.**, the latter company, the shipper, sought to recover charges exacted in excess of the statutory rate. The shipments were made prior to the first judgment in the injunction suit when the carrier was refusing to give effect to the schedule and the excess was paid under protest and because the carrier would not deliver the coal on payment of the statutory rate. In the trial court judgment was against the shipper, which was reversed by the North Dakota Supreme Court with directions to award the shipper the sum claimed. The Supreme Court of the U. S. on Monday dismissed the writ of error brought by the railroad company to set aside this action.

In the complaint of the **Seaboard By-Product Coke Co. vs. the Director General**, the I. C. C. has decided that the rates on coal from mines on the Pittsburgh and Lake Erie R.R. in Pennsylvania to Seaboard, N. J., are not unreasonable, and dismisses the complaint.

A deficiency estimate of $27,000 for **fuel for public buildings** for the current year has been requested of Congress by the Treasury Department.

Rep. Goodykoontz, of W. Va., in a speech in the House **recommending repeal of the Lever Food and Fuel Control Law**, said that in the Judiciary Committee he had offered a motion to include the Lever law repeal in the war repeal bill but it was defeated by a vote of 8 to 6. He said very little good and much harm had come from the Lever law.

A hearing was held in Louisville, Ky., recently of the Interstate Commerce Commission on the formal complaint of the **West Kentucky Coal Bureau** for a rate from western Kentucky mines to northern Arkansas and southeastern Missouri of 25c. over the through rate from the southern Illinois group of mines, it being alleged that present combination rates are excessive and that through rates are needed and are reasonable if worked out on this basis. Testimony introduced generally favored the western Kentucky operators.

A bill already passed by the Senate providing for agricultural entries on **coal lands in Alaska** has been reported to the House by the Territories Committee.

President Wilson has nominated to the Senate and that body at once confirmed out of courtesy to its member, **Senator John F. Nugent** of Idaho to membership on the Federal Trade Commission, which is of interest to the coal trade as the commission has been inquiring into coal costs, its right to require reports from operators now pending in litigation in the courts. Senator Nugent will take the place vacated last September by **W. B. Colver**, and will serve for a seven year term. He is undecided whether to assume his new duties now or remain in the Senate until his term expires March 4. He has been a Senator since January 1918, and is a lawyer, his residence being Boise, Idaho.

Trade Catalogs

Small Turbo-Generator Sets — General Electric Co., Bulletin 420010. Illustrated 22 pp.—Advertiser.

Electric Heating of Air—Cutler-Hammer Mfg. Co., Milwaukee, Wis. 4 pp. Illustrated.—Advertiser.

Market Data Book—Lists all publications of the U. S. and Canada, rates, closing dates, etc. G. D. Crain, Chicago, publishers.

Water Supp'y and Turbine Pumps—Coyne & Bowler Co., Memphis Tenn. 64 pp. well illustrated. Describe new design and types of construction.

Tubular Steel Poles—National Tube Co., Pittsburgh. 17 pp., illustrated, describes design and use of poles.

Oil Tanks and Pumps—Wayne Oil Tanks Pump Co., Fort Wayne, Ind. General catalog containing bulletins recently published, illustrated.—Advertiser.

Oil Conservation — General Electric Co. Bulletin 407006, 10 pp., illustrated. Describes conservator type of tank for power transformers.—Advertiser.

Locomotive Cinder-Handling Plants. — Roberts and Schaeffer, Chicago, Ill. Describes new plants in detail. 15 pp., illustrated.

Mine Locomotive Headlights — Westinghouse Electric Mfg. Co. Bulletin 7 A-C 1. Features of new construction revealed. 4 pp., illustrated.—Advertiser

Personals

Mr. Gibson Hardy, of Brownsville, Pa., superintendent of the Sunshine plant of the American Coke Corporation, has been promoted to the position of general superintendent of all the operations of the company, with headquarters in Uniontown, Pa., to succeed **Mr. Frank Peabody**, who has been transferred to the Pittsburgh office of the company. **Mr. James Boyle**, assistant mine foreman of the Sunshine mine has been promoted to succeed Mr. Hardy.

Clyde Weihe has resigned as master mechanic for the Washington Coal & Coke Co., Colorado at Star Junction to become superintendent of the Corrado coal mines at Confluence and Virgin Run.

Charles B. Franks, for 21 years superintendent at Leisenring for the H. C. Frick Coke Co., has resigned that position Mr. Franks, with a number of associates has taken over extensive coal holdings and he will devote his time to these interests.

Frank L. Poindexter, assistant general superintendent of the Chesapeake & Ohio Ry. Co., has resigned to become the general manager of the Lake & Export Coal Corporation of Huntington.

Albert Torquato has gone to New York from Windber to establish a general employment agency. The Windber field is filed with miners, and he will distribute foreigners to all the fields according to contract orders from the port of entry.

Harry H. Brown, Huntington, has been chosen as president and manager of the Dominion Smokeless Coal Co. which will operate at Huntington.

I. B. Perkins has been named as manager of the operations of the Two-Seam Coal Co., recently organized. His headquarters will be at Boomer, W. Va.

Secretary Charles O'Neill of the Central Pennsylvania Coal Producer's Association, delivered an address before the Rotary club in Altoona at the regular meeting in the Logan House. Mr. O'Neill reviewed the coal industry to show its importance in the industrial field.

Willard J. Boston, Scranton, Pa. is now with the Old Colony Coal Co., Pittsburgh. For the past eight years Mr. Boston has had direct connections with some of the largest operators in the various coal centers, being well versed in classifications of coals and a mining engineer of high standing.

Harry Maddy, fiscal supervisor and secretary of the Ohio Board of Administration has resigned to accept a position with the Wayne Coal Co., at Pittsburgh. He had been in the state service for more than 10 years.

W. J. Harahan of Norfolk has been elected chairman of the Chesapeake and Ohio and the Hocking Valley railroads, succeeding the late **George W. Stevens**. He was formerly president of the Seaboard Air Line, before joining the U. S. Railroad Administration.

The Chicago Pneumatic Tool Co. announces the resignation of **H. L. Dean**, formerly manager of the compresor and engine sales division.

John Nuttall who for the last six years has been the Circuit Clerk of Fayette County, W. Va. will, at the expiration of his term on Jan. 1, enter the coal business as an assistant to H. H. Blackburn who is preparing to operate in Greenbrier county, near Rupert, W. Va.

W. J. Schnabe has recently joined the sales force of Campbell, Peacock & Kinger, Inc., and will look after the Tidewater and line business in the New York territory.

J. L. Miller, formerly with the N. Y., N. H. & H. will represent the same company in the New England territory.

The new superintendent at the Edwards mine of the Southern Coal Co. at Volga, W. Va., is **A. B. Teets**, who has succeeded **T. H. Bussee**.

W. T. Hopke who for a number of years has been the master carpenter for the Monongah division of the Baltimore & Ohio R.R. has resigned that post to devote his entire time to the affairs of the Ursula Coal Co. of Harrison County, W. Va., in which he is heavily interested.

The Chicago Pneumatic Tool Co. announces the appointment of **J. F. Huvane** as Eastern manager of compressor and engine sales, with headquarters in New York, and **G. C. VandenBoom** as Western manager of compressor and engines sales, with headquarters in Chicago.

A recent visitor in Huntington, W. Va. was **H. W. Oswald**, general manager of the New York offices of Coale & Co., that company having a district office in Huntington, W. Va.

W. Gaston Caperton of Slab Fork, W. Va., treasurer of the Winding Gulf Operators Association was a visitor in Philadelphia on December 13 and 14 attending the annual meeting of the association.

William McKell, president of the McKell Coal & Coke Co., with headquarters at Glen Jean, W. Va., was in Philadelphia for the annual meeting and election of the Smokeless Coal Operators Association of West Virgina.

C. C. Benry, of Charleston, W. Va., president of the Beechwood Coal & Coke Company and of other companies in the New River field was at Philadelphia for the annual meeting of the Somkeless operators of West Virginia.

Thomas Jordan, of the Bell & Zoller Coal Co. of Chicago, operating several mines in southern Illinois, has recently joined the forces of the Logan Coal Co. of Philadelphia in its Chicago offices.

F. K. Straub, a graduate of the University of Illinois in class of 1920, who received a fellowship in Mellin Institute as a chemist in coal carbonization, has recently accepted a position with the Semett Salvoy Coke Corporation of Buffalo, N. Y.

O. P. Pile, formerly connected with the Davidson Coal and Lumber Co. as superintendent, has been appointed by Gov. Roberts as chief mine inspector for the State of Tennessee succeeding **A. W. Evans** who recently resigned.

James E. Burch has been appointed a special agent in the coal section of the Geological Survey.

C. C. Benry of Charleston, head of the Beechwood Coal & Coke Co. as well as of other companies operating in the New River field was a visitor in the Cincinnati market recently.

S. L. Sherer, St. Louis, Mo., for many years treasurer of the Big Muddy Coal and Iron Co., has resigned to accept the position of administrator of the St. Louis Public Museum.

John Boring, for the past year mine foreman for The Boon County Coal Corporation, Sharples, W. Va., has resigned to accept a similar position with the Rockhouse Coal Co. at Blackey, Ky.

J. A. Paisley, president of the Valley Camp and J. A. Paisley Coal companies, operating mines in Belmont County, headquarters Cleveland, left recently for a six weeks sojourn in southern California.

David P. Burns, formerly salesman for the Weston-Dodson & Co., has connected with the Tuttle-Burger Coal Co. as assistant treasurer, Jan. 1, 1921. Mr. Burns was formerly chief of the coal bureau on the staff of Regional Director Smith, U. S. Railroad Administration, Eastern region, and for a number of years previous to that time was connected with the coal traffic department of the New York Central Railroad.

Oscar Robey has been appointed day dispatcher of the Consolidated Coal Co. at Fairmont, succeeding **Frank J. Jackson**, deceased, who served the company most faithfully for a number of years.

R. A. Johnson of the Crescent Fuel Co. has returned to Fairmont from Pittsburgh, accompanying his wife who recently underwent an operation in the Pennsylvania city.

W. C. McQuown, connected with A. R. Hamilton & Co. of Pittsburgh was a recent visitor in the Fairmont (W. Va.) field.

Samuel D. Brady, Jr., of Fairmont has been added to the list of directors of the Abrams Creek Coal & Coke Co., his father, Samuel D. Brady being at the head of that company.

H. H. Staggers, Fairmont district manager of A. R. Hamilton & Co. of Pittsburgh, and Mrs. Staggers have returned from a trip to White Sulphur Springs, W. Va., where they spent two weeks.

C. H. Jenkins, secretary and treasurer of the Hutchinson Coal Co. and a director of the National Coal Association, was called to Washington during Christmas week by business connected with the National Coal Association.

James Maloney of Huntington, head of the American Export & Inland Coal Corporation, was in Eastern markets the latter part of December on a business trip.

James Poindexter has resigned his connection with the Gay Coal & Coke Co. to accept a post with the Kanawha Valley Coal Company at Charleston. He will probably be assigned to the southern territory of the company.

Industrial News

Seattle, Wash. — The Hallidie Machinery Co., L. C. Smith Building, has been appointed the representative of the Conveyors Corporation of America, Chicago, formerly the American Steam Conveyor Corporation.

Chicago, Ill. — The Star Brass Works, manufacturers of spray cooling systems, painting and spraying machinery, announces that on and after Jan. 1, 1921, the company name will be changed to Binks Spray Equipment Company.

Obituary

R. L. Pepper, coal dealer, is dead of pneumonia, at his home here. He leaves a wife and two children. He was fifty-five years of age.

Francis Critz, superintendent for the Philadelphia & Reading Coal and Iron Co. here, aged 64, died after attending a banquet in Pottsville.

Frank X. Preyer, New Philadelphia, age 39, a local coal operator, was recently killed when his automobile was struck by a traction car near the city.

Jos. L. Scanlon, with the Superior Coal & Dock Co., St. Paul, Minnesota, died last week from blood poisoning which resulted from a boil.

Charles H. Babcock, Buffalo, for more than 50 years in active coal jobbing in Rochester, as a member of the firm of H. H. Babcock & Co., which bears his father's name, died recently, aged 72 years. The firm is one of the largest in the city. Mr. Babcock had been president of the Lincoln National Bank of the city till it was merged with the Alliance Bank. He was also long a member of the State Forestry commission.

Andrew Johnson, head of the coal firm of Andrew Johnson & Son at Stratford, Ontario, for eighteen years, died recently, aged 75 years. He was born in Ireland, but came to America when 21 years of age, and settled in Stratford.

Coming Meetings

The **Northeast Kentucky Branch** of the **Kentucky Coal Mining Institute** will hold a meeting Jan. 7, 1921, at Pikeville, Ky.

National Retail Coal Merchants' Association. Fifth conference of executives at La Salle Hotel, Chicago, Ill., will be held on Jan. 17 and 18, 1921. Secretary-Manager, Ellery B. Gordon, Philadelphia, Pa.

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York, Feb. 14 to 17, 1921. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

The Wholesale Coal Trade Association of New York, Inc., will hold its annual meeting in New York City, Jan. 18, 1921. Secretary, Charles S. Allen, 90 West Street, New York City.

American Society of Civil Engineers will hold its annual meeting Jan. 19 and 20, 1921, at its headquarters, 33 West 39th St., New York City. Acting secretary, Herbert S. Crocker, 33 West 39th St., New York City.

Northwest Mining Congress will hold its annual convention Feb. 28 to March 5, 1921.

Northern West Virginia Coal Operators' Association will hold its annual meeting Feb. 8, 1921. Secretary, H. S. Rogers, Fairmont, W. Va.

Pittsburgh Vein Operators' Association of Ohio will hold its annual meeting, Feb 14, 1921, at Cleveland, Ohio. Secretary, D. F. Hurd, 415 Marion Building, Cleveland, Ohio.

American Institute of Electrical Engineers and American Institute of Mining Engineers will hold a combined meeting of the local sections on Jan. 21, 1921, at Pittsburgh, Pa.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Ottawa, Ontario, Canada. Acting secretary, R. R. Rose, Montreal, Quebec, Canada.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 19 NEW YORK, THURSDAY, JANUARY 13, 1921 Number 2

The Value of Service

SERVICE is difficult to evaluate. For the act of production there have been developed in the business world and in public opinion standards by which to measure the reasonableness of the rate of return or profit. Thus we find that in past times interest of 6 per cent on the use of money was considered adequate where safety was of first consideration, but that twice that return on an investment was expected if more than ordinary risks were involved. In production, which involves the investment of definite amounts of capital, the rate of return can be measured in terms of interest on the investment.

Service, on the other hand, cannot be so calipered. That which requires the investment of personality is service and we have no criterion for measuring the dollars and cents equivalent of personality. It is likewise impossible to calculate the investment value of experience, professional or business. Selling is a form of service that combines both experience and personality and there can be no fixed rate of recompense for either. In an address before the American Economic Association in December, George Cushing, managing director of the American Wholesale Coal Association, said that for the past two years his organization had been seeking to standardize the coal-jobbing business, but that it had made no progress beyond a tentative proposal covering the rate of return, which it was suggested should be 8 per cent of the value of the coal handled. He was frank to say that the association was not in a position to defend the idea of either the percentage or the amount.

A flat percentage as a jobbing commission can be defended only as a maximum in times of stress and as a means of holding down the less scrupulous to terms that will not throw the industry into disrepute. Thus the apparently successful endeavors of the New York Wholesale Coal Trade Association to limit commissions to 8 per cent served to satisfy the public and the Department of Justice clamor for steps to lower the cost of coal. In its effect on conditions in 1920, results have amply justified the wisdom of the course taken by Mr. Allen, the secretary of the New York association. The more conservative of the jobbers, and the ones therefore whose judgment it is more prudent to follow, adopted the 8 per cent commission on sales, but with a maximum in all cases of 50c. per ton.

In one respect at least the Calder committee has cleared the air, for by statements from Senators both in the hearing and on the floor of the Senate, it has recognized as reasonable and not subject to censure, the 50c. commission allowed by the War Department in its contracts for the purchase of coal. The clean bill —even though somewhat grudgingly given—accorded to the transactions between the Wentz company and the War Department is something for which the entire wholesale trade, as well as the particular company involved, is to be congratulated. It constitutes a clear and more or less official recognition of the money value of a particular service.

Lest anyone conclude, however, that we consider 50c. per ton to be the true and everlasting value of the service involved in buying and selling coal, we add that the selling, like the coal itself, deserves recompense in proportion to its excellence. We must get away from the war-bred idea that a single standard of wage to laborer or of profit to capital should accrue to everyone. The producer of poor coal has no right to expect the same rate of profit as he who produces the best coal; the inefficient laborer cannot expect the same wage as the efficient, though each has a right to expect a profit or a living wage. One jobber may deserve but one-tenth of 50c. for the service he performs, while another may have earned the maximum. After all, there is as much competition in selling service as in producing commodities.

Let's Have Done and Away

IT MUST be disheartening to the Calder committee to have had its fond hopes so badly blasted. Having given the wide world notice that startling disclosures would follow its investigation of the National Coal Association the committee, in its frantic effort to make good, has let slip no opportunity to get something "on" the association through its officers. Some kind friend should have tipped off Mr. Miller that he was inviting defeat when he started muckraking that organization. If ever an organization has scrupulously lived and acted within the spirit as well as the letter of the law it has been the National Coal Association. No better proof of this is needed than that the most hostile critic, purposely looking for a loophole of attack, armed with the correspondence and records of the association, has found nothing on which to hang his case.

Imagine the chagrin of the committee sleuths after having discovered in the minutes of some meeting a resolution to the effect that the coal operators do not favor governmental control of their industry; to have the fact admitted by the association without argument and without apology! Why should they not take such a position?

Ah! but the association was a party in drawing the service orders of the Interstate Commerce Commission! Grave impropriety, says Mr. Miller, and he promptly wants to take the emergency power away from the commission.

In the first place we may ask what is improper in the relations of the operators and the government in this connection? Does not the judge of the court in an equity suit even request the attorney for the winner to draw the bill? Is this practice heinous? More than twenty service orders were issued by the Interstate

Commerce Commission in 1920, some of which the coal men certainly considered to be ill-advised, notably those giving assigned cars to public utilities. Is Mr. Miller about to accuse the National Association of Gas and Electric Service of having had improper relations with the Interstate Commerce Commission?

The Interstate Commerce Commission decided matters for itself. It assembled its own data, obtained wherever it could get it; consulted those best informed, whether public utility, coal, or railroad interests, and issued its orders.

The public appetite has been whetted for a "goat" in this coal sensation and none is forthcoming. Consumers of coal are entitled to know whether a conspiracy in any form caused their coal costs to rise in 1920. The Calder committee—self appointed disclosers—have volunteered to do the job.

Having gone so far, will Mr. Miller be a "quitter," having discovered that his investigation bids fair to prove a boomerang? Is he going to pursue to a conclusion Judge McGee's complaint about Lake contracts and the general question of the necessity for the service orders of the Interstate Commerce Commission?

If Senator Calder is investigating the coal industry in the interests of the consuming public he will complete the record. We confess to a growing impatience over the delay of the committee in taking up its real work—the building industry. The Lockwood committee in New York City has found this a fertile field.

Plasticity in the Roof

BROAD generalizations regarding coal seams and their roofs are always dangerous, and the lower Kittanning bed is not exceptional in this regard. Consequently, the remarks in the article "Why Does the Roof of the 'B' Seam Develop Heavy Falls on Narrow Work?" which we print today must be regarded as having largely local reference. Many of those who have operated the lower Kittanning seam where the coal is thinner and less clean and the roof less wanton will find the description fits ill with their own particular case.

For the roof of this seam is sometimes regarded as peculiarly good and is usually thought to have no fault but a tendency to "buckwheat"—that is, comminute and fall under the influence of frost and air. If the Freeports in those parts were only as reliable as the lower bed there would be fewer accidents. In fact there are some who say that the lower Kittanning should be indicted not for its weakness but for its strength. It rides the pillars, pushes them over and lifts the bottom and still refuses to break.

G. A. Ashley rightly says that the coal field described is located somewhat strangely. The wonderful low-volatile qualities of its coal, which give superiority to its fuel, would in the order of things place it along the extreme edge of the Appalachian coal field instead of somewhat back. A greater degree of mountain-making stress must have been placed upon it than upon the areas northeast and southwest of it, which stand equally distant from the line of disturbance. The stress extended the volatilization of the coal and probably fractured the roof.

It would not explain, of course, the presence of clay above the coal, and with the writer of the article we are disposed to believe that clay to be not only a coincidence but a cause. But the mountain-making pressures might account for the fracturing of the roof and for the fact that these lines of fracture are parallel. It is interesting to note that in some parts this parallelism is not by any means so obvious. In some sections there are distinct angles between the fracture lines of certain rock beds and the lines of fracture of the beds below and above them.

Much truth is contained in the author's denial of the importance of the air as an agent in suddenly bringing down large masses of roof. Its effect is wholly surficial and gradual and arises more from frost than from any other cause. It is more likely that the trouble which he records arises from soft beds which have hitherto been kept in place because everywhere loaded and supported, and consequently in a perfect balance of forces. They have not been enabled to move till the accident of mining freed them from this constraint. As the bottom of the Panama Canal was lifted under the pressure of the adjacent hills as the canal was constructed and as the beds in the bottoms of valleys are found lifted up by pressure, so it is likely that the weaker beds in the roof are made to flow toward areas over openings in the coal.

One can scarcely conceive how much the clay beds have been harrowed and squeezed since they were laid down. One needs only to view the irregular cross sections of anthracite strata to realize that the general uniformity of depth of deposit which obtained in the Carboniferous era over small areas was rudely destroyed by the crumpling of the measures and by the filling with the softer rocks of the voids thus formed or tending to be formed.

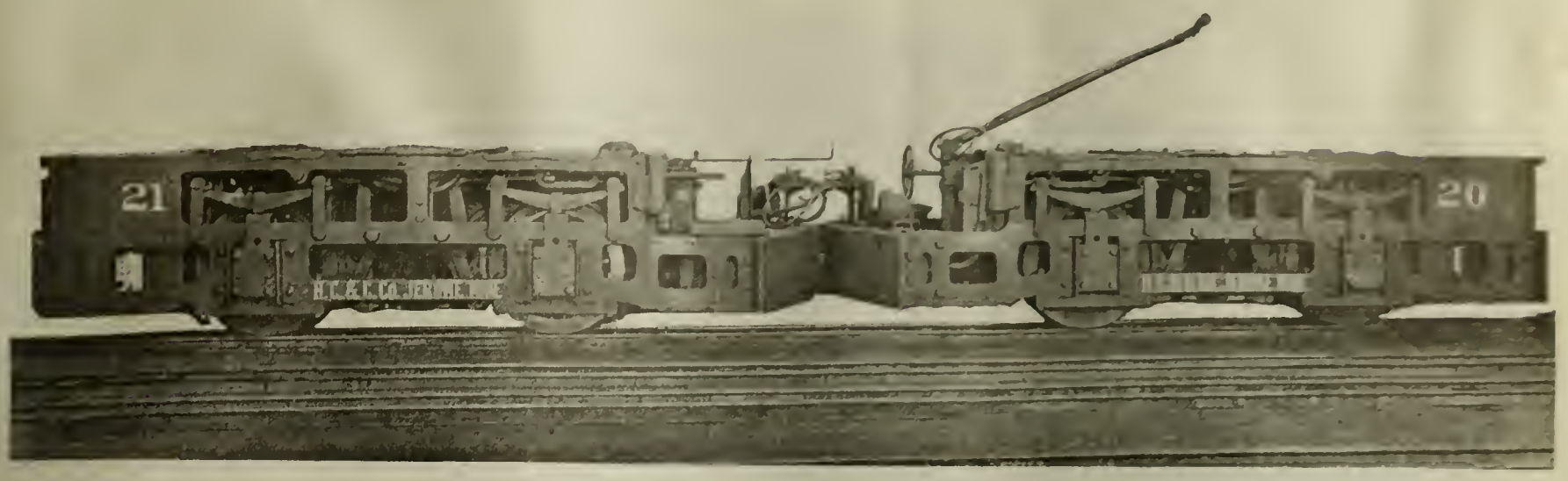
The author's recommendations seem entirely sound, but even he would not advise their adoption in parts of the same seam where a roof radically different is found. The value of the article rests not on its characterization of the lower Kittanning bed but on its hints as to the effect of clay in the roof and as to the methods by which its evil effects may be best overcome. Certain roof failures in southern Wyoming much resemble those described in the article, and clay, not water, may be the cause.

The Cost of Federal Coal Control

REPORTS from Washington are that the U. S. Fuel Administration spent $4,824,681 of public money during its life of twenty-two months. Although this may represent the cost of fuel control—the oil division of the administration is included in this total—paid directly by the Federal government, it does not cover the actual cost of the work. In the first place, fifty-two dollar-a-year men (whose checks are framed and will never be cashed) if paid salaries would have added much to the sum total. But the big item of cost that does not show up in any government accounting was the direct contribution of the coal operators in supporting first the offices of the district representatives and later the production managers. Estimates of the cost of this work, paid by assessments and contributions from the producers of coal, range up to $2,000,000.

If, however, these items all be added we find that control cost less than one cent a ton—a creditable figure when it is considered that for nearly a year every ton produced and shipped was under direct, detailed control; that coal was inspected and the public taught conservation, and a multitude of other important activities engaged in.

Changes in Electric Locomotives to Meet Demands for Heavier Duty



Frames of Bar Steel Resist Damage and Assist Ventilation of Motors—Leaf Spring Has Advantage Over Helical—Thrust Resisted by Removable Lid of Boxing—Detachable Rims and Split Gears Are of Questionable Merit—Tandem Locomotives and Fan Ventilation Meet Demand for More Power

By Graham Bright*
East Pittsburgh, Pa.

TRANSPORTATION at mines is effected by one of two classes of agents—locomotives or rope haulages. Rope haulage usually is installed only where the grades are too steep to be traversed by locomotives. Many different types of locomotives—steam, compressed air, gasoline and electric—have been tried out for mine service with more or less success. The electric locomotive, however, is the one that has given the most nearly universal satisfaction.

Steam locomotives have been used to a limited extent, but on account of the escaping gases and the fire risks involved, their application is practically prohibited. The compressed-air locomotive has a field limited to extremely gaseous mines, but its cost of operation is so high that it is installed only as a last resort. This machine has a restricted radius of action, for it has to be charged frequently.

The gasoline locomotive is a complicated piece of machinery, and, on account of the poisonous nature of the exhaust gases, can be used only in main headings having a liberal amount of ventilation. Nevertheless, in some cases it has proved a success.

The electric mine locomotive has none of the objectionable features of the foregoing and can be built to suit any conditions where a locomotive is needed. It was not until the late nineties that the electric locomotive was used to any extent in mine service, and the first machines were rather crude when compared with later types. Railway equipment was first tried, but as the demand grew special machines were designed and built to suit mining conditions.

Figs. 1 and 2 show two views of a 22-ton locomotive built for mine service in 1896. Two bipolar railway motors were used; motion was transmitted to the outside drivers through double reduction gears. As shown in the illustration, all drivers are connected by side rods. Although this locomotive was largely a makeshift, it was kept in active service for seventeen years, being finally scrapped in 1913.

The first locomotives designed to meet mining conditions were made with cast-iron frames and single reduction geared motors provided with babbitt axle bearings and grease lubrication. These machines were equipped with non-interpole motors using similar bearings and lubrication. This general type of locomotive frame and motor persisted until about 1910, when it was recognized that the entire machine should be revamped and a more satisfactory construction and better equipment adopted.

Structural-Steel and Plate Frames Bend

In earlier days experiments were made with structural-steel and plate frames, but it was found that while this type of structure could not be broken, it was rather easily bent whenever a severe accident occurred. After this experiment the Westinghouse company developed the bar-steel frame as the most satisfactory from every standpoint. This type of frame is made of cast steel and has been used by the Baldwin Locomotive Works for many years on main-line steam-iocomotive service. where it has been an entire success.

The advantage of this type of frame over the cast-iron, plate or structural frame is that as no rivets are used there are none to become loose; its design allows the material to be distributed to the best advantage: it is stronger than any other type of frame of the same weight; it permits easy access to the brakes, brake rigging and motors for inspection and oiling; it allows of a better ventilation of the motors and resistance and makes it possible to blow out dust which otherwise would settle on the apparatus.

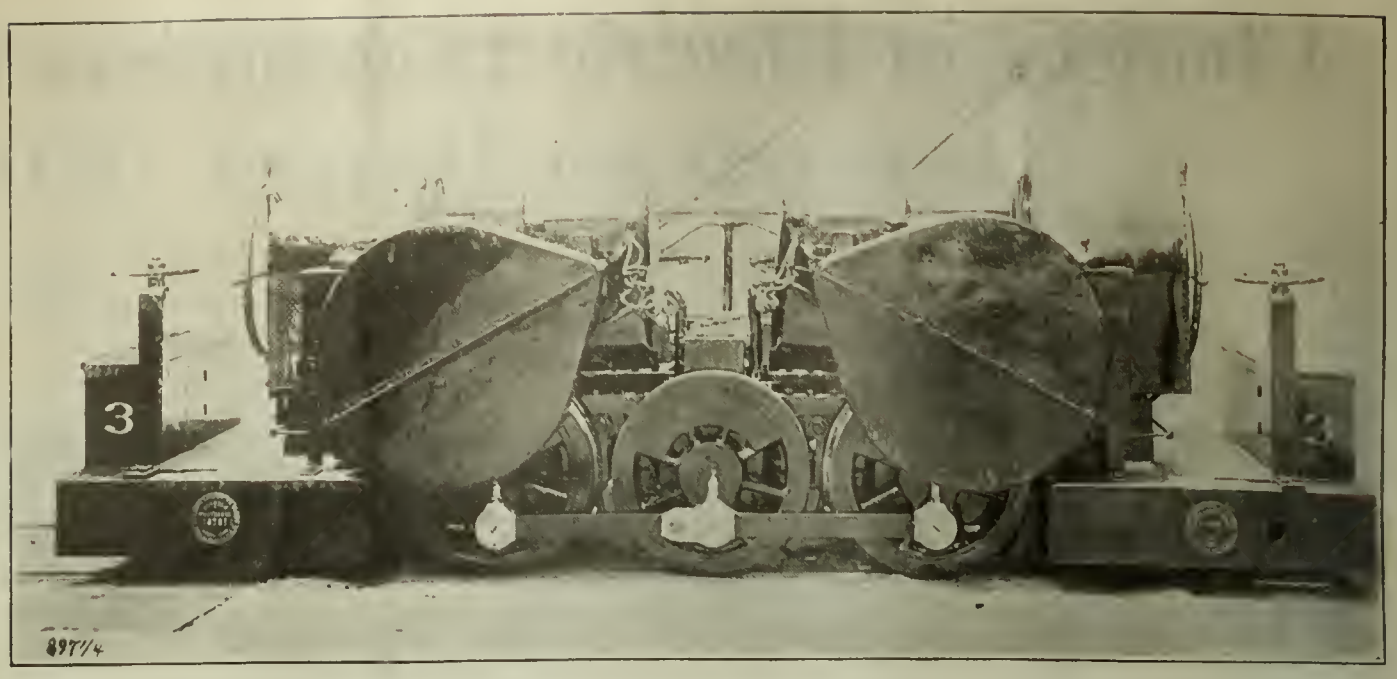
It cannot be broken and if bent through severe col-

*General engineer, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

FIG. 1

Mine Locomotive of Early Type

This machine used two motors and three drivers connected by side rods. Although this machine was somewhat crude in both design and construction, it gave excellent service for seventeen years.



lisions it can readily be straightened. The better ventilation obtained increases the capacity of electrical equipment so that it can be relied on for all-day service. Fig. 3 shows a 10-ton locomotive with bar-steel frame which illustrates the features just mentioned. Most of the locomotives manufactured are furnished with frames placed outside the wheels, thus affording the much-needed accessibility. The bar-steel frame castings can be so arranged that the motors may be hung either inside or tandem, with frames either inside or outside.

After several years of experimentation Westinghouse engineers have found that the helical type of spring over the journal box allows only a rather limited motion and does not produce the good track-holding qualities desired for best operation. The Baldwin Locomotive Works has for a number of years used the leaf spring over the journal box on large mine locomotives, especially those having three motors.

It has adopted this type of spring for all two-motor locomotives, as it greatly increases the amount of spring

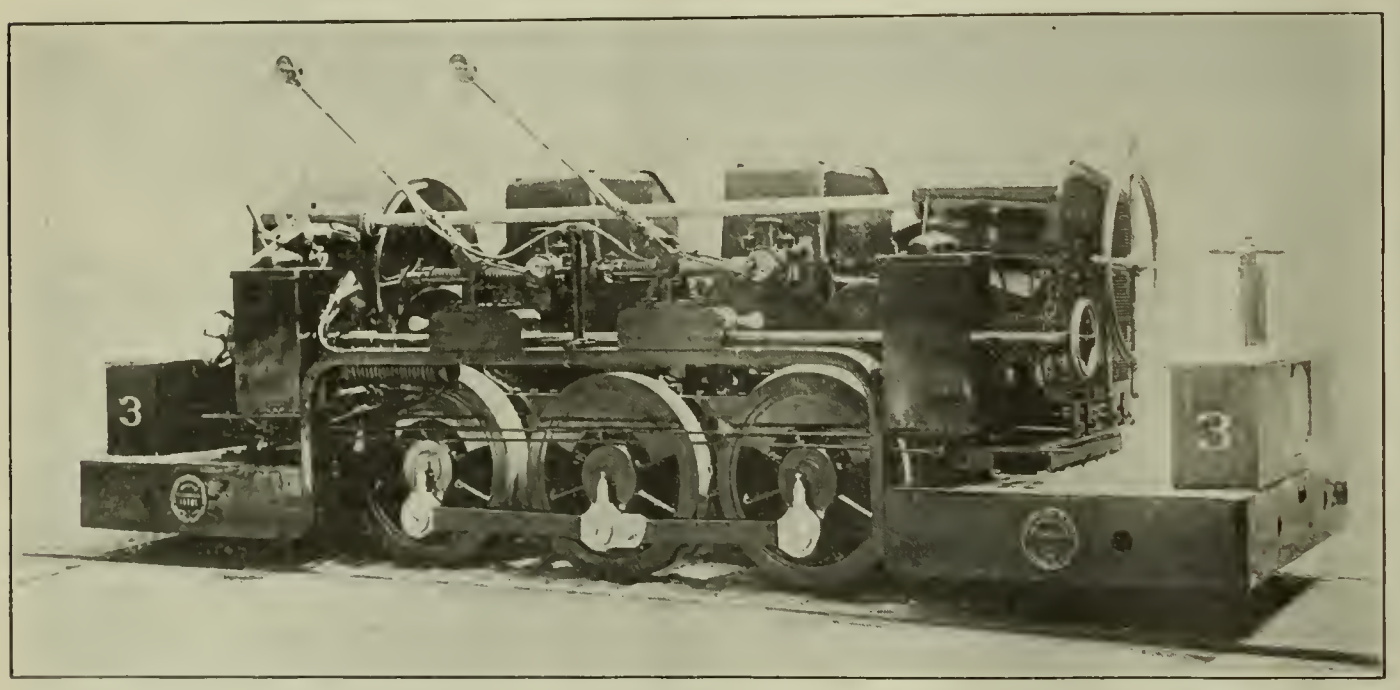


FIG. 2

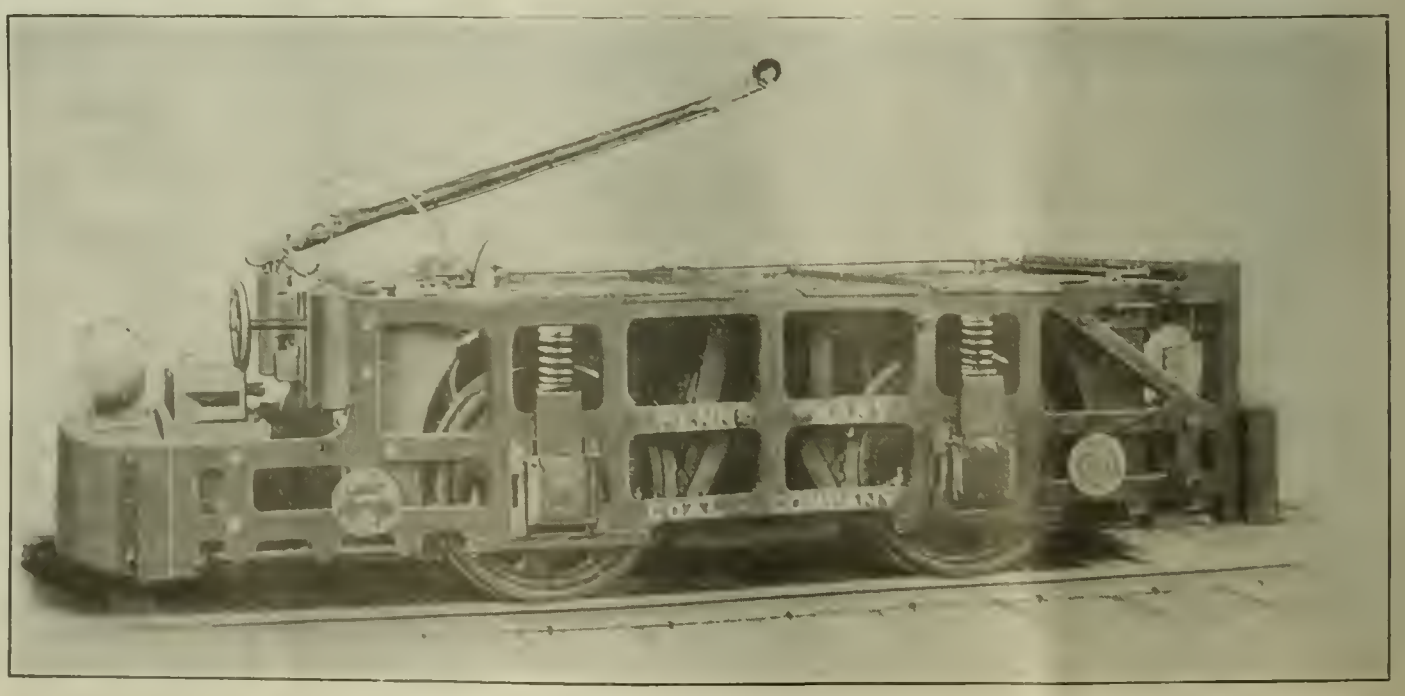
Another View of Same Locomotive

Note that there were two trolleys set somewhat low on the machine. The locomotive weighed twenty-two tons and was built in 1896, being scrapped only in 1913.

FIG. 3

Locomotive with Bar-Steel Frame

Ten-ton locomotive. Many advantages are claimed for this skeleton frame. Chief of these are greater accessibility and better ventilation.



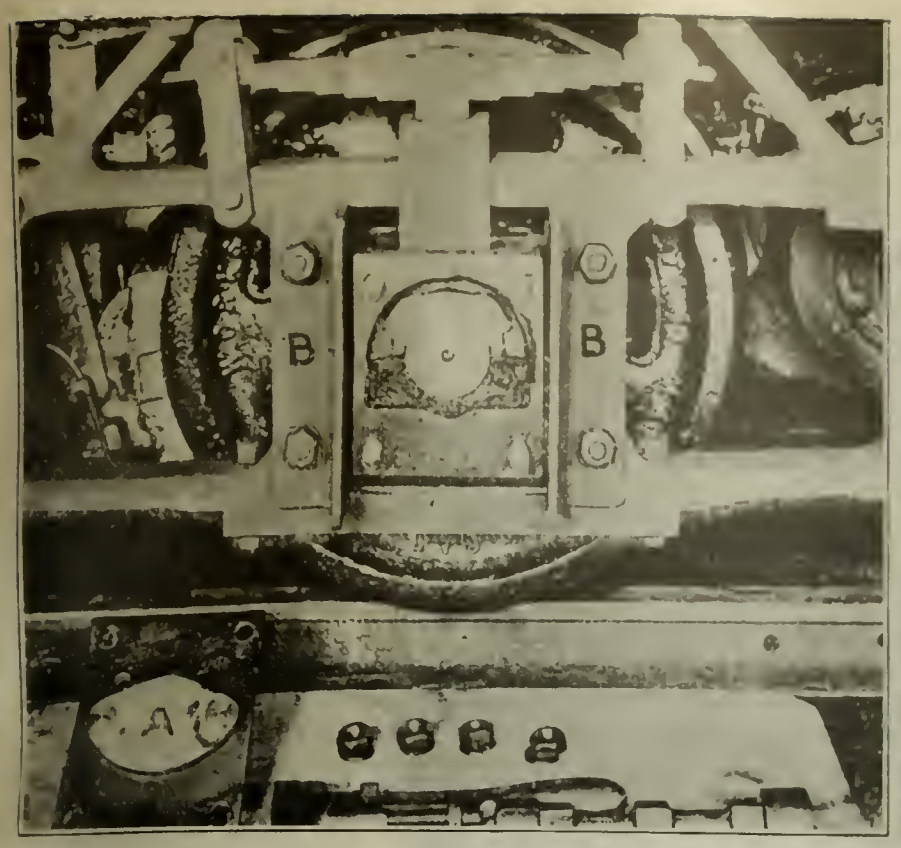


FIG. 4. JOURNAL BOX AND PROTECTING ANGLE IRONS
End thrust is taken on the journal-box lid (A), which is se-u ly bolted in place. Heavy external angle irons (B) protect this box cover from injury by obstacles along the track. All parts are readily removable.

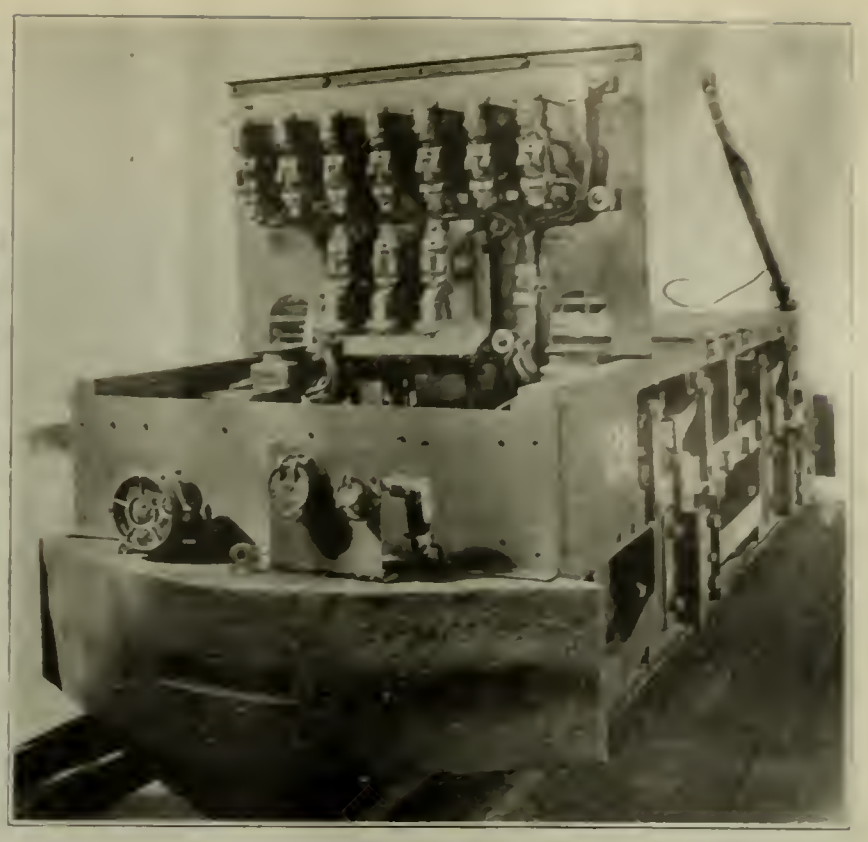


FIG. 6. MAIN CONTROL OF A 13-TON LOCOMOTIVE
Lifting a cover plate gives access to the entire apparatus. This locomotive is used at the Jerome mine of the Hillman Coal & Coke Co. and is one of the tandem locomotives in the frontispiece.

action and decidedly improves the tracking qualities of the machine. An equalizer has been proposed for two-motor locomotives and is being used by one manufacturer. As will be shown later, equalizers are of appreciable value on three-motor locomotives, but are of questionable utility when used in connection with one having only two motors.

End thrust has been taken in the past by the outside of the wheel hub. This hub has been rather expensive to keep up and troublesome to lubricate. The type of box recently developed takes the end thrust on the inside

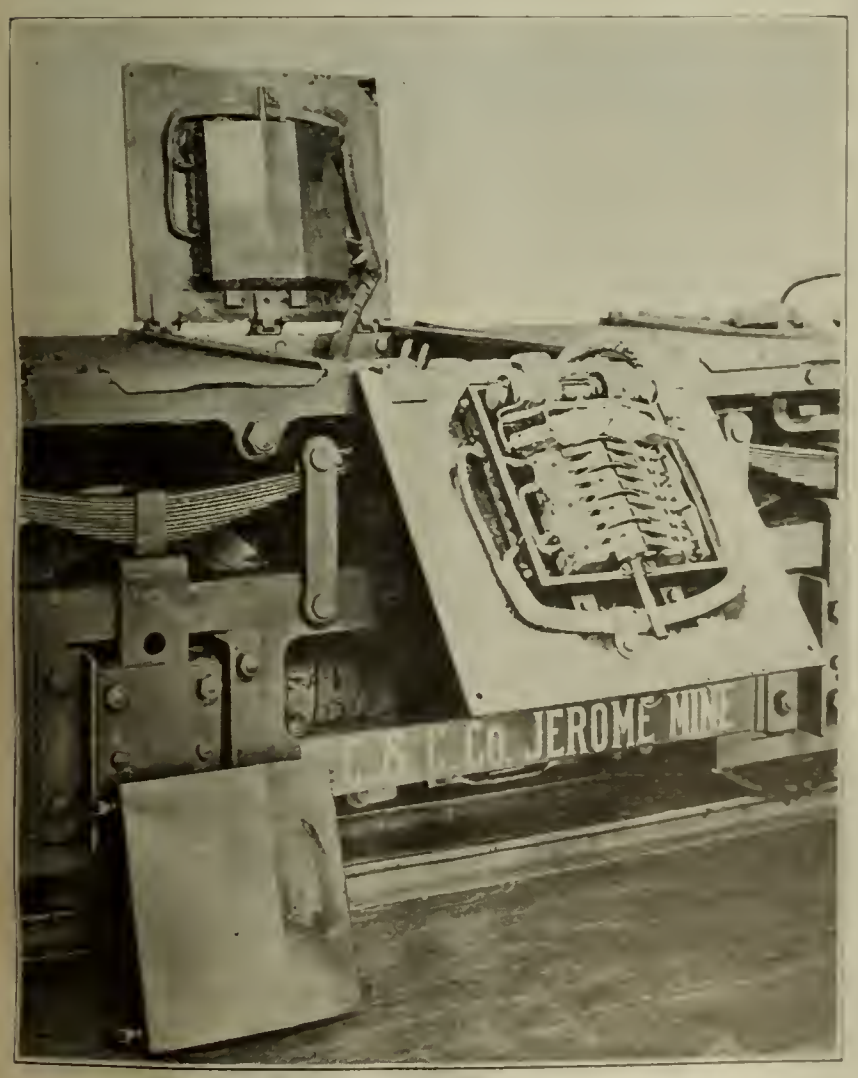


FIG. 5. REVERSERS OF LOCOMOTIVE IN FIG. 6
Little further advance can be made so far as accessibility is concerned. Electrical apparatus is far more accessible than it ever could be with a drum controller.

FIG. 7. AN UNUSUALLY "SPECIAL" MINE LOCOMOTIVE
A cab is here provided as well as air brakes and a trolley device that adapts itself to decided lateral variations in the position of the wire.

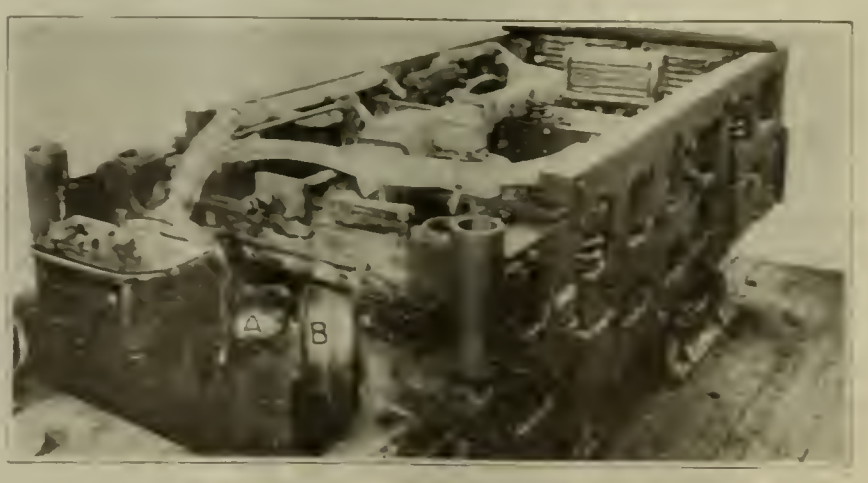


FIG. 8. ARTIFICIAL VENTILATION OF MOTOR
A small independent motor (A) driving a centrifugal fan (B) continuously pumps air through the motors, thus assuring effective cooling and consequent increased continuous haulage effort of the locomotive.

FIG. 9

Largest Mine Locomotive

This machine, which is operated by the Berwind-White Coal Mining Co., weighs 35 tons; the track gage is 36 in. and the over-all height about 48 in. Three 85-hp. commutating-pole ball-bearing motors are employed. They are kept so cool by a ventilating fan that the locomotive is enabled to haul 100 cars up a grade exceeding 3 per cent, where otherwise 70 cars would be limit.

of the journal-box lid. These lids are sometimes knocked off by obstructions along the roadway. For this reason heavy angle bars have been adopted for their protection, as shown in Fig. 4. These angle bars also serve the purpose of holding the main journal box in position. Details of construction and method of removal have already been shown on page 167 of the issue of July 22, 1920.

This method of receiving end thrust is far superior to the older scheme of resisting it by the wheel hub. A hardened plate is welded to the inside surface of the journal-box lid and with adequate lubrication by a method that excludes all dirt and grit the upkeep on this type of journal box is low and its renewal is simple.

Steel Wheels Replacing Those of Cast Iron

Cast-iron wheels are still used to some extent, but the majority of locomotive users are specifying steel wheels or steel-tired wheels, largely because with them about 25 per cent better traction is obtained. A wheel with a detachable rim has been proposed, but as most locomotives sold have outside frames, a quick change of the rims would be difficult to accomplish. Moreover, it has been found that where such rims have been in operation for some time under mine conditions they rust in place and become difficult to remove.

Split gears have been standard for many years, but the advantages of the solid gear are so great that a strong tendency has developed to standardize on this type. Solid gears are advantageous because they are not likely to become loose. The gear can be heat-treated, increasing its life to two or three times that of the split gear. With heat-treated pinions and solid heat-treated gears upkeep can be greatly reduced and continuity of service largely increased over that obtained with the ordinary pinion and split gear.

Where more capacity is desired than can be obtained on two axles because of gage and height limitations a three-axle locomotive sometimes is used. The middle driver in such a machine has no flange and so can be used where the track has a relatively small radius of curvature.

Fig. 9 illustrates a 35-ton three-motor locomotive at an operation of the Berwind-White Coal Mining Co. This is the largest single mine locomotive ever built and is operated on a 36-in. gage and has an over-all height of about 48 in. The motor equipment consists of three 85-hp. commutating-pole mine-type motors with ball bearings. This machine is equipped with a small motor-operated fan which affords air for forced ventilation.

It will handle a trip of 100 loaded cars from a distance of 16,000 to 19,000 ft., much of the distance being upon a grade against the load which exceeds 3 per cent. Two of these locomotives have been in operation for more than three years, and during this time it has never been necessary to remove a motor or open a motor frame. The motors are still operating with the original brushes and original bearings. Without the use of forced ventilation these machines could not handle trips exceeding seventy cars.

This illustration shows in detail the method of equalization employed. Two motors are equalized on the side with cross equalization on the third motor. This scheme is superior to the ordinary one of equalizing the three motors on the side only.

Using Tandem Locomotives Keeps Down Size

Where it is not possible to obtain sufficient capacity on two or three axles, tandem locomotives are used, requiring only one operator for both units. A number of such machines have been built in the past using a four-motor drum controller on the leading locomotive and a two-motor type of drum controller on the secondary unit. This equipment requires a large number of cables connecting the two elements.

Recently a new type of tandem locomotive has been put out by the Westinghouse company with greatly simplified connections between the machines as well as the entire control system. By this means it is possible

FIG. 10

Battery Locomotive

This machine is fitted with light outside bar-steel frames and leaf suspension springs. The storage battery is mounted above the frame at the expense of head room.

to utilize larger locomotives without running into cumbersome equipment. The control is of the magnet type and requires one trolley jumper and nine small control wires between units. Both machines are exactly alike and can be used separately or connected, either unit being a primary. This type of locomotive is illustrated in the frontispiece, depicting the latest practice in tandem-locomotive operation.

Commutating Pole Reduces Sparking

Under certain conditions it becomes impossible to install motors of sufficient capacity to withstand the severe heating developed in main haulage. This is especially true where long hauls up heavy grades are encountered. To meet this condition a scheme has been developed wherein forced ventilation is applied to the motors as illustrated in Fig. 8. This simple arrangement greatly increases the continuous capacity of the motors and will not only largely increase the power of the locomotive but will decidedly decrease the upkeep. This scheme can be applied only where the motors are designed with openings sufficiently large to take advantage of the forced ventilation. The Berwind-White Coal Mining Co. for several years has been using this system with entire success on 25- to 35-ton locomotives.

At the time when the new locomotive frames were designed a new line of motors was brought out which embodied all the latest features in railway practice. Advantage was taken of the vast amount of experience gained in the electric-railway field, and as railway engineers were designing the mine equipment, the latest and best railway practice was utilized in the planning of the new mine motors. These new motors include the well-known commutating pole, which enables the motor to commutate all loads without injurious sparking.

This was a decided step forward, as most of the trouble occurring in a mine motor starts with poor commutation. Babbitt bearings with grease lubrication were changed to sleeve-type bronze bearings with waste lubrication, which is the standard type of bearing for the railway motor of today and is preferred by many mine operators to the ball bearing.

The ball bearing was introduced a little later and has proved a great success when properly installed and cared for. Any bearing requires regular inspection and oiling, and if neglected will give trouble. Should there be an accident, however, the ball bearing is more expensive to replace than any other. The motor-axle bearing also was redesigned and is now of the bronze type with oil and waste lubrication. Both varieties of bearings

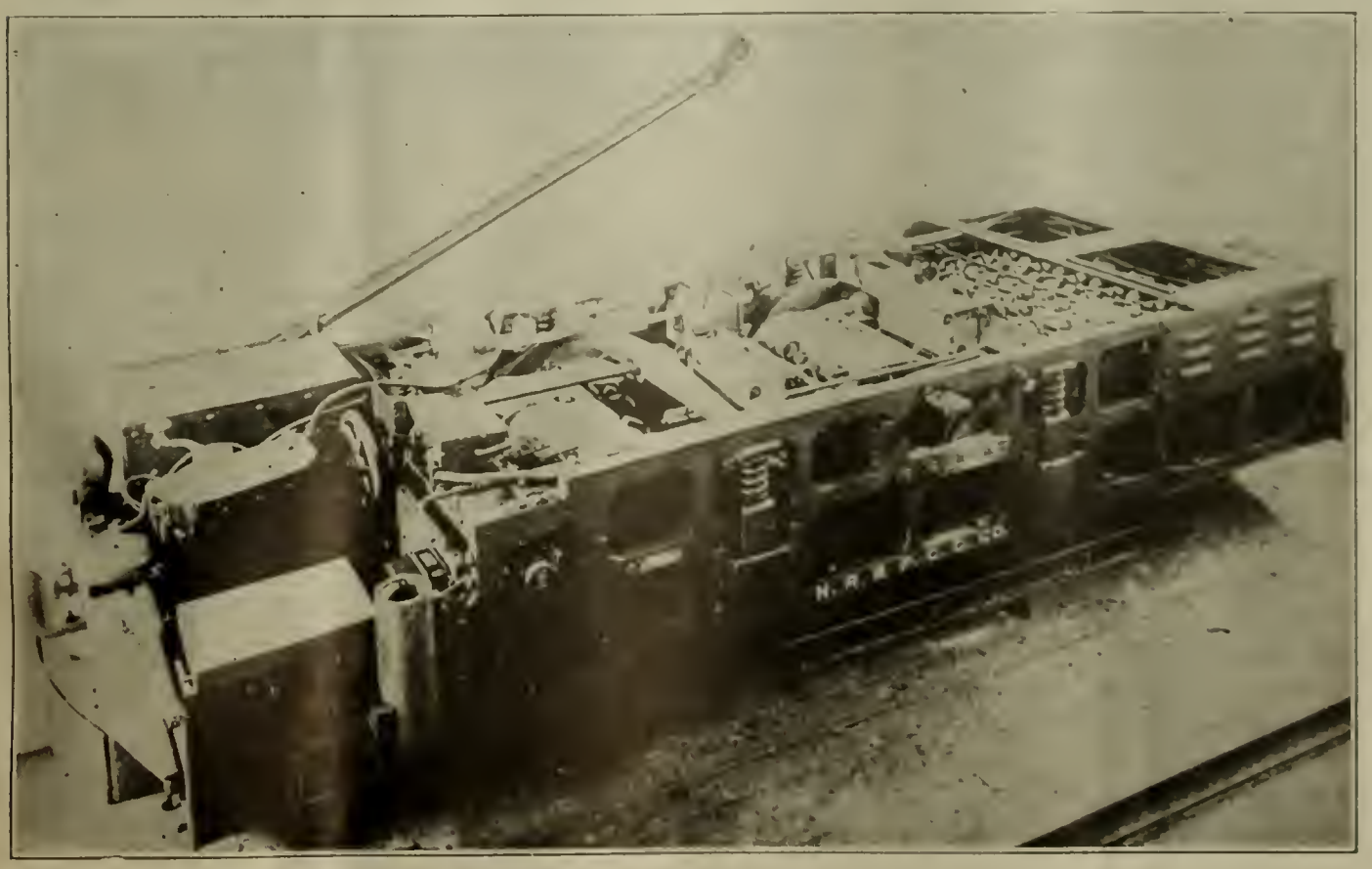


FIG. 11

Battery Locomotive for Low Coal

Placing the accumulator between the frames, as is done in this case, limits the capacity of the locomotive. However, this cannot be avoided if headroom is not available.

provide a ready means of gaging the oil. This is the most successful type of motor-axle bearing in use today.

Motor windings, commutator and general design were greatly improved. A spring was added to the suspension rod to cushion the effect of the motor weight and dispose of vibrations which might be communicated to the motor. The resistance used was changed from cast iron to a nickel iron, rendering the grids less brittle and better able to withstand vibration.

Little change has been made in the drum controller used on locomotives up to thirteen tons with the exception that a series-parallel type is being employed to some extent and dynamic braking is being improved. In addition to the above fundamental changes, improvements of various kinds are being constantly added, and actual mine conditions are being continually studied with the object of bringing out new designs that will more nearly meet actual requirements.

Locomotive designers have some difficulty in meeting the problems arising out of the multiplicity of gages. These start at 18 in. and vary in some cases by a fraction of an inch to the railroad standard of 4 ft. 8½ in. Motors for excessively narrow locomotives are difficult to design and expensive to build. They are necessarily narrow and of large diameter and for this reason are said to be of the "pancake" type. In addition to the many gages there is a wide range in weight, width and height that makes it necessary to build a great variety of types.

Mine locomotives can be divided into two general classes—main haulage and gathering. For main haulage work the electric locomotive in most cases has no competitor. For gathering, the time-honored mule under certain conditions will give the electric locomotive or any other type of mechanical device close competition. Some mines use 500 volts for mine haulage, but the majority of locomotives are built for operation on a 250-volt direct-current circuit.

Motormen Fail to Use Series Position

Main-haulage locomotives range in weight from eight to thirty-five tons, the larger sizes often being equipped with three motors. Until recently the standard method of control was the series-and-parallel type of drum controller. This device enables the operator to start either in series or parallel. The result is that in the majority of cases the series position is not used at all, which somewhat affects economy of operation. In some instances the series-parallel type of controller is employed, in which case the motors must be started always in series. This proves a more economical controller but some object to it because in certain cases as heavy a load cannot be started in series as in parallel.

For locomotives larger than fifteen tons and for tandem operation on machines where the individual unit weighs thirteen tons or more, magnetic or pneumatic control is becoming popular. For single locomotive operation with machines exceeding fifteen tons in weight and using 250-volt service the drum controller becomes large in size and difficult to manipulate from a physical standpoint. For 500-volt service and drum-type controllers the locomotive sizes can be much larger as the current on 500 volts is only one-half that reached with 250 volts.

Magnetic or pneumatic control is operated from a small master controller, and the switches can be so distributed that the safety of the operator is greatly increased. The control apparatus can be placed to much better advantage and can be made far more accessible for inspection and repair. This is illustrated in Fig. 6, showing the main control of a 13-ton locomotive equipped with magnetic regulation. Fig. 5 shows the reversers and also illustrates how accessible they are for inspection or repair. Such convenience of access could not possibly be attained with a drum controller.

For tandem operation the control is greatly simplified, as a small master controller will be placed on each unit, all of which will be made identical one with the other.

Storage-Battery Versus Reel Locomotives

The storage-battery locomotive has proved quite successful for gathering purposes, but great care should be exercised in the adoption of this machine, as many misapplications have been made as well as a large number of applications where the trolley type of machine fitted with a gathering reel is much superior. Where the grades are not heavy and hauls are short the storage battery in many cases can prove its superiority.

An accurate study, however, should be made of each case before attempting to install the storage-battery gathering locomotive. Fig. 10 illustrates an accumulator locomotive for mine service fitted with bar-steel frames and the latest type of leaf suspension spring and thrust type of journal boxes. Fig. 11 shows a low-height type of storage-battery locomotive. Where, as in this case, the accumulator is between the frames it is difficult to obtain large battery capacity. Much greater duty can be obtained if the batteries are located on the top of the frame.

It is sometimes necessary to build special types of locomotives to meet abnormal conditions. Fig. 7 shows a 15-ton locomotive with cab on one end, air-brake equipment and a special type of trolley to take care of a large lateral variation in the position of the trolley wire.

The Smoot-Reavis resolution, providing for a survey of the executive departments of the Federal Government, has become a law without the signature of the President. The statutory ten-day period passed without the measure's having been vetoed and it became a law automatically. An incident of the legislation was the loss of the bill in the White House offices. Opinion is divided as to whether the President would have vetoed the measure had it been brought to his attention. A joint Congressional committee will be organized under the bill. It is expected that Senator Smoot, of Utah, will head the committee. The bill provides for the employment of a representative of the committee to take charge of the immediate direction of the survey which is to be made.

Appropriations for special coal work requested by the Bureau of Mines, including $725,000 for the Federal inspection of fuel and $75,000 for selection of fuel for all Government uses, except the Navy, were refused by the House Committee on Appropriations which reported the sundry civil appropriation bill Dec. 29. The bureau had asked for $3,469,638 for the next year, but the committee allows only $1,357,300, which, however, is $54,658 more than the current appropriation. For fuel and other supplies for public buildings $2,500,000 is provided, and the Treasury Department is authorized to contract for the purchase of fuel for public buildings under its control in advance of the availability of the appropriation for the payment therefor, with the stipulation that the contracts shall not exceed the necessities of the current fiscal year.

The Atlantic Coast Line Railroad Co. has asked authority of the Interstate Commerce Commission to issue notes for the purchase of 400 all-steel hopper bottom coal cars.

Why Does the Roof of the "B" Seam Develop Heavy Falls in Narrow Work?*

Under Certain Conditions the Roof of the Miller Seam Falls Suddenly and Without Warning—A Weak Roof Containing Pronounced Joint Planes and Overlaid with a Thick Readily Shifting Clay Appears To Be the Cause of These Falls—Open Mine Intensively or Drive a Wide Caving Heading Parallel to Entries If You Would Avoid Trouble

By Alfred E. Roberts†
Ebensburg, Pa.

NOWHERE are more peculiar roof conditions to be contended with than in the working of the Miller or "B" seam. Over a large area the Miller bed shows marked uniformity. A section of the roof, as I have observed it, would be roughly as follows: One to two feet of dark hard slate showing little or no tendency to part along bedding planes; above this a softer grayish shale interspersed with bands of dense sandrock, often exhibiting a lenticular tendency and varying from a few feet to a bed of great thickness; above this a hard grayish fireclay exhibiting no tendency or only a slight disposition toward bedding and falling out in rude lenticular masses. The thickness of this clay may vary from a few feet to many feet. This material apparently is high in silica and it probably merges into a bed of sandy shale, for such a deposit has been reported in near-by areas. At other places it may finally grade into sandrock.

In the discussion of this paper Joseph Williams, then president of the Coal Mining Institute of America, offered another solution of this problem of roof failure in narrow work. He believed it to arise from hydraulic pressure. No great volume of water would be needed; only free access from the surface and enough water to extend thereto and give the required head. The coal in the region where the conditions described were found is 200 to 800 ft. deep and it lies at a moderate gradient.

After deposition of the covering of the coal bed the whole region was elevated and gently folded. This elevation and folding resulted in the formation of remarkable joint planes. These are highly developed and show great persistency and parallelism in any given locality. When the side of a joint is exposed, it exhibits a remarkably smooth surface, resembling a slickenside, as if through oscillation the opposing faces had polished one another. This similarity to a slickenside is heightened by the material which is found deposited in the joint and which comes without doubt from the fireclay above. In no other coal-mining region have I seen such highly developed joint planes in the roof. As will be shown later, this characteristic, after mining operations are started in the coal bed, has an important bearing on the action of the roof.

Roof in Narrow Road Falls Without Warning

I have myself observed several peculiar falls of roof and some that were equally strange have been described to me by competent and thoroughly reliable mining men. One of the first of these incidents and one which came under my direct observation occurred in a room heading. In the first few hundred feet of this roadway, top rock was shot to make height. The roof gave much trouble and had to be brushed so often that it was decided to shoot the bottom and leave the top undisturbed. The heading was driven in this manner for a distance of 500 ft. and slightly widened to permit the gobbing of the bottom rock. To all appearances the roof was good. It sounded perfectly solid and gave no indications of getting heavy, though it was posted sufficiently to allow such indications to become apparent. At half-past three the day shift left this heading in apparently normal condition. The men on the night shift who were working in it have since said that there was no apparent indication of a break until the roof suddenly fell. The night foreman at 4 p.m. reported this heading closed with fallen roof to a depth of over 10 ft. for a distance of nearly 300 ft. from the face.

One Fall Begins Where Other Fall Ended

In the second case main and back headings were driven, and the roof shot in each sufficiently to permit of haulage. Little or no trouble had been experienced with the roof when, without apparent warning, it fell in the back heading, starting from a point within a few feet of the face and extending approximately 250 ft. outby. These headings were then abandoned temporarily, remaining in this condition for several months. Again, without apparent warning, the roof in the main heading, beginning at a point near the junction with a cross heading, gave way and fell to a point nearly opposite the outby end of the fall in the back heading.

Some of the details considered important in connection with these two incidents might be singled out. First, both pairs of headings had been driven at an acute angle with the joint planes in the roof. Second, both pairs of headings had been driven into the solid a long distance without any other opening having been turned from them. Third, in the case of the second occurrence the fall in the main heading terminated opposite the end of the fall in the back heading and traveled in a different direction.

*Abstract of paper presented before the Coal Mining Institute of America, Pittsburgh, Pa., Dec. 9, 1920, entitled "Some Peculiar Roof Conditions Encountered in the Central Pennsylvania Bituminous Field."

†Superintendent Monroe Coal Mining Co.

The peculiar incidents now to be related were told me by men who have had long experience in the working of the Miller seam. A room heading from which sixteen rooms had been turned, suddenly and with only slight warning caved for a considerable distance. The warning was sufficient in this case to enable the men working in this section to escape. In another instance a room heading that had been driven for a long distance without having any rooms turned from it caved apparently without warning. This heading had been examined and found in normal condition on Saturday, but on Monday morning it was found to be almost entirely closed from a fall.

Some of the Theories to Explain Falls

Many such occurrences could possibly be related were I familiar with the entire field. The foregoing, however, are sufficient to establish the existence of a distinct mining problem, the correct solution of which can be found only by the collection of all available facts.

Many theories are held by men experienced in operating the Miller seam regarding this tendency in the roof to break unexpectedly or to become bad and require much attention. These theories are interesting, but they are based on erroneous ideas. Some of the prevailing ones may be set forth as follows:

(1) That roof falls are caused by accumulations of gas under sufficiently high pressure to rupture the rock.

(2) That the falls are attributable to the hard bottom which is found in several areas underlying the coal. This theory assumes that where soft bottom exists, redistribution of the weight of overburden made necessary by excavation of some of its support forces the pillars into the bottom until adjustment has taken place and that where a hard bottom exists this adjustment must be made in the roof. This results in sufficient disturbance to cause enormous falls.

(3) That some limelike substance occurs in the rock, which on exposure to air slacks, breaking up the rock. This theory has arisen without doubt from the appearance of what is called a "cutter," a rather irregular grayish line which forms in the roof, indicating the development of a break therein. This cutter develops, according to my experience, more readily in a roof that has been shot for height than in one which has been left undisturbed.

(4) That falls result from exposure of the rock to the air, without any other qualifying reasons. Certain objections exist to all the above theories, as will be pointed out, though much evidence apparently tends to support them all.

Where All Former Theories Appear to Fail

The first theory, that gas was the cause, was advanced to explain the occurrence first narrated. I am inclined to deny that gas was the cause of this roof failure or of others I have noted, for the reason that no gas was detected immediately after, or in fact at any time after, the occurrence, though a constant lookout was maintained for it. This statement applies to inert as well as to explosive gases. In no instance of the kind have I learned that large volumes of gas were detected after sudden falls of the roof above the Miller seam.

The second theory is supported by the fact that many falls have occurred where hard bottom exists. But that may be only a coincidence and not a cause. Other factors having a highly important bearing on results may have been overlooked. In this connection and as previously pointed out, the roof may have contained highly developed joint planes, and it readily can be seen that if the openings were driven so that their direction formed an acute angle with these planes, the roof between two such joints might be considered as a beam the length of which is increased with the acuteness of this angle. If this beam is considered as being uniformly loaded, its tendency to rupture is increased by a corresponding increase in length. In all cases of failure encountered, I have observed that the angle formed between the joints and the direction of the heading was quite acute.

What Hard-Bottom Theories Would Assert

Another objection may be raised to the second theory, which assumes that an adjustment of the weight of the overburden takes place in the softer bottom. In few words this theory asserts that a certain initial load per square foot rests upon the bottom rock. Excavation removes support from a portion of the roof, the weight of which is transferred to the pillars remaining. The original bottom, unable to sustain this, is compressed until equilibrium is attained. If the bottom is hard, this adjustment takes place in the roof, resulting in falls.

The main objection to the theory based on the adjustment on the top that should take place in the bottom is the fact that no more heaving or creeping is observed when the bottom is soft than when it is hard, nor is it my belief that any such movement usually takes place, as actions of this nature are likely to be noted and anticipated. The bottom has been observed to heave under both conditions.

The third theory presupposes the existence of some limelike substance in the roof, the exposure of which to the air causes the rock to slacken and swell, creating sufficient pressure to break the roof.

The only effect the mine atmosphere coming in contact with the roof could have would be to supply moisture, oxygen or nitrogen. In just what mysterious way the mine air could penetrate and react upon the roof throughout any considerable thickness of rock remains unexplained. Neither is it clear how a limelike substance could remain for ages in so unstable a state.

Why Has Lime Delayed Deliquescence?

Much evidence appears to disprove the assumption that it could. The material forming the roof we know was laid down under water, and in all rocks such as these under discussion a certain amount of moisture always is present. Subsequent heat developed through folding has hardly been sufficient to calcine any such mineral material.

It is well known that certain rocks swell on exposure to air. This has been demonstrated repeatedly in the sinking of shafts. Whether the swelling is caused by some change in the constitution of the rocks or is only apparent and in reality is the result of exudation of more or less mobile material under the influence of pressure has, as far as I know, not been made clear.

The fourth theory advances the old idea that the bad roof conditions are caused by the action of air on the rock. I have heard that argument from my boyhood days—from the beginning of my mining experience

as a door boy in the anthracite region. Usually this statement is made with all the assurance born of ignorance and with all seriousness. It is one of the many fallacious reasons given as the cause of many incomprehensible phenomena encountered in mining—believed in by many and really investigated by few.

If Air Rots Roof Effect Must Be Seasonal

We all know from experience that during the summer months the cooling effect of a mine contracts the air as it enters. This results in the deposition of part of its moisture content. In the winter the cool air entering the mine is warmed, expands and takes up moisture. If the air were responsible for bad roof conditions we should naturally look for seasonal disturbances, whether the cause arose from absorption or loss of moisture or from contraction or expansion of rock because of cold or heat. The disturbance from the latter cause would be highly localized. But no such seasonal weakness exhibits itself.

The above theory seems to be supported to some extent in the case of the Miller seam because of the presence of the cutters already referred to. These cutters herald the approach of a break in the roof and are regarded as marking a point in it weakened by contact with air, this idea being supported by the apparently disintegrated material along the line of the cutter. I am forced to believe, however, that this condition is resultant upon incipient stages of breaking and not antecedent to them.

It might be mentioned in connection with the disintegration of the roof that when this material is sent outside to the spoil bank rapid disintegration takes place and in a week or two large lumps can be kicked to pieces with ease. It has always been a matter of speculation to me why this disintegration takes place only slowly in the mines. Observation has failed, however, to reveal the reason.

Extrusive Clay Cause of These Roof Falls

In my opinion, the chief cause of bad roof in certain sections of the Miller seam and the extensive falls that occur in them, sometimes quite suddenly, is the large body of fireclay above the coal bed and the pressure of the overburden acting upon it.

This thick bed of fireclay can be imagined as being under certain conditions more or less mobile because of the rude lenticular structure of the masses of fireclay composing it. This mobility may well become more pronounced in the presence of water. When an opening is driven in the bed, the coal support under the area so mined is removed and the weight formerly supported by this coal is transferred to the surrounding pillars. It is natural to suppose that this weight in large measure falls on an area of the pillar close to the opening.

The mobility of the fireclay tends to keep this pressure evenly distributed much as it would if a fluid body replaced the deposit. This tendency to distribute the weight evenly causes a pressure to be maintained over the excavation comparable with that over the pillars. The unsupported roof naturally responds by giving way if the stress becomes sufficiently great.

The analogy between the clay bed and a fluid body fails, however, at one point, for the fireclay mass is able to adjust itself to the new conditions of pressure and come to equilibrium. This occurs when the pressure on the mass of clay above the pillar is no longer able to disturb or displace any part of it.

Under what conditions will the clay break the roof gradually or suddenly? Reviewing the geological characteristics of the roof it is found that the measures lying immediately above the coal are the strongest, as they are made up of homogeneous slate and layers of hard sandstone. This material will withstand enormous pressures but does not appear to be of an elastic character such as would permit of appreciable bending, hence it breaks suddenly.

Immediately above this comes the more highly stratified slate, which is of much less strength. Where the top has not been shot the gradually increasing pressure exerted by the extended fireclay may become so great that the roof will not sustain it. This is more likely to occur where the direction of the heading makes an acute angle or where water is present to accentuate the action of pressure on the fireclay. Where the top has been shot and brushed for height, the roof is weakened correspondingly and cannot resist the gradually increasing pressure. This results in successive falls until the movement has ceased.

Methods Adopted to Protect Entries

Several methods favored by men with years of experience in working the Miller seam seem to justify the theory just enumerated and they may now be recounted. Where the roof tends to be bad and unexpected falls are encountered, experienced men advocate that an additional and comparatively wide opening be driven near by when headings are driven in the solid. This opening can be allowed to cave so as to relieve the pressure over the other openings. This plan, I understand, has been adopted with some success and it has been found that over a limited territory adjacent to the caved opening the roof does not tend to break.

Another of the ideas largely held by mining men is that if sufficient area is opened up as development progresses the roof will have sufficient elasticity to overcome the excess pressure placed upon it. This idea may be explained by the familiar example of the automobile tire and the inner tube. Where the tire is weakened, the pressure on the inner tube forces out the weakened spot until the tension in the fabric is sufficiently great to balance the pressure within. Why does this pressure which tends to break the roof in a restricted area have a less tendency to break it in a wider area?

Simply because the analogy of likening the clay bed to a fluid is not complete and only a small percentage of the actual transfer of weight is made to the roof of the excavation in the form of pressure. Thus in the wider opening, with a greater tendency toward elasticity, the corresponding pressure will be less per unit of area than in the narrow and more constricted opening. It has been my personal observation that those who went on the principle of intensive development were successful in avoiding much trouble.

Four Conclusions Derived from Observation

The following observations have convinced me of the soundness of some of the ideas here set forth:

(1) Falls tend to terminate in one heading opposite the beginning of a fall in an adjacent parallel heading.

(2) In any opening turned at right angles to one in which acute roof disturbances have occurred the roof tends to remain undisturbed. Inquiry will show that the latter opening has been driven at an unfavorable angle with the joint planes.

(3) The roof is free from disturbance in openings driven parallel to others in which roof trouble has been acute.

(4) By developing simultaneously all the workings which are planned for the area the management of a mine may be practically relieved from roof difficulties in an area formerly mined only with difficulty.

Remedies for Roof Collapse in Narrow Work

Having arrived at the above conclusions regarding the characteristics of the roof of the Miller bed, the remedies proposed are as follows:

If conditions permit, drive most of the openings as nearly at right angles to the joint planes as possible. If this is done, some of the openings must of necessity, where a rectangular system of development is followed, be driven at an acute angle with the joint planes.. If these are room headings, turn off the rooms as distance is reached and open them up to an appreciable depth.

Too rapid driving into solid coal should be avoided. In the case of main heading I would drive multiple openings. There should be several small openings rather than a few wide places, unless the decision is reached to drive a caving heading. In such a case this should be driven wide.

It is my belief that the most abnormal roof disturbances in the Miller seam upon investigation will be found to have occurred in openings driven at an acute angle with the joint planes, in passages driven in the solid without the proper number of additional openings and in places where the roof has been disturbed by shots.

The Fuel Supply of the World*

Fuel Is a Basic Necessity—The World Now Largely Depends Upon Coal for Its Heat—Petroleum, Natural Gas, Wood, Etc., Also Are Burned, but as Their Supply Is Diminishing the Time Is Ripe for Co-operation in Fuel Conservation

By L. P. Breckenridge†
New Haven, Conn.

FOOD and fuel are basic necessities of present-day existence. Here in America as recently as one hundred years ago men were selecting places in which to live where food could easily be produced and where wood was near by for fuel and for the building of homes. Up to 1820 fuel was needed primarily for cooking food and for keeping warm. At that time power was produced by wind for propelling vessels and by falling water for the gristmill, sawmill, cotton mill, woolen mill and forge.

It was not until 1859 that Drake discovered petroleum, and if all the petroleum produced in the United States since that time had been burned for fuel it would replace our coal production for only the last two years.

The total amount of coal mined in the United States up to the end of the year 1840 was only 12,000,000 tons, an amount which is now produced in six working days. In fact the total coal mined up to the end of 1880 was no more than 1,000,000,000 tons, an amount now produced in twenty months.

Natural gas was first used for domestic fuel in 1821 and for manufacturing purposes in 1863. It has been a valuable fuel for domestic and industrial use in the areas where it has been available. It has been used wastefully and its diminishing supply is to be regretted.

In 1820 the center of population of the United States was not far from Washington, the national capital. Today it is about 130 miles southeast of Chicago and near the Illinois-Indiana state line. One hundred years ago no locomotive had been run in America and the fuel used for producing power was negligible. Today food is no longer produced near the consumer and fuel is an essential for its transportation, its preservation and increasingly for its production. Our population of 106,000,000 is widely separated and more than half the people now live in the cities. Food must be brought to the urban dweller and manufactured products must be taken to the people on the farms.

Fifty years ago (1870) the total coal production of the United States was less than one ton per capita (0.96). Today it is slightly more than six tons. This great increase is accounted for primarily by our growth as a manufacturing nation, involving great increases in the requirements for transportation, but to this must be added the evident fact that we have surrounded ourselves with many comforts, then unknown, as well as luxuries which still are never found in many foreign countries. We have wonderfully advanced our standards of living. The people of the United States (106,000,000) constitute only a small percentage of the population of the world, yet we consume more than half (52 per cent) of the coal used each year, and over two-thirds of the petroleum production of the world.

We are rich indeed in fuel but our wealth of heat-producing resources should not make us wasteful of them, for they are a world need and one which when once exhausted may never be replaced. It is hoped that a study of the facts presented in the accompanying tables will serve to emphasize the larger problems of fuel as related to their place of production, extent of exhaustion, methods of transportation, and especially their methods of use, pointing—as all the facts do—to the great necessity for co-operation for conservation.

The importance that fuel has assumed during the last five years has been recognized by the U. S. Geological Survey and the Bureau of Mines, with the result that the former has collected and distributed much valuable information relating to the production and distribution

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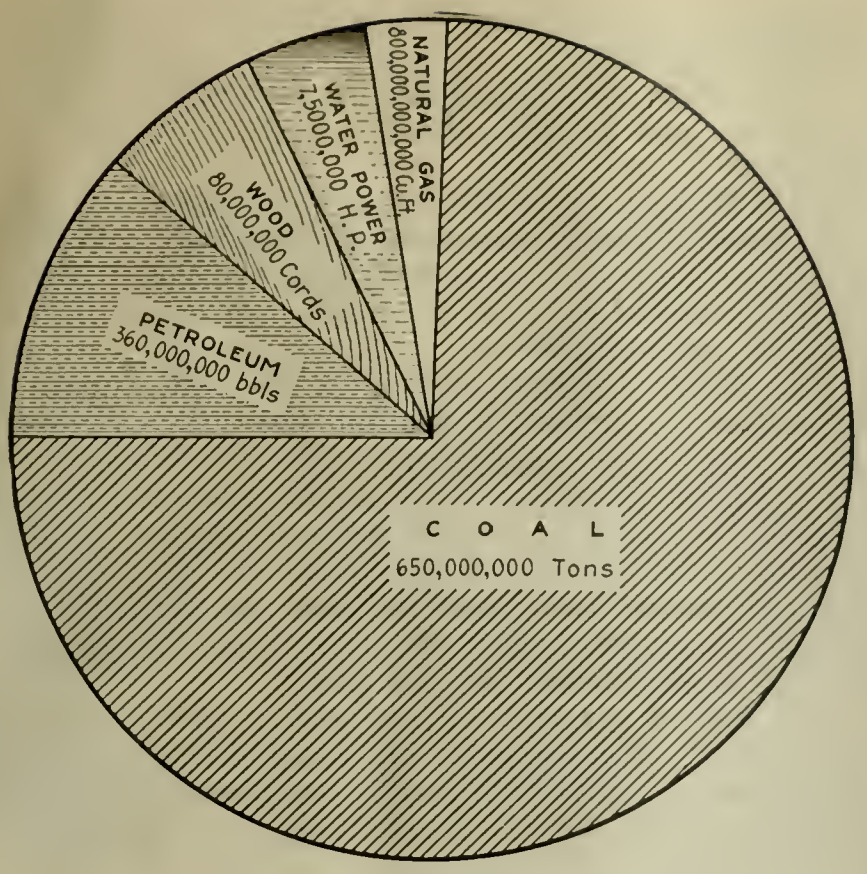
*Abstract of paper presented before the Fuel Section of the American Society of Mechanical Engineers, New York, Dec. 7, 1920.

†Professor of mechanical engineering, Sheffield Scientific School, Yale University, New Haven, Conn.



FUEL CONSUMPTION OF THE UNITED STATES

This chart is drawn to the scale of tons of coal. Thus the petroleum, wood, water power and natural gas are each given the arc of the circle equivalent to their fuel values in tons of coal. The predominating dependence we place in solid mineral fuel is here strikingly portrayed.

of fuels, while the latter has investigated many problems relating to safety in mining and the storage and economical use of fuels for both domestic and industrial use. Such service as these bureaus have furnished must be given high praise. It is only when the facts are collected with care that any intelligent plan for bettering conditions can be proposed and carried out. All those interested should obtain for the asking the publications of these bureaus and should urge and aid suitable congressional appropriations for extending their important work.

It has been the aim of this paper to select from the mass of available material such facts as relate to four significant items, namely: (a) The location of the world's fuel reserves, (b) the present estimate of the amount of fuel in the earth, (c) the relative production of fuel by the different countries and by different states in the United States, and (d) the use made of the fuel produced.

Should Solve Fuel Problems as a Whole

The time has come when the fuel problems of the world must be given consideration in a large way. Communication or transportation has made all countries of the world near neighbors. Food and fuel are essential to the world's life and progress. The United States now for the first time in many decades has cargo vessels. It will fail in its duty to the world if it does not make wise use of its resources and its facilities to aid the various peoples of the earth. If your neighbor likes you he will do you no harm.

The title of each of the accompanying tables is sufficient to indicate its import. War conditions have made many temporary disturbances in statistics of this character and for this reason it has seemed wise in some cases to choose pre-war conditions where it is simply the trend of progress that it is desired to indicate.

The difficulty experienced in obtaining a supply of coal coupled with the high price paid for it has in itself

TABLE I. TOTAL COAL RESERVE OF THE WORLD[1]

(In Millions of Tons)

EASTERN HEMISPHERE		
Europe		
Germany	423,356	
Great Britain and Ireland	189,533	
Russia (in Europe)	60,106	
Austria	53,876	
France	17,583	
Belgium	11,000	
All others	28,736	
Total for Europe		784,190
Asia		
China	995,587	
Siberia	173,879	
India	79,001	
Indo-China	20,002	
Japan	7,970	
All others	3,147	
Total for Asia		1,279,586
Africa		
South Africa	56,200	
All others	1,639	
Total for Africa		57,839
Oceania		
Australia	165,572	
New Zealand	3,386	
All other islands	1,452	
Total for Oceania		170,410
Total for Eastern Hemisphere		2,292,025
WESTERN HEMISPHERE		
North America		
United States	3,838,657	
Canada	1,234,269	
All others (including Central America)	505	
Total for North America		5,073,431
South America		
Colombia	27,000	
Chile	3,048	
Peru	2,039	
All others	10	
Total for South America		32,097
Total for Western Hemisphere		5,105,528
Total reserve of the world		7,397,553

[1] Twelfth International Geological Congress, Canada, 1913.

brought about a desire to exercise all possible care in its use. The public at large more and more realizes the need of co-operation to assure conservation in some large way. It is in connection with the last plan, "Co-operation for Conservation," rather than in "Individual Thrift" that I see the most promising chance for initial success. Especially is this true as a wise first step.

Individual thrift should always be practiced, but the large savings of fuel that could be made by co-operation are far beyond anything that could be expected from individual effort. The suggestions for coal conservation which follow are not new—some of them are already

TABLE II. ANNUAL COAL PRODUCTION OF PRINCIPAL COUNTRIES OF THE WORLD (1865-1913)[2]

(In Millions of Tons)

Countries	1865	1870	1875	1880	1885	1890	1895	1900	1905	1910	1913
United States	25	30	48	67	102	142	178	243	351	446	569
Great Britain	100	112	135	149	162	185	194	229	240	264	321
Germany	28	35	49	59	74	89	104	150	174	222	305
Austria-Hungary	2	8	13	15	20	26	27	39	41	38	59
France	12	13	17	19	20	26	28	33	36	39	45
Russia	0 3	0 7	1	3	4	7	9	15	17	25	35
Belgium	12	14	15	17	17	20	20	23	22	23	25
Japan							5	7	12	15	23
China										15	...
Canada							3	5	8	13	..
Other countries	3	5	7	10	13	18	14	22	28	43	..
Totals	182 3	217 7	285	339	412	513	582	766	928	1,143	1,382

[2] From statistics in Mineral Industry, N. Y.

TABLE III. COAL PRODUCING AND USING STATES IN 1915[3]

(In Millions of Tons)

States	Bituminous Producing	Bituminous Using	Anthracite Producing	Anthracite Using
Pennsylvania	158	66	89	23
West Virginia	77	6	...	..
Illinois	59	40	...	3
Ohio	22	22	...	..
Kentucky	21	5	...	..
Indiana	17	16	...	..
Alabama	15	8	...	..
Colorado	9	5	...	..
Virginia	8	4	...	..
Iowa	8	7	...	..
Kansas	7	..	...	..
Wyoming	5	..	...	..
Tennessee	6	..	...	..
New York	...	17	...	21
New England	...	21	...	14
New Jersey	...	4	...	8
Wisconsin	...	8	...	2
Minnesota	...	6	...	2
Maryland and D. of Columbia	...	..	...	2
Michigan	...	10	...	..
Missouri	...	8	...	..
All other states	29	37	...	5
Railroads	...	122	...	6
Exported	...	19	...	4

[3] Compiled by C. E. Lesher, U. S. Geological Survey.

begun—but it is only when the significance of all is fully realized that we shall be able to feel that we are really making satisfactory progress in preventing waste of fuel, as well as waste in the labor and capital that are required to produce and transport it.

Prevention of waste of coal may be accomplished in the following ways:

(1) Extend as rapidly as possible improved methods of mining coal. Under present conditions one-third of the bituminous and one-half of the anthracite coal is left in the mine where recovery is practically impossible.

(2) Extend improved methods of "preparation" of coal at the mines. A premium might advantageously be allowed for well-prepared coal, or a penalty imposed for an impure product.

(3) Reduce the hazards of coal mining. For every 1,000,000 tons of coal mined, between four and five fatalities occur.

(4) Operate the mines a maximum number of days each year. Mines are now operated from 200 to 240 days per year. Lost time arises from three principal causes:[7] (a) Shortage of cars, (b) shortage of labor or strikes, and (c) mine disability.

(5) Utilize a larger amount of the mine waste—briquetted fuel, pulverized fuel and electricity generated from mine refuse. All are susceptible of development.

(6) Increase the use of byproduct coke ovens. The byproducts wasted by beehive coking are equal to fully 600 lb. of coal per ton of coke produced. Increase the use of domestic coke from the local gas plant. This should tend to keep down the price of gas, and coke is a clean and economical domestic fuel.

(7) Extend the use of blast-furnace gas for power generation. Much progress has recently been made in this direction, but it will require co-operative effort to utilize fully the power that might be made from blast-furnace gas.

More Extensive Use of Gas Advised

(8) Extend the use of the gas producer, the gas engine and the heavy oil engine for power generation, more especially where electrical energy is not available. Develop the lignite fields—by power from gas producers and briquetted fuel for domestic use.

(9) Extend waterpower development. Hydro-electric power, in many instances combined with steam power, offers large possibilities for saving coal. It will require comprehensive expert study before any new development can be undertaken or satisfactory financial returns may not be possible. (It will be noted that the above nine suggestions relate to savings which are not concerned with burning coal for making steam or heating homes.)

(10) Extend generally the best-known performance of locomotives. The better locomotives of 1920 use only two-thirds of the coal required twenty years ago to do the same work. Much saving should be expected in the operation of steam locomotives. Electrification will save coal where water power is conveniently available. Instructions to firemen should be given and followed up even more carefully than in the past.[8]

(11) Encourage the tendency of the small industrial plant to purchase its power. The best coal is often sent to the small industrial consumer. Small plants, like individuals, should be examined by experts and all reasonable effort made to conserve fuel. Correct equipment and correct methods of operation would save 20 to 25 per cent of the coal used in industrial plants. It is the coal saved by the industries that will set free transportation facilities sorely needed for other purposes than hauling coal. One-third the railroad tonnage is coal.

(12) Furnish homes and public buildings with correct and simple instructions for operating the furnace, heating boiler and stove. This involves using fuel with suitable equipment for burning it. This should result in saving from 10 to 15 per cent of the domestic coal consumed.

TABLE IV. INDUSTRIES USING BITUMINOUS COAL IN THE UNITED STATES (1914)[4]

Industry:	Net Tons	Industry:	Net Tons
Coke	50,467,000	Woolen and worsted goods	1,544,000
Steel works	20,343,000	Oil, cottonseed, etc	1,232,000
Clay products	8,566,000	Leather	1,124,000
Cement	6,731,000	Zinc smelting and refining	1,066,000
Paper and woodpulp	6,268,000	Lumber products	885,000
Gas (heat and light)	6,076,000	Sugar refining	875,000
Railroad shops	5,486,000	Copper smelting and refining	812,000
Cotton goods	3,579,000	Electrical machinery	769,000
Ice (mfg.)	3,386,000	Paving materials	665,000
Foundry and machine shop	2,913,000	Glucose and starch	648,000
Meat packing	2,786,000	Pottery	577,000
Malt liquors	2,742,000	Agricultural implements	555,000
Chemicals	2,607,000	Wine	523,000
Glass	2,252,000	Soap	515,000
Petroleum, refining	2,045,000	Automobiles	464,000
Blast furnaces	1,892,000	Fertilizers	433,000
Flour and grist mill products	1,809,000		

[4] Bureau of Census.

TABLE V. PER CAPITA COAL CONSUMPTION OF THE UNITED STATES

(Total Coal)

Year	Net Tons	Per Cent Increase	Year	Net Tons	Per Cent Increase
1870	0.96	....	1900	3.2	39.1
1880	1.4	45.8	1915	5.5	71.9
1890	2.3	64.1	1920	6.2	12.9

TABLE VI. COMPOSITION AND HEATING VALUES OF DIFFERENT RANKS OF COAL COMPUTED ON ASH-FREE BASIS[5]

Rank of Coal	Heating Value, B.t.u.	Fixed Carbon, per Cent	Volatile, per Cent	Moisture, per Cent
Anthracite	14,440	95.6	1.2	3.2
Semi-anthracite	14,880	83.8	10.2	6.0
High rank semi-bituminous	15,360	83.4	11.6	5.0
Low rank semi-bituminous	15,480	75.0	22.0	3.0
High rank bituminous	15,160	64.6	32.2	3.2
Medium rank bituminous	13,880	54.2	40.8	5.0
Low rank bituminous	12,880	47.0	41.4	11.6
Sub-bituminous	9,720	42.4	34.2	23.4
Lignite	7,400	37.8	18.8	43.4

[5] Campbell, U. S. Geological Survey.

[7] The author has overlooked lack of market as a cause of lost time. This was an important cause of non-operation of spot-coal mines in 1919.—Editor.

[8] See "The Economical Use of Coal in Railway Locomotives," Cir. No. 8, Engineering Experiment Station, University of Illinois, Urbana, Illinois. (Prepared by J. M. Snodgrass and others.)

TABLE VII. ONE YEAR'S FUEL REQUIREMENTS OF THE UNITED STATES AND ITS COAL EQUIVALENT[6]

Kind of Fuel	One Year's Fuel Consumption	Approx. Coal Equivalent (Net Tons)	Conversion Factors
Peat.....	25,000 tons	12,500	2 tons = 1 ton coal
Natural gas...	800 billion cu.ft.	27,000,000	30,000 cu.ft. = 1 ton coal
Wood.....	80 million cords	40,000,000	2 cords = 1 ton coal
Water power..	7.5 million developed water horse power	55,000,000	33 per cent load factor 5 lb. coal per horse-power
Petroleum....	360 million bbls.	100,000,000	3.6 bbls.= 1 ton coal
Coal.....	650 million tons.....	650,000,000	.....
Total.....		872,012 500	

[6] Calculated on a basis of 13,000 B.t.u. per pound.

(13) Extend the practice of placing coal in storage.[9] The conditions under which this can be safely performed are now available to the manufacturer, and now that we have learned how coal may be safely stored, the "load curve" on the mining industry should be greatly improved. Coal should be stored at or near its point of consumption.

(14) Extend electrification. The full use of electrical energy offers the most promising means of saving coal. Conservation by co-operation of water power, steam power and electricity opens large possibilities for saving coal, capital and labor. This is contemplated by the super-power plan now being investigated by the Department of the Interior (U. S. Geological Survey) and a report is in preparation by an engineering staff. This will set forth the facts as to: (a) Needs for super-power, (b) characteristics of an installation, (c) location of suitable super-power lines, (d) estimated costs, (e) estimated economies and other details.

[9] See "The Storage of Bituminous Coal," by H. H. Stoek, Cir. No. 6, Engineering Experiment Station, University of Illinois, Urbana, Illinois.

This Loader Runs on the Coal Bottom and Does Not Use the Mine Tracks*

Machine Rams Itself Under the Coal To Be Loaded—Falling Coal Cannot Injure It—Conveyors Hold Three-Quarters of a Ton, Which Capacity Is Available if Car Supply Is Momentarily Delayed

By G. F. Dillig
Pittsburgh, Pa.

PRODUCTION of coal under ground may be readily divided into three processes, viz.: breaking down, loading out and haulage. In the first and third divisions much progress has been made through the introduction of mechanical appliances, but in the second little, if any, advance has been achieved in the many centuries during which the art of coal mining has been practiced. Except in a few instances coal is still shoveled and loaded by man power, as in the earliest times.

In the design of the tractor loader about to be described four cardinal facts have been kept in mind. These are as follows:

(1) The loading of coal into the mine car is the largest single item of expense entering into the cost of production. All other operations are, comparatively, far less costly and are already being performed rapidly and satisfactorily by mechanical means. Consequently a machine that will successfully perform this operation opens tremendous possibilities for further economy. Not only does such a machine reduce the labor cost but it saves expense by concentrating the work in a smaller area than suffices when coal is loaded by hand.

(2) A machine of this kind in order to be successful must be of the simplest possible form and design. It must be exceedingly mobile and capable of being taken in and around sharp curves, through restricted passages and crosscuts. It must be suited for the performance of effective work in remote portions of the mine, at the face and in quarters cramped by mine posts.

(3) Such a machine must be of correct design and detail and the material entering into its construction must be intelligently used as well as of the best quality procurable. No class of machinery receives harder usage and more abuse than does a machine which is employed in mining. To be successful a machine must require few repairs and cost a minimum for maintenance.

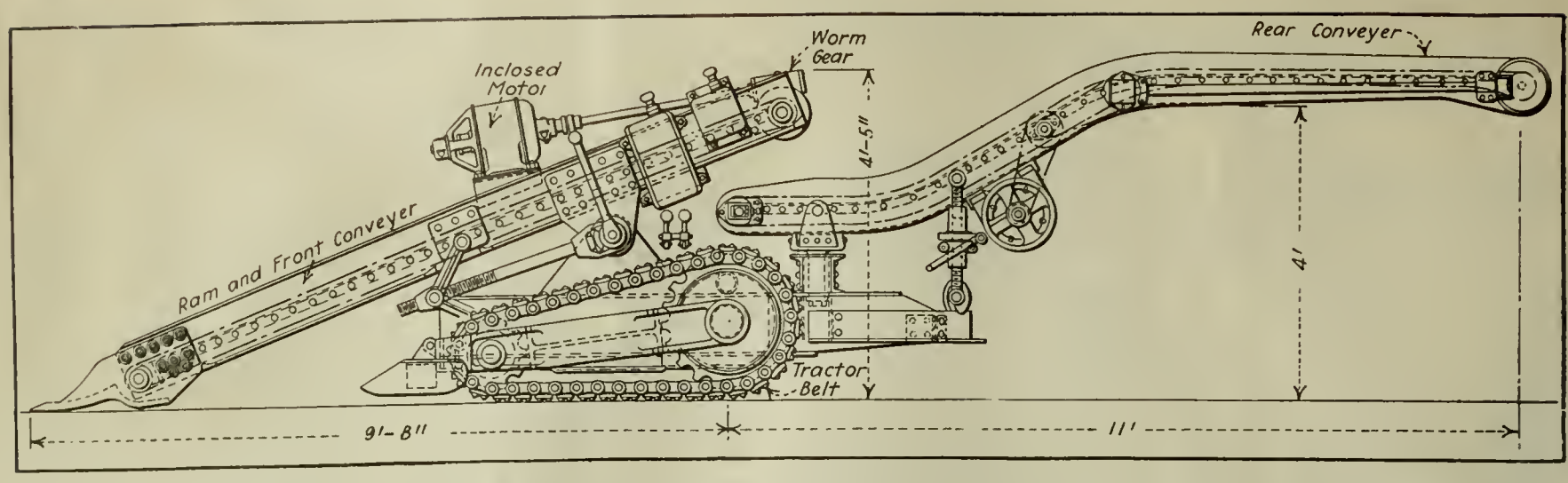
Only One Machine Thus Far Constructed

During the last year I have built an experimental machine and put it to work. Its principle of operation, its simple mechanism, its mobility, compactness and ability to load coal rapidly have all been tested with satisfactory results. From the experiences designs have been prepared for machines which will embody the basic principles of the experimental loader, while containing certain improvements that will enhance its accessibility, capacity and endurance.

The materials employed in this loader have been selected with due care for the purpose they are intended to serve. The frame for the tractor carriage, ram conveyor and rear conveyor is built up of open-hearth rolled steel. All the frame castings and gear housings are of steel. Cast iron is used in only one place in the machine and there only for the construction of a small housing. All gears are of nickel-alloy steel, heat-treated; the shafts are either nickel or carbon steel, heat-treated and ground. The conveyor chains are of the roller-bearing type and have nickel-steel pins and rollers that have been hardened and ground. Both the rear and swinging conveyor are 42 in. wide, and the maximum shoveling capacity is 2½ tons per minute.

The length of the machine is 21 ft.; its height 4 ft. 6 in. The gage is 46 in. from center to center of tractor arm, while the weight is approximately 11,000 lb. The

*Brief abstract of article entitled "Dillig Tractor Loader," read before the West Virginia Mining Institute at the Dec. 8 meeting.



DILLIG TRACTOR LOADER PUSHES THE NOSE OF ITS FRONT CONVEYOR UNDER THE COAL TO BE LOADED

Extreme mobility marks this machine. It goes up to the coal to be loaded wherever the coal may be and so long as the rear conveyor will reach the car the machine performs its work satisfactorily without having the coal brought to it. The inclination of the front conveyor is regulated by a toggle joint. All the gears in the machine operate in semi-grease, giving cleanliness, freedom from friction and minimum wear.

new models will be completed within the next few weeks. They are being manufactured by the Dravo Contracting Co., for the Dravo-Doyle Co., of Pittsburgh.

In visualizing this loader it may be convenient to consider the machine as being made up of three distinct units, each driven by an electric or, if necessary, an air motor. The most important of these is the tractor unit. The ram and front conveyor come second, while the swinging, adjustable rear conveyor ranks third.

Tractor Gears Run in Semi-Grease

The tractor belts are composed of built-up rolled-steel shoes having large-size openings through which dirt and coal may work, thus preventing clogging. These shoes are fitted with roller bearings; their pins are of nickel steel, heat-treated, carbonized and ground, provision being made for lubrication with grease. The rollers likewise are accurately ground and provided with ample grease chambers so that the belt need not be lubricated more frequently than about once in four months. The tractor sprockets are of cast steel, and the teeth are accurately machined.

The tractor mechanism is driven by a 26-hp. inclosed motor, the gear train terminating in an internal drive at both large tractor sprockets. All gears and shafts in this device are heat-treated nickel-steel, and the teeth are accurately cut and finished. The pinions are forged integral with the shafts. All shafts except that of the internal-drive pinions are supported in ball bearings. This shaft is carried in special bronze boxes of liberal dimensions. It should be noted that a heavy, rigid cast-steel gear box incloses the gear train, the various members of which are flooded with semi-grease and protected from coal dust and other foreign material. The internal gear rings and pinions are similarly protected and lubricated.

Built to Sustain Blows of Falling Coal

The digging element is, of course, the business end of the entire machine. Here special attention is called to the rigid heavy steel ram casting. This is free from all mechanism and therefore capable of withstanding great punishment from the impact of falling slate or coal. Such falls are at all times more or less imminent. The machine is so arranged that the front end can be raised or lowered to the proper elevation and the shovel or ram made to follow the bottom. Its frame is built up of heavy channels and plates. Its conveyor is driven by an inclosed motor through a single worm reduction gear inclosed in a cast-steel housing and operating in semi-grease. It is therefore thoroughly protected from dirt or coal dust. The worm carries triple threads accurately cut and polished. It is built of high-carbon steel, hardened, ground and supported by double-row radial and thrust ball bearings.

The rear-conveyor structure is designed to swing horizontally through an arc of approximately 120 deg., and may be raised or lowered to any elevation desired. The center bearing pivot as well as the trolley support rollers are provided with large ball bearings so that movement of this mechanism from side to side may be accomplished with small effort. The ability to swing the rear conveyor at will is of great importance in loading cars and when passing through narrow entries and crosscuts.

On this unit an inclosed electric motor drives the conveyor through a series of reductions consisting of silent chains and bevel gears, all inclosed in grease-tight cast-steel housings.

Operation of this machine is extremely simple. It is advanced and the large rigid shovel at the front end pushed under the coal in a manner similar to that employed in shoveling by hand, except that as the shovel or ram advances the conveyor picks up the coal and moves it to the second or rear conveyor, the function of which is to deliver the coal to the mine car. The operation is thus rendered continuous.

Storage on Conveyor Three-Quarters of a Ton

While the loaded car is being taken away and an empty put in its place the operative, if he chooses, can charge both conveyors with a load of coal approximating 1,500 lb. Some saving in time may thus be effected.

Emphasis may be laid on the following considerations: (a) The Dillig tractor loader is a single-purpose machine intended for loading only. (b) It requires no rails and only a fairly good bottom for its operation. In going from place to place it runs astride the rails and crosses over then without tearing them up. (c) The machine is extremely mobile. It may be moved from right to left, forward or backward, with equal ease and under the action of a simple control. (d) Where the face has been shattered and broken but not brought down the machine by a few repeated ramming strokes can readily dislodge, bowl over and load out the coal. (e) The machine is of a powerful and rugged design, weight being placed where it will do the most good. (f) Extreme simplicity and accessibility are notable features of the machine.

Lignite Bricks Pave Canada's Way To Fuel Independence

Lignite Utilization Board to Place Briquets on Market — If They Prove a Commercial Success 300 New Plants Will Be Erected

By Walter Noble Burns
Chicago, Ill.

LIGNITE briquets bid fair to win for Canada fuel independence from the United States. Though Canada is second only to this country in coal resources, it imports more than half its fuel from us. More than 400,000 tons of anthracite coal are brought annually into western Canada alone.

Tentative operations in making lignite briquets have been begun in a plant established at Bienfait, Sask., by the Dominion Government in co-operation with the governments of Manitoba and Saskatchewan. The plant will have a capacity of 30,000 tons of briquets a year, the briquets having practically the same heating power as anthracite and selling at half the price.

Briquets May Tend to Reduce Coal Prices

The 30,000 tons of briquets will be only a drop in the bucket, compared to Canada's fuel requirements. But when the public has been educated to the use of this fuel and a market firmly established, the plant will be increased in size and others built. According to Government plans, the number of plants will keep pace with the developing market. If the venture proves a commercial success the plans call for 300 factories to be built in the next few years throughout the lignite fields of western Canada. With such a number of factories Canada can manufacture enough lignite bricks to supply its home market and make an important dent in the fuel markets of the United States and other countries. Even at this formative stage of the industry it seems logical to expect that eventually lignite briquets will prove an influential factor in reducing the high cost of coal.

The Lignite Utilization Board was formed in November, 1918, by an order in council of the Dominion Government. R. A. Ross, a well-known engineer, was appointed chairman, and associated with him were J. A. Sheppard, of Moose Jaw, and J. M. Leamy, of Winnipeg, both expert engineers, the latter electrical engineer to the Manitoba Government.

Early Briquets Unable to Stand Shipment

At that time the briqueting of lignite was in only an experimental stage. It had been accomplished but not in a way that would make it commercially valuable. The briquets of the pioneer makers were easily broken and consequently would not stand shipment. This was largely because of improper binder. Also they were subject to spontaneous combustion, which precluded their being kept in any quantity in storage. The problem confronting the board therefore was practically a first-hand one.

Though Canada is remarkably rich in coal beds, its fuel problem from the beginning has been constant and serious. The coal mines in the Maritime Provinces supply the eastern seaboard and Quebec, but, as coal barges cannot navigate the St. Lawrence river far above Montreal because of rapids, Ontario is almost wholly dependent upon imports from the United States. The coal fields in the Western Provinces are even richer but have not been sufficiently developed as yet to supply the home market.

The area of coal lands in Canada is estimated at 111,169 square miles, containing 845,900,000 tons of semi-anthracite, 313,573,000,000 tons of bituminous, 932,053,000,000 tons of sub-bituminous and 111,286,000,000 tons of lignite. Despite these immense natural resources, the Canadian ouput of coal is only about 15,000,000 tons annually. The imports from the United States in 1916—the last official figures available—amounted to 17,000,000 tons, or over 53 per cent of the total consumption. Though much capital has been invested recently in Canadian coal mines and the industry is rapidly growing, the relative proportions between home and foreign supply remain practically the same today.

Could Supply the World for Half Century

The lignite fields are mainly in central and southern Alberta and Saskatchewan and extend across the border into the northern tier of Western States. They contain enough fuel to supply the entire world for at least half a century if the world had to depend upon them alone. It was evident at the outset that if the Lignite Utilization Board solved the problem of manufacturing commercial briquets it would also go far toward solving Canada's fuel problem.

Four hundred thousand dollars was appropriated to finance the board's work. Half of this was furnished by the Dominion Government and half by the provinces of Manitoba and Saskatchewan. The board spent months in investigations of all known methods of carbonizing and briqueting coal. It found successful carbonization in use in the United States. But those engaged in the work south of the border were concerned chiefly with obtaining byproducts such as oil, pitch, ammonia sulphate and gas. Manufacturers in the United States, moreover, were dealing with a problem different from that confronting the board because they were using a much higher grade coal than lignite. The board learned that its problem had not been solved anywhere and that there was not, either in Canada or the United States, a single plant that was turning out lignite briquets on a large commercial scale.

Much Preliminary Research Necessary

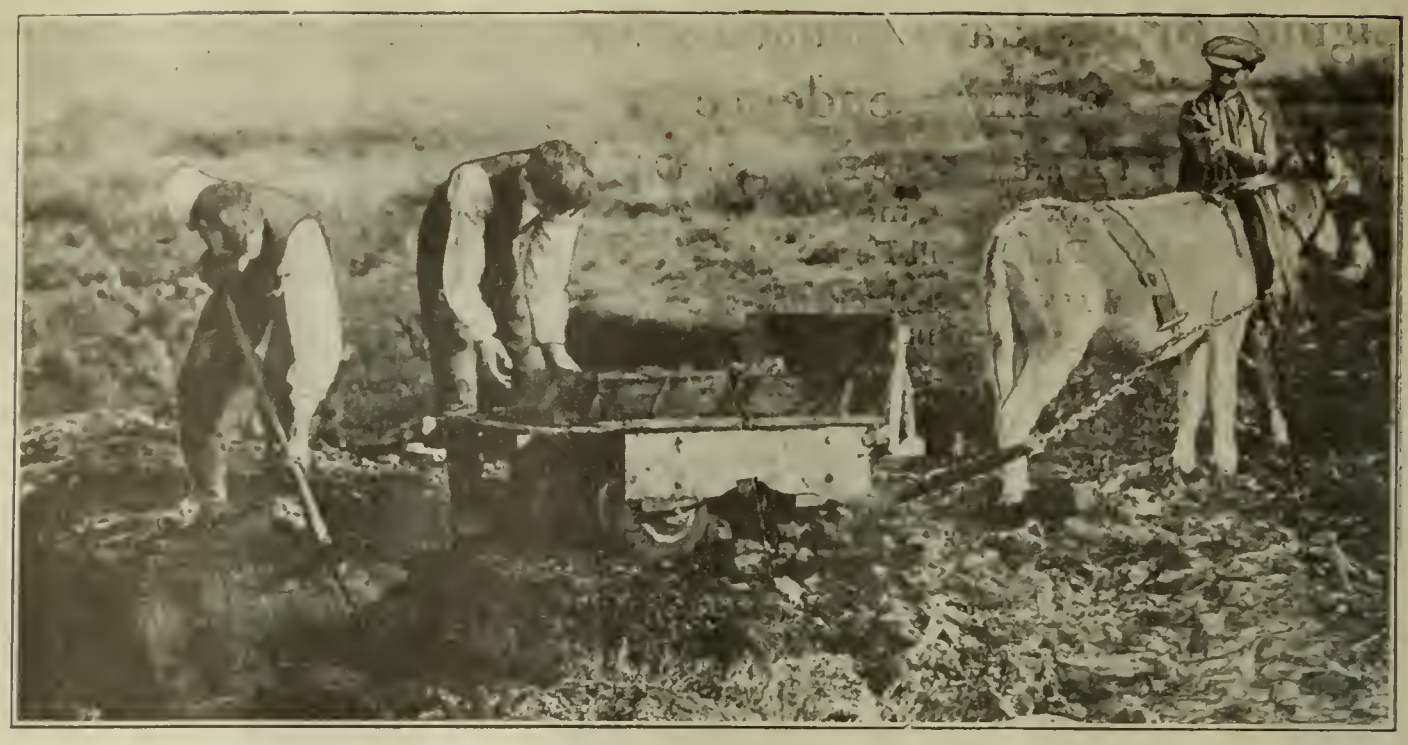
The board thereupon turned its attention to original experimentation. It was necessary to learn the relative weathering and storing qualities of raw, air-dried and oven-dried carbonized briquets; the proper adjustment of heat to the pulverized lignite, the rate of carbonization, the fineness of pulverization best adapted to the product as well as the best binder and the proper quantity to be used. The solution of these questions was preliminary to that of the right kind of machinery to install in order to insure successful manufacture, uniformity of product and continuity of output.

Having achieved a degree of success in carbonization, the board began the erection of the pioneer briquet factory of Canada. The site selected was at Bienfait, Sask., on the Souris River and in the heart of one of the greatest lignite fields in the Dominion.

The plant is now completed. Equipping it was more than a mere matter of erection. Many difficulties had

Primitive Peat Handling

Peat is cut by shovel and piled by hand until well dried. It is used in the rough state in which it is cut. The scene is taken in the celebrated Bog of Allen, which unfortunately puts a belt of infertility across Ireland.*



to be overcome. The apparatus and machinery were changed a number of times before a satisfactory output was obtained. Application of heat in the carbonization of the powdered lignite was a delicate process. Too little heat would not drive off the gases and too much would burn the coal, while uneven heat resulted in a non-uniform product. Niceties of adjustment were obtained only through painstaking effort long continued. This was only one of many subtle problems the board had to settle with absolute certainty and finality. The plant is now in tentative operation, briquets are being made, and the public will have its first chance to try out the new fuel when they are offered for sale next fall.

The finished product of the mill has been subjected to the severest kind of tests. The briquets have been soaked in water, frozen, thawed and frozen again, after which they burned as readily as when fresh from the press. The danger from spontaneous combustion has been overcome, as has also been the brittleness of the original product. This permits of rough handling and long shipments.

Briquets made in this mill represent low-grade lignite transformed into a product possessing all the good qualities of anthracite. Two tons of lignite make one ton of briquets containing as much heat as an equal weight of high-grade hard coal but selling for half its price. It is believed that a market will soon be built up for the new product and that additional factories will spring up rapidly. This in turn may quite possibly revolutionize the whole fuel situation of Canada.

THERE WAS A heavy decrease in the tonnage of anthracite and bituminous coal transported on the canals of New York State during the 1920 season of navigation when compared with the tonnage of 1918 and 1919. A comparison of the tonnages carried during the three years shows the following:

	1918	1919	1920
Anthracite	100,705	82,788	53,686
Bituminous	44,086	9,128	7,976

Of the tonnage carried in the season just closed there were transported over the Erie Canal 37,257 tons of anthracite and 3,938 tons of bituminous, and over the Champlain Canal 16,429 tons of anthracite and 4,038 tons of bituminous.

*The bog extends from Wicklow Head to Galway on the south and from Howth Head to Sligo on the north and is perhaps the biggest peat bed in the world. In Kings and Kildare Counties it is 25 ft. thick. Methods such as these are not suited to the use of peat industrially, especially where the material has to be transported by railroad and must compete with good coal.

Development of Alaska's Coal Resources Shown in Annual Mineral Report

THE annual report on mineral resources and production in Alaska for 1920 is now in preparation under the direction of Alfred H. Brooks, of the U. S. Geological Survey, Department of Interior. Complete statistics of the mineral production of Alaska cannot be collected for four or five months, but some of the important features of this report relating to mining development during the year are issued herewith.

Though the mining industry of Alaska as a whole suffered a serious depression in 1920, yet the value of the total mineral output was greater than in 1919, chiefly because of the great increase in the production of copper, largely to be credited to the four large copper mines in the territory. The value of the total mineral production of Alaska was $19,620,913 in 1919 and about $22,070,000 in 1920. The output of the gold placers has decreased, but that of the gold lode mines has been maintained.

VALUE OF MINERAL PRODUCTION IN ALASKA IN 1919 AND 1920

	1919	1920
Gold	$9,426,032	$8,000,000
Copper	8,783,063	12,400,000
Silver	705,273	900,000
Platinum and allied metals	73,663	80,000
Tin	73,400	20,000
Lead	72,822	142,000
Coal	343,547	380,000
Petroleum, marble, gypsum, quicksilver, etc.	143,113	148,000
Totals	$19,620,913	$22,070,000

One of the most important events of the year was the beginning of systematic underground exploration of the Matanuska coal field under the auspices of the Navy Department. Mining was continued in this field also by the Alaskan Engineering Commission on about the same scale as in previous years, to obtain fuel for the railroad and the nearby towns. Much underground work was done by the Bering River Coal Co. in the western part of the Bering River field, but no coal was produced except for use at the mine. The Alaska Coal & Petroleum Co. also continued underground explorations in the eastern part of the field.

The completion of the railroad between Fairbanks and Healy Creek (except for the Tanana River bridge) early in 1920 made the Nenana coal accessible, but the temporary bridge at Nenana River was washed out by a flood, and the coal was carried across the river by aërial tram. During 1920 coal was mined in the Nenana field at the Burns and Calderhead mines, operated under temporary permits. A lease was granted to the Healy River Coal Mining Co. in the same field. Lignitic coal also was mined on a small scale in the Cook Inlet region and in other parts of Alaska. A coal land lease was granted in the Cook Inlet field. The coal production in 1920 was about 68,000 tons; that in 1919 was 60,674 tons.

Why the Export Coal Business of America Should Be Built Up—IV

World Shortage of Coal Likely for Several Years and This Country Must Fill the Need—Our Merchant Marine Needs the Encouragement an Extensive Coal Trade Would Provide—An Ideal Weight Equalizer

By Erich W. Zimmermann, Ph.D.*

IN CONCLUDING the preceding instalment of this article we pointed to the necessity of further analysis of statistics showing the weight balance of our foreign trade. As they stand, the figures can hardly be used as the proper basis of estimating the need or the lack of need of a tonnage equalizer such as England possesses in her coal exports. A threefold reduction is necessary. We have to analyze our exports and imports first in regard to the kind of vessels required to carry different commodities; secondly, as to the respective deadweight tonnage requirements of different commodity movements, and, thirdly, as to the direction in which our exports go and from which our imports come. General comparisons of the respective weights of total imports and exports bring us nowhere. Only a detailed study covering the three main points just enumerated will place us in a position from which the real merits of the case can be intelligently judged. We shall discuss these three items in their order.

The first point deals with vessel types. In order to understand the relation of coal exports to merchant shipping we must know that merchant ships may be divided into three main types: (1) Fast liners which carry passengers and general freight, usually both; (2) specialty steamers, such as tanks, refrigerator steamers, colliers, special ore carriers, etc., which because of their construction may be used for one kind of cargo only, and (3) tramps, the ships which carry the bulk commodities of commerce, roaming about without a schedule to whatever place happens to offer an attractive cargo.

Tramp Vessels Carry the World's Coal

By far the greatest portion of the international coal trade of the world is carried on in tramps. So if we wish to ascertain to what extent coal exports today are valuable to us as return freight for incoming cargoes the only kind of cargoes we are interested in is tramp cargoes. We have to find out how much of our imports are carried in tramps, where they come from and what outbound cargo besides coal we have for these incoming tramps.

How important such an analysis is for a clear grasp of the real significance of coal exports may be illustrated by an example of our trade with the middle American region. In 1918 the import movement from that region to the United States amounted to approximately twelve million long tons while the exports weighed less than seven million. One might immediately conclude that here is a good market for coal, as coal could be used in establishing the proper balance between imports and exports. But study of the details of the case easily bars such conclusions.

About half our imports from this middle American region is oil, which is transported in tank vessels, and a goodly portion of the other half is bananas, which also require better transportation facilities than are afforded by the common tramp. There is some molasses, which of late also has been transported by the tank method. That leaves only sugar and ore. Much of the ore is destined to the Bethlehem Steel works, which is putting into service a fleet of special ore carriers. These ships do not bother with coal cargoes, but rely for profitable employment upon the quickest possible turn-around. So with the exception of sugar, some of which is carried by liners, there is no out-and-out tramp cargo. This case may suffice to show how carefully conclusions have to be drawn if entirely erroneous deductions are to be avoided.

Establishing the Need for Coal Exports

Viewing the matter in this light we would now have to ascertain what proportion of our exports and imports respectively moves in tramps. If we could definitely establish this fact it would be a big step toward proving the need for coal exports as a tonnage equalizer—in other words as return freight for excessive tramp imports.

Generally speaking, tramps carry raw materials, such as cotton, jute, ore, grain, etc., while manufactured goods choose liners. Our exports consist chiefly of manufactured goods and our imports of raw materials and foodstuffs—that is, if we forget coal, our exports are prevailingly liner cargoes and our imports tramp cargoes. The tendency is for our imports of raw materials and foodstuffs to increase and for their exportation to decrease—at least relatively speaking. On the other hand, larger exports of manufactured goods are required to liquidate our indebtedness, particularly to Latin America and to Asia, the main sources of our imports.

This transformation of our foreign trade characterized by the swing of foodstuffs and raw materials from the export to the import side is clearly shown by the following charts. The two diagrams show exports and imports respectively, not the actual figures but only in per cent. One can read from them at a glance how our exports of foodstuffs and raw materials, which during the period 1830 to 1870 made up approximately 70 per cent of our export trade, gradually decreased to about 40 per cent. During 1918, due to our heavy shipments of war materials, these commodities contributed even less than 30 per cent. The import side tells just the reverse story, foodstuffs and raw materials rising from about 20 per cent to over 50 per cent.

This tendency will continue and is likely to gain momentum, for two reasons: (1) The process of the industrialization of the United States slowly but surely

*Professor of commerce, James Milliken University, Decatur, Ill.

continues; (2) the war has made us a creditor nation. Our foreign investments amounted to about thirteen billion dollars at the end of 1919, while only about one billion dollars worth of American securities were held abroad. This enormous foreign loan eventually must at least bear interest.

That means that our total imports at some not too distant future date will have to exceed our exports. A constructive foreign trade policy requires that every effort be made to have these imports take such form and move in such channels that they shall not undermine our own industrial prosperity. That means that these imports must largely take the form of foodstuffs and raw materials. Just when this reversal of our trade balance will occur is hard to predict. Messrs. Vanderlip and Williams, in their excellent analysis of our international trade balance entitled "The Future of Our Foreign Trade," seem to expect the actual swing to an excess of imports in the late twenties. Our export of shipping, banking, insurance and like services will help the transition while continued investments will delay it.

Coal Exports Likely To Be Needed Soon

Thus if we read the signs of the times aright, we shall need coal exports before long, and as wise trade policy takes the long distance view of things. We must see into the future and lay our plans today to meet requirements of the future. And there are several reasons why the present time is particularly opportune for laying the foundation of a strong coal export trade. The world faces a coal shortage for the next few years and we are the only nation that can fill the gap. The trade of our strongest competitor is swung loose from its moorings and our young merchant marine needs the encouragement which a large volume of coal exports can afford it.

Enough has been said of future possibilities, but we wish to know how matters stand today. General estimates, however, are the best we can produce. We found that about 40 per cent of our exports (value) is foodstuffs and raw materials. While their weight is undoubtedly more than 40 per cent of the weight of the total exports, the weight of exports carried in tramps probably is hardly more than one-third of the total seaborne exports—a large portion of our wheat exports move by liners; mineral oil, which is a very important export item as far as weight is concerned, moves by special vessels, and cotton shipments, which next to coal probably provides the biggest tramp employment of all American exports, are decidedly seasonal in nature and therefore play a relatively unimportant part during a considerable part of the year. On the other hand, probably two-thirds of our imports come by tramps. Assuming these estimates to be approximately correct we get a very different picture from that shown by our table (in the preceding instalment) comparing the British and American trade positions. There are several features which clearly point to an increasing significance of exported coal for the American trade balance and to the reverse in the case of Great Britain—rapidly increasing coal exports for the United States, rapid decrease for the United Kingdom, rapid increase of imports for the United States and practical stagnation for Great Britain, relatively slow increase of exports exclusive of coal for the United States as against Great Britain's pressing need for greater exports.

If our assumptions are correct, then our coal exports in 1920 just about afforded enough weight to offset the excess weight of our imports over our exports—speaking of that portion of our sea-borne trade which is carried by tramps. But that conclusion again is based too largely upon assumptions. We have to analyze the matter still further. As will be remembered, two additional modifying factors remain to be discussed.

The second point refers to different amounts of deadweight tonnage required in the transportation of different commodities. To use a technical term, commodities differ as to their load factor, which is the index showing how many weight tons of a given cargo may be stowed in a vessel ton. The mere weight of imports and exports is not an exact indication of the value which coal may or may not possess as a tonnage equalizer.

Relation Between Weight and Cargo Tons

To illustrate the extent to which the relation between weight tons and cargo tons affects the need of cargo space the following facts may be cited. In 1918 the 3,500,000 long tons of cargo exported from the United States to the middle American region required less than 400,000 deadweight tons for their transportation. On the other hand, the 20,500,000 tons going to Europe needed 6,800,000 deadweight tons. This means that in the first case the average cargo ton carried nine weight tons in the course of the year against less than three in the second case. Of course, it is next to impossible to definitely state just what the tramp tonnage required in each of our trade services is and just exactly how many tons of coal are needed to fill empty tramp space for the return voyage. We have to be content to state the problem, to lay the foundation for further studies which will accurately prove what we are trying to indicate in a general way.

The third point brings the discussion to a study of the geographical distribution of the coal export trade in relation to the excess of inbound deadweight tonnage

REGIONS TO WHICH U. S. EXPORTS REQUIRED GREATER TONNAGE THAN THAT IN THE OPPOSITE DIRECTION (FISCAL YEAR 1918)

(In 1,000 Tons)

Region of Shipment:	Deadweight Tonnage Requirements Exports	Imports	Excess in Per cent	Coal Exports from United States
European and Mediterranean	6,800	800	88	201 (Italy)
West and South Africa	123	77	38	...
East Asian	741	493	33	...
River Plate	575	415	28	248 (Argentine)
Australian	230	165	28	...
Peruvian	75	55	27	...

REGIONS FROM WHICH U. S. IMPORTS REQUIRED GREATER TONNAGE THAN THAT IN THE OPPOSITE DIRECTION

(In 1,000 Tons)

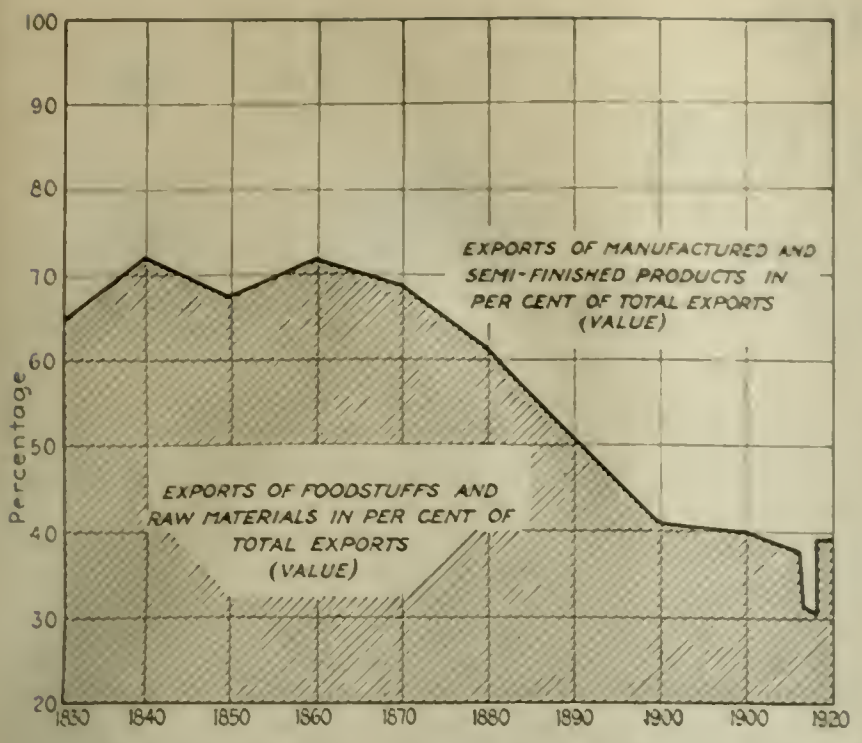
	Imports	Exports	Per Cent	Coal Exports
Eastern and Western Caribbean	318	184	42	611
Philippine	224	77	66	...
East Indian	318	133	60	...
Mexican	449*	94	80	155†
British Indian	383	191	50	...
Central and North Chilean	550	318	42	324
Amazon and East Brazilian	401	360	10	735 (Brazil and Uruguay)

* Heavy oil shipments. † Mostly overland.

REGIONS WHERE EXPORT AND IMPORT REQUIREMENTS OF DEADWEIGHT TONNAGE BALANCE SATISFACTORILY

(In 1,000 Tons)

	Exports	Imports	Coal Exports
Hawaiian	89	88	...
West Indian	398	408	1,795



DECREASING PROPORTION OF FOODSTUFFS AND RAW MATERIALS IN EXPORT TRADE OF THE UNITED STATES, 1830-1920

employed on the various trade routes radiating from our shores or terminating in our ports.

Using material furnished us by the division of planning and statistics of the U. S. Shipping Board we have compiled the following tables, which divide the important trade routes of our foreign commerce into three groups on the basis of deadweight tonnage requirements of imports and exports. By incorporating in these tables the figures for our coal exports we believe we have furnished as adequate a basis for estimating the worth of our coal exports as a tonnage equalizer as the present supply of information available permits.

It is easy to pick out the regions where coal helps to bring about a better balance between the respective tonnage requirements of the export and import movements of commodities. It is also clearly evident that our coal trade to Europe is rather likely to offset than to remedy the tonnage balance. But, as we have said before, other but merely selfish commercial considerations come into play to justify this trade as much as our West Indian trade, where coal serves ideally as the tonnage equalizer.

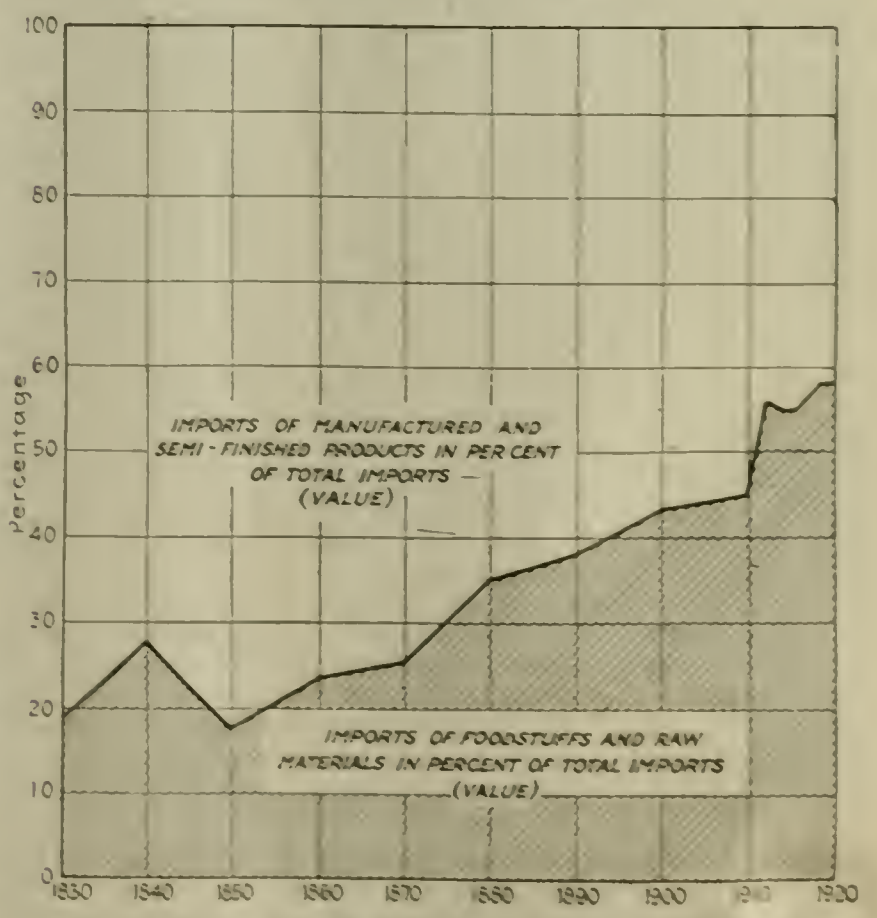
Altogether it may be said that while the return freight factor is potentially the most important aspect of the coal export situation and one which ought to be made the basis of a scientifically planned and methodically executed trade policy, the present situation, as far as shipping is concerned, is such that almost any exportation of coal, no matter in what direction or in what amount, is justifiable as a means to ward off what could easily develop into a disastrous freight-rate situation. There is no other commodity which can stabilize the charter market as can coal. The temporary restriction on our coal exports during the summer resulted in a rapid drop of charter rates, and of all the merchant fleets our own is perhaps the most vulnerable.

The merchant marine, however, is not the only branch of our economic structure which benefits from coal exports. We have pointed out before how in the case of Great Britain coal exports have reduced the freight rates on imported foodstuffs and raw materials. It is hardly possible to measure the extent to which we could benefit in this manner from a scientific coal export policy. The economies thus obtained would outweigh by far any loss which a slight increase of the domestic price might bring to the consumer.

Even the money value of coal exports must not be forgotten. Frequently we value things more highly after we mourn their loss than while we enjoy their possession. This seems to be the case with Britain's coal exports.

Finally, there is one more argument in favor of coal exports which we might call the diplomatic aspect of the matter. The following quotation may suffice to illustrate this point. In one of the speeches which the late Lord Rhondda delivered before one of the learned societies of England when he was as yet plain Mr. D. A. Thomas we read: "As far back as 1552 'Newe-castele coles' were described as 'that thinge that France can lyve no more withowte than the fyshe withowte water,' and it was suggested to Sir William Cecil, as a method of embarrassing the French, that they should be deprived of British coal; a suggestion to which effect may perhaps with advantage be given should any trouble unfortunately arise in the future." To control the coal supply of a country means the possession of a powerful weapon. But perhaps we are in so fortunate a position that we can spurn such methods and ignore such phases of the subject, particularly so as the economic advantage of coal exports is clearly evident and far-reaching.

To sum up, we may say that coal exports are the backbone of a strong merchant marine, to which they afford more ample and more regular employment than any other commodity of international commerce. Through reduction of import freight rates due to tonnage equalization coal exports cheapen the staff of life of all industrial enterprise: foodstuffs and raw materials. Coal exports may exercise a beneficial influence also over the exchange situation; therefore their financial value should not be overlooked. In short, the advantages to be derived from them are such that only a short-sighted commercial policy can interfere with them in any other way than to direct them into those channels where they will do the most good.



INCREASING PROPORTION OF FOODSTUFFS AND RAW MATERIALS IN IMPORT TRADE OF THE UNITED STATES 1830-192

Problems of Operating Men

Edited by James T. Beard

Cigarettes and Pipes in Gas a Menace to Safety

Smoking Cigarettes and Pipes, in Mines Generating Gas, is a Dangerous Practice and One Extremely Difficult to Eliminate Because of a Widespread Belief that Gas Cannot be Ignited from This Source

WITH much interest, I have read the several letters relating to the question of whether or not methane can be ignited by a pipe or cigarette. Regarded from a practical standpoint, the question is not as "foolish" as some of the writers seem to think. I regret to say that smoking a pipe at the working face is a practice far too common in the southern anthracite field, where the coal pitches heavily and the mines generate gas to such an extent as to require the use of safety lamps.

Owing to the conditions peculiar to this section, small bodies of accumulated gas are frequently encountered during the dayshift. Although smoking is prohibited at several of the collieries I have in mind, the practice is carried on stealthily by many of the miners. The belief is general among them that, under the working conditions that prevail in these mines, the gas cannot be ignited by either a pipe or a cigarette.

Lighted Pipe Failed to Ignite Gas at Face of Pitch

An incident of which I was myself a witness would seem to prove the miners' contention. A man working on the inside manway of a breast had a ribhole tamped and ready to fire. A common method of lighting the fuse, in that section, was to heat a fine wire red-hot by thrusting it through the mesh of a safety-lamp gauze. Or, the miner would go down to the heading, light his pipe and returning to the face ignite the fuse from the pipe.

In the present instance, the miner had lighted his pipe on the heading. Before lighting the fuse he made a test for gas with his lamp, raising it to the roof for that purpose. The test showed gas about two feet above the hole he was going to fire. At that moment, he remembered leaving his pick at the head of the other manway and knew he would need it for work he expected to do on the heading after firing the shot.

With his lighted pipe in his mouth, the miner arose and walked across the face, his head and shoulders for a time being enveloped by the small body of gas he had found at the roof. Returning, he lighted the fuse with his pipe and climbed down the manway to the heading. Neither the man's pipe nor the shot fired the gas, the powder used giving little flame and the hole being directed in another direction. For myself, I failed to realize what the man had done, until after the shot had exploded, when the risk he had taken came over me.

Prevailing Belief of Safety

Like the lighted pipe, the red-hot wire had always been considered a safe means of lighting a fuse. It was the general belief that neither of these sources of heat would ignite gas. The fact that the records show that accidents due to the ignition of gas were infrequent is largely responsible for this belief. Had more accurate records been kept they might show a different state of affairs.

From my own limited experience, I am compelled to admit that I do not know of a single instance where gas has been ignited by a lighted pipe or a heated wire. I have lighted an acetylene lamp by means of a pipe; but found that, in order to do the trick, it was necessary to have the tobacco burning so vigorously as to be almost in flames. Let me say, however, that this does not prove anything, since the ignition point of acetylene gas is much lower than that of pure methane.

In this connection, there is one point that should be considered. Much of the pipe tobacco now on the market contains saltpetre, which often accumulates in small particles that burst into flame when the tobacco shows but a dull glow. This fact presents a very dangerous condition that the miner does not realize when he smokes first one kind of tobacco and then another.

Face to Face with Conditions Hard to Eliminate

Practically, we are face to face with the condition that the smoking of pipes and cigarettes is being practiced by miners, under gaseous conditions requiring the use of locked safety lamps. But, what is of most importance is the fact that the men do not believe the practice is dangerous, regardless of rules to the contrary. To sum up the situation, it is extremely difficult, in these heavily pitching veins, for a man to travel the breasts without the men working there having ample warning of his coming before he reaches them, which makes it hard to catch the offender in the act.

To my mind, education along this line is the only solution to the problem. It is important that tests be undertaken to prove conclusively how dangerous the practice of smoking is in places where gas is generated in quantities that require the use of safety lamps. The importance of making such tests should appeal to all, even though we may regard it as "foolish" to question the danger of smoking in gas.

Scranton, Pa. SUPERINTENDENT.

Skill vs. Chance in Mining

Success in mining, so far as the miner is concerned, may result from his peculiar skill or be a matter of chance, as was the case under a system adopted many years ago in the north of England but which happily has had no following in this country.

IN discussing the question of the skilled and unskilled miner in *Coal Age*, Oct. 28, p. 904, Jacob Skoff, expressed the idea that the man who was willing, energetic and ambitious and who took pleasure in the performance of his work was the type of man who would achieve the greatest success, which expresses my idea exactly.

Reading his letter set me to thinking that there are other elements involved in the problem. One has no trouble to recognize a skillful miner when he enters his place. The road is clean, the place well kept, the roof supported with timbers, the coal spragged, his powder kept under lock and key; in fact everything tells you the man knows his job.

Evidences of Lack of Skill

On the other hand, the unskilled miner is a grumbler who is never satisfied. He blames his lack of success to bad tools; the coal is too hard or too soft, and the roof dangerous. The latter is generally the case because he has failed to set the needed timbers. The end of the month finds the unskilled miner unprepared. His place is not squared up, and he is in an ugly mood with himself and all about him.

When cars are scarce in a mine is a good time to observe the difference between a skilled and an unskilled miner. The former wastes no time waiting for cars, but busies himself breaking down coal and getting ready for loading a good number of cars when they are set in his place. Instead of following

this example, the unskilled man goes home complaining he cannot work as there are no cars; but an investigation shows that he has not coal enough down to load one car if it was in his place.

There are different ways of inducing ambition in men. Some men are susceptible to flattery and a little praise goes far toward making them more active and energetic. A good way is to bring a man, if possible, to feel his responsibility for doing his share in keeping up the daily output of the mine. A man with any sense of pride will respond to such an appeal, though it will have no effect on others.

Chance System of Distributing Men Practiced in England

In the north of England some years ago, a number of the coal companies operating there established a chance system in distributing the working places among their men. The system had its advantages and disadvantages. The chief advantage lay in the fact that it was evident there was no favoritism shown. Each place had a number and at the end of every quarter (three months) a drawing took place among the miners. No man could complain that he was not being treated right by the foreman when he drew a poor place. He had the consolation, however, that he would probably draw a better one next time.

In the practical working of this system the difference between the skilled and the unskilled miner, was clearly observed. A skilled miner who drew a poor place would apply himself with renewed energy and do his best to keep up his record, while the unskilled miner would lay down on the job and waste much of his time during the three months he must work the place. Quite frequently the man would quit altogether.

The System Did Not Help the Mine Foremen

This chance system by which the miners were permitted to draw their working places every three months did not relieve the foreman, however, of his particular difficulties. It was still hard to keep the men at work in the poorer places, except where such places were drawn by good, energetic men, who were not afraid and always willing to do their share of the work.

Development work was often slow, because it took men away from places for which they were best fitted. There was a constant change of places every three months and it often happened that a careless miner would ruin a good place before the three months were up, so that the plan had to be abandoned.

It is not strange that the chance system here described has been abandoned. Far better is it to distribute the working places in a mine according to the merit of the men. Each man knows then that he must finish his place before he can get another.

Scarcity of labor, particularly in the anthracite region, has brought about many perplexing problems in mining. Years ago, every available place in the mines was filled by two men, a miner and his laborer. The miner was considered as a contractor and hired his help.

The contract plan made everybody work, since a miner who could not break down the coal fast enough could not keep his laborer. On the other hand, the laborer who could not load what coal was broken down by the miner would not be able to hold his place.

Today, because of the scarcity of labor in the mines, it is rare to find more than a single man in a place. This necessitates hauling coal from many points, in order to maintain the output of the mine and makes haulage a serious problem in many mines.

Observation leads me to think, however, that our miners as a class are becoming more skilled and perform better work than formerly. It is hoped that, as time goes on, conditions in this respect will improve, and we shall operate the mines to better advantage so that less coal will be wasted.

Plains, Pa. Richard Bowen.

Coal Production in England

Machine mining in the United States cannot be argued as one of the chief factors in the greater production of coal per man in this country, as compared with the production per man in Great Britain.

REFERRING to the discussion regarding the greater production of coal per man per day, in the mines of the United States, as compared with the same items in England, allow me to make a few comments, based on an experience of twenty years in English mines and over thirty years in this country.

First, it is true that more than one-half of the coal produced in the United States is mined by machines. However, statistics give the output per man per day, in machine mining, as 3.71 tons. This is a low average and would seem to indicate that machine mining is not the principal factor concerned in the large output per man per day, in this country. We may therefore set it aside as being of minor importance.

Some High Averages in England

Allow me to cite one or two instances that go to show that all the coal-mining districts in England do not show the same low rating as has been claimed. For instance, I remember hauling coal from one man who mined and loaded seventy-two 10-cwt. wagons, making a total of 36 tons, which was the man's average daily output.

I willingly admit that this was a high average, much above the normal. What I consider a fair daily average is shown by another man who loaded thirty wagons of the same capacity, in the same time, making his daily average an output of 15 tons. This, I believe, can be taken as a normal average in that district. The mines were worked on the longwall-retreating system. The distance the men had to travel from the shaft to their working places was not great, which gave them more time at the working face.

To show the effect of less favorable conditions, I will state that the average output per man per day, in a seam lying a few hundred feet below, in the same shaft, was not more than one-tenth of the normal average previously quoted. The men working in this lower seam had numerous difficulties to contend with, which briefly stated were as follows:

Natural Hindrances to Mining British Coal

In this deep lying seam, much gas was generated, which compelled the use of Clanny safety lamps, instead of the tallow candles used by the miners in the upper seam. Again, the coal was hard and there was much water in the roof, which demanded constant care in timbering the places. Last but by no means least were numerous clay veins pentrating the coal.

Another element that acts to curtail production in England is the strict surveillance of the workers in the mine. Some large mines in this country are just as strict in their requirements, but they are not face to face with the same difficulties. Many English mines have inadequate openings; the shafts are often small and the equipment underground crude. Such mines would require elaborate changes in order to enable them to handle larger tonnages than their present output.

There are, of course, many of the more recent openings that are well equipped and second to none in this country. In respect to haulage, there are to be seen in England some of the finest systems of rope haulage that can be devised. These reach underground for miles and miles, operating in different sections of the mine.

Another of the chief set-backs, in English mining, is the scarcity and high cost of mine timber. The same is reported in respect to mines in Pennsylvania, but the conditions are not to be compared with those in England.

My conclusion is that natural conditions are the chief factors in reducing the output of a man per day, in England, and increasing the cost of production of coal. These conditions are: deep shafts, much water, hard and thin coal, faulted seams often containing clay veins, small cars or mine wagons, etc., etc. R. W. Lightburn.

Gans, Pa.

Experiences of a Tracklayer

Many valuable points develop in the daily experiences of a careful trackman, who is often able to suggest improvements that are worth considering and would save expense and trouble if adopted.

LOOKING over the back numbers of *Coal Age* the other day, I became much interested in two or three excellent letters on the subject of tracklaying and haulage in mines. This being

in line with my own duties leads me to offer a few comments.

One of the points mentioned in the letters I read related to the ballasting of mine tracks, and the writers advised the use of broken stone, cinders and ashes. Making the roadbed solid and keeping it well drained is one of the important factors in mine haulage, and depends much on the skill and faithfulness of the trackmen.

Taking Ballast Into the Mine

For sometime I was employed in the soft coal mines in Indiana. The coal being underlayed with a fireclay bottom it was necessary to take broken stone into the mine to ballast the tracks. In the anthracite region where I am now employed, there is plenty of good stone found in the mine and I have no difficulty in making a good roadbed.

It has been my practice to space the track-ties on haulage roads 2 ft., center to center. If these are laid on rock broken small and the space between filled with the same and covered over with ashes the result is a good roadbed. The rails should be well spiked to the ties and fishplated. Few things are more dangerous in haulage than loose or high joints. The latter have caused many painful accidents, owing to the habit of boys and too often men, riding the bumpers of cars and sliding one foot along the rail.

Bad Practice of Driver Boys Causes Fatal Accidents

One instance that I recall was that of a driverboy whose foot caught in a high joint in the rail as the boy was riding the bumper of his car and permitting his foot to slide the rail, as just stated. Striking the high joint, the boy was thrown under the car and killed.

In another case where the boy driver was performing the same trick, the spreader to which the tail-chain was attached caught in a switchpoint as the car approached the switch. The switch-rail was lifted and pierced the boy's stomach causing his death in a short time.

An accident of this nature shows the importance of protecting all switchpoints, guardrails, and frogs. A common practice is to drive a short piece of wooden rail properly tapered into the crotch of a frog and otherwise protect switchpoints and railends.

Laying a Room Switch Requires Care and Judgment

Trackmen should be careful when laying a room switch or "branch," as we sometimes call them. It frequently happens, however, that the tracklayer is not to blame for a badly planned room switch. A foreman will often direct the miner to turn a room at a point where there is not sufficient distance for laying a good branch into the room. Had the tracklayer been called before the room was started, he would have told the foreman that it would be impossible to lay a good switch at that point, and that cars would often be derailed by reason of the sharp curve.

However, the trackman on being told to put in such a branch will generally get a frog with a widespread and do his best to make a good job, knowing that there is bound to be trouble in getting cars in and out of the room. Every derailment of a car means lost time to the miner and expense to the company, which can only be avoided by care and judgment in laying the track.

Many tracklayers neglect to use a rail-bender when laying a sharp curve. Instead, they spring the rail around the curve and brace it against the rib to hold it in place. This practice never makes a good job, as when the cars pass over the place the spring of the rail tends to force it out of line. If a rail bender had been used there would be no trouble provided the track is well laid and ballasted.

My advice is, if a foreman has a good tracklayer let him treat him right and give him every chance to do good work. It will pay in the end. Otherwise the trackman cannot be held responsible for conditions that he did not choose. An experienced trackman can generally make valuable suggestions in the planning of roads, partings, crossovers and room switches. Consult him on all occasions and give his suggestions careful consideration. The main points in tracklaying are good road bedding, long branches, ditches at the side of the road for drainage, and a good clearance space between the car and the rib.

Pittston, Pa. Benjamin Deeble.

Inquiries Of General Interest

Electrical Installation Gives Insufficient Power

Failure to obtain the estimated power from an electrical installation may result from a number of causes, but where the installation has been made by a competent electrician the trouble will generally be due to some fault in the engine and not in the generators or distribution of the current.

FOR some reason that has not as yet been discovered, we have failed to secure the power needed at our plant, which is operated electrically. We are running two generators of 150 hp. each, which appear to me to be overloaded, and yet we cannot get the power we need to operate the plant.

While I do not claim to have a working knowledge of electricity, I have reasoned that the trouble lies in the circuit. Taking the matter up with the electrician, I drew his attention to the fact that the A. M. P. is set at 400 and insisted that it should be set at 500, in order to give us more power. He assured me, however, that I was wrong and told me that I could get no more power in that way. Still thinking that I am right and being unable to convince the man in charge, I appeal to *Coal Age* for help. Mine Foreman.

Chambersville, Pa.

It is quite obvious that, as the correspondent has stated, he has not a working knowledge of electricity. We gain from his statement, however, that there are two generators in operation, each capable of supplying 150 hp. These are, of course, operating in parallel in order to make due provision for the variable load common in the operation of a mining plant.

It is impossible to know exactly what is meant by the statement that "the A. M. P. is set at 400," and the suggestion that this "should be set at 500." Seemingly, the reference is to the amperage or current for which a circuit-breaker is set.

Assuming the generators are operating on a 250-volt circuit, a current of 400 amp. would correspond to $(400 \times 250) \div 746 = 134$ hp., which would seem to indicate that the setting of the circuit-breaker at 400 amp. would be about right. On this assumption, it is hard to understand the suggestion of overloading the generators to give a current of 500 amp. when it is stated that they already appear to be overloaded at 400 amp.

It is more than probable that the trouble, in this case, is to be found in the engine driving the generators rather than in the electrical installation. But this can only be determined by overhauling the engine and renewing any packing or worn parts that may be necessary in order to enable the development of the full power required.

Working the Redstone Coal, Pittsburgh District

Information is asked regarding what method should be adopted in working 200 acres of the Redstone coal in the Pittsburgh District.

WE HAVE in contemplation the working of 200 acres of what is known as the "Redstone coal" in the Pittsburgh District. It should be stated that all the coal, in this 200-acre tract, has been worked out of the Pittsburgh seam, that underlies the Redstone coal.

Before going further in this undertaking we are desirous of securing any advice that *Coal Age* or its readers can give regarding the quality of this coal, and whether it would make a good seller as a byproduct, gas or steam coal. What difficulties are likely to be met in this undertaking and what is

the best method to adopt to overcome them? OPERATOR.

Pittsburgh, Pa.

This is a question that we hope will attract the attention of some of our practical readers operating in the Pittsburgh district, who will be able to give the desired information and advice asked by this correspondent. The question calls for an intimate knowledge of local conditions that can only be gained by long experience in the district. For this reason, we are asking for it the consideration that it merits in its practical aspect.—EDITOR.

Examination Questions Answered

Examination for Mine Foremen, Thirteenth Anthracite District

(Selected Questions)

QUESTION—*In a mine where 750 men are employed and 100 mules, how many splits of air will be required according to law, assuming that five mules require as much air as one man?*

ANSWER—On this basis, 100 mules are equivalent to 20 men and the circulation must provide for a total of 770 men. The Anthracite Mine Law, (Art. 10, Sec. 6) provides that "not more than 75 persons shall be employed at the same time on any one current or split of air." In compliance with this law, the number of splits required in the mine will be 770 ÷ 75 = 10.26, say 11 splits.

QUESTION—*(a) If a fan is producing 100,000 cu.ft. of air per minute and your measurements near the faces of the gangways showed 40,000 cu.ft, would you consider the ventilation good or bad? (b) If bad, what would you do to remedy the same?*

ANSWER — (a) The measurements taken at the faces of the gangways show a loss of 60,000 cu.ft., which is very bad. In a well ventilated mine, the loss should not exceed 10 or 15 per cent.

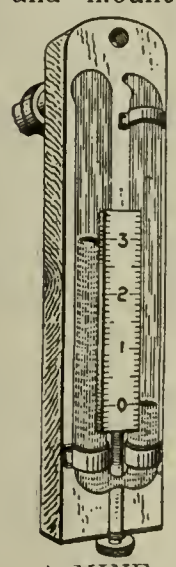
(b) The work of cleaning up the entries and air-courses should be started at once. Wherever practical, shorten the distance the air must travel and avoid sharp angles or turns in the course of the air. Enlarge all breakthroughs and crosscuts so that the area of each shall be at least equal to the area of the gangway. Repair all stoppings that are leaking and make all doors and air bridges as nearly airtight as possible. Avoid the use of doors wherever practicable.

QUESTION — *What general conditions determine the size of pillars in a mine that will yield the greatest amount of coal after robbing is completed and the mine is abandoned?*

ANSWER—The depth of cover, thickness and inclination of the seam, character of the coal and overlying and underlying strata, the presence of faults or slips in the formation and the amount of water or gas in the strata, together with the width of openings and the percentage of coal to be taken out in the first working, are the chief factors determining the size of pillars. Much depends on the quality of the coal, whether hard or soft, and its action when exposed to the air. The method of working and the length of time the pillars will be required to stand before they are drawn must also be considered.

QUESTION — *(a) Describe the water gage and state what it is used for. (b) If the pressure producing ventilation is 13 lb. per sq.ft., what is the water gage reading?*

ANSWER—(a) A mine water gage is a glass tube having a quarter-inch bore and mounted on a suitable base to which an adjustable scale is affixed, as shown in the accompanying figure. Water is placed in the bend of the tube to indicate, by the difference of water level in the two arms of the gage, what is the difference of pressure exerted on them. Both ends of the tube are open and one arm is extended and bent at right angles to enable it to be inserted in a hole in a brattice separating the intake from the return airway. The pressure on the intake is always greater than that on the return in a mine. This causes the water level to sink in the arm of the tube opened to the intake and rise a corresponding amount in that opened to the return. The difference in the two water levels is read on the scale, in inches. Each inch of water gage reading corresponds to a pressure of 5.2 lb. per sq.ft.



A MINE WATER GAGE

(b) A ventilating pressure of 13 lb. per sq.ft. corresponds to a water-gage reading of 13 ÷ 5.2 = 2.5 in.

QUESTION — *There are twelve chambers working on a gangway, the air going to the face of the gangway and returning along the faces of the chambers. An explosive mixture is found in the fifth chamber from the face of the gangway. What precautions would you take to prevent an explosion and injury to the men?*

ANSWER—On the discovery of the gas, all the men should be withdrawn promptly from the entire section. While some foremen would permit the men to continue working in the four rooms at the head of the gangway, consideration for their safety will require their withdrawal, provided the quantity of gas found is considerable. Having withdrawn the men from the entire section, the mine foreman and his firebosses should take charge and permit no one to enter the section except a few experienced men selected for the work of removing the gas. Only safety lamps can be employed in doing this work, which must be started where the air, after traversing the first four chambers counting from the head of the gangway, enters chamber five.

The air may be entering the mouth of the chamber or the last crosscut nearest the face. In either event, canvas must be erected at the point where the air enters and extended gradually toward the face of that chamber, giving time for the air to remove the gas as the canvas is extended. A careful watch must be kept of the lamps, and tests must be made from time to time to ascertain the progress of the work. In this manner, the gas must be removed from each chamber in succession, until the entire section is clear. It may be necessary to increase the circulation of air in the section, in order to remove the gas at the faces of these chambers.

QUESTION — *(a) What is a squeeze and what causes it? (b) What would you do to check its progress? (c) At what stage of its progress would you withdraw the men engaged in checking it?*

ANSWER — (a) A mine squeeze is a condition caused by the crushing action of the overburden resting on the pillars left to support the roof. A squeeze is manifested by the "nipping" or scaling off of the coal from the ribs of the pillars when the latter are too small to support the weight above them. When the roof and coal are hard and the bottom soft the pillars are often pressed into the bottom. In that case, the bottom is said to heave and the condition is commonly termed a "creep." A squeeze is the direct result of leaving too small pillars to support the roof.

(b) The best means of checking a squeeze that has started is to make every effort to induce a fall of roof in that vicinity and thereby relieve the pressure on the pillars. The setting of timbers and building of cogs have only a local and temporary effect, the timbers being soon brokn by the tremendous pressure thrown on them. To cause a fall of roof all timbers must be withdrawn from the waste, and it may be necessary to place shots in the roof to start the fall. The work of drawing back the pillars must be pushed wherever it will relieve the pressure on the affected district.

(c) The judgment and experience of the men in charge must determine when danger is imminent and the men should be withdrawn. The presence of gas or water in the strata increases the danger and requires the utmost care and watchfulness to protect the men.

The Responsibility of the Coal Consumer*

Co-operation Required of the Public as Well as of Producer and Railroads—Uniformity in Demand Necessary to Remove Disastrous Seasonal Strains on Rail Equipment—Early Buying and Storage up to Limit of Requirements Urged

By C. E. Lesher†

ONE of Æsop's fables relates that one day the members of the body announced that the stomach was getting all the food while they were doing all the work. They therefore agreed to strike and henceforth the arms would lift no more food, the mouth would chew no more. All was well for but a short time, when the arms and legs became weak and the mouth parched and dry. They soon came to the conclusion that in its own way the stomach was doing its share of the work and that all parts must work together in harmony to keep the body together.

Similarly the consumer has his place in the scheme of things and if he be a consumer of coal he must do his share in helping with the so-called coal question. I say "so-called" coal question because before the war there was no coal question in this country except as the producers were faced with bankruptcy and the miners with low wages and short working time. In the years prior to 1916 shortage of coal was unknown and high prices undreamed of.

The public itself is largely responsible for most of the fuel shortage that arises to embarrass us from time to time. In years past the railroads gave adequate service and the purveyors of all commodities could and did giv prompt attention to the needs of consumers. The public has come to feel that it is only for them to indicate when and how they will purchase their requirements in any line and the necessity will be provided at a minimum price and without inconvenient delay.

Because coal comprises more than one-third of the total freight tonnage of the railroads, it is impossible for the carriers to handle a substantial majority of this tonnage in a few months each fall and winter coincidently with the peak demand for the movement of other commodities. A tremendous overdevelopment of railroad facilities would be required to take care of such a cumulative load, which in turn would have to be reflected in heavier freight rates.

Much Trouble Caused by Irregular Operation

Irregular operation of the soft-coal mines is one of the biggest factors making for trouble in the coal industry. F. G. Tryon, of the U. S. Geological Survey, recently stated that:

"Bituminous coal mines of the United States have a developed capacity and a present labor force about 30 per cent in excess of what is required to supply the demand. In consequence, the labor and capital engaged in the industry have been idle during the past thirty years an average of ninety-three working days a year, and there is little evidence that the condition is improving. Irregularity of working time is injurious to the miner because it means direct loss of earning power, to the operator because it means higher costs per ton, to the railroads because it means seasonal demand for transportation, and to the consumer because it increases the cost of coal."

In one way or another, either by direction or indirection, the consumer of coal will be compelled to pay a higher price for his fuel requirements until he follows the very rational policy of "buying before the rush."

Why is it not possible for the coal consumer to have all the coal he wants whenever he wants it, if the mines and mine labor are sufficient to supply 30 per cent more than we have ever required? I can do no better than to read you from an address by A. G. Gutheim, a national authority on transportation in the coal industry. He says:

"The first evidence of difficulty in the transportation of bituminous coal is a coal-car shortage—that is, an inability on the part of the railroads regularly and adequately to meet the demands of the mines for empty cars in which to load and ship their production to market. Coal-car shortages have been so serious and so nearly continuous for the past four years that there is a tendency to forget that previously the situation was just the reverse. For many years prior to the late summer of 1916 there customarily existed in this country a surplus of cars available for coal loading in excess of all demands therefor almost 90 per cent of the time. The occasional coal-car shortages were strictly seasonal and local; nationwide or long continued difficulties of this sort were unknown.

Advantage of Early Purchase and Storage

"The seasonal and local coal car shortage is the result of a sudden and heavy demand for coal which comes late each summer in anticipation of, and later is accentuated by, the arrival of cold weather. The cure of such difficulties is more with the consuming public than with the producers and carriers. The former may, with little if any loss, purchase and store their extraordinary winter's coal requirements, in part at least, earlier in the season, when mine and transportation facilities are not, as a rule, fully utilized. But the latter, in effecting a cure, must mine and transport with even greater intensity during the period of strong demand. This would require larger investment in mining and transportation equipment and more employees in those industries, and these are things to be avoided where possible; certainly in the bituminous coal mining industry.

"If the future held in store no more serious problems in bituminous coal transportation than those customarily met with prior to 1916, the subject could be dismissed as not of particular importance. But our experience since 1916 has been distressing and at times attended with danger. That experience warrants serious consideration of its causes and the best endeavors of all concerned to eliminate those causes henceforth. . . .

"In the rather harsh experience of the past four years there are these signs for the future: (1) The bituminous coal mining industry is developed far beyond the present or immediate future demands of our domestic and foreign trade in bituminous coal. (2) Our railroad facilities probably are adequate today to handle our necessary annual bituminous output produced with fair uniformity of rate throughout the year and will certainly be adequate when post-war rehabilitation of the properties is completed. (3) Our railroad facilities are not, and without great waste of investment never can be, adequate to handle currently our necessary bituminous coal production when obtained by weekly peaks of 13,000,000 tons and valleys of 7,500,000 tons in a twelve-month period, as has been the case these past two years. . . .

"Let it be kept in mind that production, transportation, distribution and consumption are the four big factors in the bituminous coal industry, and should be reasonably well balanced. Of course, such disturbances as war and nationwide strikes constitute emergencies which require corresponding treatment. But under ordinary conditions proper co-ordination of these four big factors is possible and the result should be better conditions of mining and railroading, lower costs of production and transportation, and better prices and distribution to the consumer."

*An address before the Hartford branch of the American Society of Mechanical Engineers, Jan. 10, 1921.

†Editor of *Coal Age*.

When the normal coal consumer thinks he has enough coal for his needs he has no interest in the subject and when he thinks he has not enough his interest is keen, for coal is absolutely necessary. And when the coal consumer concludes that he needs more coal and he experiences increasing difficulty in obtaining supplies he is quite likely to be stampeded. The individual consumer may not know how many tons of coal there are above ground in the whole country or how fast coal is being produced, but he does know about his own supply and needs, even if he does not always act intelligently on the information. Individually and in the aggregate coal consumers are slow to change their minds. When they stop buying, because they think they have sufficient supplies, they stay out of the market too long, and when they get started they are hard to stop.

Effect of the Strike of Coal Consumers

The most momentous strike that ever effected the coal industry was that of the coal consumers. From the day of the armistice until awakened by the "Buy-Coal" campaign of the National Coal Association in June, 1919, a total of 41,000,000 tons, or more than 5,000,000 tons a month, was taken from storage. The consumer refused to buy, and the drop in reserves in extent and precipitateness is without parallel in our history. It is not too much to say that had this consumers' strike been settled three months sooner than it was—had the decrease in reserves ceased in April instead of July—there would have been no strike of the bituminous coal miners in November, 1919.

Price reduction by a manufacturer, producer or merchant is possible only through the reduction in commodity cost or by the absorption of loss through sale below cost, which latter remedy must of necessity be of short duration, continuing ordinarily only long enough for the seller to dispose of his stock on hand. His replacement stock, for further sale, must be obtained at a lower price or he cannot continue to do business.

Coal companies carry no stock of mined coal at the mines. Storage of coal at the point of production is only in the seam—in the ground. There is therefore no loss to the producer through sale of accumulated stock on hand or otherwise, except as open market competition might prompt a few producers, usually of the poorer grades of coal, and for some arbitrary reason, to main and sell coal for a time at less than cost.

If during the coming year the coal industry is to escape the delay in contract commitments and early-season shipments so notable in the spring of 1919 and that brought such deplorable results in the fall and winter of that year, the public and coal consumers of every class must promptly inquire into the question of whether the proper basis of prices has been reached and, having satisfied themselves on that point, must thereafter not only arrange for their next season's coal supply but must direct early shipment and store the maximum possible tonnage that they can safely and economically handle.

Such early-season movement of coal by industrials and by retail dealers directly through to the consumer's basement is vitally essential if in the fall and winter of 1921 the shortages of 1917, 1919 and 1920 are to be avoided and if, as well, high "spot" market prices that might arise from such lack of early buying are to be averted.

Prices Largely Predicated on Labor Costs

The average manufacturer, producer, distributor and retailer, recognizing the present universal countrywide public demand for lower prices on all commodities, including coal, are, after one fashion or another and with varying degrees of earnestness, trying as promptly as possible to "unload." The Federal tax laws have had an automatic tendency to hasten this process during the past few weeks.

With bare shelves and bins, however, purveyors in general have become justly concerned as to whether the public has a proper appreciation of the situation. All business, including the coal industry, will move forward haltingly until it is apparent that these changes in conditions are recognized. Evidence of such recognition will find its most dependable and helpful expression in the form of buying orders and renewed contracts.

The commercial value of practically every commodity is largely predicated on the cost of labor, the extent of such labor value in a given commodity varying somewhat but ranging as an average well above one-half the total cost. In coal production labor directly constitutes slightly more than 70 per cent and indirectly, through the labor tied up in necessary material and supplies used in and about a mine, adds an additional estimated 10 to 12 per cent, making the ratio of labor to total mine cost nearly 82 per cent.

The coal operators in the union fields—representing 70 per cent of the total production—have a wage agreement with the mine workers. This agreement and scale was defined and authorized, in so far as it pertains to the so-called Central Competitive Field, by the U. S. Bituminous Coal Commission, and does not expire until March 31, 1922. It would seem, therefore, that present wages cannot be reduced.

The only major economies possible in the operation of a modern, well-equipped coal mine come through full-time work or the nearest possible approach thereto. For a mine to produce coal, two things are absolutely essential: (1) A consumer to whom coal can be shipped. (2) Railroad cars in which to transport coal.

A coal-operating company can provide neither of these nor can it be held responsible for the lack of either, both of which so largely determine the lower limit of cost and selling price of coal.

The essential factor determining how cheap coal production may be is full running time for the mines. Every idle plant, like an idle horse in the barn, "is eating its head off." If the cost of coal-mine idleness is to be reduced there must be a regular demand for coal and cars for its movement. To the extent that it fails to buy early and thoroughout the summer season, the public itself is directly responsible for any unwarrantably high prices it may pay for coal later in the year.

Here in the East you, as advisers to the coal consumer, must press home these facts, in that part of the United States farther west, where bituminous coal is the fuel of the household, it is among the responsibilities of the retail dealer to make domestic consumers in particular understand this. If the substantial majority of domestic bituminous coal might move directly through the dealers' yard to the consumer's basement prior to Oct. 1 of each year, as it does with Pennsylvania anthracite, and go forward in something like equal monthly amounts, more would be done to avert any likely period of annual fuel and railroad distress in the Chicago territory than from almost any other remedy.

Necessary to Move Coal During Summer

Although but sixty million tons of bituminous coal is handled as household fuel the number of individual coal consumers involved is 95 per cent of the total. Much of the traffic in this coal is long haul in small lots, all of which necessitates more transportation detail in movement to final destination, greater delay of equipment for unloading and in its reassembly for return to the mines for reloading. We all know that summer is the time for such movement. Can we convince the public of its direct responsibility and get it to act? It is certainly worth a generous effort.

High coal prices in 1919 arose directly from the "consumers' strike" in the spring and summer, followed by car shortage from August to November and thereafter by the miners' six-weeks' strike—all conditions which tended to reduce supply and develop shortage, leaving the country with bare coal bins last spring and ripe for a tremendous demand in 1920. The high price that accompanied this demand was inevitable.

What of 1921?

Ample car supply and adequate motive power on all railroads for all commodities throughout the coming spring and summer are promised. What the heavier demands and weather conditions of next fall and winter may develop with respect to the ability of the railroads gen-

crally to handle maximum peak loads remains to be seen. Whether there will be a car shortage during the last half of 1921 depends almost entirely on the extent to which the railroads are used to capacity during the first half of the year. If goods—farm products, manufactured goods, coal, ore—are not moved to meet current consumption between now and July 1, we will repeat in the last half of 1921 much of our transportation difficulties of 1920.

Early Delivery To Diminish Peak Load

Every ton of coal forwarded to its final destination—the consumer's bin or storage pile—between now and July 1 will reduce just that much the peak load the railroads will have to handle next winter. Each of the past five years it has been this peak—impossible for the railroads to promptly negotiate—that has caused the unfortunate operation of the law of supply and demand and consequent high prices.

To start right every coal buyer must have the essential facts which will enable him to know for himself when the proper price basis has been reached on the particular coal he ordinarily buys.

If I do not name exact prices that are likely to prevail in 1921 it is because this is not a dollars and cents discussion; it cannot be, because coal prices even in a single state vary widely. Based primarily upon costs at individual mines, production of which in turn, varies with the character of the operation and the thickness of the bed mined, there is a wide variation in the prices that may be quoted by companies seeking business.

Prices of coal cannot in 1921 be as low as in pre-war times; on the contrary they must approximate contract figures prevailing last April. Deliveries on these contracts have been steadily protected throughout the past year by dependable and long-established companies who have not felt prompted, much less warranted, in capitalizing a temporary opportunity to charge extortionate prices to the disadvantage and loss of an old-time and valued clientele. Seventy-five per cent or more of all the coal shipped from the mines of the country in 1920 did not carry higher prices than were necessary to cover costs and a reasonable profit. Speculation was responsible for objectionable prices on less than 25 per cent of the coal—I am not sure but that I can say on less than 20 per cent.

The difference between mine cost and selling price—the margin, of which roughly but 50 per cent is profit—of 496 soft coal operators, producing 101,000,000 tons of coal in ten months of 1920, or about 25 per cent of the total for the country, according to testimony introduced before the Calder committee of the Senate last week, was 71c. The weighted average selling price of all this coal was $3.45. Twenty-five companies, selling 0.91 of one per cent of the 101,000,000 tons, realized above $5.99 per ton.

Coal Abundant and Prices Low in Spring

In the spring and early summer of 1919—February to June inclusive—when coal was abundant, car supply ample and coal-producing companies in all parts of the country were anxious to enter into early-season commitments, the price on all kinds and preparations of coal moving from every producing field in the country was probably at a minimum.

No market adjustment in 1921 can reduce prices on the basis of production cost. Moreover, since then there have been three upward adjustments in the wages paid to mine labor, each of them very substantial and each of them twice or thrice any previous pre-war advance ever granted. One of these advances (14 per cent) became effective in mid-December, 1919, and was a part of the conditions under which work was resumed following the November-December strike. An additional 13 per cent was awarded by the U. S. Bituminous Coal Commission, becoming effective April 1, 1920. Finally, following other local "outlaw" strikes in July, 1920, a still further advance of $1.50 per day was given to day-wage men. It is estimated that in some fields this allowance was equivalent to another 13 per cent general advance.

The wage rates will continue to the expiration of the present existing wage agreement—March 31, 1922—and the increase in mine cost they have occasioned—perhaps as much as 40 per cent—must be added to the contract and current market prices prevailing in the spring of 1919 to determine the probable opening season price levels of the year 1921 on any given grade of coal from any field. Wage levels throughout the entire country in union and non-union fields are essentially based upon this major agreement with the United Mine Workers and mine costs for similar conditions are approximately the same in all sections.

Production of coal in the first six months of 1919 was the lowest for a number of years. During this period government officials sounded warnings on the inadequacy of coal production; the coal operators, through the National Coal Association, conducted a countrywide advertising campaign urging consumers to buy their coal "NOW"; finally the Railroad Administration gave special preference to coal over all other industries in the use of open-top cars, and even then and regardless of the highest rate of production the country ever reached the stock of coal on hand on Nov. 1, 1919, was entirely inadequate to carry us over the period of the miners' strike.

The responsibility of the coal consumer may be summed up in the statement that as the holder of stocks he should be fully informed at all times of the situation with respect to rates of production, consumption and stocks and should act intelligently on his information. He is the arbiter of the destiny of the coal industry and, it follows, of his own destiny in respect to coal.

The refusal or failure of every consumer to buy coal to the limit of his ability to store up to his requirements will simply mean another developed shortage to be met in the fall of 1921. It is idle to wait for "hoped-for" but probably impossible price reductions before buying. Make it your first task to ascertain the exact facts on coal costs and prices and then start buying and storing at the earliest possible moment.

Nova Scotia Ratifies Montreal Agreement

RATIFICATION was given to the Montreal Agreement at the referendum held in District No. 26, Nova Scotia, Dec. 14. After the bitterest kind of a campaign, J. B. McLaughlin finally obtained the adhesion of the mine workers by a majority of 2,009 votes—6,499 to 4,490. This agreement gives an increase of 55c. to day labor, 10c. on the tonnage rate and 12½ per cent on dead work.

Trouble is by no means at an end, however. But the Stellarton and Westville locals repudiate the action of the executive officers and have intimated that the mine workers will not be held down to the terms of the compact. The men have made demands on the Acadia Coal Co. and the Intercolonial Coal Mining Co. They would like to make a separate agreement—almost any kind of contract would do, as it would show their independence of the United Mine Workers of America.

Meantime the operators at Lanark mine, outside New Glasgow, are asking a reduction of the wages of their men, declaring that they cannot operate under the present wage and price conditions.

Fred Mooney, secretary of District No. 17, United Mine Workers, has protested to the Labor Department against the importation of strikebreakers in the West Virginia coal fields where a strike has been on for some time.

The Southern Appalachian Coal Operators Association will hold its annual meeting in Knoxville, Tenn., Jan. 21, 1921. The Harlan County Coal Operators Association and the Hazard Coal Operators Association of Kentucky and the Virginia Operators Association will meet with the Southern Appalachian operators on this occasion. Both J. D. A. Morrow, vice-president of the National Coal Association, and John Callahan, traffic secretary, are on the program. The secretary, J. E. McCoy, advises that he also is arranging for several other speakers of national reputation. Reports are that the meeting will be well attended and that the program will be of interest to every operator in the South.

Calder Hearing Reveals Alleged Sinister Activities As Honest Effort to Meet Unusual Conditions

MOST of the scare headlines based on early deductions from the Calder coal probe were disproved during last week's hearings. The hearings now are simmering down to the point where alleged irregularities are being explained. In the light of these explanations, that which was at first proclaimed as sinister appears simply to have been the natural procedure in the face of abnormal and unusual conditions.

Capital was made of the fact that the Interstate Commerce Commission put into effect an order drafted in the offices of the National Coal Association. It now has been revealed, apparently to the satisfaction of the committee, that the Interstate Commerce Commission usually asks that requests for an order take the form that the persons interested would like to have the order assume, just as judges require attorneys to draft injunctions and other documents. As a matter of fact, most lawmakers are familiar with that procedure, as the original draft of most legislation is made by persons interested.

A. G. Gutheim, of the car service division of the American Railway Association, touched on the above point in his testimony when he said: "The agreement we reached [the operators and the railroad men] was proposed in the form of an order. The proposed form had been drafted by the coal people in the course of the conference and modified in some slight particulars by us. That, I might say, in view of some of the questions that have been asked previously at this hearing, is the usual way in which a good many of these things are handled by the commission."

Edge Statement Exonerates Colonel Wentz

Another assumption which came in for big headlines throughout the country was an error, as is explained by a statement issued by the National Coal Association, printed elsewhere in this issue.

After all that has been said about the activities of Colonel Wentz in his dealings with the War Department, it doubtless is gratifying to him to have the following out-and-out statement from Senator Edge:

"I will say frankly that, from your statement here, it is quite evident that you did not take any advantage of it [the War Department contract]. I am glad to say that. Any operator who wanted to take advantage of this certainly could have done so, in all kinds of ways."

In answer to a question as to whether the representatives of the railroad protested against Service Order No. 10 on the ground that it changed contract coal into spot coal, Mr. Gutheim, in his testimony, said:

"Assuming that this coal was under contract, we did not see any reason why, if any order was issued, it should not be such as would compel the man who had the contract to ship the coal. If any order was issued and you relied upon the good faith of the operator who had the contract to ship the coal and thereby reduced the amount necessary to be obtained by assessment you at least put yourself in the position where you might be double-crossed by an operator who had a contract to ship up the Lakes and chose not to do it, upon the understanding that somebody else's assessment would fill in his coal.

"The position we took was that under those circumstances the first operator, if he chose not to ship on a contract, would have his coal free for the spot market, whereas the coal that went in substitution for that to Lake Erie ports would be there as spot coal. That was the first objection. The second objection was that the railroad men never thought that the people beyond the Lake had their coal bought. When the sub-committee, of which Mr. Groverman was a member, allocated the coal on a blanket percentage basis, instead of allocating it according to contract, I was convinced that they did not have all the coal bought that they said they had bought."

When Mr. Gutheim was asked if the order resulted in great increase in the price of coal to the Northwest, he said: "If I am to answer on the strength of the grapevine gossip we get I would say it did increase the price of coal to the Northwest, but nobody really knows about it until it is checked up."

With regard to the activities of the National Coal Association in the matters of publicity Senator Kenyon read into the record a letter from the director of publicity of the National Coal Association to Vice-President Jenkins, of the Hutchinson Coal Co. The letter deals with the handling of the publicity at the Cleveland meeting, in which it was pointed out that the Associated Press report of the meeting was, to a very large extent, the word-for-word product of the publicity department. Senator Kenyon asked if the letter was a mere bouquet that the director of publicity was passing to himself. Colonel Wentz replied that the methods outlined were not the general method of procedure. Colonel Wentz was asked if he knew how it was brought about that the Associated Press should carry statements prepared by his director of publicity as if it were a mere matter of news. Colonel Wentz admitted that he did not know how that matter had been handled.

Addressing Colonel Wentz, Senator Kenyon made this statement: "You proceed on the theory, of course, that the coal business is a private industry. Coal is a basic matter. We cannot carry on the country without coal. It is like the railroads. I do not ask you to say, but I would like to have you think about it, because it is coming along some day, whether the coal that the country must have, that the Army must have, that the Navy must have, is absolutely a private business. The anthracite coal in this country is in the hands of a few corporations. You cannot conduct the country without it. People cannot live without coal. Is it absolutely a private business?"

To this Colonel Wentz replied that it is just as much a private business as is lumber, or oil or other wasting materials.

"No, one wants to harm the coal business," said Senator Kenyon, "but the people intend to see to it that they are not robbed by extortionate prices. How could a law that would require the giving out of profits to the public harm you?"

War Department Coal Cost $4.67-$9.59 a Ton; Wentz Calls Methods Unbusinesslike

COLONEL D. B. WENTZ of Philadelphia, president of the National Coal Association, according to an official statement of the National Coal Association, was cleared before the U. S. Senate Committee on Reconstruction and Production on Jan. 6 of any imputation of having taken advantage of the contracts entered into between himself and the War Department during the recent soft-coal shortage emergency, by which he was authorized to purchase 275,000 tons of coal for the department at a maximum price of $11 a ton. Colonel Wentz appeared as a witness before the committee at its morning session, explaining the circumstances surrounding the making of the contract and the manner in which he had carried it out.

Colonel Wentz made it clear to the committee that while he was authorized under the contract entered into between himself and the War Department last September to purchase 275,000 tons of soft coal, he had strongly advised the department against making a contract for coal for immediate delivery, because of the upset condition of the market. He advised the War Department, he said, to buy only enough coal to last from day to day, and to put off buying supplies for the department's winter needs until prices in the open market were down.

Against his advice, Colonel Wentz explained, he was obliged in September, October and early November to buy a portion of the tonnage called for in his contract with the department. The aggregate amount of coal purchased

by him for the War Department, he said, was exactly 72,979 tons, at prices ranging from $9.59 to $4.67 a ton, instead of $11, the maximum provided for under the contract. Under this arrangement with the government, Colonel Wentz explained, he received 50c. a ton as commission. By purchasing only 72,979 tons of the 275,000 tons demanded by the War Department, he said, he saved the government in commisions alone over $100,000. His actual commissions aggregated approximately $36,000. In answer to a question of Senator Edge, Colonel Wentz unhesitatingly declared that he regarded the contract made by the War Department as "unbusinesslike." At the end of Colonel Wentz's statement Senator Edge remarked, according to the official stenographic report: "From your evidence here it is quite evident that you did not take any advantage of it [the contract with the War Department]. I am glad to say that, as far as I can follow the testimony."

Senator Edge asked Colonel Wentz if it was true that if any operator "wanted to take advantage of the contract he could certainly have done so in all kinds of ways," and Colonel Wentz replied: "Unquestionably."

Colonel Wentz made it clear to the committee that the coal he purchased for the government was bought not at his own mines but from operators who had coal not under contract that was offered in the open market. It was solely because of the shortage of coal, Colonel Wentz said, that high prices prevailed in the fields where he was forced to buy the coal.

Colonel Wentz criticized the War Department's method of contracting for its coal supply, saying that instead of arranging for coal before the beginning of the coal year, which starts April 1, the department waits until the beginning of its own fiscal year, July 1. In this way, he said, the War Department fails to take advantage of more favorable market prices which ordinarily prevail before the beginning of the coal year. Nearly all of the large operators, he said, usually have contracted for the larger part of their yearly output by the time the government arranges for its own supply.

"More businesslike methods in arranging for its coal," Colonel Wentz said, "would save the War Department a great deal of money."

Watkins Company Unjustly Accused

In evidence given Jan. 6 before the Reconstruction Committee, according to a statement by the National Coal Association, a grievous injustice was done the Watkins Coal Co. of Pennsylvania, which has offices in New York City, the company being represented as having made a profit of $6 a ton on coal for the War Department.

At a matter of fact the Watkins Coal Co. sold only 670 tons through the Kentz company, of Philadelphia, to the War Department, and on that coal it received a gross sales commission of less than 25c. a ton. The National Coal Association is advised that the coal in question was not produced by the Watkins Coal Co. at all but was coal which that company was selling for other producers, acting as their sales agent. The production of the Watkins Coal Co. itself was all under contract and was all shipped on those contracts to regular customers. None of it went to the War Department in any transaction.

Senator Kenyon, of the committee, in checking over the list of coal companies from which the Wentz company, of Philadelphia, had purchased coal for the War Department, found the name of the Watkins Coal Co. He asked Colonel Wentz if the Watkins Coal Co. was a producer of coal. Colonel Wentz replied that it was. Senator Kenyon immediately drew the inference that the coal covered by the War Department transaction was purchased at the mines of the Watkins Coal Co.

Unfortunately Colonel Wentz did not know that the Watkins Coal Co. was not only a producer of coal from its own mines but also was a wholesaler of coal, and in the latter capacity had marketed the output of various other coal operators in accordance with their instructions. The record of the Watkins company is absolutely clean. Its officers have already telegraphed to Senator Kenyon requesting an opportunity to be heard by the committee immediately so as to rectify the injustice done them.

Army Purchases Bituminous at Average of $7.12; Anthracite $7.76 Per Ton

TESTIFYING in the Calder committee inquiry into army coal purchases made through Colonel Wentz, Colonel J. P. Barney, of the Quartermaster Corps, testified that the average price paid for 765,252 tons of soft coal, all of which was due for delivery on or before Jan. 5, 1921, was $7.12. The price of 170,000 tons of anthracite purchased by the army averaged $7.76 a ton.

Colonel Barney said that prices for army bituminous coal for the year had advanced 192 per cent over the previous year, while anthracite prices had advanced 100 per cent. He added that the Assistant Secretary of War had authorized open-market purchases of 900,000 tons of bituminous at $10 a ton and 350,000 tons of anthracite at $13.

Can't Agree on Arc-Wall Cutting Rate

EFFORTS of a joint commission of operators and miners of northern West Virginia to reach an agreement as to the rate of wages for the arc-wall large-type coal-cutting machine have so far proved fruitless, notwithstanding several joint conferences. In conjunction with other meetings of the Northern West Virginia Coal Operators Association a meeting of the commission was held in Fairmont on Jan. 3 and although the commission wrestled with the rate for the better part of two days, it was not found possible to reach an agreement, representatives of the operators so reporting to the advisory committee of the Northern West Virginia Coal Operators' Association, which held a meeting to receive the report of the members of the commission.

It was not so much the rate itself over which there was a disagreement as it was as to who was to receive the benefit of the rate. The representatives of the operators took the view that a cutter should receive the entire benefit. Representatives of the miners refused to accede to that view, advancing the proposition that the loader also should participate in the new rate, whatever it might be, as finally determined.

The operators were represented by George Brackett, of Fairmont; J. W. Bischoff, of Elkins; S. D. Brady, of Fairmont; J. M. Orr, of Clarksburg; and E. S. McCullough, of Fairmont, the association's labor commissioner. The miners were represented by Percy Tetlow, of Salem, Ohio; Joe Feeney, of Flemington; Joe Morton, of Ida May; William Petry, of Charleston, vice president of district 17, and Charles Batley, international representative of the United Mine Workers.

Union Urges Open-Shop Law to End Strike In Mingo County, West Virginia

JUST when the non-union mines in Mingo County, West Virginia, are beginning to run steadily, and the union mines, being small and inefficient, are ceasing to run at all, the union proposes that a law be passed that all West Virginia's industries be compelled to run open shop. Details of the plan may show that the bill to be presented will be one which prescribes that union men must not be discriminated against but that non-union men may be. That is, there may be "closed shop" to non-union men but not "closed shop" to those that belong to the union. That will doubtless be carefully disguised in the bill. As a result the extended Mingo County strike, so long nearly lost to the union, may be brought by them to a successful conclusion.

The rumor that the union was going to make the proposal was being discussed by the officers of the military forces in Williamson Jan. 7. A meeting was to have been held Jan. 12 at which all the thirty-five locals of Mingo County were to have been represented. The Superior Thacker Coal Co., which at one time ran a union mine employing 100 men, and which closed down that mine recently, has reopened it on a non-union basis.

Owing to the next issue being devoted to the statistical review for the past year and outlook for the future, all technical articles and the departments of Discussion, Inquiries and Examination Questions will be omitted.

Unfair to Attack Coal Trade Alone, Says Senator Sutherland, When Abuses Exist in Other Industries

FOLLOWING constant grilling of coal men over alleged profiteering on War Department coal orders by the Calder Committee on Reconstruction and Production Senator Howard Sutherland, of West Virginia, in an emphatic speech in the Senate on Friday last declared the committee should not single out coal, and in fact questioned its authority to go into the matter, fuel having no direct relation to building. He suggested that if profiteering was to be investigated all materials should be considered by a general committee of the Senate as a principal investigation rather than as a side issue by another and ungermane investigating committee.

In objecting to the Calder committee picking on the coal men Senator Sutherland declared in the Senate that profiteering investigation should be of a general nature, to include all materials. He said it was popular for states which are entirely consumers of coal to jump on the coal man and yet there were instances of many products, no doubt, in these states that might bear the same scrutiny with the same result. He would be glad to see New York and other states get coal at low prices. The Senator insisted that most of the high prices did not involve coal operators, as the coal situation during the past year was largely brought about by a buyers' market. The coal scarcity due to the car shortage, caused buyers to go to operators and offer them one price after another until the price was up to a point where sometimes the operator was almost ashamed to take the money. "They did just as other people did who are in business—take what the traffic offered," the Senator said.

Profiteering in Selling of All Materials

Senator Sutherland pointed out that the cost of fuel was an insignificant item in the cost of building operations and as profiteering had been going on in all kinds of materials it was not fair that the inquiry be directed solely to coal and that the operator be singled out. "He is not more guilty than are a great many other producers of commodities," the Senator said.

Senator Kenyon, of the Calder committee, said it was trying to catch them all.

Continuing, the West Virginia Senator said that while in some cases prices were no doubt higher than they should have been and many of them recognized the fact that it was an unwholesome condition of trade that prices should be so high, yet a vast volume of the coal business was not carried on at high prices. A major portion of the coal produced was sold at moderate prices on yearly contracts, he said.

Senator Sutherland said that many operators during the war were selling coal on 3- and 5-year contracts at prices on which they lost money. A conclusion as to profiteering should not be based on one instance in which perhaps some individual charged an excessive price. "If the Senate is going into that," Senator Sutherland said, "the entire subject should be brought out by some committee which justly has that question before it as a principal inquiry rather than as a side issue of an inquiry into buildng conditions."

Senator Calder insisted that a price of $9.12 for coal which it cost $2.80 to produce could not be defended. When the committee closed its inquiry into coal it would report the facts to the Senate and also report legislation, which would go to some standing committee of the Senate "which if it wishes can go over and check up what we have done," he said. Continuing, Senator Calder charged that the National Coal Association assisted in preparing priority orders for the Interstate Commerce Commission that had actually destroyed contracts for coal to the Northwest, causing an increase of $2 and $3 in the price for that territory.

Senator Sutherland said he did not defend unfair prices on any products, but declared "it is just as unpleasant to go into a clothing store and buy for $100 a $30 suit of clothes made in New York as it is to buy for $9 a ton of coal that perhaps cost only $4 at the mines." Senator Calder said he would join in an effort to punish those who attempt undue profits.

Senator Sutherland contended that the question was of such broad scope, covering practically every industry, that he did not like to see one industry singled out because it is a popular thing to jump on the coal operator, who certainly receives more than his share of abuse.

Senator Calder said the committee had sent to the Navy Department the hearings so that it might have the record on War Department purchases when effort was made to collect from the Navy Department in the Court of Claims $7 for coal on Navy commandeering orders. Senator Calder added that there were no charges before the committee involving the integrity of any government official, and he also did not think it fair to blame Colonel Wentz entirely, as it was largely the government's fault in the way the War Department coal was ordered.

Suggests That Navy Buy Coal for Army

Senator King said it suggested the efficiency of the navy system of buying coal and he would recommend that the navy buy coal for the army. Senator Calder thought some government department or officials ought to purchase all coal for all departments, which would provide a uniform system and enable the government to buy coal at moderate prices.

Senator Borah of Idaho objected to this plan because he said the operators would soon control the particular individual charged with coal purchases and do it more successfully than if there were half a dozen who had control of purchases.

Senator Kenyon said persons from whom coal was commandeered by the navy were going to the Court of Claims for additional money for the coal and the War Department prices would be admissible as evidence bearing on the question of fair price for the coal. He charged that the people had been robbed on coal to the extent of hundreds of millions of dollars.

Senator Pomerene referred to coal at 90c. a ton in Ohio a few years ago and a statement of Cleveland operators before the war that they would be satisfied with a profit of 10c. a ton which he contrasted with the 50c. a ton commission authorized by the War Department. Senator Kenyon said the Fuel Administration had fixed 15c. a ton as a fair commission to purchasing agents. Senator Jones of Washington said the developments before the committee would overturn any suggestion that the Court of Claims would consider the War Department prices as controlling in navy cases.

Palmer's Staff to Conduct Coal Inquiry: Senate Committee Submits Evidence

IN THE absence of Attorney General Palmer, Assistant Attorney General Frank K. Nebeker. in charge of prosecutions, said on Jan. 8 that the Department of Justice had received the report of the testimony before the Calder committee of the Senate requesting action. Mr. Nebeker said he believed that there had been enormous profits in coal and that the department would commence an immediate investigation and enter vigorous prosecutions if necessary. It was said that about twenty-five coal companies were involved, but their names were not divulged.

In the Senate, Senator Borah, of Idaho, asked what the Senate was going to do about the coal situation if it got the facts. "The committee plans to recommend legislation," said Senator Calder, "and is now preparing bills and hopes to present them next week."

Senator Borah asked if there was any law at present under which prosecutions could be had Senator Calder

October Freight Car Performance Only Once Surpassed

FREIGHT car performance statistics just compiled for October by the Bureau of Railway Economics show that the average daily movement per freight car during that month was the greatest for any month in the last four years with but one exception.

The average for the month was 28½ miles, an increase of two-fifths mile over the figure for the preceding month. The October mark was higher than that for any month of government control and was passed in the last four years only in May, 1917, when an average of 29 miles was attained.

During October, 1919, the average was 27 3/10 miles, while during the same month in 1918 it was 26⅛ miles. Each increase of one mile in the average movement of a freight car is equivalent to the addition of 100,000 freight cars to the country's transportation facilities, so that the gain for October over the previous month is equivalent to the addition of 40,000 cars, or 120,000 cars compared with October last year.

While the net ton miles total was smaller than that for August, the number of cars loaded with revenue freight during October amounted to 4,979,377, the greatest number loaded during a similar period in the history of American railroads.

said the Lever law could be invoked if the Department of Justice would take up the matter. He said the committee had sent to the department information concerning the recent revelations and suggested that prosecutions be begun at once.

Senator Overman, of North Carolina, asked if the Secretary of War had explained the War Department coal purchases. Senator Calder said the committee had heard his subordinates but the Secretary had not asked to appear, although the committee would be glad to hear him if he desired to appear.

Senator Poindexter asked if the committee had investigated whether there had been any violation of the criminal laws. He recalled that a few years ago some prominent coal dealers of the Pacific Coast were imprisoned for the acts which the Senate committee had now discovered, or perhaps it involved a conspiracy to boost prices. Senator Poindexter said it was a peculiar situation for the War Department to pay more than the market price, which tended to increase prices to consumers, without anybody being to blame. Senator Calder said the committee was submitting the testimony to the Department of Justice with the request that it inquire thoroughly into the question of whether or not any criminal act had been violated.

Asking Continuance of Lever Act, Navy Reveals Prices Paid for Coal

NOTING the Senate committee's investigation of coal prices Secretary of the Navy Daniels has issued the following statement showing prices paid for Navy coal and asking that the Lever Law be continued in order that the Navy may continue commandeering orders:

"According to published reports of the evidence recently adduced before the Senate Special Committee on Reconstruction and Production it appears that the coal trade has grievously imposed upon the public; whereas, in direct consequence of the authority conferred by the several statutes granting war-time commandeering powers this department has been enabled to avoid the profiteering prices demanded by the suppliers.

"The records show that without the commandeering power conferred by the Lever Act and the several kindred statutes, the Navy might not have been able to maintain its fuel supply at any price, as repeated efforts to secure competitive bids were without avail.

"As it was the coal supply has been at all times maintained, the suppliers being allowed the full cost of production plus a fair margin of profit in each case as follows:

	Pennsylvania Field	West Va. Field—New River	West Va. Field—Pocahontas
	Per Net Ton	Per Net Ton	Per Net Ton
October, 1917	$2.00	$2.15	$2.00
April, 1918	2.60	2.15	2.00
May 10, 1918	2.60	2.35	2.00
May 28, 1918	2.50	2.25	1.90
July, 1918	2.95	2.70	2.35
July, 1919	3.03	2.85	2.85
September, 1919	3.03	2.85	3.06
November, 1919	3.33	2.85	3.06
December, 1919	3.33	3.10	3.06
April, 1920	3.79	3.57	3.57
August, 1920	4.24	3.57	3.93
September, 1920	4.24	3.93	3.93

"As evidence of the just compensation afforded, a large majority of the suppliers concerned have in writing accepted the prices fixed as satisfactory.

"The extent to which the Navy has avoided the payment of the profiteering prices demanded elsewhere is shown by the fact that more than 7,000,000 tons of coal have been obtained under requisitioning orders and at the prices herein stated.

"In view of the successful operation of the Lever Act as applied to the maintenance of the Navy, continuation of authority at present vested in the Navy Department is vitally important, certainly at least until peace has been formally declared."

Federal Fuel Yard Points Out Benefits of Centralizing Government Fuel Buying

IN connection with the Calder probe into coal matters statements have been published which have created the impression that the government has been an easy victim for operators who would charge exorbitant prices for their product. That this was not the case with respect to coal handled through the Government Fuel Yard is set forth in a letter from E. A. Holbrook, assistant director of the Bureau of Mines, to Senator Edge of New Jersey, one of the members of the committee. In that letter Mr. Holbrook says in part:

"Last spring, after advertising twice for the estimated yearly requirements of 250,000 tons of bituminous coal, the Government Fuel Yard received only 45,000 tons under contract. The government's needs in the District of Columbia have been met at prices ranging from $4.25 to $5.50 per ton f.o.b. mines in the face of the serious coal shortage and with spot prices running as high as $13 per net ton f.o.b. mines.

"It is my belief that by centralizing under one agency the government coal purchases throughout the United States, as proposed by this measure [a bill providing for uniform selection and purchase of fuel, which it is proposed to introduce in Congress], economies would result, as indicated by the accomplishments of the Government Fuel Yard in the purchases for the District of Columbia. Furthermore, it should be possible to realize enormous savings in the more efficient utilization of coals through the selection by the trained engineers of the Bureau of coals particularly adapted to the power plant equipment and by improved methods of firing and operating furnaces."

Cancels Service Orders Nos. 1 and 13

HOLDING that the orders no longer were needed now that railway congestion has been so greatly reduced, the Interstate Commerce Commission on Dec. 30 announced the cancellation of Service Orders Nos. 1 and 13. The cancellation became effective Dec. 31 at midnight.

Service Order No. 1 provided that railroads should forward traffic to destination by the routes most available to expedite its movement and relieve the congestion existing at the time the order was issued. The railroads were ordered at the time to disregard the routing of shippers or the ownership of cars.

Service Order No. 13 provided that the railroads remove from cars and restore grain either in their own depots or warehouses at or near Galveston at the cost of the owners. This action was taken to expedite the movement of cars used for grain shipment.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

UNDOUBTEDLY the foremost question in the collective mind of commerce and industry today, according to the Mechanics and Metals National Bank of the City of New York, is how long the present depression will last, whether it will become more severe, and what time will mark the beginning of a revival. The answers to these questions depend upon a multitude of factors, psychological as well as economic, and answers cannot be given with any finality. But we do know that trade cannot remain long in its present position.

The present under-buying, like the preceding over-buying, will in time work its own cure. Purchases of the great mass of goods may be postponed, but they cannot stop. The longer they are put off, the more the demand must accumulate, and the greater it must be when resumed. The ultimate demand for some leading commodities is now underestimated, and the prices of these may shortly be expected to recover somewhat.

Much that is now being said and written assumes that the present unemployment, brought about by falling prices, will itself be a cause of still lower prices, because it diminishes purchasing power. What is overlooked in this line of reasoning is that unemployment means lessened production. As a factor making for a recovery in prices, this more than offsets diminished purchasing power. For while the unemployed cease altogether to produce, they cannot cease to consume. They must continue to buy necessities for themselves and their families; and if they have no accumulated savings, they will go into debt. Lower wages for those remaining at work mean lower purchasing power; but they also mean lower production costs, and manufacturers can afford to sell more cheaply. Lower wages, therefore, will not in the long run adversely affect the actual volume of goods purchased.

Automobile Plants Reopen

The Studebaker Corporation announced Jan. 4 that it would start work again on Jan. 10 at its plant in South Bend, Ind., working on a schedule of ninety automobiles a day. This will be increased gradually until the output reaches 500 cars daily, it is stated. On the same date a six-day working week was to go into effect at the Detroit plant of the corporation. The plant had been operating three days a week. The Nash Motors factory at Kenosha, Wis., employing about one thousand men, expects to reopen this week. The Packard Motor Car Co. plant at Detroit closed several weeks ago, reopened in some departments Jan. 3 with several thousand men on part time.

Interwoven Mills on Full Time

The Interwoven Mills, Inc., employing 1,600 men and women, reopened on full time Jan. 3 after three weeks' idleness. Company officials said that continuance of work on full-time schedule depended upon developments in the industry.

Asheville Cotton Mills Reopen

The Asheville Cotton Mills, Asheville, N. C., which suspended operations several weeks ago, resumed full operations Jan. 3. The plant is the largest of its kind in its section.

Locomotive Plant for St. Louis

The American Locomotive Co., it was reported Jan. 4, is working on plans for the construction of a new plant in the St. Louis industrial section which may ultimately lead to the expenditure of $25,000,000. Belief that the demand for locomotives during the next few years will be more than sufficient to tax the capacity of its present facilities is understood to be back of the present expansion program.

Shirt and Collar Factory Resumes

After a three weeks' shutdown the Cluett-Peabody plant at Troy, N. Y., resumed operations Jan. 4 on a five-days-a-week basis. Several thousands are employed at the plant. There was no change in the wage scale for the present.

Rubber Companies Speed Up

Early last week officials of the Master Tire & Rubber Co. announced that they intend to have their plant going with a full force before the end of the week. Increased orders and a "return to normal conditions" was given as the reason for increased production. The Federal Rubber Co. plant at Kenosha, Wis., employing about one thousand men, expects to resume operations this week. The Republic Rubber Corporation planned to resume operations Monday, Jan. 10, and by next week will be in full operation. The tire, tube and solid tire departments will resume on three eight-hour turns on Monday, Jan. 17. Orders have been piling up since the plant shut down on Dec. 23 for inventory and repairs. These orders are expected to keep the plant in operation for some time.

N. Y. Central Shops Reopen

Nine hundred car workers, employed at the West Albany shops of the New York Central Railroad, who were laid off on Dec. 23 when the shops were closed for an indefinite period, returned to work there Monday, Jan. 3.

Rochester Plants Take on Workers

With the volume of orders for the spring trade steadily growing larger, Rochester's clothing and shoe factories, employing together about 14,000 workers, are gradually taking back their normal force of employees. The president of the Rochester Clothiers' Exchange predicts that within two weeks all the clothing factories will be running with full forces.

Factories Re-employ 1,300 Hands

More than 1,300 employees of industrial concerns in Springfield, Mass., that have recently been closed resumed work Jan. 3 when the factories reopened. Most of the firms affected had been closed for inventory, which was prolonged owing to prevailing conditions. The Boston & Albany railroad car repair shops in West Springfield reopened after a week's shutdown, re-employing 80 per cent of the one hundred former workers. No pay reductions have been announced.

Maine Mills Increase Working Time

Beginning Jan. 11 the Pepperell mills in Biddeford, Me., and the York mills in Saco, employing together 6,000 hands, increased their working schedule to four days a week. For a month they had been running only three days.

To Prosecute Coal and Building Material Interests

DVICES from Washington late Jan. 10 were to the effect that the Department of Justice contemplated prosecutions under the anti-trust laws against coal operators and dealers and building material interests. William J. Rand, of New York, has been appointed to prosecute these cases. It was stated that Mr. Rand would make a careful study of the data furnished the department by the Calder committee.

Colonel Wentz in Letter to C. L. Watkins Corrects Unjust Inference

TO CORRECT a mistaken inference that had been drawn from his testimony before the Calder committee, Colonel D. B. Wentz on Jan. 7 sent the following letter to C. Law Watkins, president of the Watkins Coal Co.:

"I notice in the newspapers that an entirely unjust inference as to the Watkins Coal Co. is being drawn from my testimony before the Senate Committee on Reconstruction yesterday [Jan. 6], the inference being to the effect that the Watkins Coal Co. made something like $6.00 per ton on coal sold to the government.

"I testified to no such thing, but said that the Watkins Coal Co. did sell some coal to Wentz Company at about $9.25 per ton. Testimony was introduced to the effect that the Watkins Coal Co. produced certain coal for about $3.25 per ton. I did not say, however, and it is not true, that that company sold any coal to Wentz Company or to the government that cost it only $3.25 per ton to mine. I have investigated the matter and find that the coal which it did sell to Wentz Company for the Government was coal that it purchased in the open market and which cost the Watkins Coal Co. approximately $9 per ton. The Watkins Coal Co. sold the coal to Wentz Company for approximately $9.25 per ton and Wentz Company shipped it on its Government contract. The Watkins Coal Co. therefore made 25c. per ton on said sale, a profit which certainly no one can call unreasonable. Coal which that company produced at $3.25 per ton it sold to its own customers on contract at a very reasonable profit.

"I wish to correct any misunderstanding that may have been caused by my testimony."

Boston Fuel Administrator Asks Cut in Price of Anthracite Coal

MASSACHUSETTS coal dealers were told to cut the high prices of recent months in a communication from Fuel Administrator Eugene C. Hultman, of Boston, dated Dec. 28. Asserting that the retail price of anthracite coal in many communities was excessive, the Administrator said that there was no justification for continuance of high prices and he requested a prompt readjustment.

"Numerous complaints of exorbitant charges for coal are being received by this commission," the communication said. "Retail prices have gone as high as $18 to $24 a ton in some communities.

"So-called 'company' coal remains at approximately $8 per gross ton, with a large amount of 'independent' coal being shipped to Massachusetts for about $1 above this price."

SHIPMENTS OF BITUMINOUS COAL through the "Soo" Canals during the season of 1920, according to statistics compiled at St. Marys Falls Canal, Michigan, under the direction of Lieutenant Colonel E. M. Markham, Corps of Engineers, U. S. Army, amounted to 12,096,993 net tons, an increase of 635,031 net tons, or 6 per cent, compared with 1919. Anthracite shipments through the canals during the last season totaled 2,059,266 net tons, a decrease of 353,723 net tons, or 15 per cent, compared with the previous year.

Federal Reserve Board Reports Bituminous Production on a High Level

IN ITS review of business conditions during December the Federal Reserve Board has the following to say as to coal:

"Production of bituminous coal has continued upon a high level. The November figure was 51,012,000 tons, corresponding to an index number of 138, as compared with 50,744,000 tons during October and 18,688,000 tons during November, 1919, the respective index numbers being 137 and 50. The output for the week ending Dec. 4 set a new high record for the year, but was bettered during the following week. This was in spite of the fact that on Nov. 29 the priority in the use of open-top cars was withdrawn completely. Demand is not as insistent, with the lessened activity in various industries, and there has been a marked falling off in the export trade in particular during the past two months.

"Production of anthracite coal during November was 7,519,000 tons, as compared with 8,188,000 tons in October and 7,870,000 tons in November, 1919, the respective index numbers being 102, 111 and 106. There has been virtually no loss of time from transportation difficulties. Efforts of the fair-price committee are reported from District No. 3 (Philadelphia) to be holding down mine prices to a fair margin of profit above cost of production and to have been limiting the rehandling of coal by wholesalers. The market is becoming more steady and complaints of shortages from Eastern cities are becoming less numerous.

"Coal production has increased in the Atlanta district. In the coal mines of Missouri, Kansas, Oklahoma and Arkansas the percentage of unemployment is less than during preceding months. The situation in the coal mines of Colorado is said to be good."

As to prices the board says: "Coal prices remained largely unaffected. Coal prices are reported as easier in December. Contract quotations on leading grades of anthracite and bituminous for November, however, were at the same high level as in October."

Pennsylvania Coal Co. Miners Threaten to Strike if $10,000,000 Is Not Promised

IF BY JAN. 15 the Pennsylvania Coal Co. has not filed an answer to the demand for $10,000,000 in back pay the mine workers intend to go on strike. They say that they have obtained 140 affidavits at great trouble and expense and that Captain W. A. May, president of the Pennsylvania Coal Co., promised them careful consideration of the matter and an answer to the allegations, but has not made any reply.

Apparently the miners were under contract to give 2,700 lb. for a ton of coal, that being the figure which, according to the company's calculations, would yield 2,240 lb. of prepared sizes after the dirt and fine coal had been separated. Under the terms of a later agreement the requirement was that in estimating the amount of coal actually recovered not only the prepared sizes but the pea should be included.

Docking was to continue and in this the company's docking boss and the men's docking boss were to collaborate. However, it was agreed that if the railroad rates proved that the company did not get the 2,240 lb. of coal for every 2,700-lb. ton it paid for, the miners would accept a proportionate reduction, while if the railroad scales showed an excess the mine workers' weights should be proportionately increased.

Four miners employed at Schooley colliery have made an affidavit that they were paying $10 to their boss every two weeks in order to hold their jobs. These statements the men declared must be investigated with the others.

A statement has been made by John Ruane, chairman of the general grievance committee of the mine workers, that the contention of the miners that they have been given short weight will be taken to the Luzerne County Court for determination if redress cannot be obtained in any other way.

Foreign Markets and Export News

France Insists on Fulfillment of Spa Coal Terms

France will insist upon strict fulfillment of the Spa agreement concerning coal deliveries by Germany, according to an official circular just issued in Paris. The attention of Germany has been called to a shortage of 500,000 tons up to the end of the year.

Germany says she will be unable to make up the deficiencies in the ensuing three months, as requested by the Reparations Commission, alleging that the effect of the large coal deliveries on the economic situation of Germany is such that Germany will be unable to continue to deliver coal even at the same rate that she has been doing since August last.

Coal Exports Increase Fivefold in a Year

Exports of anthracite and bituminous coal and coke as reported by the Department of Commerce for November, 1919, and the figures for November, 1920, as finally revised, are as follows, in gross tons:

	Nov., 1919	Nov., 1920
Anthracite	320,719	333,265
Bituminous	713,650	3,567,136
Exported to:		
France	.....	741,437
Italy	45,933	214,778
Netherlands	36,950	195,391
Sweden	16,247	39,126
Switzerland	17,417	22,173
Canada	335,641	1,459,373
Panama	8,482	3,644
Mexico	8,932	21,543
Br. West Indies	8,174	26,205
Cuba	59,835	117,976
Other West Indies	2,171	18,510
Argentina	19,954	107,048
Brazil	14,699	115,295
Chile	.....	84,150
Uruguay	17,653	34,087
Other countries	121,562	366,400
Coke	66,873	85,443

Cancellations of French Contracts Cause Heavy Losses

French government and commercial officials say that France has a surplus stock of coal sufficient to supply all her needs for the next six months. American coal contracts involving over $100,000,000 have been canceled. American coal c.i.f. French ports has fallen from $32 to $12.50 within the last two months.

All French railways and public service companies are heavily stocked with coal and foreign purchases have almost ceased. Perhaps 50 per cent of the American contracts will be renewed on the basis of $14@$15 a ton, according to official opinion. The French government will very likely have to stand the loss incurred by the overstocking through a reduction in the price and when the agreements have been adjusted American coal interests will have lost approximately $50,000,000 in contracts. A reduction in coal prices has just been announced ranging from 70 to 75 francs per ton during January, the French government reimbursing the various departments for losses entailed through selling at this new price coal bought at a premium.

French coal importers, in commenting on the situation, lay the cause to three elements—fulfillment of the Spa agreement by the Germans, industrial contraction due to the depression and the unusually mild weather that has prevailed. They see coal shipments from the United States practically discontinued for the next five or six months.

A recent arrival of American coal at Havre, amounting to 6,000 tons sold at auction for 70 francs, a price less than sufficient to pay the freight. English coal is now being offered at 70 shillings, a decline of more than 25 per cent.

It has been suggested that France will agree to a temporary reduction in the amount of coal to be delivered under the impending renewal of the Spa agreement.

Officials of the French National Bureau declared that the manner in which Germany has lived up to the Spa coal agreement by delivering virtually all the coal demanded came as a big surprise to the French government. In the belief that Germany would not fulfill the terms France encouraged her import firms to purchase all the coal they could, while the government itself bought heavily in the United States and England. In consequence of this there are at the present time from 12,000,000 to 15,000,000 tons of coal in France.

Japanese Coal Being Contracted; Figures Advanced

Since writing a fortnight ago, according to Wheelock & Co.'s market report issued at Shanghai, Dec. 2, sellers have issued their prices for 1921 requirements and the majority of the larger consumers have closed their contracts at prices considerably higher than those for last year. This is entirely due to exchange which shows a drop of about 100 per cent as compared with last year. Although prices are lower in Japan than they were a year ago, they are not low enough to compensate for the enormous difference in exchange.

No change is reported in the Fushun market.

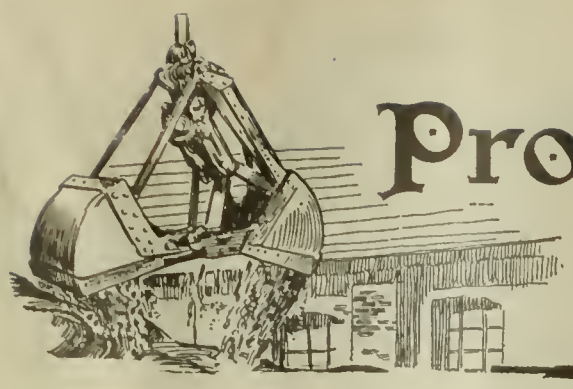
Some large contracts for Kaiping coal have just been fixed for 1921 at slightly advanced prices. There are indications of a shortage in washed coal. Temporary congestion of tonnage is again being experienced at the port of loading due to shortage of rolling stock between the mines and Chinwangtao.

Coal prices are quoted as follows:

	Taels per Ton ex-Wharf
JAPAN COAL	
Miike Lump, Miike Small, Miike Dust	Contracted for
Kishima Lump	15.00
Shakano Lump	13.00
Arate Lump	12.00
Shimoyamada Kirigomi	11.00
Shin Shakano Kirigomi	11.00
Yoshinotani No. 1 Lump	12.00
Yoshinotani No. 2 Lump	10.00
Ochi Lump	12.00
KAIPING COAL	
No. 2 Lump	13.50
Washed Nuts	13.50
Washed Slack	10.50
No. 1 Slack	9.00
No. 2 Slack	8.50
FUSHUN COAL	
Dust	11.00
Dust Kirigomi	Contracted for
Dust Lump	No stock

MINERS IN THE RUHR DISTRICT of Germany have decided to deprive Bavaria of coal as a step toward forcing Bavaria to disarm the civil guards, the disbandment of which has been demanded by the Allies, says a Berlin dispatch to the *Matin*, quoting the Rhenish *Journal*, a Socialist organ. This action practically means that the miners are tired of the Government's dilatory way of treating the disarmament question and themselves have taken the bull by the horns, since the continued existence of the civil guards exposed the Ruhr district to sudden French invasion.

THE SOUTH WALES COAL MARKET is depressed and idle. Best Admiralty steamless is quoted at £3 10s. to £3 15s.; best smalls £2 10s. One Welsh colliery recently sold inferior dry smalls for ballast at 7s. 6d. per ton to vessels bound to New Zealand.



Production and the Market

Weekly Review

INACTIVITY marks the coal trade now. At least 10 per cent—if not more—of mine capacity is closed through lack of orders for coal. The closing is complete on the part of a large number of small operations, but is limited to a few hours or days per week in the case of other mines. The fact that in the week of Dec. 25, 1920, time lost on account of no market by mines reporting to the U. S. Geological Survey was nearly as great as the reported loss on account of car shortage indicates the transition that is taking place.

No one should consider as permanent the extremely low prices at which spot coal is being moved today, nor is it to be expected that producers will contract at these figures. In some instances now low levels were reached last week, but only where forced sales were made to maintain production or to dispose of shipments on consignment. Most producers have named figures which they will accept for their coal, and when they are unable to obtain these prices they are closing or curtailing operations, refusing to continue mining coal at a sales price below cost of production.

Advantageous to Place Orders Now

Now is the time for the buyer of spot coal to take all that can be stored, as there is no possibility of the general range of prices going lower than it is at the present time. As a matter of fact, orders are now being taken for delivery sixty to ninety days hence at figures substantially higher than present market quotations.

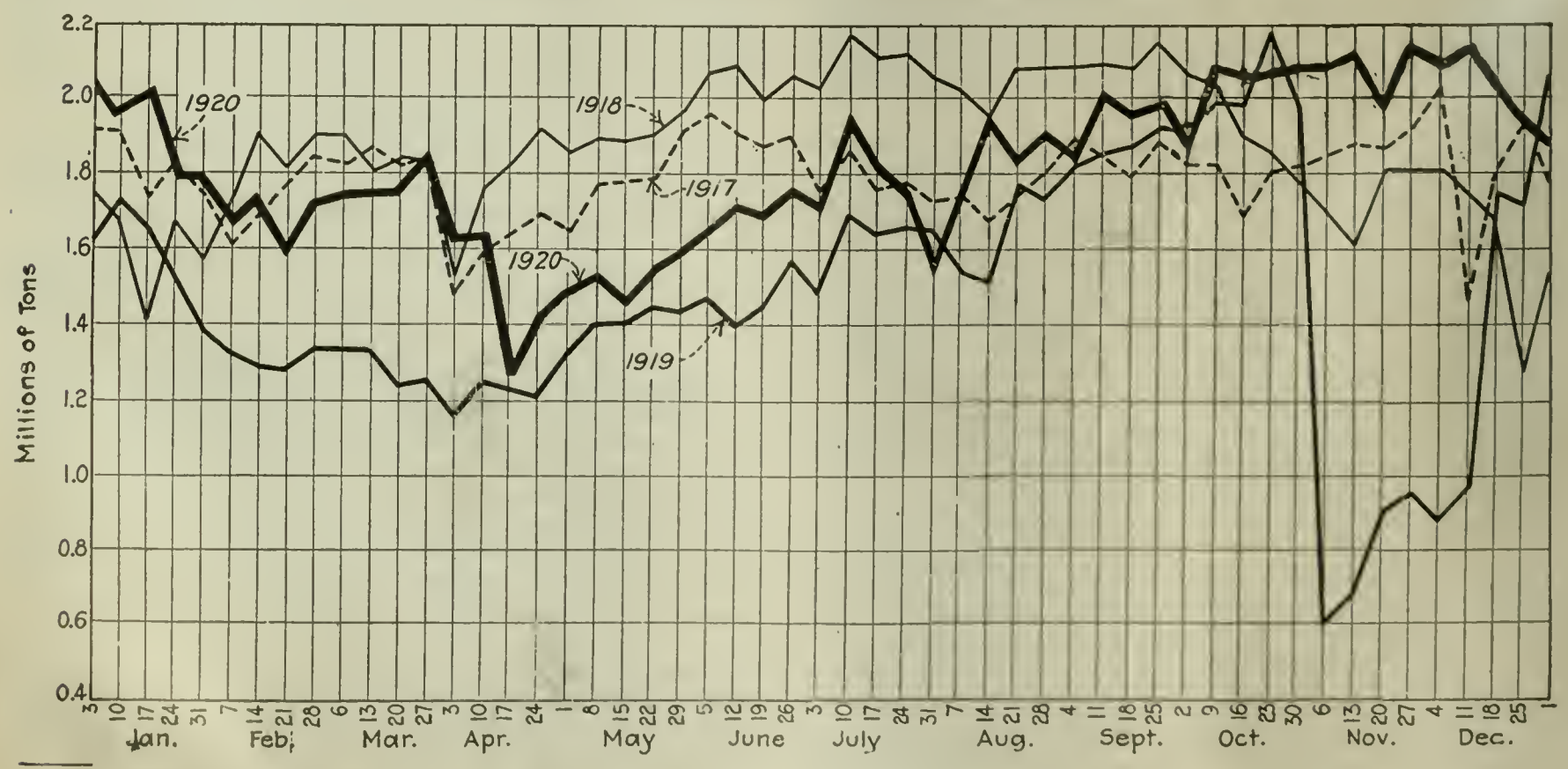
Lake buyers are once more in some of the market centers. As it is usually February before much of this business puts in an appearance the opinion is expressed that this may have a tendency to stimulate buying for present and future needs. In some sections of the Middle West resumption of manufacturing and other industrial activity is further encouraging the trade in its outlook for the coming season.

Good Weather Is Helping Distribution

Anthracite production is being fairly well maintained. Domestic sizes continue in strong demand. Distribution is being made at top speed, as weather conditions are good and the general freight movement light. Independent producers are no longer readily obtaining the premiums they formerly got for their domestic grades and in some centers the price has weakened further from quotations of a few days ago. Steam sizes are becoming troublesome to market and further price concessions were made last week.

Coke operators have accepted the present market situation with the best possible grace and have further restricted merchant production, signifying a general willingness to follow the rest of the country in the readjustment program now in progress. Prices for spot coke remain unchanged.

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

BITUMINOUS

Production of soft coal during the last week of the year amounted to 9,571,000 net tons, according to the U. S. Geological Survey, or 112,000 tons less than the figure for the preceding week. Total production attained in the calendar year 1920 was about 556,516,000 tons. The year's output was greater than during any year except the war maximum of 1918.

Many mines which closed just before the Christmas holidays are still idle, apparently waiting for a more profitable market before resuming work. In the central Pennsylvania district at least 40 per cent of the mines are temporarily out of operation; in other fields the percentage is not so heavy, but everywhere "no market" losses are increasingly apparent.

Cars were plentiful during the week ended Jan. 1. The short operating week, of course, made for a more abundant supply, but even considering this factor it can be said that production did not lag through losses attributable to car shortage. In many sections cars were altogether too plentiful, many "left-overs" being reported at the close of nearly every operating day. Transportation conditions were excellent and cars moved swiftly to destination.

Labor is entirely adequate in all mining fields, although certain interests in the strike centers of West Virginia and Alabama might take exception to that statement, but even in those regions losses attributable to the strikers are waning fast and are practically no bar to marketable production. In some sections where market conditions are dullest labor is unable to obtain enough working time to cover expenses of living, but both operators and labor are optimistic of the future and are awaiting readjustment of prices and conditions.

Some Operators Continue Production at Loss

Spot prices apparently have reached rock bottom. Prior to this nearly all small operations mining coal at higher costs had been forced to close. Forced sales of coal continue, some mines preferring to maintain their operations even at prices that have reached and in some case gone below their production costs. Some coal also is being sold on consignment, although this procedure invariably is a costly one for the producer. As indicated by current market reports, good grades have rallied slightly—that is, the price range is not as wide as had existed during the preceding few weeks. Many operators refuse to continue forcing their production upon a sluggish market, preferring to curtail operations where a fair price is not obtainable. Apparently consumers are still drawing heavily on their high-priced reserve stocks or else are in the market for only current needs. Domestic demand is slipping, due to the abnormally warm weather which has prevailed the past few weeks. Householders are not buying except, as in the steam market, on a day-to-day basis, and this is reflected in cancellations of orders by retail dealers. The overseas market shows no signs of an early strengthening. Keen competition of all-rail coal is causing a reduction on the higher priced coal on Northwestern docks.

The following table shows the trend in the spot steam market (mine run basis, net tons, f.o.b. mines):

	Nov., 1919*	May, 1920	Aug. 5, 1920	Dec. 30, 1920	Jan. 6, 1921	Jan. 13, 1921†
Pittsburgh steam	$2.35	$4.00	$10 00	2.75	$2 60	*$2.50*
Pittsburgh screened gas	2.35	4.50	12 00	3.25	3.15	3 15
Hocking	2.50	4 75	9 00	2.50	2.50	2 50
Franklin, Ill.	2.35	3.75	6 50	3.40	3 00	3 00
Indiana 4th vein	2.35	3.40	7.50	3.25	2 75	2 75
Eastern Ohio, No. 8	2.35	4.50	10 50	3 00	2 75	2 75
Fairmont	2.50	6.75	13.50	2 75	2 40	*2.20*
Kanawha	2.60	6.75	14 00	3.00	2 80	*2.70*
S. E. Kentucky	3.00	6.00	10.50	3 40	2 90	*2.80*
Western Kentucky	2.35	3.50	5.25	2 75	2.60	2 60
Clearfield	2.95	6.25	12 00	3 75	3 25	*3.00*
Cambria and Somerset	2.95	6.75	13.50	4.65	4.35	*3.60*
New River	2.70	6.50	14.00	4.75	4.50	4.50
Pocahontas	2					

*Government prices.
†Advance over the previous week shown in heavy type, declines in *italics*.

The all-rail movement to New England in the week ended Jan. 1 was maintained at about the same rate as during the preceding week. According to the U. S. Geological Survey the total number of cars forwarded through the five rail gateways of Harlem River, Maybrook, Albany, Rotterdam and Mechanicsville was 4,779.

Estimates of Production

From the Weekly Report of the Geological Survey
(Net Tons)

BITUMINOUS COAL

Total bituminous, including coal coked

ANNUAL PRODUCTION FOR CALENDAR YEAR

	Production	Average per Working Day
1917	551,790,000	1,794,000
1918	579,386,000	1,880,000
1919	458,063,000	1,485,000
1920	556,516,000a	1,805,000

WEEKLY PRODUCTION—CHRISTMAS WEEK b

1917 (Dec. 23-29)	9,737,000	1,947,000
1918 (Dec. 22-28)	6,343,000	1,269,000
1919 (Dec. 21-27)	8,531,000	1,706,000
1920 (Dec. 19-25)	9,683,000	1,937,000

NEW YEAR'S WEEK d

Ended Jan. 5, 1918	9,312,000	1,757,000
Ended Jan. 4, 1919	8,459,000	1,596,000
Ended Jan. 3, 1920	11,062,000	2,087,000
Ended Jan. 1, 1921	9,571,000c	1,849,000

(a) Subject to revision. (b) Five-day week. (c) Revised from last report. (d) Counting New Year's Day in 1918, 1919 and 1920 as equivalent to 0.3 of a working day; in 1921, to .17 of a working day.

ANTHRACITE

	1920 Week	1920 Coal Year to Date	1919a Week	1919a Coal Year to date
Dec. 18	1,979,000	64,918,000b	1,758,000	67,352,000b
Dec. 25	1,626,000	66,544,000b	1,356,000	68,708,000b
Jan. 1	1,582,000	68,126,000b	1,512,000	70,220,000b

(a) Less 2 days' production during first week of April, to equalize number of working days covered for the 2 years. (b) Revised to agree with Weekly Report No. 178, pages 2 and 7.

BEEHIVE COKE

United States Total

Week Ended Jan. 1c 1921	Week Ended Dec. 25b 1920	Week Ended Jan. 3a 1920	Calendar Year 1920	Calendar Year 1919
280,000	279,000	398,000	20,833,000	19,650,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

During New Year's week the output declined slightly, being estimated at 1,582,000 net tons by the U. S. Geological Survey. Compared with Christmas week this was a decrease of 44,000 net tons, although it was considerably heavier than the output for the corresponding week of 1919.

Preliminary estimates based on records of cars loaded, as reported by the Geological Survey, indicate that the total production of anthracite for the calendar year 1920, including mine fuel and sales to local trade, was 89,100,000 net tons, an increase over 1919 of about one million tons, or 1.1 per cent.

Domestic sizes at the company schedules are easily marketed, but further price concessions are noted on independent coals. Company schedules on stove and nut have been increased 10@15c. Steam coal from both sources is becoming troublesome to move and while company figures are well maintained much effort is necessary to market the independent steam product.

COKE

Production of beehive coke during the week ended Jan. 1 was practically the same as during the preceding week, being estimated by the U. S. Geological Survey at 280,000 net tons. Production during 1920 was 20,833,000 net tons, against 19,650,000 tons in 1919, an increase of 6 per cent.

Connellsville quotations on the spot market are unchanged, $5.25@$5.50 per net ton for furnace and $7@$7.50 for foundry at ovens. Operators are in quite comfortable position and while they naturally desire a resumption of activity they are not disposed to attempt to force its coming by any unnatural means, knowing that in due course it will come of its own accord.

Following a brief period of contracting on a five-to-one basis for furnace coke no further interest has been manifested in agreements for the first half of the year

Reports From the Market Centers

New England

BOSTON

Railroads Still Offering Coal—Receipts Steadily Diminish — Tidewater Coal Goes Begging — Minimum Prices Set by Some Operators—Anthracite Situation Easier—Delivery Limits Removed.

Bituminous — The current market shows no change for the better. There is still enough pressure to sell to hold prices well down to a minimum and not in any direction thus far has there appeared much sign of sustained recovery in industrial lines.

Certain of the railroads here are making strenuous efforts to dispose of coal on cars, both rejected and shipped on the market, and there are more than a few cases where car contents have been sold for the charges. All the carriers are more than amply supplied with fuel and it is difficult to see how this area can be made to absorb much more spot coal. Operators who have contracts with New England consumers are finding it more and more difficult to persuade the latter to accept deliveries, so far overlaid are they with reserves that will carry for months to come. The recklessly low prices that are heard make the situation even more difficult.

The trend of the market is shown by the steadily decreasing volume of receipts. Movement all-rail is again slowing down, not this time because of poor facilities but on account of poor business. By water there is so little demand for bottoms that all manner of inducements are being offered by shipowners to secure charters. Two dollars has been paid from Baltimore to Boston on a 9,000-ton steamer, and the same figure is reported to have been offered for a 2,000-ton barge, Norfolk to Boston.

At all Tidewater piers there is surplus coal which shippers are trying hard to place. One cargo was reported disposed of at $6 alongside! Bids for the Cow Pasture pumping station, opened this week, showed a willingness on the part of several shippers to accept prompt business at prices ranging $9.50 @$10.25 alongside for the smokeless coals from Hampton Roads.

Several operators have taken counsel of the present actual cost of mining and as a result have set minimum prices for their output for the present. Either sales agents are to return these figures or mining will be suspended. In other words it appears that in some districts prices are now about deflated and that the market is setttling down to a bed rock basis.

The market at Hampton Roads is extremely quiet. Offshore demand is almost negligible and in one or two cases cargoes intended for overseas have been turned back and a market sought in this territory.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, per net ton	$2 25@ $3.75	$3.00@$4.25
F.o.b. Philadelphia, per gross ton	5 18@ 6.86	6.02@ 7.42
F.o.b. New York, per gross ton	5 72@ 7.40	6.55@ 7.95

Georges Creek for forge purposes has re-appeared in the market, quotations having been made at $5.25 per net ton at the mines. Pocahontas and New River have been sold down to $7.50 per gross ton f.o.b. vessel at Hampton Roads.

Anthracite—Undeniably the situation on domestic sizes is much seasier. Mild weather has so far influenced the retail demand that the volume of unfilled orders is rapidly decreasing. The Massachusetts Fuel Administrator has now authorized that in Boston beginning on Jan. 7 the 3-ton limit on deliveries shall be removed. This reflects the opinion of the trade that before many weeks there may be some canvassing for new business.

Tidewater—East

NEW YORK

Some Advance in Domestic Anthracite —More Coal Coming Forward — Bituminous Market Is Quiet—Several Piers Under Embargoes — Contracts Under Discussion.

Anthracite—The situation is slowly improving. More coal is moving. The trade is optimistic of the future and believes that a couple of weeks more of mild weather will put the situation on a safe basis.

Announcement was made early last week of an increase of 10c. per ton in the prices of stove and chestnut by two of the large producers. This makes the prices of these sizes $8 f.o.b. mine for one of the companies, and $8.05 for the other. The latter company had on Dec. 13 added 15c. to its former prices for egg and pea.

There seems to be a feeling among trade that producers will on April 1 resume the making of a spring reduction of 50c. but no one admits they have had any such intimation from any one in authority that such a move is contemplated.

Independent coals are readily absorbed because of the constant demand, but there is not the briskness that prevailed a couple of weeks back. Salesmen are now making the rounds of the trade. Quotations for these coals are easing slowly.

Steam sizes are becoming troublesome. It is getting harder each day to move them in connection with sales of domestic. Better grades of independent buckwheat are being quoted $3.75@$4; while the cheaper grades are 25c. less. Rice is quoted $3@$3.50 for the better coals while barley is hard to move, according to some shippers, at $1.

Bituminous — There is not much activity here. Many loading piers have been under embargoes and there is an accumulation of coal in various directions. However, reports of partial resumption of various industries in the northern part of the state and in New England lend an air of optimism to the situation.

There are many inquiries regarding contracts from April 1 but so far none has been reported as closed. While nothing definite could be learned it is the opinion in some circles that contract prices will range $3.75@$4.50, mines.

Cancellations and the low prices quoted have resulted in closing many of the smaller mines in the central Pennsylvania and Fairmont regions. However, the market is flooded with the cheaper grades. The workers thrown idle by the closing down of these mines are seeking work with the larger companies. The coals available for spot buyers consist of many of the better grades, recently thrown on the free market. Large consumers are not actively in the market.

Quotations varied considerably but these will give a general idea of the market: Pool 9, $3.50@$4; Pool 10, $3.25@$3.50; Pool 11, $2.50@$2.75, and Pool 18, $2@$2.50. Quotations for Pool 34 were heard as low as $2.50.

Demand at Tidewater was largely for the better grades. Quotations for Pools 1, 9 and 71 ranged $7.75@$8.25; Pool 10, $7@$7.25 and Pool 18, $5.50@$6.

PHILADELPHIA

No Lack of Anthracite Demand—Mild Weather Creates Stocks — Company Prices Get Closer Together—Bituminous Market Dull—Prices Near Bottom—Mines Close for Lack of Orders.

Anthracite—The local market keeps on calling for coal, with the deliveries from the shippers moderate. All calls are generally well met by the dealers. Some dealers are already beginning to wonder if they are going to have a dull summer trade, as they figure with a continuation of the present mild condition consumers will have a deal of coal left in their cellars.

The trade has its ear to the ground and is indulging in much conjecture as to when the time will arrive when there will be more than enough coal. To date the independents have shown little signs of breaking, their only troubles being on the steam sizes. Until they begin to shade their family prices it must

be considered that the market is firm. The only inkling of any kind this week was the offering of a very ordinary coal by an independent shipper at the high price to local retailers. This would tend to show that its market on the outside was being slightly curtailed.

Steam sizes are draggy and even the large companies are far from easy on buckwheat. Individual producers are simply going along from day to day on steam coals, with very few future orders on hand, and it is believed some of them are actually compelled to bank some of the smaller sizes at the mines.

Following the lead of the Reading another one of the large companies has added 15c. a ton to stove and nut, making these sizes $8 and $8.10 respectively, effective Jan. 1. With this latest increase the prices of the company coals are now more nearly alike than they have been since Government control. Company prices for the month of January per gross ton at mines for line and f.o.b. Port Richmond for Tide average as follows:

	Line	Tide
Broken	$7.75	$10.45
Egg	7.75	10.45
Stove	8.05	10.70
Nut	8.05	10.70
Pea	6.40	8.80
Buckwheat	4.25	6.75
Rice	3.15	5.60
Boiler	2.50	4.90
Barley	2.25	4.65
Culm	1.50	3.90

Bituminous—It would seem that bottom had almost been reached in the market price, as during the last ten days the shadings have been more moderate and many producers have shown a tendency to quit the market rather than go on at lower figures. Recent quotations on Pool 1 coal have been at $4.50, with Pool 9 at $4, Pool 10, $3.25 @$3.50 and Pool 11 about $2.50. There are no quotations on Pool 18. Fairmont gas mine run has been freely offered at $2.50 and at times somewhat lower. Screened coal of this grade has been offered at $2.75 and slack at $2.25.

The feature of the market is the utter lack of demand on the part of the consumer. Even though the consumer realizes that coal is now about as low as it is likely to go, he shows no disposition to buy. Users already have heavy capital tied up in coal stocks and do not want to add to them at any price.

Contract talk has quieted down and it is the belief of both seller and buyer that it is best to await further industrial settlement. Pending this many shippers are advising their customers to fill only immediate wants at market prices. It is believed some of the large users with contracts expiring with the past year have reached an understanding as to price with their shippers.

BALTIMORE

Market Is Extremely Soft Under Business Depression and Good Run of Cars —Export Business Shows Improvement —Hard Coal Conditions Easy

Bituminous—An extremely soft bituminous market is with the trade here. There are evidences of the effect of business readjustment on every side. There is a confidence that the worst is about over, it is true, but the present condition is one of light demand and low prices. Both steam and gas coals are selling over a rather wide range under a market of individual application both for consumer and seller.

Sales at Tide at times have been considerably below the mine sale prices, as some shippers have again been caught with coal at terminals for which they could not find a ready sale. A one hundred car supply is reported from most of the mining districts. On the B. & O. a full supply both east and west has been noted for almost a solid week, the first time in many months that such a condition has been recorded. Loadings are less than 3,000 cars daily on that system at this time, but only because the demand is not there.

The export situation shows signs of improvement in some degree, and this has held down the pool accumulation the daily reserve being around 1,700 cars. At this writing there are four ships at the coal piers and seven astream, the greatest show of activity for three weeks. For the first six days of January there was loaded here a total of 17,858 tons of cargo export coal, with 2,683 tons in addition taken in bunkers. The December figures show 219,861 tons export and 20,136 tons bunker, but this was largely loaded the first part of the month.

Anthracite—Hard coal conditions are now quite easy. The movement last week to this point was close to 18,000 tons, and was pretty well distributed as to company and other class of coal. The only complaint heard was as to insufficiency of stove size. There is, however, a fair reserve in some of the yards and the situation as a whole is not now bothersome to the trade.

BUFFALO

Bituminous Prices Apparently at Bottom — Car Efficiency at Top — Demand Still Falling — Anthracite Deliveries Gaining.

Bituminous—Everything contributes to bottom prices, so it is expected that they will remain there awhile. It is said, by way of summing up, that there is something like twice the amount of coal above ground now than there usually is at this time of the year. Consumption is away down and still dropping off and the car deliveries are at their best.

What the trade would welcome is less promptness on the part of the railroads in exchange for a good dropping off of special charges. This district has been at work for some time trying to reduce charges on reconsignments, but next to no progress has been made. At the same time the effort is not to be dropped, for a charge of $7 for reconsigning a car here, after it has reached this point, is regarded as exorbitant.

The shutting down of coal-consuming plants is having its effect, for already there are resumptions at lower wages and what seems to be still more significant is that a good many shops are keeping up wages, but are adding to the time. Some men complain that they are made to work even more than ten hours a day, which gives reason for fearing that this thing may easily be overdone.

Bituminous prices are very unsteady, but are about as follows. $4 for Youghiogheny gas, $3.50 for all lump, $3 for mine run and $2.75 for slack.

Anthracite—The shortage is steadily disappearing, though it will be some time before everybody has plenty of coal. Mining is again on the gain and it is agreed that the miners will not make any more serious trouble right away. They worked through the holiday season much better than they did a year ago. Had the slow mining of last fall continued through the winter there would have been disastrous results.

At the same time it behooves anthracite consumers everywhere to keep ahead of the game as far as possible. There are still city bins with only a few bushels of coal in them that put in orders for a winter supply last June.

The easing down of anthracite demand is shown by the reduction of the independent premium, which is down to about $2, instead of $6 or $8, as it was before the general supply began to increase. Many city jobbers refused to handle coal at peak prices, which had much to do with the decline of that branch of the trade.

Coke—Demand continues light and promises to remain so awhile yet. So far the calculations for the coming season have not been made. All branches of business are waiting for something to appear that will give an indication as to what may be expected after the holiday suspension is over. This district has a good supply of iron ore to draw upon, but beyond that not much that is definite is in sight. Furnaces are not buying any more coke than they need right away and their contracts are again in position for prompt filling. So many ovens have shut down on account of the dull trade that a slight advance has been made.

Northwest

MINNEAPOLIS

Mild Weather Continues, but Domestic Trade Finally Weakens — Seasonable Temperatures Would Soon Develop Shortages — Distribution Has Been Good.

The abnormal winter continues. There has been an occasional touch of zero temperature but it has not endured long. In general the coal trade is not averse to this, for it is a certainty that a real old-fashioned winter would have driven dealers to a sanitarium. But it now begins to look as though instead of a shortage, there may be a surplus.

It would not take more than a few days of sub-zero weather, with consumption going at top speed, to show how little coal there is in hand through

the Northwest. So long as not much is needed, there is plenty. But when the need begins for much coal, many will be found to be on short rations.

Figures indicate a better distribution to the interior than seemed likely. The ease of transportation movement has been misleading, and made it appear that there has been only a limited tonnage moving off the docks. The total tonnage moved, and the unquestioned saving during the mild fal' qual a good total.

Dealers seem to have been convinced that they had to stock coal for the present need at the going prices, despite their hope for lower costs, and have bought reasonable amounts. But it is the inevitable experience that when a severe storm and interrupted transportation prevails, there will be many who are too low on stocks to get through without an emergency relief of coal rushed through. So far this winter there have been no such interruptions, but they seem to occur every winter, when there is any unusual weather to develop such a situation.

Some in the trade rather anticipate a withdrawal from the Northwestern market of Eastern coals, because the producers have found a sufficient market for their production nearer home. The very thing which made the Northwestern market attractive at first has worked to its undoing now. Nowhere else is it feasible to store coal during the summer for use in the winter. But with this summer outlet came a tendency to defer paying for the stocks so stored, until closer to the time when the consumer would pay. And since there has been a better demand from the trade closer home (which pays cash) there is less incentive to send coal to the docks in the summer, when it will not be consumed until winter.

But if this predicted withdrawal should occur, it would leave idle and worthless the many coal docks which have been constructed on the Great Lakes. The investment would probably be worth protecting by retaining the business which has been built up through the past twenty or more years. And it may easily be experienced that future summers will not have so keen a warm-weather trade. It is within the possibilities that even last summer might not have been so active a season, had it not been for the numerous interruptions to production. Such interruptions can hardly occur every summer, or there will be more industrial court legislation which will do away with the strike and the lockout.

MILWAUKEE

Continued Warm Weather Makes Market Dull — Illinois Coal Offered Freely at Reduced Prices—Holders of Eastern Soft Coal Forced To Cut Price Schedule.

Milwaukee's coal trade is languishing under the adverse influence of spring-like weather and the general pause in industrial activities. City deliveries are at a very low ebb, and orders from interior points are correspondingly light. A long spell of sub-zero weather is the only thing that could rescue the market from its present condition.

Illinois coal is a drug on the market and is freely offered $3.50@$4.50 at the mines. Naturally, this has undermined the market for Eastern coals and the predicted slump has materialized, a cut of from $1.50 to $2 having been put into effect on Jan. 3. Youghiogheny lump now sells $10.75, pile run, $10.25 and screenings at $9; Pittsburgh and Hocking lump, $10.50, pile run is $10 and screenings, $9; West Virginia splint lump is $11, pile run, $10.50 and screenings, $9. Prices of hard coal and coke are not affected. Coke is held at $17.25, or practically the same as anthracite. Pocahontas is selling $12.50 @$13.

Dock companies are stocked up with high-priced coal and naturally are reluctant to shade prices. The slump, if it continues, will mean a serious loss to them.

Inland West

MIDWEST REVIEW

Some Industrial Resumption Expected in February — Steam Prices Go No Lower — Domestic Weakens with Mild Weather.

It was expected by a great many operators and wholesalers that there would be a resumption along industrial lines immediately after the first of the year. This has not proved to be the case, as a number of industries which were planning to get under way have been forced to postpone their plans on account of the unsettled situation. Some are expecting to open up in the early part of February and some definitely state that they do not know when they will resume operations. As a result, the steam market is very weak, although prices have gone no lower than during the past two or three weeks. It is pretty generally felt that prices can go no lower. As it is now, a number of operators ran their mines during December at a loss and this cannot be continued.

There has been considerable change in the market for domestic. On account of the prolonged warm weather, the demand has dwindled so that good lump and egg coals are now no more in demand than steam. Warm weather and the unsatisfactory situation all through the farming areas of this territory are responsible. What little coal is being sold is moved at bargain counter prices, as dealers claim that their trade will only buy the cheapest coals.

The first week of January will probably show a further loss of production from "no market" sources. The percentage of mines closed is growing every day as even those mines with facilities for storing coal are coming to face the fact that they cannot pile up their product indefinitely.

As is usual in market situations like the present, the car supply is very plentiful. Labor conditions are excellent and should there be a demand for coal, the Illinois and Indiana mines would be in a position to produce more coal than they have at any time during the last eight or ten months.

Those who are brave enough to make predictions, venture the opinion that the steam market will be weak and disorganized all during the Spring months. The domestic market on the other hand, is purely a weather proposition and will show great strength as soon as cold weather arrives. It is expected that the long overdue cold spell must arrive soon and make up in intensity for the mild Fall and Winter we have had.

Current prices are as follows:

Southern Illinois (Franklin, Saline and Williamson Counties):	
Prepared sizes	$3.50@$4.25
Mine run	2.75@ 3.25
Screenings	2.00@ 2.75
Central Illinois (Springfield District):	
Prepared sizes	$3.25@$4.25
Mine run	2.00@ 3.00
Screenings	1.50@ 2.25
Northern Illinois:	
Prepared sizes	$3.50@$4.00
Mine run	2.50@ 3.00
Screenings (washed)	2.75@ 3.25

Indiana (Clinton and Linton, Fourth Vein):	State	Outside State
Prepared sizes	$3.45	$3.75@$4.50
Mine run	3.20	2.50@ 3.00
Screenings	3.00	1.50@ 2.25

Indiana (Knox County, Fifth Vein):	State	Outside State
Prepared sizes	$3.25	$3.25@$4.50
Mine run	3.00	2.00@ 3.00
Screenings	2.80	1.50@ 2.75

Pocahontas and New River:	
Prepared sizes	$5.25@$6 00
Mine run	4.00@ 4.50
Hazard and Harlan (Southeastern Kentucky):	
Block	$5.50@$6.50

CLEVELAND

Bituminous Trade Continues Dull — Mine Prices Near Rock Bottom—Retail Pocahontas Lower and More Plentiful —Lake Buyers Appearing.

Bituminous — The coal market in northern Ohio is extremely dull. An apparent over-supply of coal exists as the result of continued production on a large scale despite falling quotations and slackening of demand. Cleveland coal men hold to the belief that prices cannot go down much from present levels. Current quotations, therefore, are regarded as very near rock bottom.

Steam prices at eastern Ohio mines are holding $2.50@$3 for slack and $3 @$3.50 for ¾-in. lump. Domestic lump is being sold $3.75@$4. In some instances coal at the mines has been sold below these figures.

Continued mild weather has been a factor in the softening of retail prices on steam lump during the past week. Domestic grades of soft coal generally remain unchanged, however. Local yards are well supplied with stocks.

Anthracite and Pocahontas — Shipments of anthracite are still below requirements but enough is coming through to meet the most urgent demands. Receipts of Pocahontas have improved recently and prices in the retail market have dropped. Shoveled lump is down 45c. a ton to $11.90. Mine run Pocahontas has dropped from

$11.30 to $11. Anthracite prices, however, remain steady and unchanged in the retail market.

Lake—Buyers of coal for shipment up the Great Lakes next season have begun to appear in the Ohio market. Present low prices have probably attracted interest in Lake coal as inquiries do not usually appear before the middle of February. No contracts, however, have yet been closed as far as has been reported.

Retail prices of coal per net ton delivered in Cleveland are:

Anthracite—Egg, grate, chestnut and stove, $15.45
Pocahontas—Shoveled lump, $11.90; mine run, $11.
Bituminous—West Virginia splint, $11 75; No. 8 Pittsburgh, $9.30; Cannel lump, $15 75.
Steam Coal—No. 6 and No. 8 slack, $8 @ $9; No. 6 and No. 8 mine run, $9; No. 8 ¾-in. lump, $8.90.

CINCINNATI

Market Is at Standstill — Operations Closing, Awaiting Better Prices and Demand—Retail Prices Are Firm.

The coal market during the past week was virtually at a standstill. Following close on the holiday lull, it presented no change. In a number of instances dealers say that less than one-third of their average daily amount is being sold at present.

Dealers are beginning to view the situation for the next few weeks with alarm. Firms with equipment for large business report that the demand for steam coal is far below normal, with but little prospect for improvement at least until such time when manufacturers reopen their plants.

Prices of steam at the mines have reached what dealers believe is the lowest possible level. What coal is being received represents contract shipments or demurrage coal which a number of dealers have secured at almost their own prices.

Operators of mines in Kentucky and West Virginia which supply the Cincinnati market, unable to get prices for their coal above the cost of production, have been forced in many instances to close their mines temporarily. This situation has been current among the smaller operators for several weeks and the same condition is now noticeable among the larger producers.

Retail prices as quoted by dealers remain unchanged and are as follows: Bituminous lump, $9.25@$10.50; mine run, $8.50@$9.25; smokeless lump and egg, $11.25; mine run, $10@$10.50; anthracite egg, $15@$16.25; domestic egg coke, $14.50@$15.

DETROIT

Buyers Not Yet Displaying Active Interest — Domestic Trade Again Rather Sluggish—Mine Prices Slightly Lower.

Bituminous—With the holiday period out of the way and some industrial plants resuming more active operation following the inventory period, jobbers and wholesalers feel there is a prospect for a better demand for steam in the near future. So far the improvement has been slow to develop.

A number of industries having reserves, apparently are utilizing them to meet present needs, though some buyers are taking coal in small consignments, restricting their purchases to quantities sufficient to provide for only a few days in advance. Considerable steam coal coming to the city is being sent on contracts that were arranged early last year.

Interest of domestic users is apparently diminishing with the passing of the colder temperatures. The period of more active demand was scarcely sufficient to make its influence felt in increasing the volume of orders coming to jobbers and wholesalers from the retail trade.

Prices have worked a trifle lower on some sizes. West Virginia or Ohio lump is quoted at the mines a $4.25@$4.50, while nut and slack is $2.25@$2.50, mine run remaining around $3.25.

Anthracite—There is little improvement in the supply. Few retail yards have reserve stocks of any size and shipments are light, irregular and uncertain deliveries adding to the unsatisfactory features of the situation.

CHICAGO

Refusals of Shipments Cause Forced Sales — No Industrial Resumption as Yet—Domestic Market Also Quiet.

The steam market in Chicago is no better than any other place throughout the Middle West, in fact, if anything, it is a little worse. Almost daily large numbers of cars are refused on account of "poor preparation," and other trumped-up charges, thus forcing the operator and wholesaler to sell the coal elsewhere at greatly reduced prices. There has been practically no resumption of the industries. Those manufacturers lucky enough to have orders, are buying only in a hand to mouth way, and perhaps operating their plants from one to three days a week.

The domestic market is in a very weak position. Practically every dealer has his bins full and not only has stopped buying, but has held up shipments on his contracts. There are a great many unemployed in Chicago and when this class goes out to purchase coal they buy in small quantities and as cheaply as possible. As a result, what little market exists today is on the short-rate cheaper coal from the central part of the state and from Indiana. It is expected that cold weather will bring some improvement.

COLUMBUS

Mines Closing with Stagnant Market —Domestic Trade Slipping — Production Declines—Cancellations Are Heavy.

The Ohio coal trade is in a weak condition in every locality, due to the continued high temperatures which have prevailed, coupled with reduced demand for all steam sizes. Cancellation of orders for lump are now the rule and as a result operation at a number of the larger mines of the state has been stopped. Little likelihood of a revival until real winter weather appears is expressed on all sides.

The domestic trade, which has been the strong department of the market, has slumped off to a large extent during the past week. Retail prices are slumping off in sympathy with other grades. Hocking lump is now being delivered $7.50@$8.25 and in some cases even lower. Pomeroy lump is slightly higher. West Virginia splints retail $8@$8.75. Pocahontas, which has been a scarce article, is now arriving in larger quantities. Prices on Pocahontas are still high, however.

Steam trade is at a standstill. With a large number of users closed down there is an oversupply of the small sizes. Railroads are taking some mine run but this is not sufficient to give any strength to the market. Reserves in the hands of large users are generally adequate and consequently buying for the future is reduced. Public service concerns are the best customers at this time.

Production has been lagging considerably under the influence of reduced demand. This is shown by the report of the Southern Ohio Coal Exchange for the week ended Jan. 1 which shows a production of 254,866 tons out of a full time capacity of 518,382 tons. Of the loss, 32,963 tons was due to "no market."

Prices at the mines of the principal coals used in central Ohio are:

Hocking lump	$4.00@$4.75
Hocking mine-run	2.25@ 2.75
Hocking screenings	1.25@ 2.00
Pomeroy lump	4.00@ 5.00
Pomeroy mine-run	2.50@ 3.00
Pomeroy screenings	1.50@ 2.00
West Virginia splints lump	4.25@ 5.00
West Virginia mine-run	2.50@ 3.25
West Virginia screenings	1.50@ 2.25
Pocahontas lump	7.50@ 8.00
Pocahontas mine-run	4.25@ 5.00
Pocahontas screenings	3.25@ 4.00

ST. LOUIS

Independent Coal Down to Unbelievable Prices — No Market for Steam or Domestic — Mines Idle Account of No Market—Conditions Serious for Small Producers.

The St. Louis situation is worse than the most pessimistic coal man ever dreamed it could again become. Screenings are actually selling in the Standard field at $1 mines, and 2-in. lump is down to $2, with egg and nut $1.90@$1.95, while 6-in. lump is down to $3. Many mines are idle because of no market and one company with several operations reports over 500 no-bills on track.

The demand for coal in the country is very small. The present weather is such that in many homes throughout this section but little coal is burned.

Very little coal is moving to Chicago and none to the Northeastern market. A few scattered cars are going north along the river and west to the Omaha territory, with only contract coal going to Kansas City. Conditions in the south are bad on account of the cotton and lumber situation, and the extension of credit is very careful in that territory.

Mines in the Standard field average one to two days a week on commercial

coal as a maximum and some have not worked for a week or ten days. The Mt. Olive field is in somewhat similar condition, except as to price. Operators still maintain their circular. When they cannot sell the coal the mines stay idle. Price does not make the market anyway, for if there is no demand the coal does not move, regardless of prices.

In the Carterville field overproduction has hit some mines slightly in working time, but in a general way all domestic sizes are being moved. Steam drags heavily. Circular prices are maintained on most of the coal, that is from $4@$4.25, with the independents around $4 and slightly under on screened sizes. Screenings are down to $2.25 among some of the independents, while the regular circular prices of the larger operators are around $3, with mine run at about $3.75. Independents are selling mine run as low as $2.75.

No labor troubles in any field to speak of, but the situation is becoming a serious one for the miners who are not getting full working time and some not any working time at all.

South

BIRMINGHAM

Domestic Trade Easier but Demand Still Good—Heavy Surplus of Steam Fuel — Production Maintained Near Normal Basis—Labor Slow in Returning to Work.

The steam coal trade is practically at a standstill, as there is no demand worth mentioning and both sellers and buyers are apparently playing a waiting game. Sales agencies report this as the quietest period that has followed in the aftermath of the holidays in a number of years. Quotations are not being made, as there is no business to quote on, but it is the opinion of coal men that prices will stabilize on the schedules in effect April 1, 1920, when buying is again resumed. These figures were as follows per net ton mines:

	Mine-Run	Prepared
Big Seam	$2 95@$3 25	$3 45
Black Creek	3 90@ 4 00	4 45@4.50
Cahaba	3 85@ 4.00	4 35
Carbon Hill	3.35@ 3 50	....
Pratt	3.35@ 3.50	....

There is still a good demand for lump and other domestic sizes and spot prices have not receded as yet, as the output from the mines is not sufficient to care for contract business and afford much free coal and prices range $4@$9.50 mines for lump.

Mine workers have been very slow in getting back to work following the holiday season and the output is reflecting this condition. Production as reported to the Coal Operators Association for the week ended Jan. 1 amounted to 240,777 net tons, which is about 60,000 tons under normal figures, but an increase over the week of Dec. 25 of about 25,000 tons. Acts of intimidation and threats upon the part of striking miners about sum up their activities at present, but labor is little affected by these influences and there is a surplus in every mining section as well as in every other line of industry.

LOUISVILLE

Prices Steadied as Rock-Bottom Is Reached—Numerous Mines Close Until Demand Revives—Buying Expected To Improve Shortly.

Coal has reached such low levels except in the better grades of lump, that producers prefer closing down to operating. If demand was sufficient to take full production at present prices conditions would be fairly satisfactory, but operating only part time on low priced fuel increases the cost of production, and leaves a small margin at best.

At the present time there is but little demand. Gas coals are selling at a slight premium over steam, as some of the gas companies apparently are in the market, while prepared sizes of gas coal are always preferred. Byproduct plants are also taking some coal. Railroad buying is light, and public utlities have not cleaned up the heavy stocks laid in last fall.

Retailers report that about 50 per cent of the delivery equipment is in service, but that yard sales are very low, there being but little hauling. Prices have been reduced on eastern Kentucky and West Virginia coals to $10 for lump; $8 for mine run; $6 for screenings; western Kentucky lump, $8.50@$8.75; mine run, $7.50; nut, $8.25; screenings, $5.50@$6.

Quotations show the following mine prices:

	Lump	Mine Run
Harlan	$5.50@$6 00	$3.25@$3.50
Hazard	5 00@ 5.50	3.00
West Virginia	4 75@ 5.50	2.50@ 2 75
Elkhorn	5.25@ 5.50	2.75@ 3.00
Straight Creek	5 50	3.25
Jellico	5 00	3 00
West Kentucky	3 75@ 4.00	2.75@ 3.00

Southwest

KANSAS CITY

Warm Weather Cuts the Demand—Steam Buying Also Sluggish — Mines Operate Part Time—Prices Firm.

Operating conditions were good in the period ended Jan. 8. Cars were plentiful and there was no labor shortage to speak of.

Mild summer weather is now prevailing throughout the Southwest. Domestic demands have been materially reduced. Steam consumption is also limited by the industrial inactivity. Plants are running on short time or have been closed entirely, resulting in a sluggish steam market.

Despite the inactive market, however, there has been no material change in quotations for spot coals. Many operations are running half-time and forced sales are few, producers refusing to push their output on the market by making further price concessions.

West

DENVER

Lignite Mine Prices Cut—"No Market" Losses Grow — Bituminous Reduction Seen.

Facing an uncertain market, lignite operators have cut prices 25c. on first grade and 50c. on second grade. Retail prices have been reduced accordingly. Bituminous operators may follow this lead before many days. Steam prices have not yet been cut.

An open winter has demoralized the trade, coming as the climax to uncertainty of market conditions because of the cancellation of top-price contracts entered into last summer The bituminous market, while not as seriously affected as the lignite, is being stabilized largely by the program of the Colorado Fuel and Iron Co. This concern did not sell coal at top prices demanded by smaller operators, and now that the market has changed and orders are eagerly desired, the higher-price concerns are seeking to take away from the company the legitimate business it has built up in recent months.

Domestic and industrial uses took one-half of the coal mined in Colorado during 1920, railroads about one-fourth, and the following states the remaining one-fourth: Nebraska, 10 per cent; Kansas, 8 per cent; Texas, 5 per cent, and scattering states, 2 per cent.

Production for the week ended Dec. 25, with a holiday keeping down the tonnage, was 183,725 tons.

Canada

TORONTO

Trade Quiet on Account of Mild Weather—Two Weeks' Supplies of Anthracite on Hand — Bituminous Plentiful with Little Demand.

Dealers report trade quiet for the season owing to the unusually mild weather. Anthracite is being received in fair quantities though the receipts are still below normal and there are now about two weeks supplies on hand. All danger of a coal famine is now considered over unless a strike or other serious interruption of traffic should occur, which is not regarded as likely. There is no change as regards the bituminous situation. The demand continues very limited and probably will continue light for some time in which case, there is an ample supply to last through the winter.

Quotations per short ton are as follows:

Retail:	
Anthracite egg, stove, nut and grate	$16 90
Pea	15 40
Bituminous steam	12 75
Domestic lump	13 25
Cannel	20 00
Wholesale f.o.b. cars at destination:	
Three-quarter lump	10 00
Slack	9 50

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Contract Coke Yielding $6—No further Interest in Contracting — Spot Market Remains Quiet—Prices Unchanged.

Promptly with the opening of the new year a prominent valley blast furnace interest reduced its asking price on basic pig iron from $33 to $30, and thus the 5 to 1 ratio contracts for furnace coke yield the operator a price of $6 per net ton at ovens. Some contracts at a 4 to 1 ratio expired Dec. 31, those contracts having been yielding $8.25.

Most of the coke operators would probably be quite willing to sell furnace coke on contract at a 5 to 1 ratio, but some at least would require a provision for a stiffer ratio in case pig iron should advance above $30. There is, however, no inquiry as to contract coke, the furnaces that were disposed to cover for the half year having already done so. In December merchant furnace interests and independent steel interests blew out 55 furnaces and blew in none, while the Steel Corporation blew out one furnace and blew in five, so that the trend as to merchant coke consumption is plainly indicated. It is practically certain that a number of additional furnaces will go out of blast in the next few weeks.

In contract foundry coke likewise there is no inquiry, and some contracts made quite a while ago are practically inoperative, the consumers not requiring any coke under them. Several producers have regular asking prices on contract foundry coke, but these are regarded as practically nominal.

The spot market continues quiet and remains quotable $5.25@$5.50 for furnace and $7@$7.50 for foundry.

With the exception of furnace reserve, yards are clear of stock and all surplus has been practically disposed of.

The *Courier* reports production in the Connellsville and Lower Connellsville region for the week ended Jan. 1 at 164,985 net tons, or practically the same as the preceding week, a loss of 8,000 tons by the merchants having been offset by an equivalent gain at furnace ovens.

PITTSBURGH

Spot and Contract Demand Extremely Light — Some Manufacturers Consuming Stocks—Gas Coal Demand Fair.

Demand for coal is extremely light, both for spot and contract. While most of the contract business is done for the coal year, there has usually been some contracting for the calendar year or for a fraction of the year. Now there is no contract demand at all and it is probably needless to say that the matter of contracts for the coal year, beginning April 1, is not being discussed at all.

Spot demand for coal is even lighter than it was. Manufacturers who recently were trying to add to their meager stock piles are now disposed to consume what stocks they have. As to domestic demand, the weather has been abnormally mild on the whole, while the natural gas pressure has been much heavier than was predicted, and domestic demand is running very light in consequence of these two influences.

Prices for the best grades of by-product coal seem to be well maintained, but the fact is that there is no demand of any consequence and therefore some competition such as tend to reduce prices. Demand for gas coal remains fair and the best grades continue to command a substantial premium over steam coal. Occasionally a lot of steam is sacrificed to avoid demurrage, but such transactions are not considered in quoting regaular market prices.

The spot market is quotable at about $2.50 for steam mine run, $3@$3.50 for screened gas and $3@$3.25 for by-product mine run, per net ton at mine, Pittsburgh district.

FAIRMONT AND PANHANDLE

Light Production Follows Holidays—Many Operations Remain Closed—Poor Market Continues— Bulk of Movement Goes Eastward.

FAIRMONT

The last week of the year was one of slim production in northern West Virginia. A large number of mines were shut down, not through any dearth of cars but because of general market conditions, the holiday period being considered an appropriate time to cease production. The general run of operators could not have sold their coal above cost and therefore closed down their mines until there were further signs of activity. Even late in the week there were many mines not being operated, the number not in operation in the Fairmont region alone averaging 100 a day. After Monday, however, some of the larger mines having contracts resumed operations but not on so large a scale as usual

Buyers were conspicuous by their absence, none of the brokerage concerns being in the market. Any that was sold brought not much more than $2.15 @$2.25 as a general proposition. Despite general market conditions a fairly large tonnage was consigned to Eastern markets, virtually all of it on contract, Western shipments being insignificant. Coal had begun to accumulate at Tidewater, representing a mixture of unconsigned and rejected coal.

During the early part of the week, not more than half the empties furnished were loaded. The supply during the week was one of the best of the year but came at a time when producers were unable to take advantage of it.

NORTHERN PANHANDLE

Open market demand had largely disappeared in the last weekly period of 1920, so that prices sagged somewhat as compared with the preceding week. With so light a demand, idleness was forced on a number of mines, more especially those which had depended upon selling on the open market. Companies producing coal under contract were more fortunate but even some of them had been affected by the large number of cancellations.

As was to have been expected, the district was almost overrun with empties, both the Pennsylvania and the

Average Cost Per Net Ton, Including Freight, of Coal Consumed by Locomotives in Road Service

(As reported by the Interstate Commerce Commission)

	Month						Cumulative from Beginning of the Year					
	1919			1920			1919			1920		
Region	July	Aug.	Sept.	July	Aug.	Sept.	July	Aug.	Sept.	July	Aug.	Sept.
New England	$5.26	$5.01	$5.30	$9.49	$9 57	$8.84	$5.82	$5 76	$5 67	$7.38	$7 75	$7.72
Great Lakes	3.12	3.05	3.27	4.33	4 58	5.23	3.40	3.35	3.35	4 00	4 07	4 20
Ohio, Indiana — Allegheny	2 50	2 64	2 75	3 92	4 28	4 24	2 77	2 75	2 76	3 40	3 59	3.62
Pocohontas	2 45	2 65	2.59	4 06	4 48	4 38	2 60	2 60	2 60	3 26	3 42	3 52
Southern	3 06	3.02	2 91	3 97	4 42	4 15	3 24	3 20	3 15	3.51	3 58	3 69
Northwestern	3 75	3.72	3.43	4 38	4.79	4 43	3 86	3 83	3 49	4 07	4 18	4.04
Central Western	2 98	3 01	2 85	3 51	3.57	3 57	3 04	3 03	2 97	3.37	3 39	3 38
Southwestern	3.45	3.34	3.32	3 77	4 48	4 39	3 54	3 49	3 47	3 93	4 01	4 08
ALL REGIONS	3.12	3 11	3.10	4 25	4 56	4 54	3 32	3 28	3 21	3 80	3 91	3 95

To Enlarge Coal Prosecution

Judge A. B. Anderson on Jan. 10 indefinitely postponed the trials of coal-operators and miners now under indictment in the Federal Court at Indianapolis. Frederick Van Nuys, U. S. Attorney, said he wished to complete other inquiries before the Grand Jury before renewing the coal investigation.

Mr. Van Nuys said new indictments would result from the Federal Grand Jury's reopening of the investigation of the coal conspiracy cases against 125 operators and miners in Indiana, Illinois, Ohio and Western Pennsylvania.

B. & O. having a surplus. The generous supply of cars was due to the lack of any need for empties either in other coal fields or for the general transportation of commodities.

Labor conditions were conducive to a larger production than was possible under existing market conditions, there being more miners than usual in the region owing to general dullness elsewhere. The limited tonnage of coal which was loaded was being moved without any unusual delay.

CENTRAL PENNSYLVANIA

Operations Curtailed 40 Per Cent with the Low Demand—Prices Sag Further—Cars Are Plentiful—Movement Confined to Contract.

There is little demand for coal with the exception of some of the large operations with Tidewater contracts. About 40 per cent of the mines in the central Pennsylvania coal field are closed down as a result of the dull market now prevailing, due largely to the depression in other industries.

Prices for the first week of January range from $3.25 for Pool 11 coal to $3.75 for Pool 9, while in many instances coal is being sold considerably lower. At DuBois, sales were reported as low as $2@$2.25 a ton. Practically every wagon mine in the DuBois district closed when the price dropped below $4.

With the market dull and little demand, even at the seaport towns and with the export trade falling off, the railroads serving the mines in the central Pennsylvania coal field have no trouble supplying all the cars necessary to fill requirements.

Notwithstanding the reduction in coal prices at the mines, retail prices are still high in Altoona, the lowest quotation being $6.50 on the cars at the sidings. Coal is being delivered at $7.50@$10.50, according to the kind, to the home trade.

EASTERN OHIO

Production Declines—Car Supply Is Improved—Many Industries Reopening—Better Demand Anticipated—Prices Unchanged.

Production in the No. 8 field for week ended Jan. 1 was estimated at 320,000 tons, being 20,000 tons under that of the previous week and was about 51 per cent of the potential capacity of 537,000 tons, based on the 5-day week. Car supply was about 85 per cent of requirements, resulting in loss of about 80,000 tons production account of insufficient cars. Labor shortage also resulted in about 15 per cent work-time lost; mine disability and other causes about 10 per cent.

Reports of mines closing down account "no market" show a slight increase, especially among the smaller operations, and demand for both industrial and domestic coal is weak. However, operators generally are optimistic and it is felt that this sagging market will be of short duration, as many industries in this section have resumed operations on a larger scale beginning with the new year.

Retailers are well supplied and are slow to take deliveries of coal on track for their account. They have not been confronted with an insistent domestic demand for four or five weeks, as the weather has continued moderate.

Receipts of bituminous coal at Cleveland for the week amounted to: industrial, 1,606 cars; domestic, 412 cars, which is a considerable decrease compared with previous weeks, although an improvement over the last week.

Although the market continues dormant, there is little if any recession from prices of last week. Range on spot coal—mine run and slack $2.50@$3, ¾-in. lump $3@3.50, 1¼-in lump $3.75@4.25. On orders for larger quantities for future delivery—mine run and slack $2.75@$3.25, lump $3.50@$4.25, domestic lump $3.50@$5, all f.o.b. mines.

Middle Western

WESTERN KENTUCKY

Situation Unimproved — Demand Is Dull—Prices Still Sagging—No Prospect of Immediate Buying Movement.

Operators are living in hopes that with present light buying stocks will soon be low with industrial concerns, and that a new buying movement will begin. There is no great prospect of such being the case, but it is believed that general commodity buying will shortly open up, resulting in industries, public utilities, railroads, etc., consuming more fuel.

Prices in western Kentucky show very little change as a whole. This week coal is quoted $3.75@$4 for prepared sizes; $2.75@$3 for mine run; $2.25@$2.50 for nut and slack and $2@$2.25 for screenings. Last week's averages show prepared, $4.55 (range $3.75@$5); mine run, $3.20 (range, $2.85@$4; screenings, $2.45; (range, $2.25@$3).

Some of the operators are afraid that there is another period ahead of them similar to that existing just after the armistice when there was light demand and poor business for several months, followed by very fair business after things opened up in April of 1919.

INDIANA

Spot Coal Freely Offered — Some Stocking Activity Is Observed—Domestic Sizes Are Softer with Mild Weather.

Some idea of what has happened in the bituminous market may be gathered from the announcement that one of the mines in the Indiana district has closed down because of lack of orders. The car supply as it affects the coal trade is excellent, largely because the demand for open top cars from other industries is not heavy.

One of the main causes for the present market condition here is the remarkably open winter. Up to the present time the temperature has been several degrees above normal and just once, and that only for eighteen hours, did the state have real winter weather.

Some demand has been seen from public utilities and some of the industries, which despite the fact that there appears to be somewhat of a business depression, are laying up stocks of reserves against another situation such as prevailed last fall. This demand, however, is noticeably falling off because of the fact that these industries have about got their supplies in.

Jobbers report there is more free coal on the market and at much more reasonable prices than formerly and retailers have plenty of coal in their yards. In spite of real cold weather last week Kentucky lump is being sold at $1.50 below the selling price of the week previous. On Pocahontas and West Virginia coals the market is extremely soft and some reductions are expected. There is no indication that prices will slump to the pre-war level, which was much lower in all grades than coal is now bringing.

Middle Appalachian

HIGH-VOLATILE FIELDS

All Production Greatly Curtailed—Mines Closing with Low Prices—Shipments Confined to Contracts—Cars Too Plentiful—Little New Business Taken.

Logan and Thacker

Mines were marking time to a great extent in the Logan field between Dec. 27 and Jan. 3 and until there was a better market, especially in view of the low level of prices. Mine run was not averaging, insofar as there were any quotations, more than $2.50@$2.75. Not only were prices too low to market the output at a profit, but furthermore there was no demand in the open market. As it would have meant giving coal away to sell at the above figures, operators preferred to keep their mines in idleness.

The bulk of contract coal was being consigned to gas companies and public utilities. Steel companies, as a general rule, were not taking much on their contracts. With operations so greatly limited as a result of market conditions, production was far below normal, in fact not over 30 or 40 per cent. There were more cars in the field than could possibly be used, hundreds of empties being left over from day to day. It was estimated on Jan. 3 that there were not less than 4,000 empties in the Logan region.

In the Williamson field the drop in demand and prices was making itself felt to some extent during the last days of 1920 and the first few days of 1921,

although three more mines, which had originally been affected by the strike, were again in operation. Mines had not been so seriously affected in the Thacker field by developments in the market. At a time when the market situation was growing less encouraging they were struggling under the effects of the strike.

If the output was not up to normal it was not so much because of the strike but largely because of inability to dispose of a larger tonnage, there being virtually no spot market. Contract requirements were all that kept the mines going, many operations still being far behind on such contracts.

Kanawha

Inability to market more coal was responsible for a general curtailment of operations in the period ended Jan. 1. The few spot orders placed were for gas coal and fuel for public utilities. There remained only contract orders to be filled.

It was useless to try to produce a large tonnage, as it would simply have accumulated on sidings for want of buyers. Indeed, there were many unconsigned loads on the Coal River branch of the C. & O. and elsewhere. Mines were flooded with cars throughout the week. Upon few previous occasions have there been more empties furnished at any one time and seldom has there been less need for cars.

The market was showing no signs of recovery, as disclosed by a price of $2.75 on steam. That at least was the price being offered by buyers, but they found few takers. Gas fuel was bringing a better price—about $4. Gas companies and public utilities were sticking to their contracts better than other classes of buyers.

Virginia

General market conditions cut down production to about 70 per cent of normal capacity, although some of the larger plants were able to continue shipments on their contracts to the full extent of capacity. As not all of the miners had returned to work during the last week of the year there was some loss of production at the larger mines chargeable to a labor shortage. There was no shortage of cars during the week, empties being left over in many instances. The output for the week was in the neighborhood of 100,000 tons. Twenty thousand tons had been lopped off production because of the inability of some mines to dispose of their potential output.

Northeastern Kentucky

Production was far below normal in the last weekly period of the year. In fact, it reached a more pronounced minimum than has been recorded in some time, due to extremely poor demand and low prices. As a matter of fact there was little more than an occasional order, mines being restricted largely to contract shipments. The larger companies were not affected by market conditions to such an extent as the smaller producers, but from 40 to 50 of these smaller mines were down. It did not require a capacity output to take care of contract business, hence operations were far from regular even at some of the larger plants. Nut and slack were not averaging more than $2@$2.25, with mine run $3@$3.50, and prepared sizes ranging $4@$4.50.

Car supply was more than satisfactory. There was really an overplacement every day in the week. With a heavy run of empties, only a small proportion were loaded.

LOW-VOLATILE FIELDS

Good Production and Market Conditions Prevail in Pocahontas and Tug River Sections—Operators Take More Optimistic View—Return to Normal Seen with New Coal Year.

New River and the Gulf

There was a plentiful supply of empties both on the Virginian and the C. & O. in the Winding Gulf region for the week ended Jan. 1. Operators were unable to take advantage of the supply, there being probably less need for cars than at any other time in the year.

Many of the miners did not return before the first of the year, knowing that their services were not particularly in demand. That, together with the falling demand materially curtailed production. The intention was announced by some companies of not resuming operations until Jan. 10 and even not then unless there should be a material improvement in market conditions.

Contract business constituted the only source of activity in the New River region in the last week of the old year, spot business having practically vanished. Mines not having contract orders to fill made no effort to operate during the weekly period, and even where producers held contracts they were not shipping full tonnage thereon. There was no immediate prospect of additional business but producers were optimistic of the future despite prevailing conditions.

Nearly every mine in the field was overrun with empties, only a small proportion of which it was possible to use. That was especially true on Monday, not much more than 8,000 tons being produced on that day.

From a market standpoint there was nothing to cause a large production. What little coal was being sold on the open market had a range of $4@$5. The greater part of the output was being shipped to Eastern points, as the Western demand was largely at a standstill.

Pocahontas and Tug River

Production conditions in the Pocahontas field the last week of the year were apparently encouraging, as the principal shippers were working on a larger scale than during the corresponding week of 1919. The United States Coal & Coke Co. was short of coal and producing heavily, and other companies worked Monday, although it had been the general expectation to extend the holiday until Tuesday. No difficulty was being experienced, apparently, by regular producers in moving all coal.

Inquiries for slack around $4 for steel companies were more brisk. Retailers were taking coal, anticipating cold weather. Prices were generally firm, mine run was fluctuating $4.50@$5 and contract holders were taking shipments a little more freely. Everybody, however, was somewhat apprehensive about the future but expecting a return of normal business by April.

Loadings in the Tug River field reached a total of 68,350 net tons, equivalent to about two-thirds of maximum production. Car supply was adequate for all needs, but a number of operations had their deliveries of cars held up pending disposition of set-out loads. That movement on the part of the railroads proved to be effective, railways reporting that they had cut in half the number of unconsigned loads during the past week.

Tug River coal, it was claimed by the producers, was being easily absorbed up to the point of the present output and nearly all operations were running on a full-time basis. Labor was more plentiful than for several years, there being a large influx from mines recently shut down in the fields served by the C. & O.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Many Operations Still Closed—Market No Inducement for Reopening—Contract Shipments Heavy—Labor Is Plentiful—Over-Scale Wages Reduced.

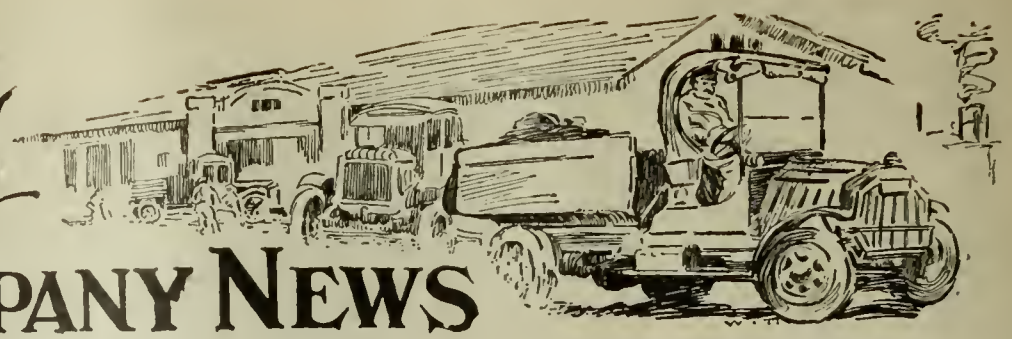
Operations in this field have been greatly curtailed over the holiday season. Many mines which closed Dec 24 are still in idleness, due to the extremely sluggish market. All demands are quiet and the little tonnage mined is moved with great difficulty.

Quotations range around $5 for block, $3@$3.50 for mine run. Mines which have orders are receiving 100 per cent car supply. Shipments on contract are heavy and those operations which are not fortified with sales agreements are hard put to it to market their output.

All high wages above the standard scale, which had been paid in this field for some time as an inducement for the men to work more efficiently have been reduced in an effort to cut the cost of production. Labor is plentiful, in fact with the present low rate of production it is doubtful if, for a time, the field can furnish a living to all the workers available.

The Southern Appalachian Coal Operators' Association estimates the tonnage produced for the year 1920 to be around six and one-half million tons.

MINE And COMPANY NEWS



ILLINOIS

The Tushorn Coal Co. and the **Jefferson Coal Mining Co.**, both of Springfield, have filed notices of dissolution in the office of Secretary of State L. L. Emmerson.

The Groveland Coal Co., Peoria, through Dan R. Sebastian, president, and Walter Off, secretary, has certified to the Illinois Secretary of State for an increase in capital stock from $400,000 to $1,000,000. The $600,000 increase is a surplus which is to be divided among the stockholders pro rata according to their holdings as a stock dividend.

The Illinois Central R.R. has appropriated the sum of $10,000 to be used in the erection of a new depot at the town of Dowell, in Jackson, at which place is located the Kathleen mine of the **Union Colliery Co.** of St. Louis. The town has been built up entirely within the last three years and the mine around which the town is built, is rapidly becoming one of the largest producers in Perry county.

A price of $50 per acre for the coal under the 120 acre county farm of Macoupin County, has been offered the **Standard Oil Co.**, by the supervisors of the county. The plan was to leave the coal under the buildings standing on the farm. The operating company has not yet made public its intentions of the offer.

Hundreds of men are flocking to the Southern Illinois coal fields from the industrial centers where the plants have closed down. One mine has had seventy-five applications from men and boys but was unable to use any of them, and operators say there are more applicants now than at any time in years. Several miners from the West Virginia coal fields, where the union men are locked out, have recently found work near Benton, one mine employing eighteen of them. It is expected that the influx of strangers to the coal fields will continue to increase. Most of these people coming in have no experience in mines, coming here only in the hope of work, as the plants which have heretofore employed are closed down wholly or in part.

The Binzel Coal Co., Farmington, has been incorporated with a capital of $300,000, to operate coal properties in this section. The incorporators are Louis P. Haller, Otto C. Bruhlman and F. E. Matthews.

INDIANA

Dwight S. Curwick, Frank A. Throop and Lester A. Brown, all of Indianapolis, recently incorporated what is known as the **Western Coal Corporation** of Indianapolis, with a capital stock of $25,000. The company was organized to buy up mines and mineral lands.

The **Culbertson Construction Co.** of Ohio, recently applied for admission to Indiana. The company is engaged in stripping and shipping coal and states in the petition for entry that $25,000 of its capital stock is represented in Indiana.

The Tidewater & Western Coal Co. has handled a big deal in taking over 2,000 acres of coal land in Pike County, east of Spurrier, in Monroe Township, seven miles from the Big Four R.R. An average of $125 an acre was paid for the land. Grading has started on a seven-mile survey to connect with the Big Four near Somerville. It is proposed to use stripping process as well as shaft systems. B. W. Lewis of Wheeling, W. Va.; R. D. Lloyd, Steubenville, O.; Loris Julian, Evansville; and H. W. Eakin, Petersburg, Ind., are interested in the organization

The first coal mine in the Clinton field to close because of the slackened demand for coal will be the No. 3 mine of the **W. S. Bogle Co.**, incorporated. The mine was opened a year ago and employs 100 men.

KENTUCKY

The Virginia Mining Co., Allen, is planning for the erection of a new coal tipple at its local properties. The company recently increased its capital for general expansion.

Col. Samuel Wilson, Lexington, appearing for the **Kentucky Union Coal Co.**, protested before the State Tax Commission against an assessment of $20 an acre on 7,000 acres of coal in Perry County, the land being several miles from a railroad, and not ready for development for some time to come.

Reports from Pike County, in the Hazard District, are to the effect that **extensive road improvements** will be made in the coal fields districts this season. Hundreds of miles of road improvement are expected in the Big Sandy district this year.

A new company of Louisville and Cincinnati business men are forming **a half million dollar company**, headed by E. T. Durrett and E. T. Hutchins, Louisville, to construct barges and start a barge line between Cincinnati and Louisville, which should further develop river transportation.

The Clabron-Elkhorn Coal Co., Paintsville, is planning for the construction of a new coal tipple at its properties near McDowell. A housing development for miners is also planned.

The **Parks-Richmond Coal Co.**, Wheelwright, Ky., recently organized, is planning for the construction of a tipple at its local properties. A housing development will also be established for operatives at the mines.

MARYLAND

The **Cumberland Smokeless Coal Co.**, Cumberland, Md., has been organized with a capital of $100,000 to operate on a large tact of property in Somerset County, on the main line of the Western Maryland Railroad. The company has a total of about 500 acres of land in this section. L. Lee Lichenstein is president and D. F. Mullen, secretary and treasurer.

OHIO

The **Hocking Valley Mining Co.**, recently organized, which took over the abandoned mine of the Lorain Coal & Dock Co., at Hocking Station, five miles north of Athens, has completely re-equipped the mine and is loading coal in a small way. The property consists of 2,300 acres of good coal and was abandoned about 1919. The equipment is modern and a capacity of 3,000 tons daily is expected by April 1. O. E. Harrison is president. The product will be sold through the **Essex Coal Co.** of Columbus.

The Continental Clay Co., recently chartered at Canton, with a capital of $2,000,000, has taken over the yard of the Ferris Steam Mortar Works, Columbus, and will soon install coal-handling machinery to open a retail business. D. M. Swisher is general manager of the yard.

Papers have been filed increasing the authorized capital of the **Ohio Consolidated Coal Co.**, from $50,000 to $250,000.

The Eagle Red Ash Coal Co. has been chartered with a capital of $200,000 to mine and sell coal in West Virginia. Incorporators are J. E. Sater, M. L. Sater, W. A. Lyons, A. Timberman and F. Scott, all of Columbus, Ohio.

OKLAHOMA

The Cavanal Coal Co., Kansas City, recently organized with a capital of $500,000, is planning for the development of extensive coal properties at Shady Point, Okla. Mining machinery and equipment will be installed at an early date, and a modern coal tipple constructed. The installation is estimated to cost about $100,000.

PENNSYLVANIA

The Reed Coal & Coke Co., Pittsburgh, is being organized by R. P. Reed and R. S. McMahon to operate mining properties in the Pennsylvania fields. Application for a state charter will be made on Jan. 17. Joseph J. Goldsmith, 921 Frick Building, represents the company.

What is considered to be the last large coal field in Greene County in the line of easy development to be sold has just been acquired by the Perry Land company, reputed to be a subsidiary of the **Piedmont Coal Co.**, purchaser of the J. V. Thompson estate. The tract consisting of 1,953 acres was sold for $250 per acre by Uniontown investors.

The Northwestern Mining & Exchange Co., Granville, is establishing a new mining town in the vicinity of DuBois, to be known as Cramer. Construction is under way on a new railroad line, expected to be completed at an early date. Immediately following, considerable machinery and equipment will be installed. Twin shafts will be constructed and provided with all modern features, including two large hoppers, each with capacity of 6 tons, for bringing the coal to the surface, instead of with the use of mine cars. A large coal tipple will be built. Superintendent Robertson is in charge.

Miners in the section of Coaldale have launched **a new daily paper** to be known as the "Panther Creek News." Thomas Kennedy, president of the United Mine Workers of the Hazleton district, is head of the enterprise and John Guyer is editor.

The Harco Coal Co. of Johnstown, a subsidiary of **Cosgrove & Co.**, declared a dividend on Jan. 1, of 7 per cent and also a substantial dividend on the common stock of the company. The Harco company was organized in March, 1920, taking over the property of the **Sunnyside Coal Co.**, and the **Ideal Coal Co.**, the mines being known as Thermal Nos. 5 and 6 of the Cosgrove chain. H. J. Mechan is president of the company and the stockholders are mostly residents of Johnstown.

Members of the engineering corps of the **Delaware, Lackawanna & Western R.R. Co.** and Scranton city firemen have succeeded in determining the location of the mine fire raging in the old workings of the above-named company, and for twenty-four hours played streams of water on the blaze. The fire, according to members of the engineering corps, is in what is known as the New County vein and is about 400 feet below the surface. The New County vein has a thickness of about eight feet, and is a mass of burning coal, according to reports of the surveying corps. The first mining in the workings which are now on fire was completed some time ago and no operations have been carried on there for several years.

TEXAS

The Texas Fuel Co., Dallas, recently formed with a capital of $2,000,000, is planning for the development of extensive lignite coal properties in Limestone County. The company has a tract of land totaling about 1,500 acres, a portion of which will be worked at the present time. E. B Neiswanger is president, and S. J. Jacobs, treasurer.

WEST VIRGINIA

The Crown Coal Co., Sand Run, recently formed with a capital of $100,000, is arranging for the development of extensive coal properties in this section. The company has a tract totaling about 150 acres, and plans for the installation of machinery to provide a capacity of about 400 tons of coal per day. A. J. Chisolm is president and manager.

The Loeo By-Product Co. was organized late in December with a capitalization of $100,000 and has entered upon the development of 828 acres on Gauley River at Swiss, Nicholas County, W. Va. However, it will

require a period of six months before the new plant will be ready for the production and shipment of coal. Newly elected officers of the company are: Dr. O. O. Older, president; J. O. Lloyd, vice-president and general manager; A. C. Orentt, treasurer; M. M. Moorehead, secretary.

Construction work is progressing on a number of houses which are being erected for the use of miners by the **Pine Bluff Coal Company** on the Wyatt-Bingamon branch of the Western Maryland in the Marion county field.

Provision will be made by **the Western Maryland R.R.** for handling at least 100 more cars than is now possible at the Chiefton yards of the company through which loads and empties from and for the Helens Run and Wyatt-Bingamon branches of the road in the Marion County field pass. This will be accomplished by adding two tracks to the present trackage of the yard and it will make it possible to accommodate about 350 cars in all. Plans have progressed to the point where directors have authorized this improvement and had made an appropriation in the 1921 budget for the expense of this improvement.

Offices of the company, for the present, however, will be in Pittsburgh, Pa. Closely identified with the new company are: Dellet Stemple, Gordon B. Ramsey, John Hewitt, E. W. S. Kennedy and Waitman D. Corder, all of Philippi, W. Va.

Lee J. Sandbridge, a successful operator of Barbour County, and associates have organized a million dollar company to develop coal property near Meriden in Barbour County, the new concern having been chartered as the **Meriden Smokeless Coal Co.** Offices and operation, as indicated will be at Meriden. Associated with Mr. Sandridge in this project are: M. A. Osgood, Philippi; S. M. Kaemmerling, Gustav Kaemmerling and Rose L. Meaner, all of Philadelphia.

The Diamond Coal Co., Fairmont, with headquarters in this city, has retired all its preferred stock, such stock being retired at a price of $105, although the par value was $100. There were 250 shares outstanding.

In order to make provision for a larger force so as to increase its output, **the Forest Coal Co.**, Morgantown, is engaged in putting up about 20 new houses for miners at its plant at Cassville on Scott's Run in the Monongalia County field.

The Betty mine of the **Hudson Coal Co.**, Morgantown, located on the Wyatt-Bingamon branch of the Western Maryland Ry. in the Marion County field has been purchased by the **Stone & Scott Coal Co.**, owned jointly by E. B. Stone and T. M. Scott of Morgantown.

In connection with the recent purchase of coal land in Monongalia County, the **Connellsville By-Product Coal Co.** has started work on three openings on its 4,000 acre tract in the Pittsburgh vein, located near Barker, Monongalia County. The company is sinking one shaft and arranging for two slope openings. Production will not be started, however, much before March 1, 1921.

Development of coal territory in the Harrison County field will be undertaken on a rather extensive scale by the **Macfarlane Coal Co.**, which has been organized with a capital stock of $50,000, general offices of the company to be in Clarksburg. Largely interested in the new enterprise are: George C. Macfarlane, Percy Byrd, John P. Keeley, J. H. Callahan and Benjamin R. Britt of Clarksburg, W. Va.

Purchase of 140 acres of coal land in the Sewickley vein from the **Knob Coal Co.**, in Monongalia County, in addition to acreage already held by the **American Gas Coal Co.**, will give the latter company about 440 acres in all. The American Gas Coal Co. not only secured the holdings of the Knob company but also the tipple, sidings, houses and entire plant. The 300 acres held by the American Gas Coal Co. are in the Pittsburgh vein. With the mining properties of the two companies combined, it will give the purchaser an output of about 40 cars of coal a day. The acreage which changed hands is on the Monongahela River about 12 miles south of Morgantown at Flaggy Meadows station.

The Hoffa-Martin Coal Co., Piedmont, will operated on a very extensive scale in Mineral County in the Upper Potomac field. This company was organized with a capital stock of $150,000. It is understood development work will be initiated at an early date. Principal stockholders of the new company are: Charles W. Hoffa and Margaret Hoffa of Lonaconing, Md.; John Martin, Lillie G. Martin and James Martin of Piedmont, W. Va.

Capitalized at $100,000 the **Hutton Coal Co.**, Clarksburg, plans the development of coal lands in Harrison County though the principal office of the company will be at Fairmont, W. Va. Actively connected with the new company are: Ernest Hutton, Isman E. Swartz, A. J. Colborn, Pearle Morris, Adda Morris of Fairmont.

Operations of the **Verona Coal Co.**, Wellsburg, will be in Cross Creek District of Brooke County, general offices of the concern to be in this city. The capitalization of the new corporation has been fixed at $50,000. Preparations are under way, for the beginning of development work at a reasonably early date. Active in organizing this company were E. E. Carter, G. R. Waddell, Jeannie Waddell, Robert Shepherd and A. M. Shepherd, all of Wellsburg, W. Va.

Unless present plans miscarry the **Glogora Coal Co.** of Huntington, will be in a position in the near future to make its first shipments from its new plant on the Marsh fork of Coal River, now nearing completion and also from its new operation on the Right Fort of Beaver creek in Kentucky. Richard Williams is the president of the company.

A new mine has been opened by the **Kanawha Consolidated Coal Co.**, Charleston, at Peytona on Coal River and coal will be produced from the No. 2 Gas seam. This concern was organized only a few months ago, John O. Hare being its president.

The two largest resident coal corporations organized during December, 1920, were the **Brady Coal Corporation** of Fairmont, and the **Aetna-Sewell Corporation** of Keeney's Creek, W. Va., each having a capitalization of $2,000,000.

There were organized during the month the following companies, the post office and capitalization being given for each company.

Company		Capital
Forman Pocahontas Coal Company	War	$50,000
The New Republic Coal Company	Charleston	60,000
Coalsburg Domestic Coal Company	Welch	25,000
North Weirton Coal Co.	North Weirton	50,000
Great Lakes Coal & Coke Corporation	Charleston	250 000
Moore-Humphries Coal Company	Levi	10,000
Coal River Fuel Co	Charleston	75,000
The Shaw Coal Co	Parsons	50,000
Glasscock Collieries Co.	Morgantown	200,000
The Sage Coal Co	Buckhannon	20,000
Lillybranch Coal Co	Big Creek	50,000
The Clay Gas Coal Co.	Philippi	60,000
Kendrick Coal Co	Madison	50,000
Union Fuel Co	Charleston	50,000
Shinnston Fuel Co	Shinnston	50,000
Laurel Creek Fuel Co	Charleston	250,000
Two-Seam Coal Co	Winding Gulf	25,000
Vernon Coal Company	Naugatuck	20,000
Coal Mountain Mining Company	Huntington	250,000
Tidewater and Domestic Coal Company	Charleston	25,000
Strickler Pocahontas Coal Company	Sandy Huff	100,000
Sand Hill Coal Company	Fairmont	50,000
Brady Coal Corporation	Fairmont	2,000,000
Woods Run Coal Co.	Fairmont	50,000
Middle Fork Block Coal Company	Charleston	150,000
Dale Coal Company	Clarksburg	150,000
Ridgeline Coal Mining Company	Clarksburg	100,000
Standard Gas Coal Co.	Charleston	150,000
Wood-Morton Fuel Co.	Charleston	100,000
Lewis County Collieries Company	Clarksburg	25,000
Reed Run Coal Co	Masontown	50,000
The Robinson Coal & Coke Company	Sutton	
Aetna-Sewell Coal Co.	Keeney's Creek	2,000,000
The Crown Coal Co	Sand Run	100,000
Guyan Coal Company	Charleston	25,000
Gauley By-Products Co	Vaughn	100,000
Carman-Litten Coal Co.	Wellsburg	32,000
Glennova Coal Co	Wheeling	50,000
Lock Six Coal Co	Charleston	10,000
Wilsondale Coal Co	Huntington	10,000

In addition to the resident companies organized during the month, the following **non-resident companies** were also organized:

Castile Coal Co	Morgantown	60,000
Lawrence Coal Co	Pittsburgh	10,000
Elkhorn Gas Coal Co	Bluefield	100,000
The Ira Coal Co	Williamson	40,000
McKeefrey Coal Co	Pittsburgh	300,000

The following companies increased their capital stock in the amounts named during the month:

West Williamson Coal Co., from $10,000 to $50,000; Follansbee Gas Coal Co., from $175,000 to $250,000; Weston Fuel Co., from $25,000 to $100,000, East Gulf Coal Co., from $800,000 to $1,250,000; Marteny Coal Co., from $25,000 to $100,000; Sequoi Coal Co., from $50,000 to $150,000; Greenbrier Smokeless Coal Co., from $100,000 to $200,000; Wood-Peck Coal Co., from $35,000 to $200,000; Nelson Fuel Company, from $50,000 to $500,000; Raleigh Smokeless Fuel Co., from $300,000 to $500,000; Sewell Valley Coal Co., from $200,000 to $300,000; Waddell Coal Company, from $200,000 to $250,000; Pointlick Coal Co., from $100,000 to $150,000; The Tabors Creek Coal Co., from $25,000 to $100,000; Summit Coal Co., from $100,000 to $250,000.

Marion County coal land will be developed by the **Southern Coal Corporation**, which has just been organized with a capitalization of $50,000. Officers of the new concern will be maintained at Fairmont. Actively connected with the new company are: Edna Anderson, Hal O. Dille, O. P. McKinney, J. Edwin Gushill and Frank C. Haymond of Fairmont, W. Va.

Virgin coal territory will be developed by Morgantown capitalists near Mannington in the Marion field, the sum of $337,500 having been paid for 1,500 acres purchased from the **Flat Run Gas and Coal Co.** It will be necessary for the purchasers to sink a deep shaft as the coal is between 500 and 600 feet below the surface. The large tract purchased is only about a mile west of Mannington. Coal is in the Pittsburgh seam. Among those interested in the concern which purchased the land are: B. M. Chaplin, R. E. Kerr, E. F. Bowlby, M. L. O'Neal, P. M. Beaumont, C. F. Boehler, A. Kammerer and N. C. Burdette of Morgantown; E. S. Dunn of Pittsburgh, Pa.

Boone County coal lands will be developed by the **Haman Coal Co.**, which will operate on a large scale in the county named as the company's capitalization of $400,000 will indicate. Leading figures in connection with the organization of the new concern are: H. T. Lambert, Jack T. Craig, J. W. Van Valkenburgh of Huntington; James E. Hughes of Charlestown; A. C. Schafer of Cofoco, W. Va.

Development of quite an extensive acreage in Harrison County will follow the organization of the **D. K. R. Coal Co.**, capitalized at $40,000, the general office of the company to be at Clarksburg. Largely interested in the new concern are: Chester O. Davisson, V. J. Roy, Fannie Hart, W. D. Williamson, of Clarksburg; A. O. Kelley, of Wallace, W. Va.

Purchase of 150 acres of coal land on Scotts Run in Grant District of Monongalia County at an expenditure of $34,500 by a David C. Reay of Morgantown is thought to presage the development of the territory purchased by a company now being organized.

The Guyan Collieries Corporation, Logan, in which W. P. Tams, Jr., and others are interested has just consummated negotiations for the purchase of 2,100 acres of land from the **Gilbert Creek Land Co.**, the Canebrake Land Co. and C. W. Campbell for the sum of $91,307. The same purchasing company in addition to the land just acquired has also expended $160,000 for coal territory on Gilbert Creek and the Guyandotte River and will operate on a very extensive scale in the Guyan region.

While the **Morgantown Coal Co.** will retain its general office at Morgantown, it is also branching out and has opened a branch office in Philadelphia of which Joseph A. Bayle, sales manager of the company will have charge, the Philadelphia offices being in the Pennsylvania Building.

J. J. Reynolds, until recently connected with the **Soper-Mitchell Coal Co.**, has acquired title to 125 acres in Cass district of Monongalia County in the busy Robinson Run district and it is believed that he plans the early development of the territory so acquired.

Organization of the **Fraser Mining Co.** with a capitalization of $50,000 presages the development of additional coal territory in Kanawha district of Fayette County. Chiefly interested in the new concern are: C. V. Fraser, H. M. Morgan, F. M. Butts, E. M. Hoback and C. A. Fraser, all of Charleston.

CANADA

R. A. Ross, chairman of the Canadian Advisory Council of Scientific and Industrial Research, who has for the past two years been investigating **the possibilities of utilizing the large lignite coal deposits** of Saskatchewan, states that the briquetting plant now being established at Estevan, Sask., will be in operation by April next. The buildings are almost complete and most of the machinery is on the ground. It will have an output of 30,000 tons of briquettes per year.

Industrial News

Johnstown, Pa.—Cosgrove & Co., operators of twelve mines in Pennsylvania and three in Illinois, remembered their employees at Christmas time and announced a bonus for every worker in the offices at New York, Chicago, St. Louis, Minneapolis, Baltimore and Norfolk.

San Francisco, Cal.—The Western Fuel Co. announces the removal of its offices to the Balfour Building.

Akron, O.—The B. F. Goodrich Rubber Co. recently celebrated their golden anniversary, the company having been incorporated by Dr. Franklin Goodrich on Dec. 31, 1870.

Association Activities

West Kentucky Coal Operators Association

At a meeting in Louisville in December the association reported numerous cancellations on orders, which in some cases had left books almost empty of business. It was reported that car shortage was no longer a serious matter, the principal trouble now being in getting business. Operators while a bit dispirited, were optimistic, feeling that cold weather will force a demand for domestic sizes, and steam demand will come back shortly, but probably not strong until present stocks are lowered.

Traffic News

In an interlocutory order recently, the **Public Service Commission** of Indiana authorized the Indiana Power Co., Edwardsport, to increase temporarily its commercial power rates and its power rates to mines until the commission has time to go into the company's petition. The final hearing on other increases requested will be held Jan. 24. The company supplies electric power to many mines and industries in a big field, of which it is the center.

The Senate recently passed a resolution introduced by Senator Nelson, of Minn., directing the Interstate Commerce Commission to ascertain and report the cost of railroad fuel for the current year as compared with 1919, and to furnish a statement of the tonnage of railroad fuel for 1920, its total cost, its average cost per ton and the average cost per ton of 1919 railroad fuel "so that the difference in cost between the two years may plainly appear."

Senator Poindexter, of Washington, has introduced a bill similar to that introduced in the House by Rep. Johnson, providing for 20-year leases of school lands in Washington State containing coal, oil, oil shale or gas.

The Interstate Commerce Commission has decided that the proposed cancellation of joint rates on bituminous coal from mines on the Kanawha and Michigan Ry. in West Virginia to Eastern and Southeastern points is not justified.

The Interstate Commerce Commission has approved a loan of $60,550 to the Huntington and Broad Top Mountain R.R. and Coal Co. of Pennsylvania for the construction of a bridge on its main line at or near Saxton, Pa.

The Senate and House have passed a bill which now goes to the President, **reserving public lands for a water supply** for Sunnyside, Utah, but authorizing the lease or other disposition of coal or other minerals in the land if they can be mined without injury to the water supply.

The Mayor, Aldermen and Common Council of Brockton, Mass., have petitioned Congress to enact legislation regarding **the fixing of prices on coal.**

The Indiana public service commission has denied a petition of employees of the McClellan mine at Riley, Ind., for a miners' train between that place and Terre Haute. The commission in its finding held that the railroad company was not provided with sufficient extra equipment to place the train in service and that the cost of operating a train, the distance of nine miles for 100 men would be excessive and prohibitive.

The Federal Supreme Court has upheld the maximum freight rates of North Dakota, reversing its own decision, in the suit of the Soo Line against the Washburn Lignite Coal Co. The road sued the coal company to recover $28,000 freight charges in excess of the rate allowed under the state law, and the court holds in favor of the coal company.

In urging readjustment of division rates to provide larger revenues, representatives of New England railroads before the Interstate Commerce Commission said the large deficits suffered by these roads the past year were partly due to higher coal costs. D. S. Brigham of the Boston and Maine R.R. said the average cost of coal during the first eight months of 1920 was $7.19 as compared with $6.28 a ton for the same period of 1919.

The Interstate Commerce Commission in a letter to W. N. King, Assistant General Attorney of the New York Central Lines, has defined "district" as used in its orders affecting car supply for coal as meaning "a mining district within which the mines are grouped under common rates and within which the mines are rated for car cupply with relation to each other."

Personals

Frank C. Dunbar of Kentucky, has been appointed general superintendent of the Hillman Coal & Coke Co., of Pittsburgh, Pa., to succeed **Harrison T. Booker,** whose resignation was announced some weeks ago. **M. D. Cooper** of Brownsville, Pa., district superintendent of the company has been promoted to the position of assistant general superintendent with headquarters also in Pittsburgh.

B. L. Johnson has been appointed chief of the section of foreign mineral reserves of the Geological Survey, succeeding **Eugene Stebinger.** Mr. Stebinger has for some months been engaged in private foreign work, and is now completing the test of the report on the coal resources of Europe.

George F. Harley, engineer of the Geological Survey, who was appointed during the war to make power investigations in connection with the conservation of fuel, has resigned.

The Chicago Pneumatic Tool Co. announces the appointment, of **R. F. Eissler,** as assistant to the Vice-President with headquarters in the company's new office building in New York. **W. C. Straub,** formerly district manager of the New Orleans Branch, has been appointed district manager of the Pittsburgh Branch to succeed **Mr. Eissler. Ross Wyeth** succeeds Mr. Straub.

John W. Whiteley, formerly a member of the firm of Whitney & Kemmerer, of New York City, and **George C. Foedisch**, of Philadelphia formerly manager of Bituminous sales for the same firm, have formed a partnership under the name of Whiteley & Foedisch, and will mine and sell anthracite and bituminous coal and coke.

The first number of "The Pioneer," the new monthly magazine of the Island Creek Coal Company and of the Pond Creek Coal Co., both under the same management, made its appearance before Christmas. **Geo. C. McIntosh** of Huntington is the editor of the new monthly.

David Brown has resigned his position as manager of the Reserve Mine of the Canadian Western Fuel Co. in order to accept a leading and active part in the development of new coal fields situated north of the City of Kamloops.

W. A. Flanegan, acting treasurer and auditor of the Sun Coal Co., and Allied Coal Co., Ky., has resigned his position with those concerns, and will devote his time for the immediate future in the Rail & River Coal Co., of which he was one of the organizers.

Henry Menke, a miner employed by the Davis Coal & Coke Co., Md., received total wages of $690 for the month of November, believed to be a record for miner's pay in this disirict. He earned $356 during the first half of the month and $334 in the latter half.

J. R. MacArthur, well known in mining circles in Illinois and Chicago, has accepted a position with the Rutledge & Taylor Coal Co., Fisher Bldg., Chicago, as city salesman.

James Johnson, a son of Thomas Johnson, of the **Lorain Coal & Dock Co.**, Columbus, who has been operating a jobbing concern in the Brunson Bldg., under the name of the Cedar Grove Fuel Co., has closed out the business and has become purchasing agent for the Lorain Coal & Dock Co.

The Goulds Manufacturing Co., Seneca Falls, New York, announces the appointment of **Edward S. Jenison** as acting General Sales Manager to succeed **W. E. Dickey** who recently retired from business. For the past five years Mr. Jenison has been manager of their Philadelphia office.

H. G. Nash, mine car engineer of the Huntington district, Industrial Bearings Division of the Hyatt Roller Bearing Co. is now connected with the Star Car & Foundry Co. as advertising manager.

E. B. Sutton, for a number of years district engineer in charge of the local station of the Bureau of Mines, and later connected with the West Virginia Coal & Coke Corporation, has returned to the Birmingham District and has accepted the position of chief mining engineer for the Sloss-Sheffield Steel & Iron Co.

Publications Received

Preliminary Investigations of Storage Battery Locomotives — U. S. Bureau of Mines Technical Paper 264. Specifications, Laboratory Test, Permissible Schedule, by L. C. Ilsley and H. B. Brunot.

Obituary

Jos. L. Scanlon, of St. Paul, with the Superior Coal & Dock Co., died recently, of blood poisoning, after an illness of only a few days.

Coming Meetings

National Retail Coal Merchants' Association. Fifth conference of executives at La Salle Hotel, Chicago, Ill., will be held on Jan. 17 and 18, 1921. Secretary-Manager, Ellery B. Gordon, Philadelphia, Pa.

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York, Feb. 14 to 17, 1921. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

The Wholesale Coal Trade Association of New York, Inc., will hold its annual meeting in New York City, Jan. 18, 1921. Secretary, Charles S. Allen, 90 West Street, New York City.

American Society of Civil Engineers will hold its annual meeting Jan. 19 and 20, 1921, at its headquarters, 33 West 39th St., New York City. Acting secretary, Herbert S. Crocker, 33 West 39th St., New York City.

Northwest Mining Congress will hold its annual convention Feb. 28 to March 5, 1921.

Northern West Virginia Coal Operators' Association will hold its annual meeting Feb. 8, 1921. Secretary, H. S. Rogers, Fairmont, W. Va.

Pittsburgh Vein Operators' Association of Ohio will hold its annual meeting, Feb. 14, 1921, at Cleveland, Ohio. Secretary, D. F. Hurd, 415 Marion Building, Cleveland, Ohio.

American Institute of Electrical Engineers and American Institute of Mining Engineers will hold a combined meeting of the local sections on Jan. 21, 1921, Pittsburgh, Pa.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Ottawa, Ontario, Canada. Acting secretary, R. R. Rose, Montreal, Quebec, Canada.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 19 NEW YORK, THURSDAY, JANUARY 20, 1921 Number 3

Bituminous Coal in 1920

Production 21 Per Cent Greater Than in 1919—Distribution Considered Geographically and in Regard to Classes of Customers—Consumption Dependent on Industrial Conditions and the Weather—Prices Reach New High Records

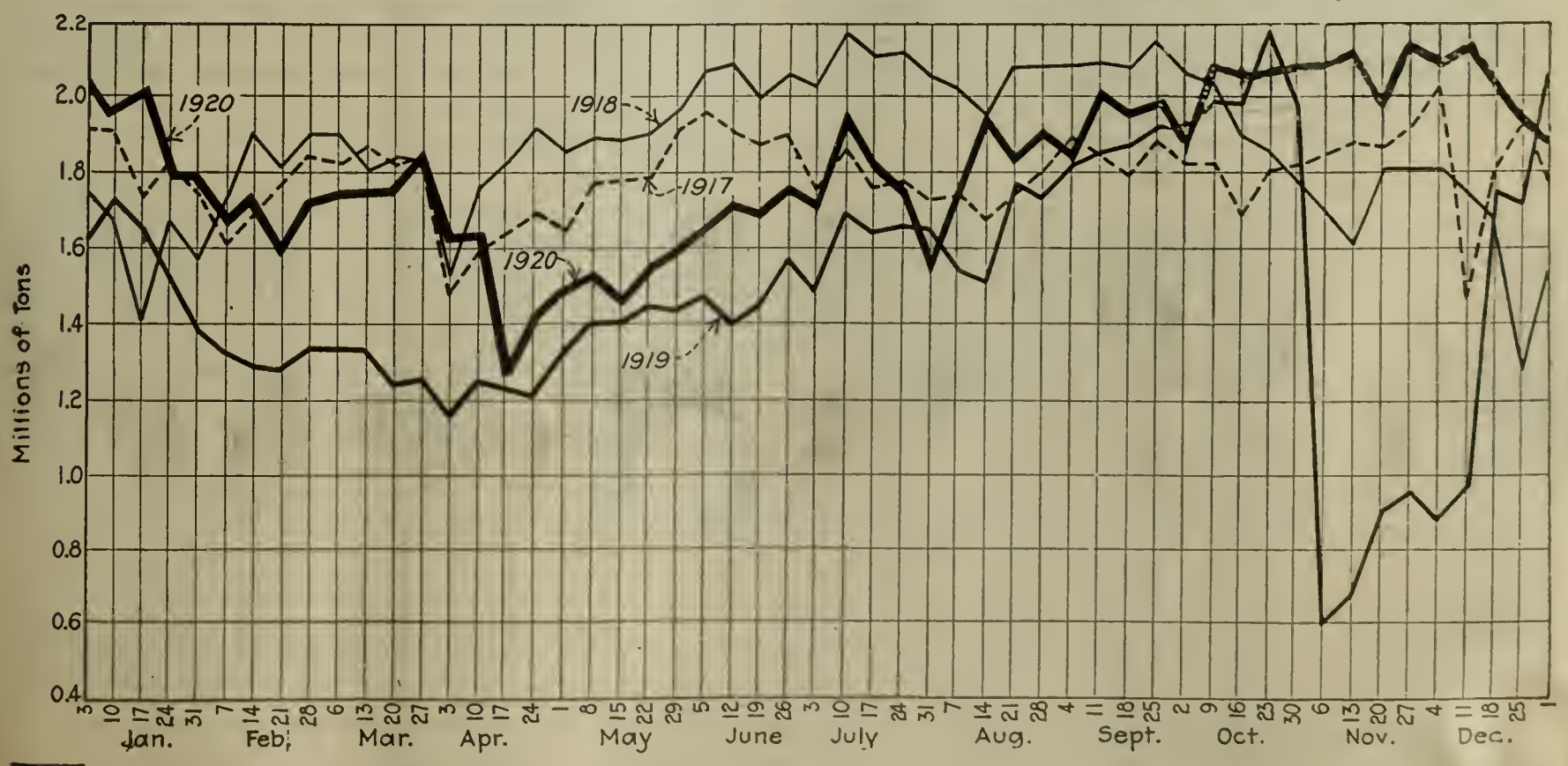
PRODUCTION of bituminous coal in the United States in 1920 is estimated at 556,500,000 net tons, an increase compared with 1919 of 98,000,000 tons, or 21 per cent. Production of anthracite is estimated at 89,000,000 net tons, an increase of 1,000,000 tons, or 1.1 per cent. The production of bituminous coal has been exceeded in but one previous year, 1918, when the total output was 579,000,000 tons. The best pre-war year was 1913, in which 478,000,000 net tons of bituminous coal were produced. In 1917, when the production was 551,000,000 tons, the third highest record was attained.

In point of value at the mine the year 1920 has set a new record. Official figures of the value of the bituminous coal produced in 1918 are $1,491,000,000, compared with which it is conservatively estimated that the smaller production in 1920 netted the producers approximately $2,225,000,000. Of the increase in value at the mine mouth of $734,000,000 it is estimated that the miners and mine laborers received $234,000,000 as wages and bonuses.

Although production of bituminous coal in the United States in 1920 increased 21 per cent over 1919, all producing fields did not share equally in the gain. Considering the coal fields by groups, which is all that the preliminary statistics will permit at this time, we find that the Middle West—Illinois, Indiana and western Kentucky—made the largest gain, 38 per cent. The increase in quantity was 36,400,000 tons, exceeded only by that in the middle and northern Appalachian territory. This large region, comprising the coal fields of Pennsylvania, Ohio, West Virginia, Virginia, Maryland, Michigan and eastern Kentucky, produced in 1920 332,148,000 net tons of bituminous coal, a gain over the previous year of 43,837,000 tons, or 15 per cent.

The Southern states of Tennessee and Alabama produced 25,178,000 tons in 1920, compared with 20,380,000 tons in 1919, an increase of 22.5 per cent. The Western Interior Region, comprising the fields from Iowa to Texas, had an estimated output of 29,707,000 net tons, a gain over the previous year of 27 per cent. In the far West the Rocky Mountain region, including the fields of Montana, Wyoming, Colorado, New Mexico and Utah, registered a gain of 22.6 per cent over 1919 and Wash-

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

ington had a small increase of 234,000 tons, or less than 1 per cent.

Illinois, according to the preliminary figures of the Geological Survey, in 1920 reached the goal for which she has been striving for years, namely to replace West Virginia as the second largest coal-producing state in the Union. West Virginia's output increased only about 10,000,000 net tons over 1919, while Illinois gained nearly 25,000,000 tons. Although it is admittedly difficult to arrive at preliminary estimates of production by states to the same degree of accuracy as for the country as a whole, it appears that the indicated lead of more than 7,000,000 tons held by Illinois in the first eleven months of 1920 warrants the conclusion that West Virginia will now occupy third position.

The middle and northern Appalachian region fell short by 20,000,000 tons, or nearly 6 per cent of the high mark set in the war year of 1918. Illinois, Indiana, and western Kentucky had a production in 1920 equal to that in 1918, and the South and West fell little short of reaching the war maximum. As was so clearly demonstrated in the war years, it is in the immense coal fields of the East that greatest difficulty is experienced in meeting large demands for increased production.

Production Shows Market Fluctuation

The rate of bituminous coal production in 1920 may be roughly described as having dropped from the high point of the first half of the year, attained the first week of January, to the low point of the year, in the middle of April, and from then on until the holiday season at the end of 1920 to have climbed upward, with many backslidings on the way. Until after the middle of the year the rate of output in 1920 was about midway between that of 1919 below and that of the war years, 1917, 1918, above. From Oct. 1 on the rate of production was, with the exception of the highest of all records, in the week preceding the miners' strike in November, 1919, greater than for the same period in any other year for which records are available. For the last thirteen weeks of 1920 production averaged well above 12,000,000 net tons a week, a record of sustained output equalled only during the summer and early fall of 1918, when every energy of the country seemed to be directed toward getting out coal and still more coal.

From the first week of January until the middle of December car shortage was the principal factor limiting production of bituminous coal. That is to say, each week of this period the demand for coal was in excess of the ability of the railroads to carry it from the mines. To a limited extent labor trouble adversely affected output, particularly in Alabama and West Virginia, where strikes were in effect throughout the greater part of the time, and in Illinois, Indiana, Ohio and central Pennsylvania, where there were temporary losses because of local strikes during the summer. These strikes, however, cannot be said to have decreased the production of the country as a whole, for when the mines at which the men were on strike did not operate, the cars were in use elsewhere. Likewise the mines that reported no market as a cause of non-operation in the last half of December were those properties which, because of high cost of production, were not in position to compete with lower-cost operations after prices fell to low levels. It is not at all unlikely that the total output was as great as it would have been in any event, despite the closing of these few properties.

An important cause of the failure of the fields in the East to attain as great an increase in 1920 as was realized by the country as a whole was the dislocation of open-top cars at the beginning of the year. During the miners' strike in November and December, 1919, thousands of open-top cars belonging to the roads serving the coal fields in the East were sent under load to the West, where complete stoppage of mining had taken place. These cars were many months in reaching home lines and in the first half of the year their absence seriously affected production in the East.

Price was an important stimulus to production in 1920. The effect on production of the extraordinary prices that obtained throughout the greater part of the year is difficult to appraise. The high prices were the direct cause of the opening of many small and usually inefficient mines—inefficient both in the use of labor and of transportation. The same or a greater output could doubtless have been obtained from a smaller number of mines working with the same total number of men and railroad cars. But it is equally evident that had it not been for the high prices there would not have been the nationwide interest in efforts to make the supply of transportation carry more coal. It was recognized by all that the cure for high prices was more tons of coal.

PRODUCTION OF BITUMINOUS COAL BY MONTHS, JANUARY TO NOVEMBER, 1920, IN NET TONS*

State	January	February	March	April	May	June	July	August	September	October	November	Total First Eleven Months, 1920
Alabama	1,740,000	1,409,000	1,565,000	1,419,000	1,520,000	1,540,000	1,594,000	1,484,000	1,359,000	1,568,000	1,595,000	16,792,000
Arkansas	221,000	179,000	204,000	151,000	176,000	197,000	209,000	207,000	188,000	210,000	212,000	2,153,000
Colorado	725 000	843,000	595,000	667,000	713,000	851,000	851,000	885,000	854,000	869,000	955,000	8,807,000
Illinois	8,760,000	7,575,000	8,721,000	6,580,000	6,520,000	7,866,000	6,435,000	7,734,000	8,074,000	9,009,000	9,104,000	85,737,000
Indiana	2,540,000	1,8[illegible],000	2,052,000	1,436,000	1,464,000	2,264,000	1,788,000	1,880,000	2,395,000	2,622,000	2,652,000	23,577,000
Iowa	877,000	787,000	850,000	731,000	694,000	775,000	650,000	685,000	688,000	817,000	806,000	8,360,000
Kansas	699,000	566 000	638,000	502,000	559,000	560,000	460,000	367,000	532,000	631,000	606,000	6,113,000
Kentucky	2,822,000	7,4[illegible],000	2,572,000	2,172,000	2,449,000	2,531,000	2,939,000	2,975,000	2,826,000	2,851,000	3,096,000	29,647,000
Maryland	301,000	217,000	366,000	310,000	304,000	290,000	364,000	375,000	395,000	292,000	393,000	3,706,000
Michigan	154,000	118,000	122,000	124,000	82,000	128,000	115,000	115,000	115,000	117,000	114,000	1,303,000
Missouri	564,000	484,000	547,000	423,000	469,000	449,000	457,000	438,000	478,000	485,000	463,000	5,258,000
Montana	506,000	405,000	367,000	358,000	285,000	336,000	361,000	453,000	375,000	457,000	486,000	4,387,000
New Mexico	317,000	275,000	314,000	258,000	251,000	280,000	282,000	297,000	297,000	302,000	323,000	3,196,000
North Dakota	84,000	63,000	58,000	54,000	40,000	44,000	49,000	67,000	62,000	74,000	95,000	691,000
Ohio	3,641,000	2,962,000	3,541,000	2,932,000	3,306,000	3,920,000	3,827,000	4,124,000	4,182,000	4,268,000	4,231,000	40,933,000
Oklahoma	405,000	338,000	327,000	314,000	315,000	316,000	324,000	337,000	302,000	338,000	357,000	3,673,000
Pennsylvania (bituminous)	13,761,000	11,323,000	13,435,000	11,019,000	11,030,000	13,120,000	13,676,000	15,501,000	15,042,000	15,842,000	15,052,000	148,801,000
Tennessee	639,000	488,000	551,000	487,000	517,000	563,000	558,000	553,000	490,000	586,000	593,000	6,024,000
Texas	149,000	110,000	104,000	121,000	126,000	140,000	142,000	139,000	100,000	113,000	118,000	1,362,000
Utah	271,000	473,000	482,000	319,000	375,000	480,000	517,000	479,000	449,000	455,000	516,000	5,291,000
Virginia	990,000	716,000	882,000	829,000	822,000	833,000	694,000	682,000	724,000	743,000	720,000	8,635,000
Washington	369,000	304,000	334,000	294,000	252,000	298,000	358,000	267,000	294,000	354,000	322,000	3,346,000
West Virginia	7,047,000	5,523,000	7,083,000	6,190,000	6,304,000	6,880,000	7,652,000	8,112,000	8,003,000	8,027,000	7,657,000	78,476,000
Wyoming	962,000	819,000	815,000	681,000	702,000	731,000	818,000	909,000	939,000	1,002,000	982,000	9,359,000
Other states (a)	11,000	10,000	12,000	10,000	11,000	11,000	10,000	10,000	9,000	11,000	11,000	115,000
Total bituminous	48,555,000	39,419,000	46,537,000	38,381,000	39,556,000	45,404,000	45,030,000	49,081,000	49,172,000	52,143,000	51,459,000	505,742,000

*Estimates by U. S. Geological Survey; subject to revision.
(a) Includes California, Georgia, Idaho, North Carolina, Oregon and South Dakota.

Had it not been for the evidence of tremendous demand afforded by the high price of coal, it is doubtful whether the Interstate Commerce Commission would have given absolute priority to coal in the use of that transportation.

Thousands of new coal mines were opened in 1920, but for the most part they have again closed, as the price has gone down. How much of the tonnage that was loaded and that figures in the statistics as coal actually was slate and dirt will never be known, but, as in 1917 and 1918, it is certain that the percentage was appreciable and that the total transportation wasted in hauling rock was a national loss. To this the smaller new operations were the heaviest contributors because they were in most instances "outcrop" mines and were not equipped to clean their product.

Of the service orders of the Interstate Commerce Commission, those relocating open-top cars—bringing the wanderers in the West back home in the East—ordering increased shipments to the Lakes and, of greater importance, those giving coal preferential use of open-top cars, were potent in increasing the production of soft coal. The Lake priority orders increased production because they provided for a shuttle movement between the mines and Lake Erie ports and thereby decreased car detention and provided potentially more cars for loading coal.

Distribution

Four different conditions affecting the distribution of bituminous coal may be roughly assigned to the four quarters of 1920. The first quarter was devoted to filling the gaps in supply left by the miners' strike of the previous year, the second quarter saw tremendous demand for free coal and every possible ton going to the highest bidder, followed by three months in which prices and distribution were brought under control, while finally in the last quarter of the year, supply having caught up with demand and fears of a shortage having been allayed, a pronounced drop in prices and to a small extent in production took place.

It is of primary importance in considering the subject of distribution of coal to have clearly in mind the difference between distribution as to sections of the country—that is, geographic distribution—and among classes of consumers—use distribution. The problems of furnishing coal to New England and the Northwest are examples of the first class and the problem of getting coal to the railroads and public utilities represents the second class. Under the system of control exercised by the Fuel Administration in 1918 and emulated by the Railroad Administration during the strike of 1919, the problem of geographic control of distribution was effected by the zones and distribution in regard to users was controlled by the priority lists.

Federal control of coal in 1920, and of course there was such control, was exercised by the Interstate Commerce Commission through its power over transportation and coal cars under the Transportation Act of 1920. A study of the service orders of the commission will show how these two kinds of distribution were affected. To force coal to New England and to the Lakes for the Northwest, orders were issued requiring minimum deliveries or consignments each day by the operators to these sections and enforcing the mandate by embargoing shipments from the mines until the respective minima had been fulfilled. In effect, the first cars to be loaded with coal at each mine in the fields affected were each day assigned either to the Lakes or to Tidewater for New England. The results sought were in each instance promptly attained and the plan worked after the first few weeks of tryout.

Particular Attention to Special Classes

However, to get coal to a special class of users in all parts of the country made necessary some other method of control. Whereas the coal forced to New England was for any and all consumers in that section, there were parts of the country where no such broad action was considered necessary but in which there were special users of coal who seemed to require particular attention. The most notable example of this were the public utilities in New York and other cities on the Atlantic coast.

The problem here was to pick out from current production additional and special supplies for particular consumers without attempting to increase the total movement to that section of the country. This was effected by extending to public utilities the privilege of assigned cars, already a prerequisite of the railroads for obtaining their coal. Service orders were promulgated by the Interstate Commerce Commission making provision for this, the method in detail requiring that utilities in need of coal for current consumption and unable to otherwise procure it, apply to the railroads and finally to the coal shippers for cars and coal assigned for this specific use. Because the lack of cars in which to load the coal was the only hindrance to getting all the coal required, it is patent that having cars assigned provided sufficient incentive to shippers to give coal to those to whom such cars were given.

Assigned-Car Privilege Abused

The privilege of assigned cars for public utilities and other public and semi-public consumers was withdrawn before the end of the season, mainly, it is understood, because of abuses in the practice. The plan was not so successful as that adopted for regional distribution and was opposed by the coal operators on general principles and was favored just as much by those who were the beneficiaries.

The West, Middle West and the South have demon-

BITUMINOUS COAL AND LIGNITE PRODUCED IN THE UNITED STATES, 1916–1918, WITH ESTIMATES FOR 1919 AND 1920, BY GROUPS OF STATES

	(In Thousand of Net Tons)					—Increase 1920— Over 1919	
	1916	1917	1918	1919	1920	Tons	Per Cent
Pennsylvania, Maryland, West Virginia, Virginia, Eastern Kentucky, Ohio and Michigan	324,493	333,416	351,342	288,250	332,148	43,898	15.2
Tennessee, Alabama	24,223	26,262	26,016	20,380	25,178	4,798	22.5
Illinois, Indiana, Western Kentucky	94,110	122,976	130,791	94,600	131,009	36,409	38.5
North Dakota, South Dakota, Iowa, Missouri, Kansas, Oklahoma, Arkansas and Texas	27,119	31,507	31,451	23,340	29,707	6,367	27.6
Colorado, Montana, Wyoming, Utah and New Mexico	29,388	33,411	35,539	28,240	34,634	6,394	22.6
Washington	3,039	4,010	4,082	3,100	3,324	234	0.8
Total	502,282	551,582	579,221	458,000	556,000	98,000	21.0

strated through the troublous past four years an ability, both as regards mine capacity and railroads, to take care of their normal markets. Any large dislocation in production and distribution, excepting of course those arising from major strikes of labor, comes in the coal fields of the middle and northern Appalachian regions—that is, from southern West Virginia north to and including Ohio and Pennsylvania. The coal fields in this area, from which comes nearly three-quarters of the total bituminous coal output of the country, not only are the source of supply for markets immediately adjacent, as in Pennsylvania and New York on the east and Ohio on the west, but these same fields must also meet the requirements of the Northwest, to which they ship via the Great Lakes; New England, to which coal is shipped all rail from Pennsylvania fields and by rail and water from fields further south, and as well the requirements of ocean shipping for bunkers and foreign countries for cargo coal. In other words, the largest coal fields are large exporters of coal—to New England by rail, to the Northwest by way of the Lakes and to Atlantic Tidewater ports for a number of uses. In addition to these three major movements, there are insistent demands for coal from these fields for consumers in Michigan, Ohio, Indiana and, closer by, from Virginia.

The variety and magnitude of the demands on the coal fields of the northeastern United States make it plain why trouble is first encountered there and why so much effort was necessarily expended on this area in 1920. It was shown early in the summer that the deficiency of production in the fields from West Virginia north was at least 5,000,000 tons per month and that no measure of arbitrary distribution would meet the situation of impending shortage unless production in these fields was increased, and increased without materially decreasing that in other fields. How that was accomplished is illustrated by the following figures:

ESTIMATED PRODUCTION AND DISTRIBUTION OF BITUMINOUS COAL BY MIDDLE AND NORTHERN APPALACHIAN FIELDS, BY MONTHS, JANUARY TO NOVEMBER, 1920
(In Net Tons)

Month	Production	Shipped to Lake Erie Ports	Shipped to Tidewater	Shipped to New England and Canada by Rail and Used as Railroad Fuel in East	Balance for Consumption in Immediately Adjacent All-Rail Markets and for Coke Making	Per Cent of Total Output Available for Local Markets
January.....	27,754,000	.....	3,185,000	5,771,000	18,798,000	68.0
February....	22,468,000	.....	2,899,000	5,663,400	13,905,600	62.0
March.....	24,727,000	.....	3,965,000	5,972,000	14,790,000	59.5
April.....	22,852,000	377,500	4,056,000	5,958,000	12,460,500	54.5
May.....	20,510,000	1,272,000	4,436,000	5,935,500	8,865,000	43.0
June.....	26,869,000	2,221,000	4,699,000	5,989,000	13,959,800	52.0
July.....	28,288,000	2,857,500	4,915,000	6,747,500	13,768,000	48.6
August.....	30,893,000	4,601,700	5,352,000	6,701,800	14,237,500	46.0
September...	30,345,000	4,138,500	5,447,000	6,207,000	14,552,500	48.0
October.....	31,189,000	4,693,800	5,786,000	6,804,000	13,905,200	45.0
November...	30,268,000	3,504,100	4,784,000	6,705,000	15,274,900	50.0
Totals for 11 mos..	296,163,000	23,667,000	49,524,000	68,454,200	154,517,800	52.0

New England and the Northwest each had their coal problems in 1920, and for each a solution was found before the depression in business late in the year removed the great demand for fuel in these sections. Elsewhere in this issue both are fully and authoritatively discussed and but passing mention of them will be made in this review.

New England guessed wrong at the beginning of the year and had not definite and comprehensive steps been taken in her behalf by the Federal Government she would have had difficulty in getting the coal required without paying very highly for it. Consumers in New England have much to learn about the shifts that have taken place in the coal trade in the last four years, and until they approach their problem with more open minds and fuller recognition of their changed relations to the rest of the world in respect to bituminous coal, they will have trouble.

The Northwest, in particular the dock operators, is in a peculiar position in that a considerable portion of the coal used in that large section comprising the States of Minnesota, Wisconsin, North Dakota and parts of South Dakota and Iowa must be purchased and moved in the summer time, stored on the docks at the head of the Lakes and doled out during the cold weather. In the past, prior to the war, coal was cheapest in the summer time and the operators of the docks always were able to obtain their winter's supply, usually more than 20,000,000 tons, at very reasonable prices and could sell it to their customers at prices netting them a nice profit.

When coal reaches its highest price in the summer time, as in 1917 and 1920, however, the dock men are at a disadvantage. They pay high prices for what they get, and the following winter, when the rest of the country is enjoying lower prices, they must either pass on what they have in storage at high prices or accept a loss. As their customers have no other adequate source of supply, it can be assumed that they voluntarily pocket no loss.

The theory on which the Lake trade has been built up was overturned in 1920. For instance, there is the matter of contracts. It does not appear to have been the custom for those who ship coal to lower Lake Erie ports to enter into even the usual form of coal contract with the dock buyers, because it usually has been so easy to obtain coal in the summer months for the Lake trade. The Lake outlet in the off season of summer enjoyed by Eastern operators has been observed with envious eyes by coal producers in the Middle West. Simple agreements to ship "what I may have available," at a price to be determined later, were this year magnified by some of the Northwest buyers and the Calder committee to read as hard-and-fast contracts and there has been much acrimonious debate because the shippers did not so construe them during the past season.

Buyers Enter Market Early This Year

That those who are responsible for getting the coal for the docks are aware of this is evidenced by the fact that this year they are in the coal fields six weeks earlier than ever before, taking advantage of the present low prices, making, or rather trying to make, contracts for cargo coal for the Northwest for the season of 1921.

All records for shipments of soft coal to the Atlantic Tidewater ports were broken in 1920. Compared with the previous maximum of nearly 43,000,000 net tons delivered over the North Atlantic piers in 1918, the figures for the first eleven months of 1920 exceed 49,500,000 net tons and the total for the year is estimated at more than 53,000,000 tons. In the five months July to November inclusive Tidewater dumping at these ports were at the rate of 63,000,000 net tons per year, and in October it was at the rate of more than 69,000,000 tons. For the first time export cargo exceeded every other item with a total in eleven months of more than 20,000,000 net tons. Exports off shore in 1917 were 5,500,000

net tons, or about one-fourth what they were in 1920. In 1918, because largely restricted, exports by water were but 3,700,000 tons, and in 1919 the record was the highest attained to that date—8,292,000 net tons. In the five months July to November inclusive, 1920, exports from the four North Atlantic ports were at the rate of 28,000,000 net tons per annum and in October at the rate of nearly 35,000,000 tons. Hampton Roads is the most important loading port for export cargo coal and in the period from the beginning of May to the end of the year 1920 the daily average was 50,000 net tons or at the rate of 1,250,000 tons per month or 15,000,000 tons a year.

TIDEWATER BITUMINOUS COAL SHIPMENTS AT CHARLESTON, HAMPTON ROADS, BALTIMORE, PHILADELPHIA AND NEW YORK, ELEVEN MONTHS ENDED NOV. 30, 1920
(In Net Tons)

Months	Coastwise to New England	Exports	All Others	Totals
January	804,000	897,000	1,484,000	3,185,000
February	793,000	718,000	1,388,000	2,899,000
March	954,000	1,033,000	1,978,000	3,965,000
April	717,000	1,903,000	1,436,000	4,056,000
May	776,000	1,942,000	1,718,000	4,436,000
June	772,000	2,175,000	1,752,000	4,699,000
July	1,006,000	2,081,000	1,828,000	4,915,000
August	1,048,000	2,295,000	2,009,000	5,352,000
September	1,108,000	2,332,000	2,007,000	5,447,000
October	889,000	2,911,000	1,986,000	5,786,000
November	792,000	2,063,000	1,929,000	4,784,000
Total for 11 months	9,659,000	20,350,000	19,515,000	49,524,000
1919	8,385,382	8,292,414	20,384,120	37,061,817
1918	15,248,129	3,740,750	23,919,641	42,908,522
1917	12,268,470	5,515,634	20,484,862	38,268,966

Consumption

Rate of consumption of coal is the important factor in the situation over which the coal operators and the railroads have no control. The railroads are the largest individual consumers of coal but their consumption is proportional to the freight that is offered. The rate at which coal is burned varies with the relative prosperity of industry and with the weather. Demand, as differing from consumption, is consumption plus or minus the quantity of coal that is put into or taken from consumers' storage and plus the difference between exports and imports.

Production in the period of a year is an approximate, rough measure of demand. To determine the quantity consumed in any period it is necessary to know also the extent of stocks at the beginning and end of the period. On the basis of such data as are available it is estimated that the consumption of bituminous coal in 1920 was 490,000,000 net tons, compared with 480,000,000 tons consumed in 1919, 525,000,000 tons in 1918, 502,000,000 tons in 1917 and 494,500,000 tons in 1916—that is, in respect of coal burned in the United States it appears that 1920 was about on a par with 1916. The difference in production in the two years, about 54,000,000 tons, is accounted for in the greater exports last year and the fact that in 1916 stocks were 11,000,000 tons less at the end of the year than at the beginning, whereas in 1920 about 21,000,000 tons were added to consumers' storage. In 1916 total exports both by land and water less imports were, in round numbers, 19,000,000 net tons, compared with more than 39,000,000 in 1920.

Prices

New high records in spot prices for both bituminous coal and anthracite were set in 1920. Emerging from a severe winter following the six-weeks miners' strike, during which production was cut more than two-thirds, the stock piles of the country were the lowest of any record. No sooner had the prices fixed by the government been lifted than consumers began to bid strenuously for coal, and under the impulse of this competitive bidding prices rose from an average of $2.50 to $9.50 in the middle of August. In this issue of *Coal Age* are given in graphic form the curves of spot prices of bituminous coal in eighteen fields. The range is considerable but the weighted average in the second week of August, when most prices were the highest, was $9.56 per net ton at the mines for run of mine. The weighted average spot price from April to the end of the year was $6.30. The weighted average contract price, considering not only those contracts dated in 1920 but those of the earlier date, is estimated at $3.25. If it be assumed that one-fourth of the output was sold at the average spot price and that the remainder moved on the average contract figure it is found that the average realization was $4 per net ton at the mines. The total value of the soft coal produced in 1920, based on this assumption, was $2,225,000,000, compared with $1,491,000,000 for the 579,000,000 tons produced in 1918. This represents an increase in value at the mines over the war year of $734,000,000, of which mine labor received in increased wages and bonuses not less than $234,000,000 and the producers $500,000,000.

In the accompanying diagram the current quotations on spot sales as reported in *Coal Age* from week to week in 1920 are reduced to one figure for all fields, properly weighted according to the relative tonnage from each, and in turn reduced to relatives by weeks compared with the average government prices, taken as one hundred. Thus, starting at 100 on April 1, the index number of spot prices of bituminous coal as quoted for eighteen fields rose by the second week in August to 372, which means an increase of 272 per cent. At the end of the year spot prices had fallen until they wereb ut 28 per cent above the average government maximum in effect during the last of 1918, despite the fact that labor and other costs mounted in 1920 at least 40 per cent.

Some indication of what coal cost the consumers in 1920 is found in statistics compiled by the Interstate

DESTINATION OF COAL DUMPED OVER TIDEWATER PIERS AT HAMPTON ROADS, BY WEEKS, 1920
(In Net Tons)

	Coastwise to New England (a)	Exports (a)	Bunker (b)	All Other (c)	Total Dumped
May, weekly average	109,000	253,000	71,000	51,000	448,000
June, weekly average	114,000	295,000	79,000	20,000	508,000
Week ended:					
July 3	146,000	299,000	59,000	4,000	508,000
July 10	149,000	295,000	71,000	11,000	526,000
July 17	108,000	262,000	65,000	10,000	445,000
July 24	148,000	332,000	67,000	6,000	553,000
July 31	136,000	392,000	68,000	8,000	604,000
Aug. 7	134,000	326,000	75,000	12,000	547,000
Aug. 14	116,000	358,000	71,000	6,000	551,000
Aug. 21	141,000	312,000	60,000	18,000	531,000
Aug. 28	166,000	308,000	53,000	13,000	540,000
Sept. 4	125,000	273,000	48,000	21,000	467,000
Sept. 11	98,000	237,000	54,000	16,000	405,000
Sept. 18	106,000	286,000	54,000	43,000	489,000
Sept. 25	143,000	328,000	79,000	22,000	572,000
Oct. 2	104,000	354,000	68,000	18,000	544,000
Oct. 9	92,000	237,000	75,000	16,000	520,000
Oct. 17	97,000	333,000	78,000	11,000	519,000
Oct. 24	79,000	340,000	83,000	26,000	528,000
Oct. 31	66,000	361,000	114,000	6,000	547,000
Nov. 7	109,000	214,000	55,000	28,000	406,000
Nov. 14	78,000	309,000	84,000	4,000	475,000
Nov. 21	83,000	286,000	67,000	5,000	441,000
Nov. 28	101,000	257,000	63,000	39,000	460,000
Dec. 5	106,000	223,000	98,000	27,000	454,000
Dec. 12	114,000	233,000	55,000	3,000	405,000
Dec. 19	115,000	189,000	75,000	17,000	396,000

(a) Cargo coal only. A small amount of other coastwise coal is included. (b) All bunker, whether foreign or domestic. (c) Includes coal used inside Capes and other local and coastwise tonnage coal for the Navy and for Panama.

Relative spot prices of bituminous coal in United States 1920. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.

Commerce Commission of quantity and cost of coal consumed by certain large railroads in locomotive service. However, as these data on costs include freight as well as the mine price of the coal, the figures are of value only as they give comparisons as between months and years. In the four months July to October, 1919, inclusive, for which the data are available, the range in average cost per ton for all roads was 5c. In the same months of 1920 the average cost of the coal used by the railroads reporting to the Interstate Commerce Commission ranged from $4.25 in July to $4.77 in October. Preliminary figures for November show a decrease to $4.70.

Cumulative average cost of 93,620,000 net tons consumed in the first ten months of 1920 was $4.05, compared with $3.24 per ton in the same period of 1919. It is significant of the change in the market in the two years that in 1919 average costs in the months of July to October were less than the cumulative for the year, but in 1920, because of rising prices, average monthly costs after June were well above the average for the year to date. Despite the high spot prices in 1920, the railroads were able to obtain their coal at an average increase of but 75c. per net ton over 1919.

The story of how and why prices rose and fell in 1920 is too well told in the pages that follow to require recital here. As the new year begins the coal industry, like other business in the United States and all over the world, is marking time awaiting the expected and hoped-for resumption. Just as no one was able in January a year ago to foretell the marvelous record for both tonnage and profits of the coal industry in 1920, so no one can see ahead to what 1921 holds in store.

La Follette Committee Considers Calder Coal Bill

HEARINGS were announced for Tuesday, Wednesday and Thursday, Jan. 18, 19 and 20, by the Senate Committee on Manufactures to consider Senator Calder's coal bill. This action followed a meeting of the Manufactures Committee on Saturday, Jan. 15, at which it was decided to confine the hearings to a few days in view of the fact that the Calder Committee had considered the matter and also that the committee investigated the coal industry in 1918.

At the Saturday session W. T. Chantland, one of the assistants of the Calder committee, presented to Senator La Follette's committee the testimony on coal taken by the Calder committee, and explained the purposes of the bill section by section.

Any interested parties appearing will be heard, and it is expected that among the witnesses will be Dr. Garfield, former Fuel Administrator. Prior to the public hearings, however, the committee called in A. G. Gutheim, of the American Railroad Association, to obtain his views on the legislation.

PRIORITY IN TRANSPORTATION of navy coal from Pennsylvania and Maryland fields was suspended, effective Jan. 15. In cancelling its Service Order No. 19 the Interstate Commerce Commission stated that the Secretary of the Navy had certified that the order no longer is necessary.

Average Cost Per Net Ton, Including Freight, of Coal Consumed by Locomotives in Road Service

(As reported by the Interstate Commerce Commission)

Region	Month — 1919 — July	Aug.	Sept.	Oct.	1920 — July	Aug.	Sept.	Oct.
New England	$5.26	$5.01	$5.30	$5.59	$9.49	$9.57	$8.84	$7.84
Great Lakes	3.12	3.05	3.27	3.34	4.33	4.58	5.23	4.32
Ohio, Indiana—Allegheny	2.50	2.64	2.75	2.75	3.92	4.28	4.24	3.71
Pocohontas	2.45	2.65	2.59	2.62	4.06	4.48	4.38	3.62
Southern	3.06	3.02	2.91	3.14	3.97	4.42	4.15	3.78
Northwestern	3.75	3.72	3.43	3.70	4.38	4.79	4.43	4.22
Central Western	2.98	3.01	2.85	2.97	3.51	3.57	3.57	3.43
Southwestern	3.45	3.34	3.32	3.47	3.77	4.48	4.39	4.08
ALL REGIONS	3.12	3.11	3.10	3.24	4.25	4.56	4.54	4.05

Region	Cumulative from Beginning of the Year — 1919 — July	Aug.	Sept	Oct.	1920 — July	Aug	Sept.	Oct
New England	$5.82	$5.76	$5.67	$4.99	$7.38	$7.75	$7.72	$9.21
Great Lakes	3.40	3.35	3.35	3.25	4.00	4.07	4.20	5.28
Ohio, Indiana—Allegheny	2.77	2.75	2.76	2.74	3.40	3.59	3.62	4.54
Pocohontas	2.60	2.60	2.60	2.81	3.26	3.42	3.52	4.46
Southern	3.24	3.20	3.15	3.00	3.51	3.58	3.69	4.52
Northwestern	3.86	3.83	3.49	3.63	4.07	4.18	4.04	4.86
Central Western	3.04	3.03	2.97	2.94	3.37	3.39	3.38	3.82
Southwestern	3.54	3.49	3.47	3.40	3.93	4.01	4.08	4.36
ALL REGIONS	3.32	3.28	3.21	3.16	3.80	3.91	3.95	4.77

AS THIS ISSUE OF *Coal Age* goes to press no effort has been made on the floor of the Senate to have consideration of the Calder bill transferred from La Follette's Committee on Manufactures to the Frelinghuysen committee. Strenuous efforts are being made by the Calder faction to railroad his bill through the Senate and it is authoritatively learned that every preparation has been made to report out a special rule in the House which will give the bill special consideration and limit debate thereon to two hours. Should the bill pass the Senate there is no doubt but that it will also pass the House.

THE MEETING OF those interested in the formation of a Tidewater Coal Exchange at Charleston, S. C., which was to have been held in Knoxville, Tenn., on Jan. 28, 1921, has been postponed until Feb. 4, 1921.

Complex Features of 1920 Lake Traffic in Coal

While Shipments Were Nearly Seven Million Tons Short of Estimated Requirements, Increase in All-Rail Movement, Aided by Mild Weather, Industrial Depression and Priority Orders, Satisfied the Demand

By William A. White

LAKE coal traffic for the 1920 season of navigation totaled 23,667,138 net tons, of which 22,408,355 tons was cargo coal. With the official ending of the Lakes season, Nov. 24, the Northwest's main source of coal supply was practically closed, but, as in other years, vessel movement continued well into the month of December. A review of the season proves interesting because of the national interest in the fuel situation in the Northwest and the alleged inadequacy of stocks on the docks for the winter of 1920-1921.

Requirements for both Canada and that portion of the United States dependent on its coal supply via the Lakes amounted to 28,000,000 tons of cargo coal in 1918 as against approximately 27,000,000 tons in 1913 and 1917, the previous high records. The bituminous carry-over on the docks from the season of 1918 was about 2,000,000 tons. April, 1920, however, saw less than 800,000 tons stored on the Lake docks, due to the lighter shipments in 1919. This indicated a need of 1,600,000 additional tons of cargo to be carried up during the season of 1920; therefore the goal was set for 30,000,000 tons for the season.

Mild spring weather prompted an early start for the season, but so great was the call for coal after government control was removed, April 1, that little Lake business other than the seasonal contracting by producers with dock affiliations was transacted for the first sixty days. In fact, dumpings at Lake ports up to May 31 amounted to but 1,650,222 tons, one-third as much tonnage as moved in the same period of 1919. By the end of July less than 7,000,000 tons had been shipped, not more than half the dumpings of 1919 to that date.

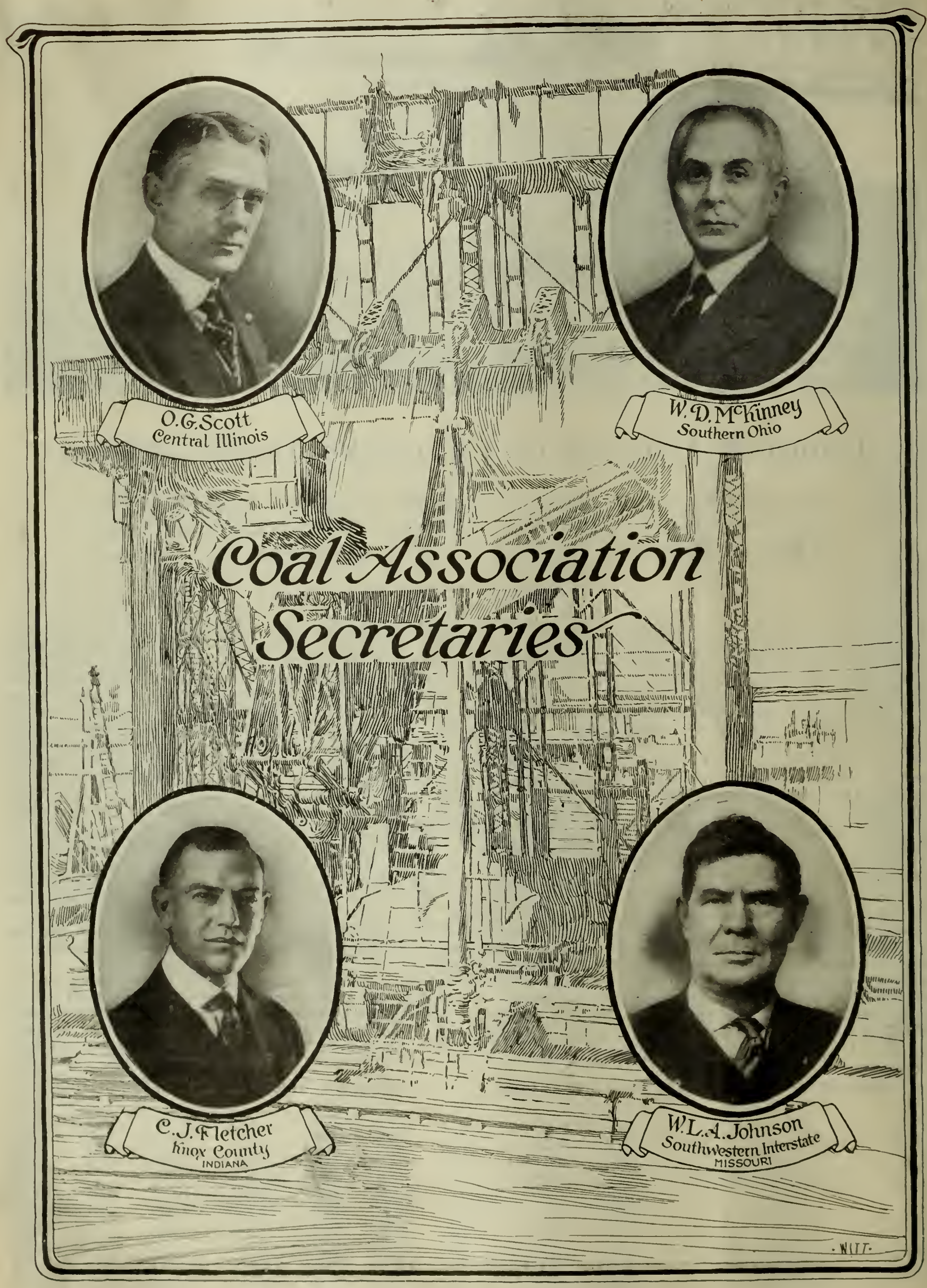
The Northwest became alarmed and when coal could not be had except at extremely high prices it was urged that steps be taken to insure a coal supply for the Northwest. The Interstate Commerce Commission, by Service Order No. 10, issued on July 20, effective July 26, established preference and priority in the supply of cars for the transportation of bituminous coal for the Northwest. The order provided that after a certain percentage of each day's mine loadings had been billed to the Lakes the remainder might be shipped elsewhere. The percentage from each originating field was determined by H. M. Griggs, manager of the Ore & Coal Exchange, appointed special agent of the commission for that purpose. It was hoped that in this way a movement of 4,000 cars per day could be attained, which would offset the delayed program and more than make up the shortage which had accrued by Aug. 1.

The effect of Service Order No. 10 was to boost the spot market on the heavy tonnage that was being forced to the Lakes. Prior to its issuance,

Bituminous Coal Loaded Into Vessels at Lake Ports as Dumped by Docks for the Season of 1920

(In Net Tons)

Ports	Railroads	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total	1918 Cargo	1918 Fuel	1918 Total
Toledo	Hocking Valley	3,930,269	93,095	4,023,364	4,276,148	119,024	4,395,172	4,991,658	144,130	5,135,788
	Toledo & Ohio Central	1,729,894	65,695	1,795,589	1,159,908	33,925	1,193,833	2,123,001	54,910	2,177,911
	Baltimore & Ohio	1,619,875	44,804	1,664,679	2,293,513	53,888	2,347,401	2,960,128	64,930	3,025,058
Sandusky	Pennsylvania	1,604,305	26,542	1,630,847	1,407,263	34,765	1,442,028	2,389,150	59,107	2,448,257
Huron	Wheeling & Lake Erie	1,864,527	93,919	1,958,446	1,437,640	50,876	1,488,516	2,094,324	75,403	2,169,727
Lorain	Baltimore & Ohio	3,276,539	211,643	3,488,182	2,720,541	150,909	2,871,450	3,342,681	92,313	3,434,994
Cleveland	Pennsylvania	1,221,955	180,335	1,402,290	2,234,951	249,693	2,484,644	2,547,479	292,898	2,840,377
	Erie	437,653	19,234	456,887	305,977	9,904	315,881	670,322	22,814	693,136
Fairport	Baltimore & Ohio	.....	.....	.....	16,692	12,954	29,646	271,148	46,436	317,584
Ashtabula	New York Central	1,641,732	274,396	1,916,128	1,667,048	149,965	1,817,013	1,954,276	211,312	2,165,588
	Pennsylvania	1,942,021	101,706	2,043,727	1,955,796	100,982	2,056,778	1,451,089	82,371	1,533,460
Conneaut	Bessemer & Lake Erie	2,405,884	41,076	2,446,960	1,372,321	10,398	1,382,719	2,212,947	32,945	2,245,892
Erie	Pennsylvania—West	284,860	27,850	312,710	702,242	43,322	745,564	679,766	39,155	718,921
	Pennsylvania—East	448,841	78,488	527,329	163,301	16,446	179,747	465,348	16,201	481,549
Totals		22,408,355	1,258,783	23,667,138	21,713,341	1,037,051	22,750,392	28,153,317	1,234,925	29,388,242


O.G.Scott
Central Illinois
W.D.McKinney
Southern Ohio
Coal Association
Secretaries
C.J.Fletcher
Knox County
INDIANA
W.L.A.Johnson
Southwestern Interstate
MISSOURI

the meager shipments for the Northwest were mostly on contract at a range of $3.25@$3.75 per net ton f.o.b. mines. Lake prices immediately paralleled quotations for other markets and forced the general market price range still higher. Speculators entered the market in an attempt to take advantage of the situation by buying up coal forcibly diverted to this market.

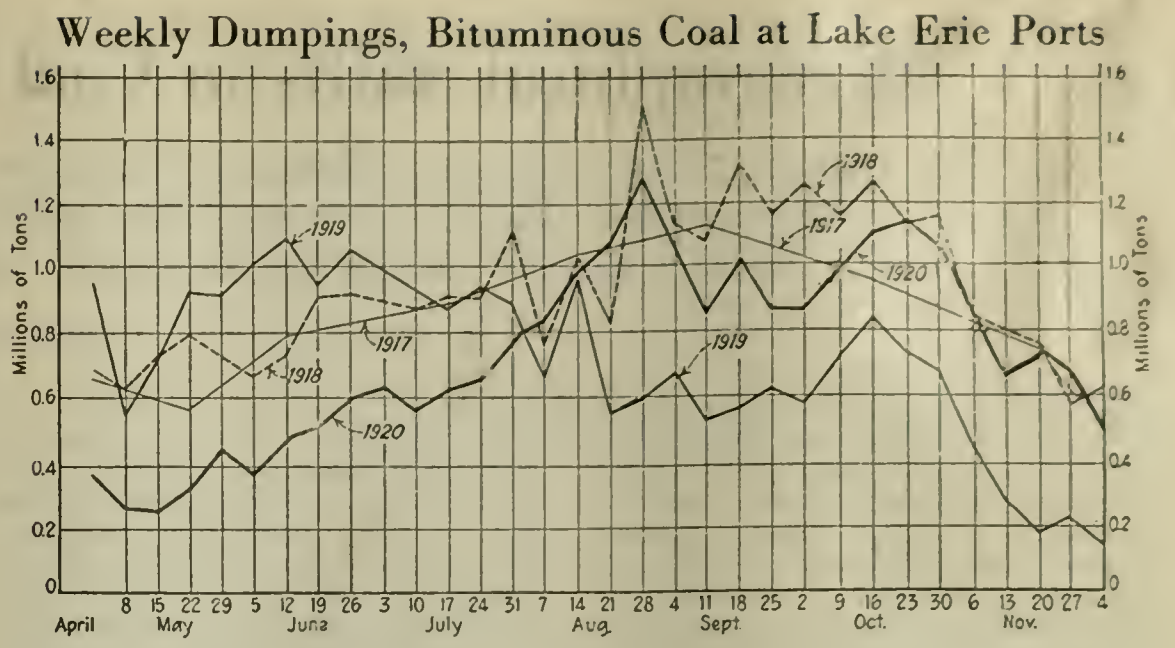
Under the stimulus of the priority order, loadings increased steadily, the peak being reached for the week ended Aug. 28, when 1,262,868 tons of cargo and fuel coal were dumped into Lake vessels. From that week on the dumpings fluctuated but the trend was downward, as shown in the accompanying chart, following a general market decline from earlier high-price levels. Northwest dock interests were well stocked with mine run by the latter part of the season of navigation, but were in the market for lump sizes. However, price again was the deterrent to a heavy movement. Dock companies were hesitant about stocking coal at prices they felt would be out of line with the winter market at the upper ports. As the market declined so did their orders until it was necessary in October to place embargoes in several districts against shipments to the Lakes.

On Oct. 27 Service Order No. 10 was indefinitely suspended by the Interstate Commerce Commission, it having become apparent that the Northwest could not absorb the heavy movement of coal allotted to it and that tonnage was rapidly accumulating at the lower ports. From that date until the close of navigation shipments steadily declined, being almost entirely on contract obligations. Every effort was made to press tonnage on the docks, a straggling movement extending almost through the month of December, with an unusual number of storage boats sent up just before winter locked the Lakes. There was no life to the demand, however, and producers found the dull Inland market reflected in the difficulty to place late shipments of spot coal via the Lakes.

All-rail coal from the Middle Western fields moves to the Northwest throughout the year, largely for railroad fuel, supplementing to the extent of some 3,000,000 tons the supply loaded off the docks. This year, because of inability to maintain the Lake schedule, several railroads of the Northwest increased their contracts for Indiana and Illinois all-rail coal and thus reduced their requirements for dock coal by an amount estimated at 3,000,000 tons. Some gas and electric concerns also have gone into the all-rail fields for a considerable tonnage.

Just how the dock interests will emerge in the spring of 1921 remains a question. It would seem as if their limited stocks should all be absorbed before that time, yet the possibilities of severe competition from the all-rail trade, extended into a further stretch of territory, may cut down the consumption of dock coal. The high prices ruling on dock coal have already provided a wider field for the sale of all-rail coal and with prices of Illinois coal again at low levels still sharper competition is offered. This will compel a reduction in dock prices or limit sales and the market promises to be very easy as long as mild weather continues.

At any rate a coal shortage in the Northwest has been averted. Lessened industrial consumption, curtailed domestic use caused by an unseasonable autumn and diversion of supply to all-rail sources have all contributed to relieve the tension. Despite the promising situation, however, there are many coal men who feel that the Eastern mining companies affiliated with dock interests did not live up to implied obligations to Northwestern consumers.



Shippers' Part in High Prices

In serving the Northwest through many years the dock interests had implied a continuous service through the winter which their customers had a right to consider a recognized obligation. Hence, to the extent that they diverted a portion of their usual tonnage to other markets and left their affiliated concerns at the head of the Lakes with a curtailed supply by so much did they fail to live up to this implied obligation. Instead of seeking large profits elsewhere in the temporary emergency, it is argued, they should have taken care of the Northwest. If this had been done, it is asserted that the percentage of high-priced spot coal up the Lakes would have been greatly reduced. The average dock price for coal would likewise have been lowered, placing it more nearly in competition with the all-rail fuel purchased after the wild scramble for coal had ceased and prices had resumed more reasonable levels.

During the 1920 Lake season, which ended Dec. 13, 22,408,355 tons of bituminous cargo coal were forwarded to various American and Canadian points, the Geological Survey reports. Statistics furnished by the Ore & Coal Exchange show that of this amount 5,931,418 tons went into Canada. The proportion of the total shipped to Canadian destinations—26.5 per cent—was greater than in either 1918 or 1919, indicating that Canadian purchasers received their full share of the 1920 movement. Shipments to American ports on Lakes Superior and Michigan decreased both absolutely and relatively, while to Port Huron and Detroit River points a market increase was made, bringing the proportion of the total for those ports up to nearly 4 per cent.

DESTINATION OF CARGO COAL DUMPED AT LAKE ERIE PORTS DURING THE SEASONS OF 1918, 1919, AND 1920

Destination	1918 Net Tons	1918 Per Cent	1919 Net Tons	1919 Per Cent	1920 Net Tons	1920 Per Cent
American:						
Lake Superior ports	12,726,910	45.2	9,425,770	43.4	9,330,287	41.6
Sault Ste. Marie Pt. and River points	587,811	2.0	350,341	1.6	562,494	2.5
Lake Huron-Georgian Bay ports	406,768	1.5	303,160	1.4	213,431	1.0
Lake Michigan ports	7,406,926	26.3	6,680,180	30 7	5,459,519	24.3
Port Huron and Detroit River.	467,489	1.7	347,972	1.6	846,219	3.8
Lake Erie ports	131,683	0.5	72,856	0.4	64,987	0 3
Total American	21,727,587	77.2	17,180 279	79.1	16,476,937	73.5
Canadian:						
Lake Superior ports	2,152,326	7.7	1,580,642	7.3	1,965,052	8.8
Sault Ste. Marie Pt. and River points	1,143,096	4.1	810,796	3 7	1,092,428	4.9
Lake Huron-Georgian Bay ports	1,196,065	4.2	740,529	3.4	1,006,208	4.5
Port Huron and Detroit River.	537,939	1.9	364,055	1.7	442,751	2.0
Lake Erie ports	29,238	(a)	49,393	0 2	9,678	(a)
Lake Ontario and St. Lawrence River	1,367,066	4.9	987,647	4.6	1,415,301	6.3
Total Canadian	6,425,730	22.8	4,533,062	20.9	5,931,418	26 5
Grand total	28,153,317	100.0	21,713,341	100 0	22,408,355	100 0

(a) Less than two-tenths of 1 per cent.

Geographical Shifts in Coal Production*

Industry Marches Steadily Westward, Production Center Now Being in Western Ohio—Between 1890 and 1920 Coal Production Increased 4.3 Times — Eastern Kentucky Increased Output Thirteenfold

By F. G. Tryon† and W. F. McKenney‡

THE beginning of a new year is the customary time for taking stock of the past and laying plans for the future. The history of the tumultuous year 1920 is being reviewed by every organ of the coal trade. By many the new year is hailed as the turning point in the history of coal in America, the point at which the industry, having struggled through five years of rough going, marked by an extraordinary war demand, the restraints of government regulation, and the inevitable period of readjustment, sets its face toward an era of tranquillity and steady progress. At such a time it is in order not merely to recall the events of the war period but also to look back over the road traversed by the industry in the past thirty years and thereby to see a little more clearly whither the path before us is trending. To one phase of this task of retrospection the present article is addressed, namely, shifts in centers of coal production and the relative rates of growth in the larger fields.

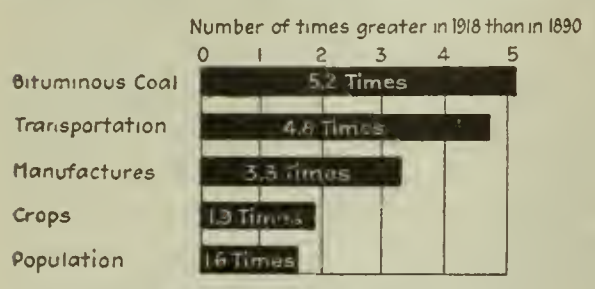


DIAGRAM I. OUR INCREASING DEPENDENCE ON COAL

We often say "coal is basic," but we ought to say also "coal is getting more basic." The diagram shows that production of soft coal increased more than fivefold from 1890 to 1918, or more than population and more than the volume of farm products, of manufactures, or of transportation.

In the early years of the nineteenth century coal production followed the maxim "Westward the course of empire takes its way." Starting with a few tons of anthracite mined in Pennsylvania in 1807, the industry began its westward march, entering what is now West Virginia and Kentucky in the twenties, reaching Ohio and Illinois in the thirties, and in the early forties crossing the Mississippi and moving at the same time in another direction into the Southern Appalachians. Development in the Puget Sound region and the Northern Interior field at Michigan began just before the Civil War. The enormous reserves of the Rocky Mountains, however, remained untouched until the close of the Civil War. The baby in the ranks of coal producers is North Dakota, which first reported commercial output in 1884.

Since that date, while indeed new fields have been opened up in several states, there has been no significant addition to the ranks of coal-producing states.

Center of Production and Resources

In its westward movement coal production followed the path of the geographical center of population, which, beginning at a point just east of Baltimore in 1790, moved westward at the rate of about forty-five miles per year until in 1910 it was at the town of Bloomington, in Southern Indiana. Whither it has moved in the last census period the Bureau of the Census has not yet informed us, but there are many who infer that the development of war business in the Northeast has arrested for a time its westward march.

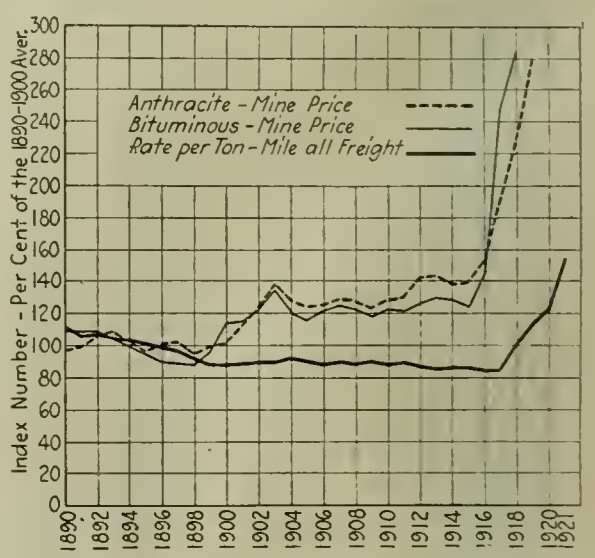


DIAGRAM III. COAL COSTS AND TRANSPORTATION COSTS

The cost of transportation, as indicated by average receipts per ton mile of all revenue freight, decreased in general from 1890 to 1916, while the cost of coal at the mine increased. Even the increase in rates during the war period has been smaller than the rise in mine prices. To facilitate comparison figures are expressed in terms of per cent of the 1890-1900 average.

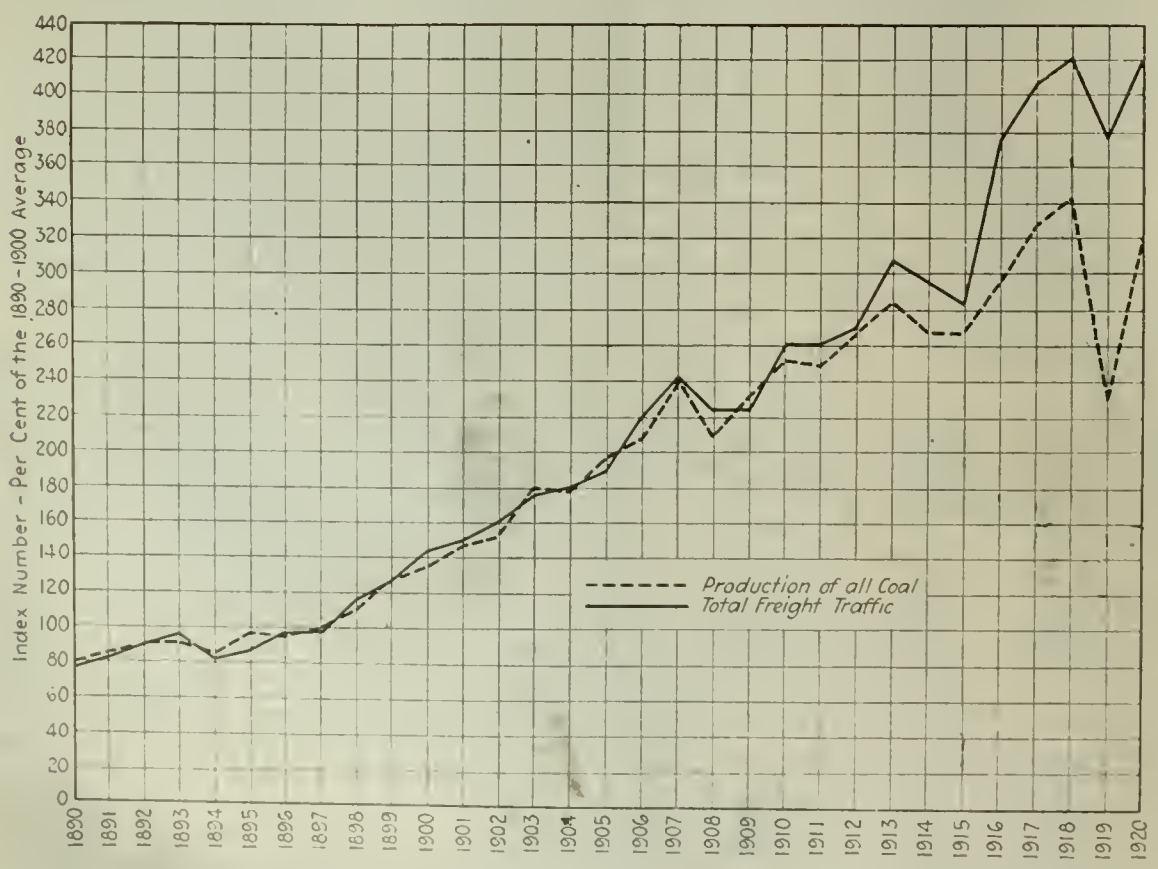


DIAGRAM II. GROWTH OF COAL OUTPUT AND OF VOLUME OF TOTAL FREIGHT TRAFFIC

To compare such unlike things as tons of coal produced and volume of traffic requires a common denominator, provided in this case by expressing the record for each year in terms of per cent of the average for 1890-1900. Coal output is for calendar years throughout, volume of traffic for fiscal years except for 1916-1919.

The movement of the center of population has, however, outstripped the westward migration of the center of coal production. As ascertained by Mr. Horton, of the Geological Survey, the center of coal output in the United States is in western Ohio, not far from the town of Urbana. The "center of coal production" is a mathematical conception, but it has some significance even to the practical coal man. It means that if all of the coal mined in a year were piled up on a great map at the point where it is obtained, and the map balanced on a point so that it would tip neither to one side or the other, the point would have to be located near Urbana. It is significant that the center of power demand, prob-

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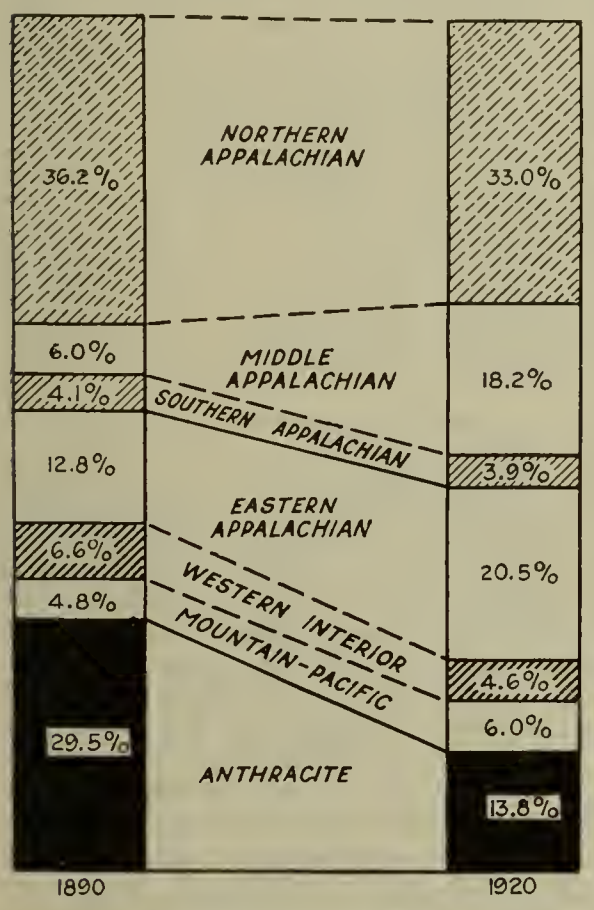
†In charge of coal statistics, U. S. Geological Survey.

‡Assistant to F. G. Tryon.

ably a pretty good indication of the center of coal consumption, also lies in western Ohio, just a little north of the center of coal production.

The center of coal resources, as distinct from production, is found by Mr. Horton to lie in central Nebraska, near the town of Kearney. The center of production therefore must travel westward some 900 miles before it reaches the center of the resources.

That production will ultimately migrate far in that direction is a prophecy that can hardly be disputed, although of course it does not follow that the center of demand will move westward at the same pace. Significant of the potential industrial position of



RELATIVE GROWTH OF OUR LARGE COAL FIELDS

In parallel columns, each equal to 100 per cent of the total coal output in 1890 and 1920 respectively, are shown the proportions of the whole output from the seven main coal fields. The largest increases were in the Middle and Eastern Appalachian and the greatest decrease has been in anthracite.

the Far West is the fact that not far from the center of coal resources lie also the centers of potential water power and of our resources in oil. The former, Mr. Horton places near the center of Wyoming; the latter, close to the Trinidad and Raton coal fields, which face each other across the Colorado-New Mexico boundary.

Since 1890, however, there has been no great shift in the center of gravity of coal production, at least as far as bituminous coal is concerned. By that time developments had begun in most of the important deposits, production had hit its stride, and, in spite of great local variations, there was a tendency for East, West and Interior to advance in company front. For example, if we group together all of the Appalachian fields from Pennsylvania and Ohio south to Alabama, and express their average production for the years 1890 to 1900, inclusive, by the number 100, then their production during the past five years will be represented by the number 364 (see following table). The rate of production in the Interior fields, expressed in the same way, would be represented by the number 374, while that of the Rocky Mountain and Pacific States would be represented by 353.

RATE OF GROWTH OF BITUMINOUS PRODUCTION IN THREE GRAND DIVISIONS

(Figures are index numbers, and represent per cent of the 1890–1900 average)

	Appalachian Fields	Interior Fields[1]	Mountain-Pacific Fields[2]
Average 1891–1895	85	90	86
Average 1896–1900	120	114	119
Average 1901–1905	189	186	189
Average 1906–1910	262	245	270
Average 1911–1915	313	285	288
Average 1916–1920	364	374	353

[1] Includes Michigan. [2] Includes North Dakota.

It is clear from the foregoing table that by 1890 the larger competitive groups of fields had been staked out, and at that date an analysis of what may be called the modern history of the coal industry may well start.

To the coal man the first outstanding fact about the generation from 1890 to 1920 is the extraordinary growth in the demand for coal. Between 1890 and 1918 the production of all coal, including anthracite, rose from 158,000,000 to 678,000,000 tons. In other words, it increased 4.3 times. Considered separately, even more rapid was the growth of bituminous coal, the production of which increased from 111,000,000 tons in 1890 to 579,000,000 in 1918. To grasp the real significance of this enormous increase it must be compared with the rise in other basic factors in our industrial life.

Population in 1918 was 1.6 times as great as in 1890. The volume of farm crops and of manufactured goods (expressed not in the fluctuating standard of the dollar but in terms of physical units available for human needs) has been shown by Prof. W. W. Stewart

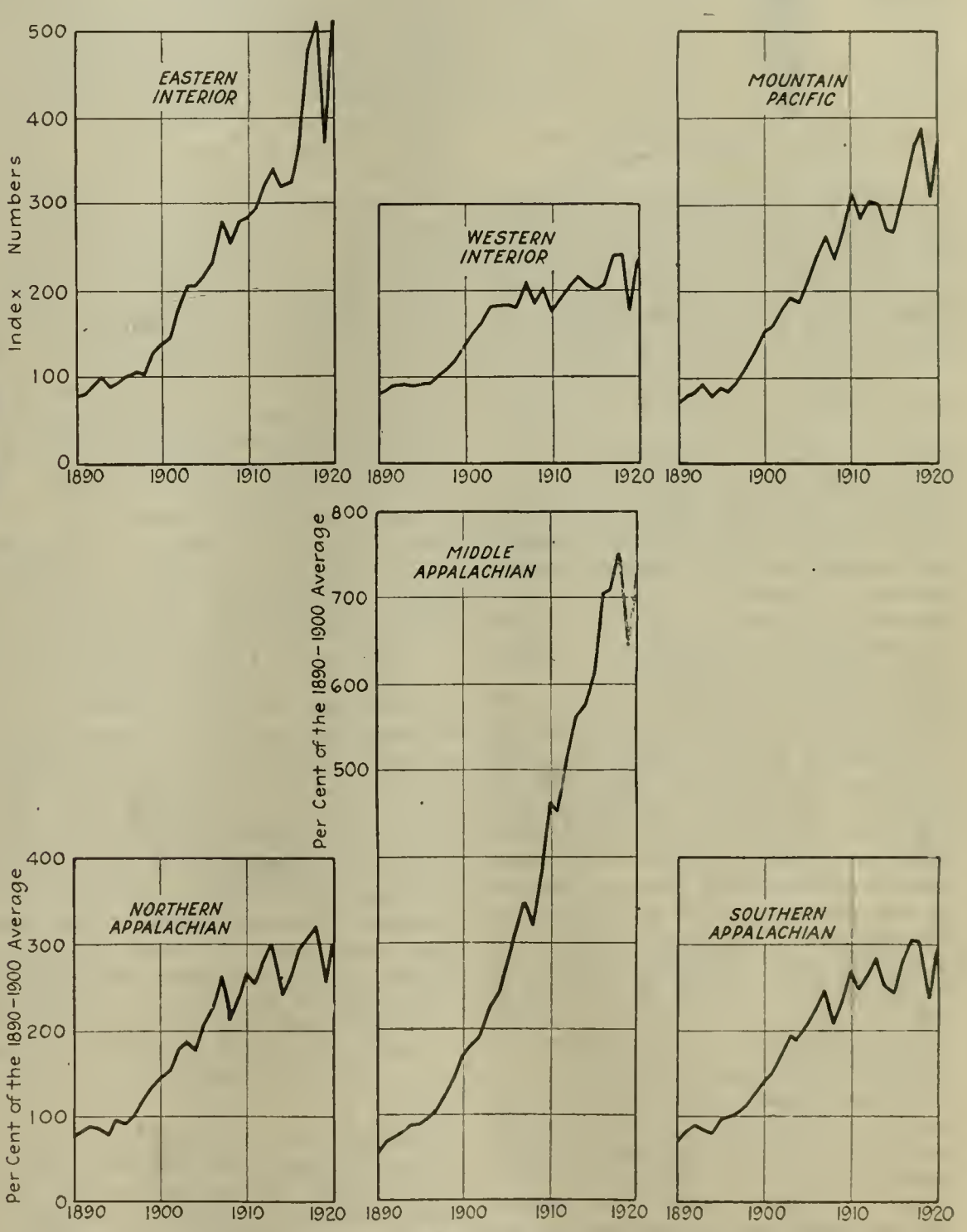
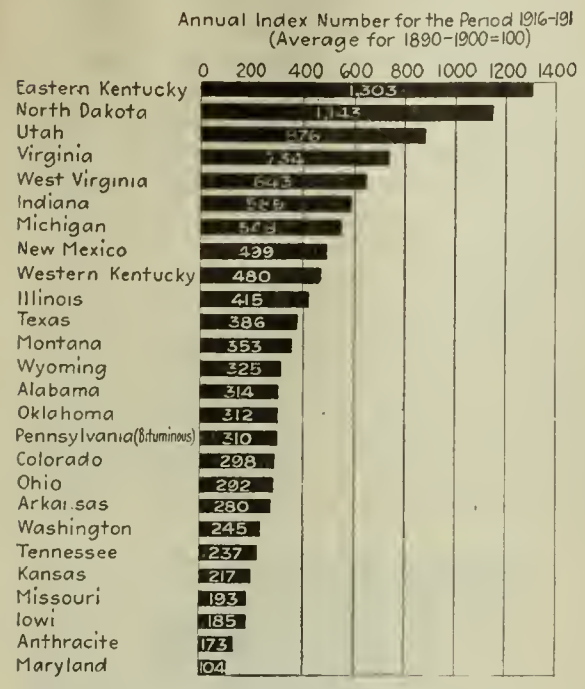


DIAGRAM V

RATES OF GROWTH OF PRODUCTION—BY PRINCIPAL REGIONS, 1890-1920

The output of the various fields has been generally increasing, but at very unequal rates. The Middle Appalachian region (eastern Kentucky, West Virginia and Virginia) has increased its production with extraordinary rapidity, and next to it has been the Eastern Interior Region (Illinois, Indiana and western Kentucky). It is noteworthy that these are the fields where in general the transportation disability has been most acute in recent years. The region of smallest increase has been the Western Interior. To facilitate comparison production in each region is expressed in terms of per cent of the average for the base period 1890-1920.

to have been respectively 1.9 and 3.3 times greater in 1918 than in 1890.[3] The physical volume of transportation, having due regard for both freight and passenger traffic, was 4.8 times as great in 1918 as in 1890. These comparisons serve to emphasize our increasing dependence upon coal, particularly bituminous coal. To satisfy this ever-increasing demand required the opening up of new fields and of new mines in old fields. On the average throughout this period the American market absorbed 17,000,000 tons of new production each year, and during periods of most rapid growth the new tonnage was sometimes 40,000,000.



GROWTH OF COAL PRODUCTION IN TWENTY-SIX DISTRICTS

To be fair, comparisons of growth should be based not on a single year but on an average for a series of years. The diagram compares the average for the last five years (1916-1920) with the average for the base period (1890-1900). Thus if we represent the 1890-1900 average for each district by the figure 100 the 1916-20 average for eastern Kentucky will be represented by the index number 1,303. This is just another way of saying that the eastern Kentucky average for 1916-1920 is more than thirteen times as great as that for the base period.

To what extent did the many producing fields participate in the annual increment of new business? Not at all equally, as we shall see. While eastern Kentucky increased its output thirteenfold from the base period, 1890-1900, to the year 1920, the State of Maryland was producing little more at the end of the period than at the beginning. In explanation of these unequal rates of growth many conditions, such as the extent of the reserves, the quality of the coal, the costs of mining, and the accessibility of the region to transportation, at once suggest themselves.

No less important in the long run has been the trend of growth of transportation facilities during the same period. In the early days it not infrequently happened that a local deposit of low-grade coal was opened up, but that, as the increase in transportation made possible competition from other districts, the product of the field could not be sold in competition with better coal brought from a distance. Cheap transportation favors good coal. Costly transportation encourages the local development of poor coal.

[3] "Index Numbers of Production," paper read at the annual meeting of the American Economic Association, Atlantic City, Dec. 27-30, 1920, by W. W. Stewart of Amherst College.

SOURCES OF THE COUNTRY'S COAL SUPPLY, 1890 AND 1920

Region	Million Tons		—Per Cent— of All Coal		—Per Cent of— of Total Bituminous	
	1890	1920	1890	1920	1890	1920
Bituminous:						
Northern Appalachian	57.1	212.7	36.2	33.0	51.4	38.2
Middle Appalachian	9.4	117.5	6.0	18.2	8.5	21.2
Southern Appalachian	6.5	25.2	4.1	3.9	5.9	4.5
Northern Interior [5]	0.1	1.4	0.1	0.2	0.1	0.3
Eastern Interior	20.1	131.1	12.7	20.3	18.0	23.6
Western Interior	10.5	29.6	6.6	4.6	9.4	5.3
Rocky Mountain and Pacific Coast [6]	7.5	38.6	4.8	6.0	6.7	6.9
Total bituminous	111.2	556.1	70.5	86.2	100.0	100.0
Anthracite	46.5	89.0	29.5	13.8	.....	.....
Total, all coal	157.7	645.1	100.0	100.0	.....	.....

[5] Michigan. [6] Includes North Dakota.

The trend of coal output, of the volume of transportation, and of the costs of both coal and transportation are shown in diagrams II and III. The close correspondence between the growth of the production of coal (including anthracite) and of the volume of freight traffic during the years 1890 to 1912 is shown in diagram I. Since 1912, however, the number of ton-miles of freight of all kinds carried has been increasing more rapidly than the production of coal. As the index of coal in the diagram is based on tons rather than ton-miles, one explanation of the widening gap between the line of coal and the line of freight traffic may be a relative increase in the haul. There are many coal men, however, who will interpret the discordance between the two lines as meaning that with the pressure of freight traffic upon the ability of the railroads to transport, there has been a tendency to prefer higher class freight, giving larger returns to the carrier, in place of coal.

In diagram III the trend of the cost of coal f.o.b. mine is compared with the average rate per ton-mile on all revenue freight. The course of the latter is at best only an approximate index to the course of the rate on coal, for coal as a commodity has been made the subject of important rate adjustments, independent of changes in the general level of all rates. Considering, however, the fact that coal constitutes about a third of all the freight carried, whether measured in tons alone or in ton-miles, it appears safe to assume that the general trend of the average for all freight would be in the same direction as for coal alone.

The general tendency of transportation costs was downward from 1890 to 1916, while that of coal costs f.o.b. mine was slowly upward. Throughout that period, therefore, the conditions were such as, other things being equal, to encourage the wider shipment of the high-quality coals from the Appalachian region as against those of the Interior, or on the other hand, to encourage the Eastern Interior coals at the expense of their competitors of the Western Interior States, just west of the Mississippi. It is further to be noted that even the sharp increase in transportation costs since 1917, including the latest increase of Sept. 1, 1920, has been proportionately less than the increase in mine costs and it would appear that the present relation of rates and mining costs is such as to continue to encourage the long-distance shipment of high-quality coals in preference to local low-quality coals.

Shifts in Production, 1890-1920

The extent and nature of the shift in the sources of the country's supply from 1890 to 1920 are shown in the following table, and in graphic form, in diagram IV. Considering the output of anthracite and bituminous as a joint source of supply (diagram IV), the most striking change during the period has been the decline in the proportion of anthracite, from 29.5 per cent in 1890 to 13.8 per cent in 1920. Of the bituminous fields, three major districts have decreased in terms of per cent of the total output contributed. These relatively stationary fields are the Northern Appalachian, the Southern Appalachian and the Western Interior. Two of the bituminous regions have greatly increased in proportion of the total contributed—the Middle Appalachian, 6 to 18.2 per cent, and the Eastern Interior, from 12.8 to 20.5 per cent.[4] As pointed out above, however, the localities of rapid growth have been in part in the East, in part in the Interior and the West, so that the relative proportions contributed by East, West and Interior as a whole have been constant.

SHIFTS IN BITUMINOUS PRODUCTION

Section	Per Cent of Total Bituminous	
	In 1890	In 1920
Appalachian	65.8	63.9
Interior	27.5	29.2
Montana-Pacific	6.7	6.9

We may in passing note the dominant position occupied by the Appal-

[4] The states included in these groups are as follows: Northern Appalachian, Pennsylvania, Ohio and Maryland; Middle Appalachian, West Virginia, Virginia, eastern Kentucky; Southern Appalachian, Tennessee, Georgia, Alabama; Northern Interior, Michigan; Eastern Interior, Illinois, Indiana, western Kentucky; Western Interior, Iowa, Missouri, Kansas, Oklahoma, Arkansas, Texas; Mountain-Pacific, Colorado, New Mexico, Utah, Montana, Wyoming, North Dakota, Washington.

achian region, which even in 1920 produced five-eighths of all the soft coal mined.

To compare rates instead of tonnage a common denominator is necessary, and again the index number, in which each year's output is expressed in terms of per cent of the 1890-1900 average offers a convenient method of comparison. Diagram V reveals at once the extraordinary rate of growth maintained by the Middle Appalachian region, which reached in 1920 the index of 730. Next to it comes the Eastern Interior, with a 1920 index of 512, followed in turn by the Mountain-Pacific with 373. The Northern and Southern Appalachian regions, which have been developing at almost exactly the same rate, show a much slower growth. Their 1920 indexes are 295 and 283 respectively, but little, it will be noted, above the level of the year 1913. Slowest of all in development has been the Western Interior field, the index for which last year was only 233 and where during the decade before the country entered the war production showed practically no increase. The same inequalities are shown even more strikingly, state by state, in diagram VI.

These diagrams throw a flood of light on the problem of transportation disability at the mines. The fastest growing field, the Middle Appalachian —including among other districts Eastern Kentucky and West Virginia— has been the scene of most acute car shortage during the past five years. The region next in rate of development—the Eastern Interior—also has has had a serious problem in car supply since 1917 whenever demand was active.

Avert Government Control of the Coal Industry by Reform from the Inside

Merchandising Should Be So Perfected That a Fair Proportion of All Sizes Will Be Used in Each Locality—Improved Distribution Needed—Price Inconsistencies Declared To Be Greatest Evil—Downward Adjustment of Freight Rates Advocated

By J. E. Lloyd*

THE season of good resolutions is here again. Many will be made, but how many will be kept? Probably more would be kept, if everyone would try his level best to help in the general reform. There are a number of good resolutions that need to be made and kept in the coal trade. In the past there has been too much fault finding and not enough of the real spirit of co-operative assistance. The coal trade always has been and probably always will be abused by the public press, but to a lesser degree if we honestly try to put into effect some much-needed reforms.

Has there ever been any real salesmanship displayed in selling coal? To my mind, there has not—it has just sold itself. There has been no conspicuous effort to really merchandise coal. What effort has been made by the operators to show large consumers the advantages and great saving to be made by using the steam sizes of coal under the proper engineering conditions?

Certain sections of the country will burn only stove and chestnut for family use, which penalizes consumers in other parts of the country. All sections where anthracite coal is used should burn a fair proportion of each size. This is by no means all the operator's fault. The retailer simply sells and tries to buy what his customers wish, even though by a little real selling effort his customers could be shown that they could save both money and coal at the same time.

Let our first New Year resolution be a real effort to merchandise coal.

Secondly, we have the matter of distribution. What has been done to effect an improvement in this direction? Every time the coal trade has been put to the test there has been almost total failure. Is there any other commodity so universally used that is either so plentiful or so scarce as coal?

A new plan must be worked out and at once, or some sort of government supervision will be tried.

*President, National Retail Coal Merchants Association.

Last, but by no means least, we have the matter of price. Conditions that have prevailed during the past year are most dangerous to all engaged in the coal industry. Some plan should be worked out to prevent a repetition of recent price evils or public clamor through the press will force the government to take some drastic action.

The public is entitled to and should receive coal of uniform quality in a given community at a uniform price. Every operating company should make a profit from the operation of its mines and the matter of freight revenues should not control the price. Freight rates on coal should be adjusted and in most cases, I believe, downward.

Shows Necessity for Constructive Work

The Calder committee, if its wishes to do something constructive, should co-operate with the Interstate Commerce Commission on investigations and adjustments of coal freight rates. I am not in sympathy with all the actions of the Senate committee, but, on the other hand, can we place all the blame on it? Have we done our best to improve conditions and work out a real constructive program? If we have not, can we do so, or must we admit our failure as practical business men and allow the government to step in and manage the coal business for us?

Let the organized coal trade admit the facts as they are and honestly try to remedy them. We have brains in the industry to do this and in such a way that the coal trade will be a model of good business methods, instead of one of the most glaring examples of mismanagement in the modern business world.

There are selfish interests who, no doubt, will not go along willingly and it is because of these very interests that the coal trade is in its present chaotic condition and in the shadow of at least some kind of government supervision, if not even government control.

Production of Anthracite in 1920 Encountered Numerous and Varied Obstacles

Total Output of Approximately 79,285,000 Gross Tons Exceeds Yearly Average of Last Decade by About 475,000 Tons—Strikes and Holidays Reduced Possible Output to Considerable Extent

By E. W. Parker*
*Director, Anthracite Bureau of Information.

According to the records of the shipments of anthracite as reported to the Anthracite Bureau of Information at Philadelphia, the total production for the calendar year 1920 showed an increase over that of 1919 of about 1 per cent, amounting to approximately 79,285,000 gross tons. In 1919, according to the U. S. Geological Survey, the total production was 78,501,931 gross tons. Excluding 1917 and 1918, in which production was abnormally stimulated in order to meet the demands created by the World War, and whose output included exceptionally large amounts of "washery" coal, the average production of anthracite for the decade from 1910 to 1919 inclusive was 78,811,724 tons, an amount exceeded by the production in 1920 by about 475,000 tons. In both 1919 and 1920 the anthracite industry was affected by influences which reduced the possible production by approximately 4,000,000 tons.

Causes of Production Losses

Following the release on Feb. 1, 1919, of government regulation of production and distribution of anthracite, and a winter of unusually mild temperature, the domestic demand fell off sharply, so that notwithstanding some 2,000,000 tons were mined and put in storage, the production in February fell below normal by about 1,500,000 tons; 2,000,000 tons more were lost in March and April showed a decrease of about 500,000 tons. The difficulty in meeting the demand, which was the pronounced feature of the trade during 1920, had its origin in the mistaken policy of consumers and dealers of cancelling orders and refusing to accept coal in the spring of 1919. The winter of 1919-20 was as abnormally severe as the preceding one had been abnormally mild, and the spring of 1920 opened with bins of dealers and cellars of householders practically bare of fuel.

The shortage created in 1919 would not, however, have been of serious moment except for the similar condition in 1920, brought about, first, by the outlaw switchmen's strike in the railroad yards in April, which so interfered with the movement of cars to and from the mines that the production of that month fell short about 1,250,000 tons, and second, by the "vacation" strikes of miners in September, which was intended to voice their dissatisfaction with the award of the U. S. Anthracite Coal Commission and which resulted in curtailment of output by about 2,500,000 tons. An extra holiday in November (election day) reduced the tonnage for that month by about 250,000 tons.

Except for the incidents cited above the production of anthracite in each of the last two years would have amounted to about 83,000,000 gross tons. The shipments, by months, in both years as reported to the Anthracite Bureau of Information, are shown in the following table (shipments from the Bernice basin in Sullivan County are not included in this statement):

	1919	1920
January	6,066,689	5,868,835
February	3,951,898	5,046,483
March	4,016,290	6,077,821
April	5,326,363	4,814,211
May	5,817,756	6,155,878
June	5,737,472	6,319,957
July	6,189,740	6,389,100
August	6,241,809	6,207,653
September	5,786,282	3,592,954
October	6,671,891	6,240,901
November	6,066,501	5,765,347
December	6,251,736	†6,250,000
Totals	68,124,427	68,729,140

† Estimated.

The calendar year opened auspiciously, the three months of January, February and March recording a normal production for that period and one considerably in excess of the corresponding period in 1919, when output was below normal because of the slump in demand in February and March, following a mild winter and the release of government control over the production and distribution of anthracite. Trouble began with the first month of the coal year, April, when the effects of the "outlaw" switchmen's strike in the yards of the transportation companies was shown in the reduction of the shipments for that month to 4,812,153 tons. This strike was not of long duration, having expended its force about the 20th of the month, but it was enough to cause a loss in the production of anthracite of approximately 1,400,000 tons, as in the four succeeding months anthracite shipments averaged about 6,200,000 tons.

One disturbing factor of a local nature, but which reduced production by approximately 750,000 tons, was a strike in the mines of the Pennsylvania Coal Co. in the vicinity of Pittston in protest against the contracting system employed by that company in operating certain portions of its properties. This strike, which began early in July, when the Anthracite Wage Commission was sitting at Scranton, affected some 10,000 men and was continued for nearly three months. It was finally settled through the action of the contractors in giving up their contracts. The contracting system had been the subject of some controversy in the adjustment of wage agreements for a number of years, but had never before assumed such serious proportions. It is now in the discard.

As a result of the outlaw switchmen's strike in April and the miners' "vacations" in September the production of anthracite for the eight months of the coal year beginning April 1 and ending Nov. 30 showed a decrease of 1,550,000 gross tons, as compared with the preceding year. The decrease in production of domestic sizes was more than twice as much as the decrease in total tonnage, for the quantity of coal recovered by washeries from the culm banks this year exceeded that of 1919 and made up in part, by larger output of steam sizes, the smaller production of domestic coal. The output of fresh-mined coal, which furnishes the domestic sizes, is about 3,700,000 tons below what it was last year, a situation for which the "vacation" strikes and numerous holidays are directly responsible.

Embargoes Add Complications

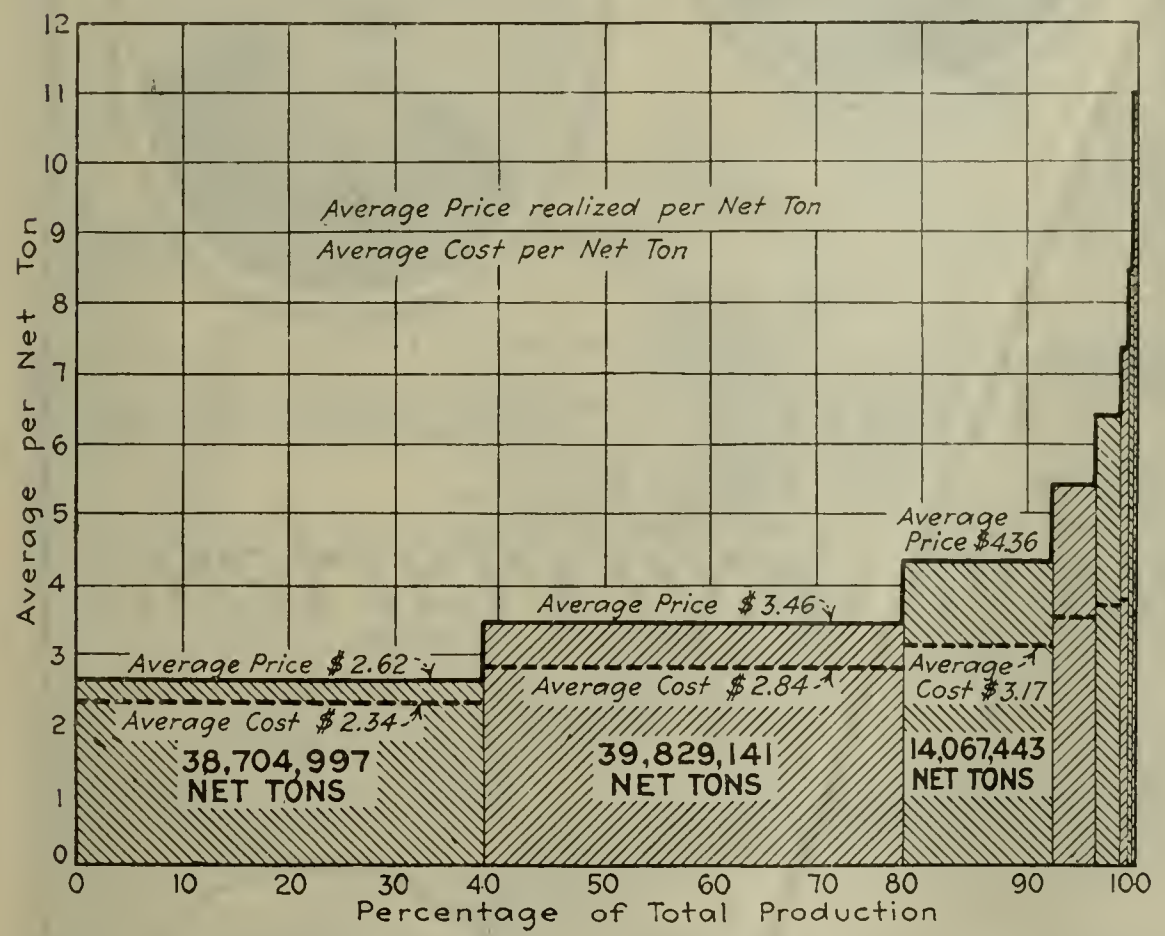
The situation in New England was aggravated by the embargoes placed against anthracite shipments by the railroads serving that territory. From April 1 to Aug. 31, a period of 150 days, there were only 30 days that anthracite could be shipped without special permit into the territory served by the New York, New Haven & Hartford R.R. During the same period embargoes were in effect on the Boston & Maine and on the Boston & Albany for a total of 78 days each. Movement by water to Sound and Atlantic Coast ports was prevented for about two months by the strike of the towboat men in New York Harbor.

One of the most unfortunate developments of the year arising from the disturbance of the regular methods of distribution, due to the causes already referred to, was the creation during the last half of the year of a feeling of apprehension in the minds of dealers and consumers who had not been able to secure their full supplies that the arrival of cold weather would find them without fuel. In no inconsiderable part of the anthracite-consuming territory this feeling of apprehension partook somewhat of the nature of panic, which resulted in a scramble for coal unprecedented in the history of the industry.

Consumers and dealers were bidding against each other for any free coal that was to be had—that is, coal that was at the disposal of operators and middlemen and which was not committed to a regular trade—which naturally had the effect of skyrocketing prices on such tonnage as was available. The proportion of the anthracite production affected by this situation was less than 1 per cent of the total output, but the publicity given to it and the advantage taken of it by some retail dealers to base the prices of all of their coal on the high-cost portion of it created an impression that producers generally were taking advantage of the situation to mulct the public, whereas as a matter of fact by far the larger part of the production has been sold at prices that were not only reasonable but were actually below what would have been justified by the increased cost of production and the earning of profit on the capital invested.

Government participation in the problems that confronted the anthracite industry in 1920 was not confined to the Department of Justice, for the Senate Committee on Reconstruction and Production, of which William M. Calder is chairman, extended its activities to include investigations of the coal business, notwithstanding the fact that a sub-committee of the Committee on Interstate and Foreign Commerce, of which Senator Frelinghuysen is chairman, was considering coal.

Average Prices Realized for Bituminous Coal, with Production Costs, January 1 to October 1, 1920



THE information depicted above in graphic form and shown in detail in the accompanying table with respect to the prices realized by the bituminous coal mining companies for their output from Jan. 1 to Oct. 1, 1920, was obtained by the National Coal Association direct from the producers. They were requested to furnish this information in confidence in order that it might be placed before proper government officials in tabulated form. The operators began complying with this request, and by Dec. 18 practically five hundred reports had been received. On that date the Senate Committee on Reconstruction and Production subpœnaed all of these reports with attendant newspaper publicity, which had the immediate effect of stopping the forwarding of reports by the remaining operators. However, when these five hundred returns first received had been returned after scrutiny by the Calder committee the association tabulated them, and the attached figures show the result.

The averages shown in the tabulation above were obtained by combining the monthly totals of all companies whose average prices fell in the respective groups. It was impossible to obtain the individual sales transactions of the several companies. The number of companies in each group includes all companies whose average prices fell within that group in one or several months, consequently the sum of the companies shown in each group exceeds the total number of companies reporting.

These figures show that the 100,000,000 tons produced in the first nine months of the calendar year 1920 by the 494 companies reporting were produced at an average cost of $2.76, and sold at an average price of $3.47 per ton, f.o.b. mines; this leaves a margin of 71 cents per ton. But that margin is not profit by any means. It is safe to say that not even half of it will actually be profit because all interest on bonds and borrowed money and all income and excess profits taxes must be deducted from that margin before the producing company has any profit.

It will be noted that 78,500,000 tons of the 100,000,000 tons were sold at prices averaging less than $4 per ton; that 14,000,000 tons were sold at average prices between $4 and $5 per ton, with a general average price of $4.36; 4,000,000 tons were sold at an average price of $5.41; 2,000,000 tons were sold at an average price of $6.44. Only 1,335,000 tons, or 1.32 per cent of the total production were sold at prices in excess of $7. It will be noted, therefore, that the prices which may seem excessively high are confined to a small proportion of the bituminous coal production, as shown by these reports. It will further appear that the cost of production invariably increases as the realization increases.

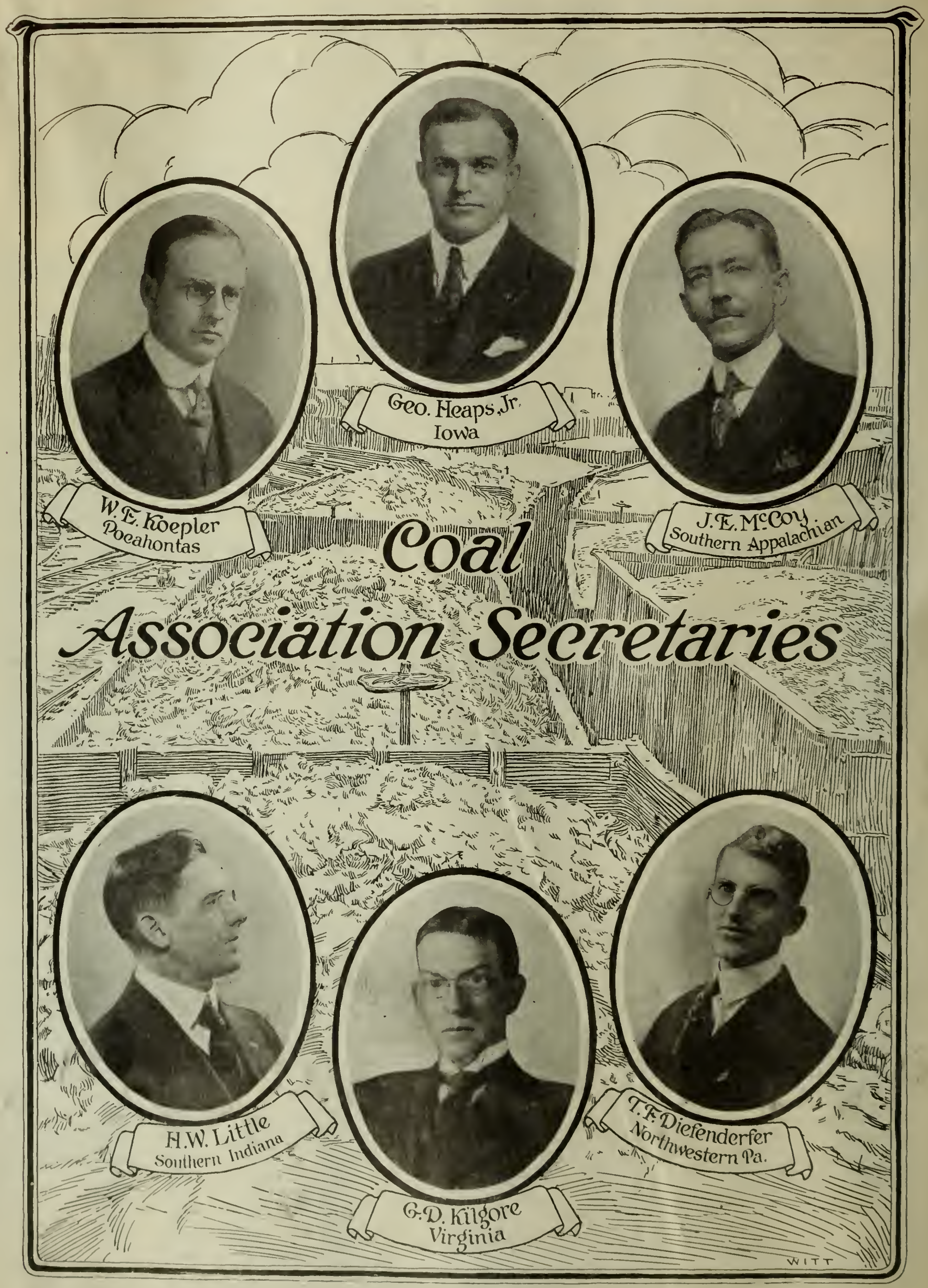
It is also very important in this connection to note that most of the companies charging these high prices are companies whose costs of production are very high. Some of them are producers of very high-grade special-purpose coal, which customarily commands a large premium in any coal market. The others produce lower quality coal and must operate at a loss under ordinary market conditions or must shut down entirely. Accordingly, if the latter companies are to make any profit at all they must obtain relatively high prices when supply and demand conditions make for unusually high prices of bituminous coal. They constitute a reserve output which comes into the market to increase the supply when demand for coal is extraordinarily great.

It is clear, therefore, from the confidential reports of these producers to the National Coal Association that the loose and widespread charges of general, indiscriminate, conscienceless profiteering on the part of the bituminous coal mine operators are absolutely baseless and without justification.

STATISTICAL REPORTS OF MEMBERS OF THE NATIONAL COAL ASSOCIATION

Number of Companies	Classification According to Monthly Average Prices	Net Tons Produced and Sold at Foregoing Prices	Per Cent of Total Tonnage	Average Price Realized per Net Ton	Average Cost per Net Ton	Average Margin (b) per Net Ton
315	Less than $3.00	38,704,997	38.53	$2.62	$2.34	$0.28
237	$3.00 to $3.99	39,829,141	39.65	3.46	2.84	.62
138	$4.00 to $4.99	14,067,443	14.01	4.36	3.17	1.19
96	$5.00 to $5.99	4,203,061	4.19	5.41	3.53	1.88
64	$6.00 to $6.99	2,306,962	2.30	6.44	3.70	2.74
36	$7.00 to $7.99	828,609	.82	7.35	3.77	3.58
19	$8.00 to $8.99	254,186	.25	8.46	3.95	4.51
19	$9.00 to $9.99	119,053	.12	9.52	4.07	5.45
16	$10.00 and over	132,853	.13	10.98	4.31	6.67
494 (a)	Totals	100,446,304	100.00	$3.47	$2.76	$0.71

(a) Many companies fall in more than one group.
(b) The margin should not be confused with profit. See explanation above.


Coal
Association Secretaries
W. E. Koepler
Pocahontas
Geo. Heaps, Jr.
Iowa
J. E. McCoy
Southern Appalachian
H. W. Little
Southern Indiana
G. D. Kilgore
Virginia
T. F. Diefenderfer
Northwestern Pa.
WITT

America's Export Coal Opportunities in 1921

Disastrous Results of Sending Out Unsold Cargoes Taught Speculators a Costly Lesson—Market Now Dull Because of Oversupply—Elimination of Speculative Element Expected to Hasten Return of Normal Conditions

By C. Andrade, Jr.*
New York City

PRIOR to the World War England and Germany were competing to control the export coal markets of the world, but Germany was eliminated in 1914 and England has since found herself unable to maintain her former rate of export shipments. To fill the gap foreign buyers of coal began in 1919 to apply to the United States for tonnage. In this way American coals were introduced to new and wider markets in South America, on the Mediterranean shores and in western Europe.

A tremendous foreign demand for American coal thus created was augmented last summer by the British coal strike and the failure of Germany to deliver her quota of coal under the Spa treaty. At the same time other factors were at work in the United States which sent coal prices very high and many of the export coal contracts were only partly filled owing to the inability of the exporter to obtain coal from the domestic market.

Expediency in Ordering

European consumers then began to figure that they must order about three times as much coal as they needed in order to get their actual requirements. They proceeded on this theory until in the late summer and early autumn American exporters caught up with the demands, and at times actually exceeded their contract quotas.

Speculators, who have and had no proper place in the coal trade, entered the export business, loaded ships with coal and sent them out unsold, thinking that on the rising market they would realize large profits. These floating cargoes were sold for awhile, but when the market dropped in the early autumn many could not be sold and European ports are now largely overstocked as a result.

Obstacle to Price Stability

The sending out of unsold cargoes is perhaps the most hazardous undertaking in the coal business, and as long as it continues there can be no hope for normal prices from foreign customers. This evil, like most others, will soon correct itself, because the speculators who sent out these floating cargoes are taking heavy losses, and probably will be deterred from attempting further activities of the same kind in the future.

Of course, it is self-evident that the oversupplies which have reached Europe must be burned up in due course, and when they are burned up Europe inevitably will need more coal. It is equally self-evident that a part of this coal will have to come from America. While, therefore, the present market is perhaps the dullest in history, there is no reason to suppose that this condition will continue forever. On the other hand, there is every indication that when the speculative newcomers have been eliminated from the coal business the trade will get back to its normal basis.

Prices and Government Control

One of the chief things to be remembered is that the present fluctuation in prices has been due in no small measure to the Government of the United States, through its different agencies, in attempting to control in one way or another the price and movement of coal. We had the Fuel Administration, with its regulation of prices and coal movement. Later we had the Shipping Board, with its foreign rates, and we had various forms of license control which undertook to regulate the movement of export coal. We also had various Interstate Commerce Commission orders, which diverted coal from its normal channels in unexpected directions, which were directly responsible for some of the vagaries in price which we witnessed in the last six months. Now we have the prospect that the Calder committee may attempt to pass laws for further regulation of the industry.

It is the consensus of the trade that any such continuation of government control or interference will be disastrous. The activities of government agencies in the past have led to a good deal of disquiet and lack of certainty in the minds of the coal industry and no one knows where he stands or what he may expect. Therefore if the coal industry is to regain a normal basis, government control of business must cease.

Business to Help Itself

Fortunately, we have assurances from many men high in the coming administration that business of the United States will be left to itself to work out its own problems and to reach a pre-war basis, which was so satisfactory to the nation.

We believe there is no more urgent question than this before the nation, and we believe that all possible agencies and influences should be brought to bear on the coming administration so as to insure the business of the country being allowed to solve its own problems in its own way.

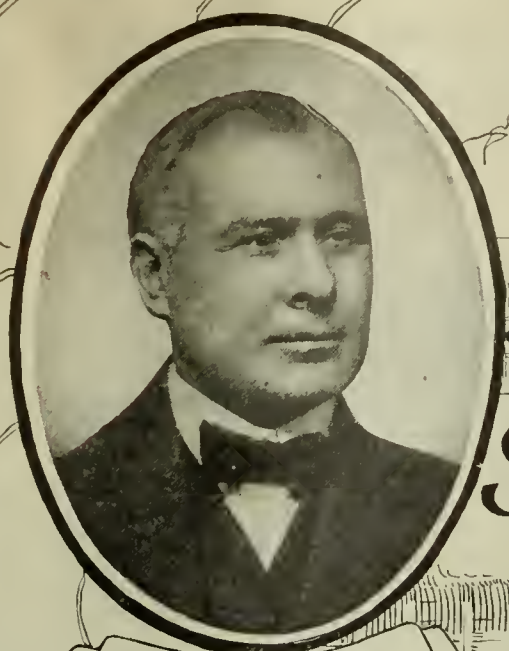
Photo by Galloway

CHARLESTON GROWS AS AN EXPORT CENTER

A view of the Southern Railway coal pier at Charleston. An important business in export and bunker coal is being built up at this port, to which is shipped coal from southwestern Virginia, Tennessee and southwestern Kentucky

*President, Andrade-Eyre, Inc.; president, Wholesale Coal Trade Association of New York.

Coal Association Secretaries



D. C. Kennedy
Kanawha
WEST VIRGINIA

Geo. T. Bell
Northern West Virginia

Geo. Wolfe
Winding Gulf
WEST VIRGINIA

P. H. Greenlaw
5 & 9 Districts
ILLINOIS

J. F. Palmer
Upper Potomac
MARYLAND

WITT

American Coal Men Adopt Sellers' Market Methods to Export Coal in a Buyers' Market

With the Machinery and Incentive for Overseas Trade Americans Seek Large Profits, Overlooking the Opportunity to Encourage Foreign Industrial Expansion, Which Would Provide a Growing Market

BY GEORGE H. CUSHING

WITHOUT going tediously into the reasons or figures, we have an exportable or surplus productive capacity in bituminous of at least 100 million tons per year. Similarly begging the question, there is a foreign demand for at least 100 million tons of bituminous coal per year. Therefore we have a market and the coal to satisfy it. But are we equipped commercially to command our share of the trade? We have a very large desire to sell abroad, but there is a vast difference between having a desire to do a thing and being equipped to do it. I want to know whether we are so equipped.

It was only ten years ago that I proposed that we put an end to our dreaming about some day going into the export market and actually do it. As a feeler I proposed that we send some literature to foreign buyers to tell them what we had to sell. My recollection is that three firms offered to venture as much as $100 apiece behind this venture. That didn't indicate that the trade was eager to translate its dreams into action.

I was told by shippers, bankers and everybody that we couldn't hope to do an elaborate export business until we had American ships. If we needed ships it seemed to me that the thing to do was to go get them, but first we must bring America around to the point of wanting a merchant marine. I carried my superheated appeal to some magazine editor friends in New York. They said that what I proposed was that the nation grant a subsidy to some shipbuilding and ship-operating companies, which would grow rich at public expense. In other words, America had in those days no imagination on exporting.

There was, however, a far more serious difficulty. I looked around among our citizens. Every man insisted that his business affairs should be so organized that he could be at home over the week-end. He might possibly consent to travel four or even five days out of the week, but he must be by his own fireside or club on Saturday and Sunday. The average American could not understand why an Englishman would ever consent to be away for eighteen months or two years in some God-forsaken part of the earth. So we lacked the capacity to be uncomfortable while we put over a foreign trade. Furthermore, our national banks were not allowed to establish branches even at home. Certainly an American bank was not allowed to establish a foreign branch.

GEORGE H. CUSHING
Managing Director, American Wholesale Coal Association

INCENTIVES FOR FOREIGN COAL TRADE

For these reasons, we had no foreign trade in coal and no active sentiment for it. But ten years have brought a big change. Principally the war brought it. Today we have the ships. We have one-third the fleet of the world, which we have bought at a cost of three and a half billion dollars. These ships are manned in large part by American men because the Expeditionary Force taught the American youth to travel. We have today a great eagerness to sell coal abroad because for four years we have been making enormous profits on coal abroad, and we have foreign branches of American banks because it became necessary to establish them in order to simplify the matter of exchange.

These things give us the machinery and the incentive for a foreign coal trade, but are we equipped to win a commercial victory against competition?

I am not overstating the facts when I say that in six months the world coal situation has changed from a sellers' market to the beginning of a buyers' market. In a sellers' market we could easily distribute the 20,000,000 tons of coal a year which we could spare. All we had to do was to ship it to tidewater, and accept the money which the buyer was eager to pay us for it. But when we get into a buyers' market we face a vastly different situation; every sizable sale is the outcome of a fight. Victory goes to the man best equipped. I say and shall prove that we are not equipped for this impending struggle.

We have, it is true, a third of the fleet of the world. The foreign ship owners consider coal as a ballast proposition. Therefore they name a rate on coal which is a minimum. We, on the contrary, if we allocate a ship to the coal industry, insist upon getting a rate which practically insures the cost of operation for the round trip. When the Englishman is getting only the cost of operation or less on the outbound trip and when we try to get the cost of operation for the round trip, the American shipper finds himself out of line in the market and that his ships are out of sympathy with him.

The Englishman knows by long experience that when a ship ventures to sea it is likely to run out of coal before it returns to the home port. If it wants to operate cheaply, it must have an English coaling station at which it can get English coal at an English price. Therefore the Englishman has dotted the seas with English coaling stations. Furthermore, English coal concerns have learned to use the English coaling or bunkering stations as the key, as it were, of their coal merchandising policy.

We, on the contrary, have not begun to establish bunkering stations owned by American interests and supplied with American coal. The Shipping Board cannot establish such stations, because by a mandate of law it must as soon as practicable sell the ships and retire from the ship-operating busi-

Photo by Galloway

HARBOR AT GENOA, ITALY

Genoa has become a familiar name to American exporters of coal in recent months. This photograph gives a view of but a section of the immense harbor to which so much of our coal has been shipped since 1915

ness. It cannot, therefore, establish bunkering stations because it does not know whether the people who will buy the ships will also want to buy the coaling stations.

Likewise the Shipping Board has not yet seen the importance of these bunkering stations. It has not, therefore, taken up with the State Department the matter of negotiating with other countries for the right to establish such bunkering stations. Finally, coal men, lacking any acceptable leadership, have done nothing toward the establishment of these bunkering stations. For these reasons we are going into the export market depending wholly upon the use of other people's facilities to handle our coal.

Before the war the Englishman considered the export market as a dumping ground for his surplus coal in order to maintain a good price on his coal sold at home. He was content, therefore, with a margin on his export coal of 2½ per cent on the turnover. He considered himself quite fortunate if he got better than 3 per cent. As late as 1914, I was told by the leading coal exporters of Great Britain, it was perfectly easy for them to sell coal in the foreign market at a cost of 2½ to 3c. a ton.

American Method of Selling Coal

The American policy up to now has been to sell coal at home at a very low price and try to get all of our profit from the sale of our export tonnage. Before the war the average American idea was that our margin should be a minimum of 10 per cent on the turnover. After we got into the war and especially after the Fuel Administration was established, we got the idea that the American price plus $1.35 a ton was a proper price for our export coal. In other words, taking the home profit and the foreign profit into account, we had figured that our profits on export coal should be between $1.50 and $2 a ton as a minimum. Within the last six months our idea of profit has been enormously expanded.

With the Englishman satisfied with 2½ per cent and with the American considering 10 per cent as a minimum, we are in no position to compete in a buyers' market. Also when the Englishman considers the export market as a dumping place for his surplus and when the American considers it as the source of all his profit, we are in no position to meet competition.

European Trade Policies

The Englishman and the German give other countries coal in order to encourage those other countries to produce something which England and Germany want. England gives foreign manufacturers cheap coal to give them cheap power, so that they can manufacture cheaply the things which England wants to merchandise. The American policy, on the other hand, has been and is to make coal abroad as expensive as possible. This means that the foreign user of American coal will have costly power and therefore little encouragement to build factories depending upon its use.

The next question is so enormous that I hesitate to enter upon it. Perhaps, however, I can simplify the subject in this fashion: Some four or five years ago, in a conference with New York bankers, I put the export coal business in this way: The producing and selling interests in coal are so diversified that it is impossible ever to hope to bring them to a focus in any one organization, but there are middle functions which can be unified, such as the financing of sales, the chartering of vessels and the supplying of docks. One central organization could, to the pre-eminent advantage of the American trade, undertake these functions. They were quite sympathetic and announced their willingness to organize a syndicate to raise the necessary millions.

Bankers Reject Proffered Plan

My idea was and is that the banking houses which have such enormous sums of money at their disposal must of necessity be interested in other commodities which we want to export. Thus through a common financial point of contact there would be worked out a harmonious program for coal and the other commodities. However, there is so little cohesiveness in the American coal trade and so little understanding of the interdependence of coal and other commodities that this idea was no sooner laid before coal men than it was instantly and flatly rejected. Every man preferred to go it alone in production, in sale, in financing, in chartering and in docking.

Nevertheless, when we try to sell coal abroad in a buyers' market we meet the competition of the English, who have gone far beyond mere central financing. The large financial interests of England finance the buyers of coal. In this way they can dictate that the coal shall be supplied by English companies, carried in English ships, handled over English docks, sold by English selling agencies and consumed by companies financed by corporations in Great Britain.

I am not going to impose upon the coal trade's patience long enough to go through the long category of things that we have left out of consideration. I think I have said enough to indicate that in all respects we have done exactly the opposite to what our competitors are doing. They are fitting their appeals to the needs and wishes of the other people. We ask the coal buyers of the world to consider our needs, our likes and our wishes. Our competitors have been selling coal, in other words. We have been allowing our customers to buy it. The policy of our competitors is fitted to the buyers' market. Our policy up to now has been fitted to a sellers' market. Our competitors from now on are going to succeed. The American from now on is going to fail.

Coal Needed as Export Outlet

Our merchant marine is going to be a failure unless a certain percentage of the ships is constantly employed in the movement of coal.

The American coal business is going to be destroyed by the pressure of potentially excessive home production unless we have an export outlet.

Therefore, when I plead for a sound merchandising foreign policy, I plead at the same time for a stabilization of the industry at home and for the preservation of our merchant marine.

Testing the Links in the Transportation Chain

Shipment of Coal This Year Will Be Affected by Need of Cars to Move Accumulated Grain as Well as New Harvest—Depleted Stocks of Building Material Must Be Replenished —New Equipment Only Sufficient to Replace That Retired

By John Callahan*

JUST as "trade follows the flag," so transportation waits on the consummation of commercial transactions. This is always affected and modified to the extent that labor disturbances and similar features affect production and transportation. What is generally said here must be regarded as subject, therefore, to any labor disturbances which may occur during the year 1921.

Generally speaking the adage "No chain is stronger than its weakest link" applies to transportation just as it applies to the chain. Much of the commerce of this country originates in the West, Central West and South, and moves east and north. Traffic originating in the West, Central West and some of that from the South, destined for the great northeastern consuming section of the United States and export tonnage moving from North Atlantic seaboard points, must necessarily travel through areas which likewise are heavy producers. The weakest links in the chain are the carriers in the Central and Trunk Line classification territory, for they must not only handle the large volume of freight originating west of Chicago but must likewise carry such commodities as fruits and vegetables originating in the South.

Appraising Transportation

Any forecast of transportation conditions in 1921 therefore must be predicated on estimates of the probable rate of resumption of industrial and other activities and should take into account the probable status of each of the industries which normally require transportation in a large way.

In the western country today the elevators are all full of the 1919 crop of grain, and back of the elevators is the crop of 1920, still quite largely in possession of the farmers. Steps already are actively under way to finance the movement of this grain prior to the time when the 1921 crop will be harvested. It is believed that, even though the grain which is on hand may have to be sold at a reduced price, any failure to produce the customary cereal crop in 1921 will not entirely prevent some further surplus in the granaries and elevators of the West, unless in the near future there be a very considerable movement to market of that grain which is now being held.

In the lumber industry it is reported that the majority of retail yard stocks are not sufficiently assorted and that for any resumption of building, even though of moderate proportions, there must be a considerable restocking of the local lumber yard. The consensus of opinion among those interested in that industry seems to be that buying will not wait much longer on price reductions. We are rapidly approaching the season of the year when building, especially of residences, must be begun if it is to be carried on at all.

The cement industry has been enjoying a breathing spell for some time, and, generally speaking, today the stock of cement in the manufacturers' warehouses is sufficient for but two months. The rate of production of cement, however, is expected to increase in the near future in some sections of the country.

Competition for Cars Likely

It appears that efforts to dispose of stocks of general merchandise at prices higher than those which prevail at the present time were in many instances quite successful prior to the first of this year. Furthermore, sharp reductions in retail prices since the Christmas holidays have moved goods off the merchants' shelves and now merchandise must soon be had. This will add to the volume of freight.

Manufacturers generally today apparently are at the turn of the road and there is every indication that the bottom of depression has been reached and that business has a new and more hopeful frame of mind. Of the coal industry and the industries using raw steel this is not true. A general resumption of business is necessary in the majority of instances before the manufacturers of steel products and producers of soft coal may begin to function actively. Nor is this contradictory of the commonly-accepted truism that steel is the true barometer of business conditions. What is said of industries manufacturing articles of steel does not pertain to production of raw iron and steel.

Retirements Equal New Equipment

It is safe to assume, from present indications, that there will be a large increase in the demands on the railroads before many months have passed, especially in the Eastern section of the country. In speculating on whether the railroads can meet the demand it is well to remember that although the average daily mileage of freight cars has been increased 20 per cent, the average loading of cars has increased about 5 per cent, and the number of unserviceable locomotives considerably reduced since the carriers were returned to their owners March 1, 1920, yet the new equipment which will ultimately be purchased for use on the railroads will enter service this year only in sufficient amount to take care of retirements due to obsolescence and destruction. We have more need for such additional facilities as second and third tracks and increased and improved terminals than for more cars. Nevertheless the need for new engines and cars is great and I would say no word to minimize its importance.

I doubt whether since the return of the carriers to their owners the railroad facilities of the country as a whole, including additions now authorized, have been increased more than 3 per cent. If present indications of a gradually-increasing demand on transportation be realized, car shortages may be expected before the middle of 1921, particularly in the East. It should be borne in mind, however, that there is today no such slackening in freight movement west of Chicago as exists in the East. The large movement of Lake coal and ore will begin in April as usual, and this must be considered in any forecast of the future.

Source of Possible Congestion

The indicated possibility of a transportation shortage in 1921 will become a fact if the weakest link, the railroad systems of the East, burdened not only by local freight but called on also to carry the production of other sections of the country, cannot carry the load. It is feared that the cross movements of coal and ore in the Lake trade will be the first signal for storms in transportation in 1921.

For a time demand for coal for local consumption and industrial use in the territories contiguous to those producing it probably will be at a minimum. Demand will increase, however, as the year goes on and other industries resume their normal activity and coal will be faced with a gradually-increasing shortage of transportation, reaching an acute stage soon after July 1.

On the last day of 1920 new prices were made by most dealers for delivery in St. Louis, as follows:

	New price.	Old price
Carterville	$8.75	$9.50
Duquoin	8.50	9.25
Mt. Olive	7.75	8.00
Standard	7.00	7.50
Gas house coke	11.75	15.50
Byproduct	12.50	15.25
Smokeless lump and egg	15.25	15.75
Anthracite nut and stove	17.40	17.40
Anthracite egg and grate	17.15	17.15

*Traffic manager, National Coal Association.

What Will Be the Production Goal of 1921?

Success of Remedial Steps Attests Correctness of Diagnosis of Coal Situation Last July — Experience Proves That Tardy Buying, Light Output and Inadequate Transportation Tend to Cause Coal Shortage—Emergency Measures Should Be Avoided in Fairness to All

By D. E. Spangler* and A. G. Gutheim†

When the Interstate Commerce Commission, hearing protests against Service Order No. 7 early last July, sought to ascertain our probable bituminous coal requirements in the calendar year 1920, the estimates varied considerably. The figures mentioned went as low as 535,000,000 tons and as high as "probably 580,000,000 tons." Clearly, however, it seemed that the necessary production would not be obtained without weekly totals averaging 12,000,000 tons for two months, and 11,500,000 tons for another two months, making it possible for the third two months' period of the last half of 1920 to trail along at the rate of 10,000,000 tons weekly should the weather or other conditions limit production to that figure.

Service Order No. 7 was maintained in effect, with periodical modifications as conditions permitted, until Nov. 29, 1920, and while in effect was from time to time further modified by permit of the commission in individual instances. Its cancellation followed promptly upon the slump in business and the reduction in car shortage contemporaneously with a decided improvement in the coal situation by Thanksgiving Day. But even so, and with a marked decline in our overseas export movement, the country has continued to absorb with fair rapidity weekly outputs averaging well over twelve million tons up to Christmas Day. Thus far the bituminous mines have reported but little working time lost on account of no market and the railroads are holding relatively few unconsigned coal loads. Indications are that for the calendar year 1920 bituminous production will total somewhat over 550,000,000 tons.

Seemingly the situation was accurately sized up in July last. The remedial steps taken have justified themselves. The danger looming ahead for the then coming autumn and winter has been avoided. But it is not to be forgotten that particularly favorable fall weather was a factor of material assistance. All this, however, is water over the dam, and the mills of industry will no more run with coal already burned than with the water already past.

What, then, of 1921?

If the experience of the last two years has taught anything it should be that slow purchasing by the public, light production due to strikes of miners, or short transportation due to strikes of railroad men, all produce the same result: a shortage of coal. That experience has shown also that while transportation may be so distributed as to make up a bituminous coal shortage, this can be accomplished only under the emergency provisions of the Interstate Commerce Act and at the expense of other traffic. Fairness to all interests requires that action of this nature be avoided if at all possible.

In the present rather unsettled state of business it is difficult to forecast bituminous requirements in 1921. There are many who are well informed on the subject, however, who feel that the United States is now beyond the period of 500,000,000 tons per annum figures, and that for the future we must work toward a basis of 550,000,000 tons. This will require much more effective co-ordination of production, transportation and purchase and distribution than has been had in the past, and this is especially so because of the greatly increased and constantly growing demand by other commodities for what are commonly called coal cars.

There is little known of the actual extent of our bituminous coal stocks today and still less of the distribution of those stocks. Whether we are traveling on a margin of safety or one of some danger is a question. It behooves everyone to keep in mind what we have passed through since 1915 and to do what he can to effect such co-ordination of production, transportation and purchase and distribution as will avoid any repetition of our unfortunate experiences of the past five years.

Photo by Underwood & Underwood

MINE-RUN ANTHRACITE READY FOR THE BREAKER

A huge steel tipple at one of the large anthracite mines, with a long string of loaded mine cars ready for the breaker. The run of mine coal shown in the cars is crushed and sized before it becomes the stove, egg and nut of commerce.

*Manager, Open-Top Section, Car-Service Division, American Railway Association.
†Manager, Public-Relations Section, Car-Service Division, American Railway Association.

More Facts About Coal Are Needed

Parallel Interests of Coal Industry and the Public Require Better Record of Distribution and Consumption — Knowledge of Current Supply and Demand Helpful in Emergency — Wasters More Culpable Than Profiteers

By George Otis Smith*

A MEASURE of the well-being of the United States during the year 1921 will be afforded by the country's consumption of raw materials and energy. Productive industry is the life of the nation, and symptoms of national health or disease can be detected in the degree of current activity of a few basic industries. Hence increasing attention is being given in financial journals to statistical indexes and "barometric" curves; the ups and downs of business life must be kept charted up to date.

The relation of the U. S. Geological Survey to the everyday life of this busy nation has been a matter of evolution. Forty years ago this new scientific service administered the mineral-industry part of the Tenth Census, and each succeeding year it has collected the figures of annual mineral production, thus having the advantage of continued contact with a rapidly growing industry. More and more the Survey has endeavored to make its annual report "Mineral Resources" not merely a compilation of statistical returns of mineral output but an inventory of available resources and of productive capacity—a statement showing not simply what this industry contributed last year to the nation's business but what it can contribute next year. The aim of the Geological Survey from the first has been to inform the American people as to the elements of their national wealth, so far as these elements are in the form of mineral resources.

But in forty years times have changed, and in 1921 the mineral industry bulks large in the life of the country. In less than thirty years the increase in output of bituminous coal has been fivefold as compared with a twofold increase of all raw materials. The mineral fuels have come to have a hardly less prominent place in the daily requirements of the people than flour and milk and sugar. Shut down our coal mines and almost immediately the whole country becomes not only cold but idle and hungry. Under these conditions mineral statistics are not so much data for future economic study as a guide for present action. Certain industries, like the coal industry and the oil industry, are so essential to public well-being that their statistics of production and consumption are like weather charts—as a matter of national safety it is necessary to detect country-wide disturbances in advance, if possible, or at least at the time of their inception. So it is that timeliness in the collection of mineral statistics and prompt publicity have become recognized as of first importance.

This giving of news value to statistics is only another way of saying that up-to-date statistics possess general usefulness. The weekly coal report issued by the U. S. Geological Survey is perhaps the best example of the kind of statistical service that government owes its people. Begun during the war, when the whole industrial machine was being speeded up to carry an ever-increasing peak load, this weekly statement of coal production performs a no less valuable function in time of peace. The years 1919 and 1920 had their critical periods as well as 1917 and 1918, and at no time has there been any surplus of authoritative information regarding the true situation. The public needs more coal facts.

Coal Education Necessary

The increasing complexity of the industrial life of our country precludes any government bureau from being content with either the scope of its investigations or the quality of the information it furnishes to the public concerning so essential a resource as coal. The fuel problem is ever critical, and the people need education in every phase of it. Price wins first place in the headline treatment of coal news, but supply is the more vital phase; hence it is interesting to note that the weekly coal reports and the monthly petroleum reports by the U. S. Geological Survey do not contain the dollar sign. The interrelation of prices and supply and demand is recognized by all, but the ton is a more significant unit than the dollar for use in planning against any interference with industrial health and domestic comfort.

The increased service that the Geological Survey owes to the coal industry and to the general public—and be it ever remembered, their interests are parallel, not opposed—includes first of all a better record of coal distribution and consumption. A monthly record of all the major movements of coal—coastwise and export, lake and river, through the rail gateways—could be made up from scattered sources of information supplemented by a few new "gaging stations." This record of the progress of coal from mine mouth to market would afford a picture of the current supply and demand that would be helpful alike to mine operator, traffic manager and coal consumer; it would be information of the kind that is indispensable to public guidance of industry either in time of emergency or in the ordinary course of business.

Another public need is a quarterly inventory of the reserves of coal above ground—a stock report based on returns from a selected list of representative larger consumers. Such a report, issued by a disinterested and therefore impartial government agency, should serve to guide the general public in making coal contracts and, by giving advance warnings of shortage or overproduction, should tend to lessen speculation and to stabilize prices. This service would not be an experiment, as one canvass of stocks in the hands of 5,500 representative producers has already been made—in 1920 at the request of the Bituminous Coal Commission—and its cost was insignificant compared with the value of the definite information it disclosed as to the inadequate stocks on hand June 1, last.

Still more facts are needed in the public interest, but this method of keeping an official finger on the pulse of the coal industry has already detected certain major causes of its defective functioning. Impaired circulation seems to be the chief ailment—with mines and mine workers largely in excess of any possible annual demand, transportation is usually the limiting factor in the production of bituminous coal. Not more mines but more cars are needed, and yet in every period of speculative prices the tendency is to open new mines rather than to build new cars.

More facts are needed as to mine costs, and in a time like the present, when everyone who touches coal is under public suspicion, it would be a great advantage to the large majority of operators and dealers if the facts as to increases in costs had been officially determined and publicly known. It would be preferable to have all the essential information relating to the quantity of coal produced and distributed, and the costs of mining and distributing it collected by Federal agencies with the hearty co-operation of those engaged in the industry; but if the mutual need of publicity is not appreciated or the rights of the public fully recognized, any compulsory measures to protect the public interest are warranted—the facts must be available as they are needed.

Nor is this all that must be done in the public interest. The consumer becomes excited about changes of 10 or 20 per cent in the price of coal, but he is relatively quiet about equally great variations in its quality, and he shuts

*Director, U. S. Geological Survey.

his eyes to the greater losses of coal value that are within his own control. If a news item tells of the sinking of fifty tons of pig tin in New York Harbor, we realize a loss of material wealth, yet several times fifty tons of wasted heat units go up the stacks of every industrial city every working hour, unseen and unheeded by those who pay for that coal. Profiteering in the use of an essential resource like coal is as culpable as profiteering in its sale.

The task of teaching the public how to use the coal it buys and the problem of so standardizing the coal that is to be marketed that the consumers may know the quality as well as the price of the coal they buy—these are other services that must be rendered by the government in the public interest. Here again such Federal activity would not be experimental, for a beginning has been made by the Bureau of Mines, and a larger program has been clearly outlined. Increased activity by these two bureaus of the Department of the Interior—the Bureau of Mines and the Geological Survey—is plainly a more reasonable and effective way to serve both coal producers and coal consumers than any radical project of regulating prices without striking at the causes of high cost and of excessive waste.

More facts are needed, and the public should make larger use of the information already available. A campaign of education is better than a campaign of prosecution—more of us are ignorant than are guilty. Many millions of us need to be informed, and at most only a few thousand ought to be indicted.

National Aspects of the Coal Industry

Unsettled Conditions of Last Year Brought Recognition of Basic Importance of Coal—Rise in Mining Costs and Price of Fuel an Incentive to Care and Use of Improved Equipment—Bureau of Mines Encouraging Efficiency

By E. A. Holbrook*

PERHAPS the most outstanding feature in the coal industry during the past year has been the universal recognition of the absolute dependence of the whole country on coal as the keystone of present industrial and home life. So long as coal could be had cheaply whenever desired, the details of its mining, preparation, transportation and selling were of interest only to the trade. Even during the war it was felt that the derangement of pre-war conditions of general oversupply was only temporary.

However, the continued undersupply at major points of consumption and the unheard-of prices, affecting directly almost every individual in the country, have combined to make coal the most discussed of necessary commodities. This has been strikingly evidenced to the Bureau of Mines in the number and character of letters received asking for information. While the number asking for information on the technical points of mining has not decreased, the number asking for information on the economic aspects of the coal industry have markedly increased.

The separate components which when assembled make up the whole coal situation are mine operation, coal preparation, transportation, marketing and utilization. Because of its broad organic law covering these points and its non-partisan character the Bureau is often able to review these separate and necessary components, to correlate them and to broadly gage their trend. Thus to the consumer the questions of importance concern impurities, kinds of coal adapted for particular uses, and small percentage savings by reason of better equipment. These questions were largely of academic interest when coal cost less than a dollar a ton at the mouth of the mine. Now, however, the continued higher price level is bringing out many devices and schemes to save fuel, is causing the larger plants to employ technically-trained combustion engineers and is stimulating real interest in devices and ways to save fuel that are already on the market.

In the aggregate and if continued over a period of time this condition will bring reaction in the coal-producing industry, not because it will be possible generally to substitute other fuel for coal but because it will tend to put into effect the 15 to 40 per cent savings in fuel that are possible at most boiler plants, including house-heating devices, by the exercise of proper care and the use of improved equipment. For this reason, over a course of years high price will surely lessen relative demand.

Numerous Substitutes Appear

The high price and scarcity of coal have also been responsible for the appearance of a great crop of substitute fuels and processes, many of them with considerable technical merit. The coal industry, however, should not overlook that the real test of a substitute or artificially-prepared fuel is not always its technical merit, but rather whether the cost of producing the new fuel is low enough per ton to admit its commercial competition with natural coal under present and prospective prices. In any case the margin between profit and loss is not great and the production of an artificially-prepared fuel must be considered as a competitive business rather than as a development of an invention having before it a clear field.

There are immense high-grade coal areas in the United States still untouched, and until their possibilities have been fully developed, coal in its natural state must necessarily continue to be the chief fuel of the country. However, the use of raw bituminous coal in our great cities is rapidly approaching the point where it becomes a nuisance and a possible menace. Here, for reasons other than cheapness, a smokeless prepared fuel of reasonable price awaits a ready market.

The public has been educated as never before to the advantages of buying and stocking coal in the seasons of small demand and oversupply. At times this is a money-saving operation; in every case it is an insurance against shutdown and uncertainty during the periods of greatest demand. In spite of local opinion to the contrary, practically every kind of coal can be stored, providing those in charge have the full available information and knowledge of the storage problem and see that their orders are strictly carried out.

In the actual operations of mining coal each year sees real progress. The safety-first movement, which ten years ago was largely humanitarian in character, has become a commercial necessity. No work is projected or carried out, no methods are put into use, no machinery installed, without considering the real test: Is it safe? Practical cost and technical excellence must take second place to safety qualities.

There are, however, such continual changes in the methods and machinery of coal mining that continual investigation of the new hazards and formulation of rules safeguarding them are necessary. For example, electricity, which seemed ten years ago to have reached in mines a high state of use and development, is today spreading in use and in usefulness in mines as never before. The simple rules and regulations formulated to safeguard its use ten years ago are today inadequate and possibly hazardous in the great modern fully-electrified operation. Continual study of new conditions must be made and recommendations offered. The problems are complex and do not admit of a sudden snap judgment or opinion on the part of any of the interested parties. Rather, long-continued observation and compilation of data, as the use of electricity underground becomes more complex, are the only safe guides in controlling its hazards.

Never before have such earnest efforts been made to perfect mechanical underground loading devices for coal

*Assistant director, U. S. Bureau of Mines.

mines. There is no doubt that the continual upward trend in the cost of mining coal will greatly stimulate the development and introduction of mechanical mining and loading devices. As in other industries where machinery has replaced hand labor, this will not mean a decrease in the number of men employed but rather a change of their duties, and probably will bring about in turn a new cycle of lessened costs and a large increase in the amount of coal mined.

With all these and other movements in the industry the Bureau of Mines endeavors to keep in touch, to cooperate, and to assist. It possesses and desires no police powers; rather it is the one agency in touch with coal mining in every state, and through investigation and research and by reason of its contact with the many different mines and conditions it is able to point out what are believed to be the best practices and to give direct co-operation where it is asked for.

Of particular interest to the readers of *Coal Age* is the fact that the Bureau during the past year has noted in the coal industry a great and unprecedented demand for and absorption of technically-trained men. While this is partly accounted for by the general prosperity of the industry, it is doubtless of deeper significance. The increasing size and depths of the mines, the greater use of machinery and the increased price of available coal acreage all necessitate the employment of men who have special training and knowledge. I believe that the coal-mining industry today, both in the operating and business ends, offers unusual opportunity and advancement to the man willing to supplement his practical knowledge and experience with special training.

The developments in coal preparation should not be overlooked. With a return to normal the public, now becoming educated in regard to coal, is going to demand clean, well-prepared coal. The increasing freight rates further act as a deterrent to shipping low-grade or high-ash coals. Knowledge of the impurity sulphur, its effect in coal and coke and the possibilities of its removal have attracted attention as never before. Coal-washing, if the price of coal keeps at or near its present level, will see a development in processes and use during the next ten years comparable only with the progress made in its sister art of ore-dressing during the past ten years.

To repeat, coal has become a matter of prime national as well as of local interest. As such I believe the investigations of the Bureau of Mines are increasingly important. The Bureau is working directly with the coal industry, endeavoring to stimulate safety, economy and efficiency—it is not engaged, as an agency with police powers would be, in matters of a controversial nature—so that the new year may be expected to be one of continued constructive effort on the part of the Bureau of Mines with the continued cooperation of miners, officials and the industry at large.

Problems and Accomplishments of Retailers in 1920

Efforts of National Retail Merchants Association to Prevent Government Control of Coal Trade Interfered with Contemplated Constructive Work —In Sympathy with I.C.C. Regulations—Education in Cost Accounting and Closer Relations with Railroads and Government Bodies Foreseen

By Ellery Gordon*

A CROWDED year 1921. So far as the retail coal trade is concerned, we have had crowded into one year everything which might normally happen to us in the course of ten years. We have had increased mine prices, increased freight rates, increased retail wages and expenses, transportation difficulties, strikes, shortages, high prices, governmental investigations, grand-jury indictments, state-control laws, and a national election.

Since the armistice most of our attention has of necessity been devoted to defensive measures against various governmental regulations either threatened or imposed, and we have not been able to continue the constructive work for the trade in which it is the function of our associations to take the lead.

Car Supply Outstanding Factor

From the beginning of the year it was apparent that the greatest factor in the production and distribution of coal was to be one of car supply and transportation. The advisability of conducting a nationwide campaign to urge early buying of coal was discussed together with the establishment of seasonal coal prices and freight rates as an encouragement. It was decided that such a campaign would be of questionable wisdom, and later events fully justified this decision.

*Secretary-manager, National Retail Coal Merchants Association.

As far as retail trade was concerned, although our orders were placed, we did not feel any alarm over the failure to ship until pressure by our customers and the knowledge that large industrial plants were bidding for our coal forced us to swing to a large extent with the market. This was particularly true of bituminous in the early summer.

The absolute inability of the coal trade legally or effectively to agree on a united plan of distribution, so that New England and the Northwest would be insured of their tonnage in time to avoid disaster, brought about a demand for a Fuel Administrator. The leaders of the coal trade, however, succeeded in averting such a grave mistake on the part of the government. It was immediate action that was needed and there was no machinery ready nor was there time to set any up.

Commerce Commission Takes Hold

At this point the Interstate Commerce Commission with encouragement from the railroad association and the leading coal organizations, declared an emergency and took charge under the Transportation Act of 1920.

Its first steps were the issuance of priorities for New England and the Northwest, with specific daily shipments provided; the issuance of orders intended to force prompt unloading by consignees, and orders permitting the assignment of cars for loading for preferred consumers, such as public utilities. The National Retail Coal Merchants Association immediately announced its sympathy with the purpose of all these orders and took steps to co-operate in every reasonable manner.

It was during July that the greatest confusion seemed to exist and it was apparent that the entire country was in the midst of a coal panic. Prices were, of course, abnormal, particularly

for bituminous. The peak of the anthracite demand had not yet been reached. These conditions were, of course, brought about largely by the shortage of transportation facilities, emphasized at certain destination points by local railroad strikes.

Production increased steadily during the fall, as it always does, until it reached a peak during the early winter weeks—it has relieved the bituminous situation with the exception of a few scattered points. Recognizing, however, that there were acute shortages in certain localities, arrangements were made whereby the National Retail Coal Merchants Association could, through the National Coal Association, obtain shipments to those retailers who were suffering. Relief was thus afforded at points in various sections of the country, notably Ohio, Missouri and Illinois. At the same time local associations, such as the Chicago Coal Merchants Association, made similar cooperative arrangements with the operators and gradually the distribution inequalities were to a large extent cleared up.

The crisis in the anthracite situation did not come to a head until about the time when bituminous was quieting down. Bituminous prices receded immediately after the action of the operators in response to the demand of Attorney-General Palmer, although this action probably had less real effect upon the market than did the gradually increased production and the improvement in transportation.

The panic demand for anthracite during the last few weeks has been to some extent assuaged by very good production, and the Department of Justice has again, seconded by Mr. Calder, forced the organization of anthracite operators to take action with regard to prices. As a result, the market has declined, although there is some high-priced coal still running.

From the retailers' standpoint the unfortunate result of the extremely high market has been the criticism heaped upon the retail trade when we have been obliged to increase our prices in accordance with the prices we had to pay, and the losses we were obliged to take where we did not think it wise to increase our prices in accordance with the increased costs. It has been surprising to find a considerable element among the retail branch of the trade which is not so violently opposed to government control as it was some months ago.

Retailer Harried on All Sides

The retailer has been subjected not only to indifference in the matter of shipments on his contracts, to say nothing of shipments where contracts have never been the rule and moral obligations should have been recognized, but he has been subjected also to public criticism, and in only a few instances where the local retail organizations were most efficient have they succeeded in convincing the public that the exceedingly high prices are not the result of unconscionable profiteering on his part.

As in the case of bituminous, the National Association has called the attention of the anthracite operators and shippers to dozens of cases where the retailers' tonnage had fallen behind even last year's tonnage, which is not a fair measure. In some cases shippers have responded but in a larger number of cases there has been an apparent indifference.

There is now, for the first time, so far as we know, a joint coal trade committee, representing producers, wholesalers and retailers. This committee has held several meetings at which problems of the coal trade were discussed, and if these problems are properly solved it will be a great benefit to the consumer as well as the coal trade. The formation and activities of this general committee are distinctly in the public interest.

To summarize, our activities in 1920 were largely governed by the developments of the general market, with the exception of the groundwork for cost accounting activities and the continuation of efforts to bring about a resizing of anthracite. The advantages to the individual retailers through our activities in connection with the developments of the summer and autumn are too apparent to require enumeration.

The writer believes that we are now at a point where we can look to the future for constructive work with less byplay on account of the after-effects of the great war. For the National Association and its affiliations he can see the actual national enforcement of the uniform claim rules and the establishment of collection service among all the state and local organizations. He can see an aggressive and progressive campaign with no expiration limit as to time, having for its purpose the education of the entire trade in proper cost-accounting methods. He can see the successful continuation of our relations with the railroads and governmental bodies in furtherance of public interest. He can see the development of an information service in a statistical way that will be of benefit to the individual retailer, which is an absolute necessity to his organization.

Last, but not least, he hopes for a practical recognition of the necessity for proper financing of retail organizations.

Coal-Mine Fatalities in 1920 Shrink 7 Per Cent, Although Output Is 16 Per Cent Greater*

By W. W. Adams†

REPORTS received by the U. S. Bureau of Mines from state mine inspectors indicate a reduction of about 7 per cent in the number of coal-mine fatalities during the first eleven months of 1920 as compared with the corresponding period of the previous year.

The figures show that the number of lives lost was 1,983, a decrease of 163 from the 11-month record of 1919. This reduction in the number of fatalities is particularly gratifying because it was accompanied by an increase of about 16 per cent in the output of coal. Preliminary figures published by the U. S. Geological Survey show that the production of coal from January to November, 1920, was approximately 585,000,000 tons, about 84,000,000 tons more than was produced during the first eleven months of 1919. The fatality rate in 1920 was 3.39 per million tons mined and 4.28 per million tons in 1919.

Judging on Working-Time Basis

Complete information is not available to show the number of men employed in coal mining either in 1919 or 1920. However, if we use the record for 1918 as a basis, we may estimate the total number of days of labor performed by all employees in 1919 and 1920, which represents the period of time during which the employees were exposed to the hazards of mining. Such an estimate enables one to judge, with a reasonable degree of accuracy, the fatality rates for the past two years on a uniform working-time basis.

For 1918 the record shows that 762,426 employees performed 196,491,984 days of labor and produced 678,211,904 tons of coal, a daily average of 3.45 tons per man. Assuming that the individual daily output has not fallen below this record, the production figures for the last two years show that the total working time during the calendar years 1919 and 1920 was, roughly speaking, equivalent to 158,000,000 man-days and 187,000,000 man-days, respectively.

Based upon the number of full-time (300-day) workers, therefore, the fatality rate per thousand employees was 3.94 in 1918, and is estimated at 4.39 for 1919 and 3.29 for 1920.

Considered by causes the most notable decrease in fatalities was in the number due to explosives. This class of accidents showed a reduction of about 44 per cent. There also was a gratifying decrease in the number killed in explosions of gas and coal dust.

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†Statistician, U. S. Bureau of Mines.

Practically no change occurred in fatalities due to falls of roof and coal, or to the use of underground haulage. Surface accidents caused by mine cars and locomotives and railway cars decreased about 19 per cent.

FATALITIES IN COAL MINES IN UNITED STATES, ELEVEN MONTHS ENDED NOV. 30, 1919 AND 1920

	Killed 1919	1920
UNDERGROUND		
Falls of roof, (coal, rock, etc.):		
At working face	607	504
In room or chamber	107	188
On road, entry, or gangway	152	167
On slope	11	10
Fall of face or pillar coal:		
At working face	116	104
On road, entry or gangway	22	27
Mine cars and locomotives:		
Switching and spragging	10	7
Coupling cars	4	11
Falling from trips	17	28
Run over by car or motor	139	137
Caught between car and rib	100	89
Caught between car and roof while riding	22	15
Runaway car or trip	37	33
Miscellaneous	26	33
Gas explosions and burning gas:		
Due to open light	63	59
Due to defective safety lamps	22	7
Due to electric arc	19	10
Due to shot	6	11
Due to explosions of powder	2	11
Miscellaneous	28	18
Coal-dust explosions (including gas and dust combined):		
Due to open light	22	3
Due to defective safety lamps	..	..
Due to electric arc	..	..
Due to shot	13	17
Due to explosions of powder	1	5
Miscellaneous	..	1
Explosives:		
Transportation	96	5
Charging	14	6
Suffocation	3	4
Drilling into old holes	..	3
Striking in loose rock or coal	..	..
Thawing	..	..
Caps, detonators, etc	3	4
Unguarded shots	2	2
Returned too soon	5	8
Premature shot	49	47
Sparks from match, lamp or candle	7	7
Delayed blast	2	9
Shot breaking through rib or pillar	6	1
Miscellaneous	10	14
Suffocation from mine gases	11	16
Electricity:		
Direct contact with trolley wire	37	26
Bar or tool striking trolley wire	2	3
Contact with mining machine	4	11
Contact with machine feed wire	12	9
Contact with haulage motor	2	3
Miscellaneous	8	16
Animals	2	5
Mining machines (other than 8c)	25	36
Mine fires (burned, suffocated, etc.)	22	*a* 1
Other causes:		
Fall of person	4	2
Machinery (other than 10)	3	2
Rush of coal or gob	14	7
Falling timber	20	7
Suffocation in chutes	2	5
Hand tools, axes, bars, etc	..	..
Nails, splinters, etc	1	..
Miscellaneous	18	10
IN SHAFT		
Falling down shafts or slopes	20	23
Objects falling down shafts or slopes	6	8
Cage, skip or bucket:		
Runaway	8	7
Riding with rock or coal	1	2
Riding with timber or tools	2	..
Struck by	4	4
Miscellaneous	5	2
Other causes:		
Overwinding	..	..
Breaking of cables	..	..
Miscellaneous	2	4
SURFACE		
Mine cars and mine locomotives	64	47
Electricity	10	17
Machinery	20	20
Boiler explosions or bursting steam pipes	5	4
Railway cars and locomotives	19	20
Other causes:		
Explosives	1	12
Fall of person	15	12
Falling objects (derricks, booms, etc.)	7	7
Suffocation in chute, bin or culm	3	5
Falls or slides of rock or coal	10	5
Steam shovels	1	..
Hand tools	1	..
Miscellaneous	12	20
Grand total	2,146	1,983

(*a*) Six additional fatalities by mine fire occurred Nov. 16 at Earling, Ky. Reports from Kentucky are incomplete.

Of the total number of deaths resulting from explosions of gas and coal dust, 123 were reported in sufficient detail to show the specific causes of the accidents. Of the latter number, 50 per cent were caused by open lights, 23 per cent were due to shots, and 13 per cent resulted from explosions of powder. The electric arc was responsible for 8 per cent and about 6 per cent were reported as having been due to defective safety lamps.

PERCENTAGE OF FATALITIES DUE TO GAS AND COAL DUST EXPLOSIONS, JANUARY TO NOVEMBER, 1919 AND 1920

	1919	1920
Due to open light	57.5	50.4
Due to defective safety lamp	14.9	5.7
Due to electric arc	12.8	8.1
Due to shot	12.8	22.8
Due to explosions of powder	2.0	13.0
Totals	100.0	100.0

Concerning fifty-two fatalities due to electricity, 50 per cent were caused by direct contact with trolley wires and 21 per cent by contact with mining machines. Seventeen per cent were caused by contact with machine feed wires. Less than 6 per cent each were caused by bars or tools striking trolley wires and by contact with haulage motors.

PERCENTAGE OF FATALITIES DUE TO ELECTRICITY, JANUARY TO NOVEMBER, 1919 AND 1920.

	1919	1920
Direct contact with trolley wire	64.9	50.0
Bar or tool striking trolley wire	3.5	5.8
Contact with mining machine	7.0	21.1
Contact with machine feed wire	21.1	17.3
Contact with haulage motor	3.5	5.8
Totals	100.0	100.0

Accidents caused by underground haulage equipment resulted in the death of 353 men, or two less than the number thus killed in the first 11-month period of 1919. Of these accidents, sufficient information concerning 320 of them was received to show the percentage due to each cause, according to the following table, which also gives comparative figures for 1919:

PERCENTAGE OF FATALITIES DUE TO MINE CARS AND LOCOMOTIVES UNDERGROUND, JANUARY TO NOVEMBER, 1919 AND 1920.

	1919	1920
Switching and spragging	3.0	2.2
Coupling cars	1.2	3.5
Falling from trips	5.2	8.6
Run over by car or motor	42.3	42.9
Caught between car and rib	30.4	27.8
Caught between car and roof while riding	6.7	4.7
Runaway car or trip	11.2	10.3
Totals	100.0	100.0

The principal mine disasters reported in 1920 were: April 14, Dawson mines Nos. 1 and 6, Dawson, N. M., dust explosion, 5 killed; May 3, Submarine mine, Clinton, Ind., gas explosion, 5 killed; June 2, Ontario mine, Cokeburg, Pa., gas explosion, 6 killed; July 19, Union mine, Renton, Pa., gas explosion, 9 killed; July 26, No. 6 mine, Sublet, Wyo., explosion of powder magazine, 8 killed; August 21, No. 19 mine, Degnan, Okla., gas explosion, 10 killed; November 16, Arnold mine, Earlington, Ky., mine fire, 6 killed; November 23, Parrish mine, Parrish, Ala., gas explosion, 12 killed. These eight disasters resulted in the death of 61 men, as compared with nine similar disasters in 1919 which caused the death of 201 men.

New York Retail Industry Organically Sound

Shortage of Supply in 1920 Coupled with Investigations and Threat of Government Control Made the Coal Dealer's Lot Precarious—Turning Point Has Been Reached

BY ARTHUR F. RICE*

DURING the year the retail coal trade had almost everything handed to it excepting enough coal to do business with. The preparation of certain coals has been—and still is—something not to be mentioned in polite society, and the absolute shortage in shipments, very little coal being weighed at the tidewater ports and everything lost or stolen in transit coming directly out of the pockets of the retailers, caused no end of trouble and financial loss. The degradation item, even after the small sizes screened out have been reclaimed, is another feature of cost of which the public know nothing, but which helps to put red figures on the retailers' books.

Overhead expenses did not decrease and smaller tonnages correspondingly reduced profits, so that in spite of abnormally high prices, the retail coal merchant did not profit thereby even to a reasonable extent.

As if these difficulties were not sufficient, there have been investigations of one sort or another into the retailer's business; he has been put under suspicion of profiteering. In some cases his books were seized. The newspapers have been full of rumors as to his probable fate and grave and reverend Senators have arrived at the conclusion that he should be put under government control. Certainly if there were no prospect of an improvement in his affairs the lot of the man who puts his time and money into the retail coal business would not be a happy one.

Fortunately, however, there is reason for believing that the turning point has been reached and that a return to something like a normal state of affairs may be expected in the not distant future.

Granting as a rule, although it does not hold in all cases, that the operating costs of the individual producers are higher than those of the companies and that they are entitled to a differential, such as was granted by the Fuel Administration, I have never found anyone who could satisfactorily explain why this differential should amount to

*Commissioner of the Coal Merchants Association of New York City.

$5 or $6 per ton, as was the case for some months. It has worked a great hardship upon the dealers, especially those dependent upon the individual shippers for their supply.

Consumers, in their anxiety to keep warm, are not saying much about prices now, but later on, when they can afford to discriminate, they are not going to forget what, in their ignorance of the facts, looked to them like extortion. It is an absolutely uneconomic condition which cannot last; but if it should continue much longer, it is apparent to every thinking man that the government will step in and regulate the coal industry out of hand.

We may confidently expect that when the wide price differences between individual and company coals are in a large measure equalized, when the mines operate on full time and labor becomes more plentiful and efficient—and possibly cheaper—the old basis on which the dealer was enabled to figure his selling price will again prevail. It is likely, too, that the policy, which was allowed to lapse last year, of reducing the wholesale prices 50c. in the spring will be restored.

As to the investigations into the anthracite business, which have been much in evidence of late and seem to be gathering momentum in certain directions, the retail trade need feel little apprehension. We have already come though several such experiences unscathed, for the very good reason that we have had nothing to conceal. Whenever there has been doubt as to which way we should go we have taken the safe path. By the continuance of that policy we shall neither frequent the courts nor languish in jail. There are fewer dealers here in proportion to the tonnage handled than anywhere else in the country, which is a matter worth thinking about. The business is an absolutely essential one, even if not always thoroughly popular. It may have a headache or a stomach ache once in a while, and has a slight nervous spell now, but its heart and lungs seem to be all right, and I believe we need not worry about its ultimate complete recovery.

Declares Need of Organization by Coal Trade*

Organized in 1917 to Acquaint Members with Regulations of Fuel Administration, N. Y. Wholesale Coal Trade Association Has Steadily Grown—Margin for Physical Handling Increased from 15c. to 26-35c.

THE need for organized effort in the different branches of the coal trade directed toward the protection of the interests of its members is a subject upon which in the past there has been a great divergence of opinion, but within the last two or three years the necessary process of education along this line has been quite rapid, until today there is hardly to be found a progressive member of the trade who is not a member of at least one coal association, and, in numerous cases, of as many as three or four.

The Wholesale Coal Trade Association of New York, Inc., was formed in October, 1917, primarily as a means of keeping members informed as to the rules and regulations of the Fuel Administration. When it is remembered that Dr. Garfield's orders when combined form a volume of upward of six hundred pages, applying to no one coal man's business, but with which each was charged with being familiar, it will be seen that the secretary who did the work had quite a job.

In most of the work of a trade organization it is difficult to trace direct dollars and cents return to members. It is always gratifying to the officer charged with the work when he can point directly to a specific thing which has had that kind of result for his members. There are several instances of this kind in the record of the Wholesale Coal Trade Association of New York, the most definite of

*An interview with Charles S. Allen, secretary Wholesale Coal Trade Association of New York.

CHARLES S. ALLEN
Secretary N. Y. Wholesale Coal Trade Association

which is the additional margin above the 15c. allowed by the Fuel Administration for "physically handled" coal.

While many in authority held that the rule in the purchasing agent regulations was not meant to cover the service rendered by the Tidewater wholesaler, we were successful in obtaining from the Fuel Administration a ruling that resulted in the fixing of margins in New York, New Jersey and the New England States ranging from 20 to 35c. per ton instead of the previously fixed 15c. On the tonnage handled to the destinations covered by these allowances many tens of thousands dollars went into the hands of members of the trade to help defray the extraordinary expenses under which they were laboring at that time.

The formation and continuation of trade organizations is a matter of education and, like every other educational process, is by its very nature slow; but the result of the work done in New York is shown in a most gratifying increase in membership in the Wholesale Coal Trade Association from 28 members in October, 1917, to 109 members in 1920.

Many problems of mutual interest to members of the trade are continually arising and there is a distinct advantage in having a central place where the effect on the various individuals of such problems may be considered and, by consolidation and co-operation, efforts may better be directed to a prompt and proper solution of the same.

One of the most important functions that can be performed by the trade association is to see that accurate information as to its public relations is given to the public through the medium of the newspapers and popular periodicals.

Within the scope of my observation there is certainly no trade which has needed that sort of representation more sadly than has the coal business. It has long been the fashion to vilify and misrepresent the coal man and his business in all its phases. This has been due to a fact as to which it is futile to close one's eyes—that there have been abuses in the trade; but these have been multiplied and magnified and used as typical of the trade when as a matter of fact they were but isolated cases. Such, however, has been the habit of the coal man in the past that he has permitted these attacks to go by default, and as a consequence the impression that they are warranted has become widespread.

With an association properly officered and equipped for disseminating accurate information on coal matters, the members of the newspaper fraternity exhibit an entire willingness to go to it as a reliable source of information, and very generally use the matter supplied to them—so much so that while the efforts of the Wholesale Coal Trade Association of New York in this direction have been restricted to the local field, the treatment received has been cordial and gratifying. Whereas at one time it was the exception to give the coal man's side of the story, now there is hardly an occurrence of importance in which he is not given full opportunity to tell his story, which must result in a changed sentiment on the part of the public.

Calder Presents Coal Bill; Referred to Committee on Manufactures, La Follette Chairman

WASHINGTON CORRESPONDENCE

SENATOR CALDER, of New York, on Wednesday, Jan. 12, presented a bill to regulate the coal industry by publicity of costs of mining and sale of coal through existing government agencies. Although other coal bills in Congress as, for instance, the Frelinghuysen measures of last session, which are now pending, have been referred to the Interstate Commerce Committee, the Calder bill was referred to the Committee on Manufactures, of which Senator La Follette, of Wisconsin, is chairman, and of which Senator Kenyon, of Iowa, a member of the Calder committee, out of which the coal bill has developed, is a member.

The bill as introduced by Senator Calder (S. 4828) seeks to impress coal with a public interest, the title reading: "A bill to provide for the gathering of information respecting ownership of coal and ownership, production, distribution, costs, sales and profits in the coal industry and trade, and for publication of same, and to recognize and declare coal and its production and distribution charged with public interest and use, and to supply Congress with information relating to the coal industry for the purpose of legislating respecting interstate and foreign commerce, the public health, taxation and other matters, and for other purposes."

The bill calls for monthly or other reports by the Federal Trade Commission; investigations and reports by the Interstate Commerce Commission as to car supply and mine ratings; weekly reports by the Geological Survey; the licensing of coal operators and dealers; control of the coal industry by the President in an emergency; the prohibition of interlocking arrangements in the coal industry the same as were legislated against in the Clayton railroad bill; a coal brokers' tax; investigations by the Bureau of Mines concerning storage, inspecting and grading of coal and investigations by the Department of Labor as to the welfare of the miners.

To inaugurate the work the bill proposes appropriations of $10,000 each for the Geological Survey and Interstate Commerce Commission and $25,000 for the Federal Trade Commission.

Senator Calder issued the following statements in regard to the bill, the first in the Senate in presenting the measure, and the second from his committee, the latter explaining in more detail the purpose of the committee in presenting the proposed legislation:

SENATOR CALDER IN THE SENATE

"Mr. President, I desire to introduce a bill for certain regulations of the coal industry based on the committee's work thus far. It is the judgment of the committee that additional legislation will be found necessary, but the committee feels that this bill should be introduced and considered promptly at this time. A constant, sufficient coal supply at reasonable prices is so essential to public health that we feel anything which looks toward that object may fairly be considered emergency legislation."

STATEMENT BY CALDER COMMITTEE

"Primarily this is a bill to provide for current regular impartial publicity by reports through government agencies of essential facts concerning the coal industry and trade for the benefit of all concerned, instead of having the facts gathered by those in the industry and used or divulged only as suits their whim or purpose.

"Our investigation has disclosed: (1) That even after enjoining a government agency, the Federal Trade Commission, from gathering such facts for general use and dissemination the bituminous coal industry through its national association and in branches have gathered from its members all that the Federal Trade Commission requested and many more items, and, (2) that while these facts were then known to the coal operators they have induced biased and self-serving publicity propaganda, even boasting of having gotten their story out through the Associated Press as Associated Press news.

"Your committee believes a regular and impartial disclosure of the facts of the industry by districts as to supply and mine costs and prices will do much to prevent continuance or recurrence of profiteering.

"To enforce the giving of accurate figures the bill proposes a licensing system of all operators and dealers conditioned normally only on the furnishing of the required information. In any emergency threatening either unreasonable prices or shortage of coal supply and public health, the President is authorized to fix thereupon maximum prices, commissions and margins, over the whole or any portion of the United States, as the situation may warrant, and he may then revoke the license of anyone charging higher than the maximum prices fixed, and each such excess charging is also made a misdemeanor. This section also authorizes the President to deal in coal and control its production, movement and distribution, so as to put the government and not those self-interested in control in such an emergency when the usual laws of trade are in suspense, but limited only to the continuance of the emergency and in the protection of the public health.

"While profiteering has been both proven and admitted, there exists controversy as to exactly who is responsible and to what extent. For example, as to the 900,000 tons purchased by the War Department on the spot market in 1920 the figures show that an average mine price greater than a reasonable original mine price separated such price from what the government was forced to pay—to wit: an excess of $3.80 per ton average for the whole amount bought. How many resales and profits this represents in the different instances only a complete tracing of each carload will disclose.

"To meet such a situation—and the committee feels that such legislation will be helpful on the high cost of living in other lines—the bill has a provision taxing brokers' sales above a certain margin for the sale of coal had direct from the producer and taxing such sales to a much greater point on subsequent or useless pyramiding sales between dealers. This is calculated to drive coal in a direct channel from producers to consumers and keep it out of the whirlpool of endless commissions and margins.

"To prevent profiteering through subsidiary or affiliated concerns, a practice which has become quite general, the bill provides against such interested inside dealings by provisions similar to Section 10 of the Clayton Act prohibiting such dealings in the case of railroads.

"The bill is based on the public health and welfare, on interstate commerce, and on the taxing powers.

CO-ORDINATES EXISTING AGENCIES

"The bill does not set up any new governmental machinery but utilizes the experienced agencies in existence, chiefly the Federal Trade Commission, the Interstate Commerce Commission and the Geological Survey. It lessens duplication and provides for co-ordination, thus lessening rather than increasing uselessly the burden put on industry. It also provides power to classify those in the industry, with power to grant reasonable exemptions by class where the burden would be too great and of little or no value.

"Individual names and price and cost data are not to be divulged under penalty, except in cases of profiteering, when the names and prices must be public, or under other exceptional circumstances, and then only on resolution signed by a majority of the responsible commissioners.

"The committee and its staff have quite carefully considered the provisions of the bill and have taken considerable counsel on them, and we believe its prompt enactment will be a distinct forward step and will accomplish much both as a remedial and preventive measure."

BYPRODUCT COKE PLANT OF THE TENNESSEE

This plant has 434 Koppers ovens using about 2,500,000 tons of coal per annum and producing about 1,900,000 tons of coke. The whole coal output of Arkansas or Texas could be put into these ovens and still they would be asking for more. The growth in the number of byproduct ovens still continues and the oven has reached such a place in the coke field that the work of the beehive ovens will largely be to take care of the peak load of the coke demand. However, it must be remembered that the by-product oven is widening the coke market. Byproduct coke is being used for domestic purposes whereas beehive coke rarely entered that market being too expensive and being produced so far from the place of consumption that freight rates were prohibitory.

Coal Industry in 1920 Continued Metal-Mining

Coal Engineers Now Adapters, Not tory Screens, Filters, Thickeners, Fine Devices Are All Finding Application to Are Being Invented and Before Long

By R. Dawson Hall*
New York City

PROGRESS in coal mining during 1920 has been largely in the direction of adaptations of the methods of the metal industry. It is not surprising that this development should come, for the coal mining industry of late has largely taken form from without. The electric railroads of the country furnished the models from which our mine locomotives have been adapted. The civil engineers have given us concrete as a means of lining our shafts, and from them we have learned the value of gunite. From the railroad engineers we have derived the stripping shovel, the pneumatic drill and the general principles of the drag scraper.

From general industrial engineers we have taken the conveyor. From architects we have obtained a knowledge of stucco which in some mines is now being used for brattices. The multiblade fan had its first development for ventilating buildings and for creating a draft for boiler furnaces. From that it was introduced into mining. From the bridge engineer we have received the structural steel of our tipples. The automobile industry has afforded us the gasoline locomotive.

From the chemist came carbide, though Acheson was indeed not trained as chemist, and from the electric illuminating engineers came the electric cap lamp. From the electrician proper came the storage battery and the locomotive thus propelled. Many, therefore are the obligations of the coal industry to its sister crafts.

Mining Engineers World Famous

In earlier days, when Great Britain was the source of the greater part of the coal produced, mining was the great master for all the industrial arts. It made the steam engine, it developed the pump, it discovered the rail, it invented the metal rail. Its engineers were foremost as locomotive builders, as railroad engineers and as constructors of lighthouses. To them also we owe the introduction of gas lighting. For coal mining the mechanical engineering profession was practically created. Coal-mine equipment was, as it were, the germ from which was developed all the mechanical arts. The greatest of engineers were proud to connect themselves with mining or rather the mines furnished the greatest of engineers.

It is well to recall this fact, for today the coal industry is a borrower and not a creator. Certain mechanisms peculiar to the coal industry, of course, exist—notably the coal cutter. At present mining engineers seem to have only adopted and modified what others have created for application to other uses than coal mining. It is a fact not extremely cheering to the coal industry that it grows mostly today parasitically on the labors of inventors in kindred lines. It no longer leads but follows. It takes a leaf here and a leaf there out of the books of other industries, and it is not any too industrious in doing this. It usually waits till some enterprising engineer in some of the kindred arts decides to make a conquest of the coal industry for his device and too often he has to plead for a hearing.

Just now, unfortunately for the metal industry but fortunately for the coal industry, there is a lull in the metal market and perhaps that is why metal-mining engineers are preparing so generally to invade the coal field and give it the benefit of years of experience in the development of jigs, concentrators, vibratory screens, filters, thickeners, fine crushers, skips, air-operated dump cars and many other appliances.

If a little more hardness of conditions falls on the metal industry perhaps we may be able to get a few of their mine managers, superintendents, shift bosses and engineers, who, "boring from within," will speedily bring the business of coal production more nearly up to the efficiency of the sister industry.

All of this is painful to write, but for the first of the new year no better occupation can be found than a just appraisal of what we are and what we need to be. If we cannot initiate we can at least have the credit of being speedy and discriminating borrowers. Mining may never stand again in the exceptional position it did when Smeaton, Watt, Stevenson, Boulton, Murdoch and Trevethick were in the heyday of their glory. Few engineers today can have the reputation which they enjoyed and still enjoy after a century and more of elapsed time.

There are men as big doubtless wherever industry is pursued, but the arts draw their progress from so many different channels that none seems entitled any more to the honor of being rated as even one of the primal sources. So much is this the case that outstanding men are extremely few today. Perhaps none of our present-day coal-mining engineers will be known fifty years from now. Few indeed of the men have their names appended to any epoch-making development and those that have been notable inventors or borrowers have been promptly forgotten.

It is this forgetfulness of benefits received that makes the annals of coal

*Editor, *Coal Age*.

COAL, IRON & RAILROAD CO., FAIRFIELD, ALA.

It is hard to introduce coke for domestic use, but once this result is achieved as it has been recently in Minneapolis by the efforts of the Bureau of Mines, the consumer is much pleased with it as it is clean to handle and makes no smoke. Especially is it valuable where anthracite is unobtainable. The skeleton shed on the right foreground in the accompanying illustration covers the dumping points for cars from the mine. A conveyor takes the coal to the building and bins beyond the line of the ovens from which it is carried to the long batteries of ovens lying to the right and left of the conveyor. The gases with their burden of tar are piped to the byproduct separation plant to the left of the illustration.

to Borrow Ideas Liberally From Practices

Originators—Concentrating Tables, Vibra-Crushers, Skips and Other Metal-Mining Coal Needs — New Loading Machines They Will Be a Part of Standard Practice

mining so lacking in distinctive individuals and indeed in distinction, for its glories are nearly all derived from the progress of other industries. It is not creating agencies; it is borrowing them. It would not now invent the steam engine, for instance; it would adopt it from some more advanced industry; nor would it be extremely prompt in doing so.

We in America are rated as a commercial people, but in one sense by no means are we as commercial as was the world in the early part of the last century or indeed as it is today. We look askance at the inventor as soon as he begins to sell his invention. We hold his engineers as men of dubious employment. But in the early part and even in the middle of the century just past men such as these were the wizards of the period. Fulton, Ericsson, Eads, Whitney, Goodyear and Bell found honorable place in our school histories. Today men of like talents are regarded with different eyes.

This is due partly to the practice of big manufacturing corporations. They do not publish permanently the names of the inventors whose devices they purchase or whose services they engage. Most of us could pass a creditable examination as to the inventors of the past and as to the places where they made embryo attempts to install their devices, but it is doubtful if we could answer a single question as to who it was introduced electricity below ground, who first built an electric railroad for mine service, who made the first mining machine or built the first loader.

As these men get no glory, there is no competition for honors. The first device of a new kind, therefore, must be designed and installed purely for a commercial reason—to make money—and what was once partly ideal and partly commercial has become purely commercial and is so recognized. We greatly need a Hall of Fame for coal-mining inventors that we may attain to the notion that inventions and their exploitation are in their nature of basic importance and that inventors and manufacturers are among the big benefactors of the country—the source of increased wealth and physical comfort.

Lacking inventive ability, during the last year the coal industry has turned to metal mining for enlightenment. In the past it has found that fine coal could not be washed by ordinary jigs, for with the churning action of the jig there could be no settlement and therefore no separation of solids so long as they were so fine as to be readily stream-borne. The James jig is a big improvement, as it has no suction stroke. It is finding successful operation at one of the breakers of the Weston Dodson Co., one of the most progressive corporations of the anthracite region. With such jigs it will be possible to reduce the size of the particles that can be segregated by jigging.

Cannot Dissociate the Molecule

The concentrating table probably will be found suited for even finer material. Several tables are on the market, among which, alphabetically arranged, are: The Butchart, the Card, the Deister Overstrom, the Deister Plat-O, the James, the Overstrom Universal and the Wilfley. Where they are not confronted with the impossible they are successfully removing sulphur and ash. They cannot, of course, dissociate the molecule. If sulphur or phosphorus is in chemical combination with what has hitherto been called the "pure coal substance," no mere mechanical action will free it. Nothing but chemistry will do that work. Where to betray it the pyrite needs a microscope magnifying from 200 to 1,000 diameters, the coal is not likely to be ground fine enough for such separation and something even more placid than the concentrating table will be required for its separation. But all the pyrite not microscopic can be segregated. No more than this can be asked.

The Mitchell vibrating screen is another device which will soon receive general recognition, having already been accorded favorable attention. The Tyler Hum-Mer is another electric vibrating screen which may be placed in the same class. Short and rapid strokes do more than long and slower ones. Strange to say, the vibrating screen does not shake a breaker to pieces. It is far less trying to such a structure than the older and less dynamic screens. In fact, most of the introductions from metal mining do not have the racking quality of the heavier coal-mining machinery. The least noisy and most placid room in a mill is where concentrating tables are at work. They require little attention after being once adjusted, and one cannot but wonder what will happen to our breakers and washeries when mill machinery takes the place of the present equipment.

Saving of Suspended Matter

With the ability to wash fines will come a readiness to create them. We may be sure that we shall have Dorr thickeners and Oliver filters—in fact there have been several of the former already introduced, for the difficulty is to get the water out of such fine aggregates, which if not drained and dried

in a scientific manner will turn our streams into black floods which will carry away as never before the very best of our coal.

Anthracite culm is in particular need of this type of machinery. To begin with, anthracite has naturally more ash than other coal. It must have been a peculiarly clean peat that produced the Lykens Valley deposit with its 6 per cent of ash, for anthracite is coal that has lost all or nearly all its volatile matter and in suffering that loss has been reduced in quantity. The ash, with the exception of the sulphur, has not been similarly reduced. Strange to say, sulphur has been more greatly reduced than the ash itself. If it were not so, the sulphur in anthracite might run 5 per cent or 10 per cent instead of less than 1 per cent, as in most instances. Because the ash has not been affected by heat, anthracite coal naturally carries this material in excessive quantity.

Moreover less pure large coal is broken down and washed. The culm is largely what thus results. It is less clean, therefore, than the larger coal. Its ash content may reach 30 or more per cent. As by previously existing methods it could not be washed, it did not have as high a thermal value as the larger coal. It needs washing if it is to have a ready sale in competition with bituminous slack, and henceforth undoubtedly it will get it, though, of course, anthracite fines will not have an equal heating power with low-volatile bituminous slack even when the coals are equally pure, for in anthracite the "free hydrogen" is lacking.

Operating against the use of these jigs, concentrating tables, thickeners and filters is the possibility that instead of cleaning coal so meticulously we shall use it, ash and all, as pulverized coal. Already we are using that form of fuel not in great quantity but increasingly. However, we may find it well to both clean and pulverize coal, for it does not pay to transport excessive quantities of ash, in coal or as cinder. Anthracite has been proved a good coal for that purpose, but some of it has been found hard to pulverize. For that necessary work the Hardinge mill or some form of tube mill is available—machines wherein cascading balls turn anthracite, and for that matter bituminous, coal into impalpable dust.

Large numbers of ring-roll mills have already been introduced. They have shown how bituminous coal and some anthracite can be converted into dust. Already in the West that type of pulverized fuel has been introduced for school, factory, and office consumption. An illustration shows a truck making a delivery of this type of coal as manufactured and distributed by the Pacific Coast Coal Co. Impure coal and smoky coal can thus be burned with high efficiency and at least comparative smokelessness.

DELIVERING PULVERIZED COAL

In the West the Pacific Coast Coal Co. is delivering pulverized coal to business and school houses in tightly closed automobile trucks provided with flexible hose attachments. The fuel is fed into tanks that are housed in the basements of these establishments, from which it is automatically fed to the furnace fires. A Kansas City firm is preparing to furnish pulverized coal to buildings in that city.

Inventors Have Names Preserved

The reader will be interested to note that many of the different devices enumerated have the inventor's name appended. In the metal industry the machines are nearly always so distinguished. There has been a disposition to remember in this way the men who have aided in the advance of the industry. Great unknowns such as the coal industry contains are rare in the metal profession. Most of the basal patents are owned by the inventors, and their ownership is thus recognized. This has done much to make invention honorable. The men who have made that industry what it is have not died in obscurity but will be remembered by name by another generation.

That also is partly true in coal mining as regards loading machinery, which is perhaps that form of coal-mining development which has been most active in the past year. The loading machine is with us to stay, but as such machines are mostly quite expensive and are likely to remain so, they will be a success only if they are given an opportunity to work continuously. Big machines which treat the coal with due compunction will, if they are not supplied with cars, eat themselves up with interest charges. My advice is do not buy a machine if you are not prepared to move heaven and earth to keep it busy. N. D. Levin recently advocated in these columns better mine management as a means of keeping cars moving to and from the loading machines. In my opinion that is not all. We need a readjustment of methods. We must resign the room and pillar and get a longwall face, preferably, it would seem, by panel retreats. This will call for machinery that will make rapid development work possible.

It may revive a form of machinery, the heading-driving machine, that was the great aim of inventors ten and twenty years ago. Of all the many promising devices at that period few, if any, remain. The Jeffrey heading machine, however, is doing excellent work and seems likely to have increasing use. At the hands of Carl Scholz it is receiving such satisfactory application that it cannot fail in time to receive general recognition. On this machine and others like it rests the hope for a universal use of the loading machine and the face conveyor.

Longwall Needed More Than Ever

With longwall it will be possible to reduce the amount of narrow work and crosscuts and to limit the total amount of area developed. The new loading devices, of course, will work if they must with room-and-pillar methods, but they will serve a larger purpose when they are given the assistance that longwall retreating makes possible. In fact the cutting machine and the electric drill will both be bigger factors as soon

as continuous cutting and frequent drilling along a single face are made feasible.

The year past has seen some marked advances in loading machines. The Joy machine has gathering arms which bring the coal to the conveyor, and the Dillig loader has a caterpillar tractor that makes it easy to place itself anywhere, whether a track is available or not. It can shovel on one side of a prop and then back around and get on the other side and shovel again. It is a truly flexible unit and probably the manufacturers will find it has a pleasing quality in the fact that it is not dependent on track gages and so can readily be standardized.

During the year storage of coal took a few further steps forward. F. C. Thornley & Co. has erected storage plants for the Bertha Coal Co. These have obtained dumping and loading costs so low that they raise the cost of the coal thus put into and out of storage not more than 2½c. a ton. Conditions during the year just past were peculiarly favorable for storage, because orders were plentiful, prices were high enough to amply justify storage expenditure, employers had somehow to be kept satisfied and cars were in short supply. With storage it was possible to store and load out cars as soon as they came in.

Thirty-Seven Cars an Idle Day's Run

A mine of the Bertha Coal Co. received thirty-seven railroad cars on an idle day, Thanksgiving. That night the cars went out loaded—from storage. Most of the coal thus loaded represented a clean gain in tonnage. Had it not been loaded the tonnage would never have been delivered later. Other companies installing loading plants were the Peabody Coal Co. and the Pickands-Mather Co. In previous years the Consolidation Coal Co. had installed day-by-day storage, and the Orient Mine of the Chicago, Wilmington & Franklin Coal Co. and No. 6 Mine of the Old Ben Corporation had established large coal dumps. The practice is likely to spread.

Most developments arise at time of great need and continue when the need is not so acute. When the market is badly balanced, it is always well to have a place to put unsalable sizes. It is always an advantage to be able to run a full day regardless of car supply and to fill all cars delivered despite any deficiencies in coal production. It is always preferable to be able to load into stock if there is not enough coal ordered for a full day's run. It is a feature, moreover, the railroads will be sure to indorse, for it assists in the rapid movements of cars and lessens the use of railroad equipment for storage. During the year F. C. Thornley & Co. introduced its coalometer for the measurement of the heat of storage piles, and thus made coal storage at the mines and elsewhere a far safer investment that it otherwise would be.

To meet the need for frequent loadings and unloadings of cutting machines, the Sullivan Machinery Co. has introduced the Tipturn truck, which tips and swivels and so assists in the unloading of the machine and places it more favorably at the working face than does an ordinary truck. It is thus far available only in coal over 4 ft. thick.

Photo by Underwood & Underwood.

STEAM-SHOVEL WORK

Looking at this illustration one is led to wonder why such a magnificent piece of surface equipment as the stripping steam shovel shown is used with cars which were obviously designed for underground purposes. Such cars are hard to load satisfactorily, much coal is spilled, the net weight is small compared to the gross weight and the resistance to traction unless roller bearings are used is unnecessarily large. With "all outdoors" a railroad car with side dump could be used with advantage and dumping would be speedier and less wasteful of material. The illustration is of a strip pit in Hutchinson, Kan.

Install 35-Ton Mine Locomotive

During 1920 the Cambria Steel Co. has placed at its mines 35-ton mine locomotives, which are the largest single-unit locomotives for 250-volt mine service. These Westinghouse locomotives have air brakes and are equipped for dynamic braking. Five 27-ton Westinghouse quencher locomotives are under construction for the byproduct works of the Cambria and Carnegie Steel companies. They are equipped with automatic and manual electro-pneumatic control. Much has been accomplished in magnetically-controlled mine locomotives, and there is a strong indication of increased demand for this control. Interesting applications of this equipment have been made to car dumpers, ore bridges, hoists and similar machinery, but space does not permit of detailed reference to them.

More and more power is being purchased by coal mines. It seems anomalous to find coal mines operated by water power or by steam generated at distant points, but the trend is steadily in that direction. On Dec. 18 of the year 1920 the first 60,000-kw. unit was placed in operation by the Westinghouse Electric & Manufacturing Co. at the Colfax station of the Cheswick Power Co., a subsidiary of the Duquesne Light Co. This plant is located at a coal mine.

A large extension has been made in the use of motor trucks, a change which undoubtedly will modify tipple design in a marked way, though so far but one tipple of size has been constructed with this possibility in view. For generations manufactories have gravitated toward the coal supply and in consequence the mines find themselves surrounded by a large number of factories and residences. Some of the most thickly-populated districts are dotted around mining areas. The truck has in these regions large opportunities which are as yet but partly developed.

Progress in the development of by-product practice has been steady but not notable—that is, there has been no new principle developed. The same may be said with regard to the low-temperature distillation processes. There has been undoubted progress, but the methods have not undergone any remarkable modification and no new processes have been initiated.

We are gradually approaching a new

Photo by Underwood & Underwood.

SPRINKLER TANK

This tank does not merely dampen down the heading. It washes it clean even more effectually than a summer floodburst does the landscape. The coal dust thus disturbed entirely foresakes its resting place, leaving the walls bare and relatively explosion-proof. The Wisconsin Steel Co. uses this car at Benham, Ky.

era, but it does not come speedily. The time will undoubtedly come before long when small sizes of coal will be more greatly in demand than large coal. Perhaps all coal will be burned in pulverized form. This will make it unnecessary to use such care in mining and eventually the large coal will have to be crushed to make it suitable for the market.

Meantime we have to use precautions for producing a maximum amount of large coal and every effort has to be made to prevent the miner from exercising his preference for mining by powder. With the market preference for unbroken coal the plan of D. Vance Sickman, of Denver, Col., to bring down the undermined coal by shearing and hydraulic pressure must be regarded as a desirable advance in mining methods.

During the year attention has been called to the need for protection in case the power from a central station or the private station fails. Internal-combustion engines have been proposed as a means of driving the fan in such an event. A steam engine involves the maintenance of a boiler which has to be kept under steam if it is to be immediately available. An illustration shows one of two natural gas engines of the Bessemer Engine Co., Grove City, Pa., that have been installed in the power house of the Consolidated Coal & Coke Co , Plumville, Pa. It is a 165-hp. machine and drives a 100-kw. 250-volt direct-current generator through belt transmission. These engines are in steady use and cost less to run than steam engines when coal cost is considered. In starting, compressed air is used to turn the engine over a few times. This action suffices to start the magneto, and current is delivered to a spark plug where the explosion takes place.

A sign that machinery has reached a degree of finality is seen in the progress of standardization and in the development of detail. The American Mining Congress has appointed several committees on standardization, both for coal and metal-mining work, and some suggestions have been made looking toward elimination of excessive differentiation. As to improvements, reference should be made to the Link-Belt Co.'s new cutting chain, which holds the bits tightly in place without undue pressure and provides that the bits shall be held in the position which they should assume if the chain is to cut its way readily through the coal. It makes it possible also to turn the bits over and end for end, thus greatly increasing their length of service.

An improvement in the method of tempering drill steel bids fair to reduce the amount of breakage and increase cutting speed. C. E. Julihn, of the Bureau of Mines, has been studying this important factor in drilling at Minneapolis, Minn. Rock drills and coal drills are finding increasing application in coal mines, and conditions favorable to speedy and economical operation will be studied with a view to reducing drilling costs.

Cementation in the sinking of coal shafts, which had its initiation in the Rhein-Preussen pits near Homburg in 1864, has had further exemplification in repairing the damage which the inventor's countrymen did to French mine shafts. It has been used also in driving through fissured ground and in building a dam foundation.

DOCENA PLANT OF TENNESSEE COAL, IRON AND RAILROAD CO.

Modern coal plants are marked by simplicity of design and orderliness. This is the surface plant of a company that prides itself on the neatness of its villages. It tries to keep its mining plant as trim and trig as its towns.

MARKET REVIEWS

Markets and Production in 1920 and Forecasts of the Future as Seen by Our Correspondents in the Leading Cities and Important Coal Fields—Diagrams Showing Course of the Spot Market for Eighteen Principal Coals

Middle West Looks for Improved Coal Trade As European Situation Mends

Necessary Deflation Period Apparently at an End, Renewal of Industrial Activity Expected Soon on a New Basis—Prices Not Likely to Duplicate Heights of Last Year, but Business Enough for All

BY HAVEN A. REQUA
Chicago, Ill.

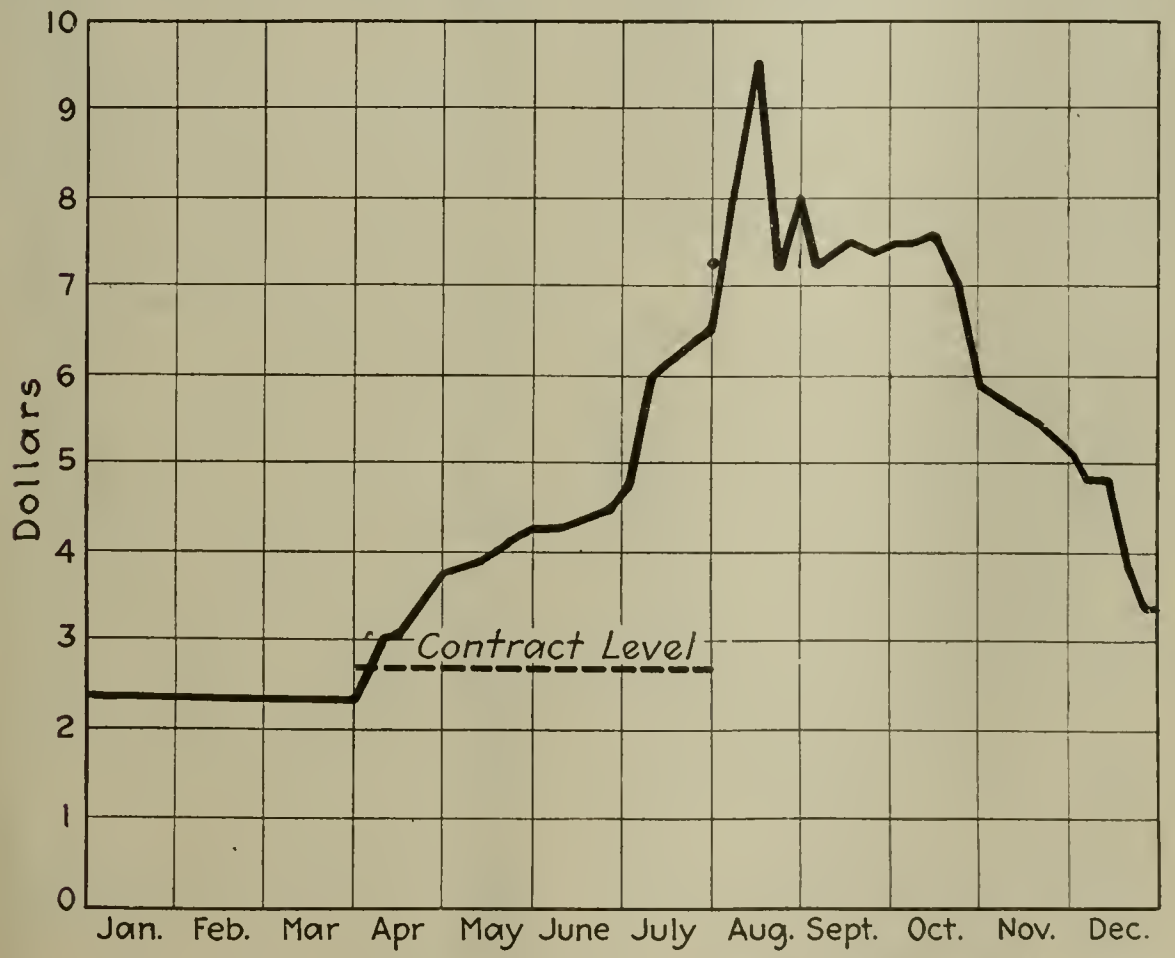
THE coal industry in the Middle West underwent some varied and new experiences during the year 1920, and although it proved a successful period from a financial standpoint, nevertheless it had its disadvantages in more ways than one. Taken all in all, it was a trying year for the operator, the wholesaler, and the public. During 1920 conditions changed so rapidly that a price quoted on a Monday, for instance, would be out of line a dollar or so one way or the other on the following Tuesday or Wednesday. Prices went from normal levels in unprecedented heights, and toward the end of the year slumped back to normal and even subnormal figures.

From January to April coal prices were controlled by the government—an unpleasant sequence of the miners' strike in November and December, 1919. During January and February the weather in the Middle West was unusually cold, and as a result of this, combined with the coal shortage, occasioned by the strike, when spring arrived there were practically no reserve coal tonnages on hand. In April the government relinquished control of coal prices and as the demand was strong, competitive bidding soon put the price of coal a little above the government prices.

For a thorough understanding of the Middle West coal situation industrial conditions ought to be considered. Practically all the manufacturers had their books filled with very profitable orders, and the general feeling was to turn out the finished article at any price, as either the American public or the European public would be glad to buy and pay the price. Goods were rapidly placed on the market, and more rapidly absorbed, countless manufacturers took on more orders at even more profitable margins and the country hummed with industry. Coal was needed, and in greater quantities than ever before.

At about this point in our industrial career the government turned the railroads back to private ownership, and a short time after that there developed an "outlaw" strike on the part of the switchmen. Soon our great terminal yards were blocked with freight which the distressed railroads could not handle efficiently. Shipments of all kinds, even foodstuffs, were delayed almost indefinitely, and the country faced—it is now pretty generally conceded—a grave crisis. Trainloads of coal could not be delivered, equipment was tied up and idle, empty cars were not sent back to the mines in sufficient quantities, and the output of Illinois and Indiana mines dropped to about 25 per cent of normal and less.

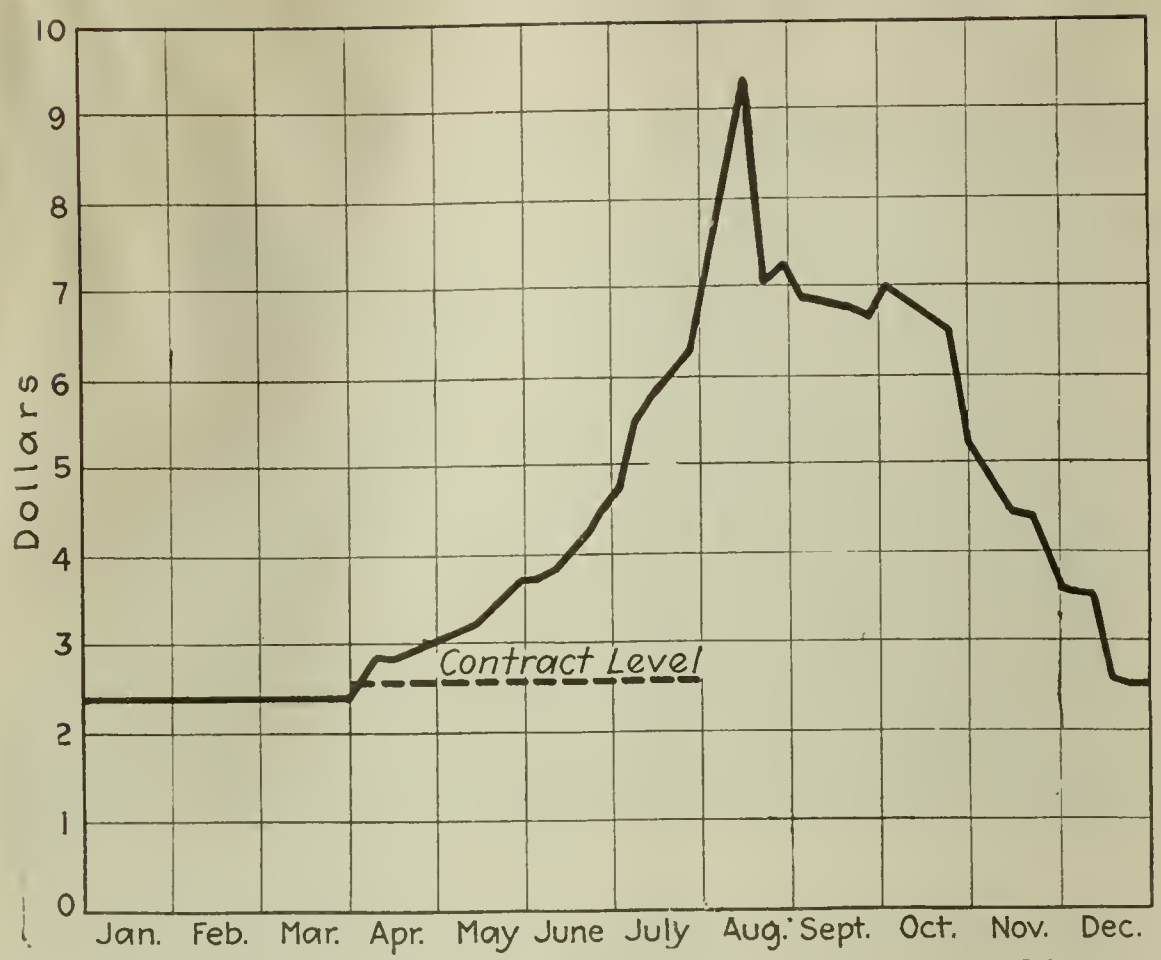
While all this was developing the manufacturers were growing increasingly nervous, and soon realized that if coal was not procured immediately, vast profits would be lost. Purchas-



SPOT PRICES, BITUMINOUS MINE RUN, FRANKLIN, SALINE AND WILLIAMSON COUNTIES, ILL., 1920

Diagram of spot prices in dollars per net ton, of mine run bituminous coal from Franklin, Saline and Williamson Counties, Illinois, in 1920, compared with the contract market price for the same coal at the beginning of the coal year in April. Quotations on the Chicago markets.

Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April 1 and reached their peak in August, due to the outlaw strike of the day men. A sharp decline followed but was checked through a period of fluctuation until the middle of October, after which prices followed the general decline observed in all fields. It should be remembered that the greater part of the production was sold on contracts that the average realization of all producers will be more nearly the contract level than the average of spot prices. Spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower. Approximately two-thirds of the annual output of this field is screened and shipped as prepared sizes and screenings.



SPOT PRICES, BITUMINOUS MINE-RUN, SPRINGFIELD DISTRICT CENTRAL ILLINOIS, 1920

Diagram of spot prices, in dollars per net ton, of min-run bituminous coal from the central Illinois Springfield district in 1920, compared with the contract market price for the same coal at the beginning of the coal year in April. Quotations taken from Chicago market. Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April and reached their peak in the middle of August. A sharp decline followed in the next two weeks, after which came a brief period of fluctuation before the general decline commenced in October. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower.

ing agents for all sorts of industrial concerns rushed to coal centers like Chicago, Indianapolis, St. Louis and Peoria and bought as much coal as they could. As a perfectly natural and logical consequence prices on all grades of coal began to advance sharply. The higher the prices, the more desirable became the coal, and soon some of our more irresponsible operators and jobbers—and especially the jobbers—were selling coal at heretofore unheard-of prices. In spite of this, more coal was wanted, and some of the larger manufacturing companies sent men down into the producing fields to buy coal as it came from the mines.

Prices went still higher. There is an amusing incident told of a certain automobile manufacturer of Detroit—a man who made the world smile a few years ago when he sailed for Europe in the fond hope of being able to end the World War. This manufacturer sent out a great number of people from his offices to purchase coal for him. Two of them happened to meet at a certain coal tipple, and as they were unknown to each other they started some spirited competitive bidding, which shot the price of coal up $2.50 per ton at that particular mine. This example is perhaps a little overdrawn to be exactly accurate, but it will serve to illustrate conditions at a great many mines during July and August.

The rise of coal prices attracted to the coal industry a class of men who as a type were undesirable. Mines were bought by those who had no previous experience in the business, and the coal from these mines was quite frankly sold to the highest bidder. On the other hand, there were far more companies who refused to be influenced by exorbitant prices and who continued to ship coal to their trade at contract prices. The majority had to suffer for the sins of the minority, and when the daily press printed the prices being obtained by the out-and-out profiteers, the whole industry was held to blame. Practically all of the large responsible companies, with reputations to maintain, realized that the situation was unusual and would last but a comparatively short time, and therefore preferred to fulfill their contracts to the letter. These operators knew that the time would come when they would need their friends, and late developments in the coal industry have justified this opinion.

A large number of coal jobbing concerns were organized and these new companies were responsible in no small way for the unenviable reputation given the coal man during the summer months. Numerous cases can be cited where firms of this type traded cars of coal among themselves so that a car of coal often reached the ultimate consumer with from five to seven profits of from 25c. to 50c. per ton tacked onto it. Out-and-out abuses like this were very much frowned upon by all responsible men, and the operators took steps, and efficient steps, to have these evils stopped.

Almost any operator of standing in either Illinois or Indiana will, if questioned, express the opinion that this unscrupulous class of jobber or wholesaler came very near to putting the coal industry back under Federal control. These same jobbers, however, are now getting their just reward, being forced to take care of the coal they bought on contract last summer. As prices are down almost to pre-war levels, it is not expected that these people will be able to stand the pace much longer. There is a place in the coal industry for the reputable jobber who supplies an economic want, but there is no place for the man or firm who comes into our business with the sole idea of reaping big profits and ignoring public welfare.

During the summer months the coal industry was subjected once more to governamental interference—this time from the Interstate Commerce Commission, who saw fit to promulgate priority rulings. As a direct result, the people in the Northwest became so frightened and agitated over their coal supply that they came into the market and brought a still greater strain on our Illinois and Indiana mines by buying our coal to take the place of West Virginia and Kentucky coals which they thought they would not get. In order to buy coal on the open market it was necessary for them to outbid the manufacturers for what little coal was not contracted for, and the market advanced to higher levels.

In the early autumn there was a slight decline in the demand for coal, but the decline was very small. The farmers, and the Middle West has quite a percentage of farmers, began to feel poor owing to the decline in prices of grain, cattle and farm products. Quite naturally they stopped buying. By mid-September the railroads had accomplished almost a complete recovery from the switchmen's strike, and freight began to move satisfactorily. The car supply at the mines improved to a marked degree; labor was satisfactory and as a result our mines began to produce more coal. Production figures climbed, and a little later on sufficiently reassuring piles of coal had been accumulated.

In early October we began to feel, if only faintly, the first signs of what was to follow. Europe was in a bad way, and this soon affected our own country in the shape of cancelled orders for manufactured products and cancelled orders for export coal. Added to this was the fact that our own long-suffering buying public came to the conclusion that it was paying too much for commodities and a "buyers' strike" followed. Manufacturing plants began to slow up, more orders were cancelled and prices began to decline.

In November and December the market price of coal fell rapidly. It was discovered that some purchasing agents, being fearful earlier in the season of not getting their coal requirements, had duplicated and in some cases even triplicated their orders, so quite naturally when coal began to loosen up it was necessary for them to cancel a few of their orders. Cancelled contracts and notices to hold shipments became the order of the day, and when the industrial outlook began to appear black and even threatening it was found that most manufacturers had substantial tonnages of coal on hand. Even more orders were cancelled and buying ceased. This explains what drove the steam-coal market down nearly to pre-war levels. The market for domestic coal was not better off.

The weather throughout the autumn and until the end of December proved unusually mild—statistics tell us the mildest in forty years. There was plenty of coal on hand at the head of the Lakes, retail dealers had full bins, and the public was not inclined to purchase. Naturally the dealer did not want to buy until he had moved his high-priced coal. In the cities those without jobs did not want to buy coal except in a hand-to-mouth fashion, and those who had jobs didn't care to buy until prices declined. In the country conditions were not much better, as the farmers were all feeling poor, on account of the decline in grain products. Eastern operators who up until late in the year had exported their coal, now turned to the Middle West and trainloads of splint and smokeless coals moved to our cities, to be sold on consignment. Prices were cut, coal had to be disposed of and the end of December saw a badly disorganized market, with practically all grades of coals selling at bargain-counter figures.

Prospects for the coming year are very hard to foretell. It is certain that the immediate future is not over-bright, but we are told that fundamentally conditions today are in just as good shape as they were three or four months ago, when the country was very active industrially. It is not expected, however, that there will be any marked improvement with us until the European situation gets better. The world has changed rapidly; so rapidly that a great many of us have not until recently understood it.

We will admit that it is hard for a coal operator with a mine, say, near Peoria, Ill., to understand that his mine is closed directly because England and France and the rest of Europe are in bad shape, yet this is the case. Our Continental friends are hard up; they stop buying, factories close, and our friend in Peoria receives an order to hold up shipments of his coal until conditions change. It's a small world after all, and with the advance of science and international credits it is getting smaller all the time. The coal operator believes that we have now reached or nearly reached the end of the painful but necessary deflation period, and that very soon there will be renewed industrial activity, but on a new basis. He does not believe that prices will ever go to the heights reached last year, but he thinks there will be enough business for all. Perhaps you will say that the coal operator is an optimist, which is quite true. If he were not an optimist he would never be a coal man.

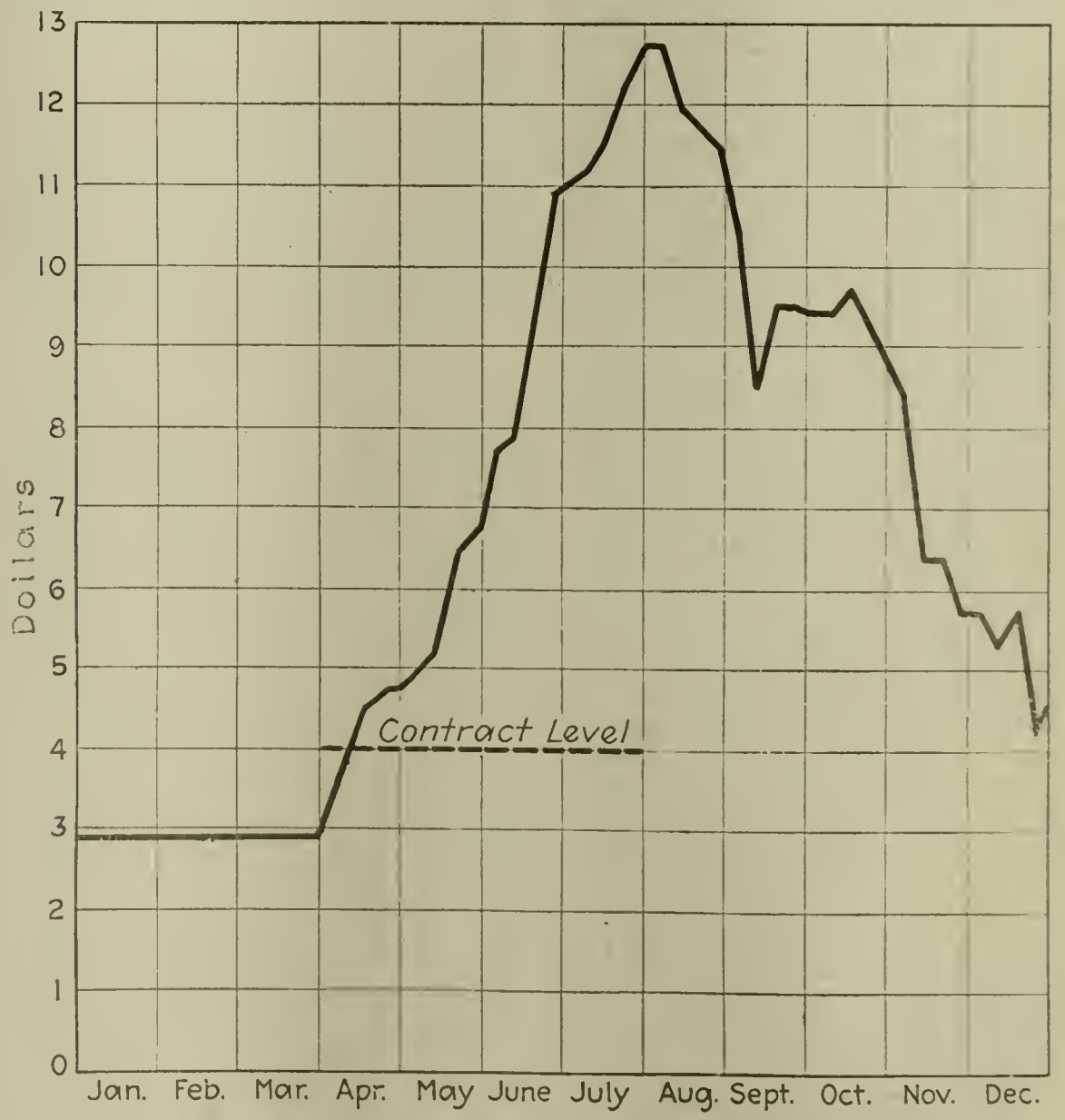
Trade Conditions in New England in 1920

Shipment Now Largely by Land Route—Lower Freights Enable Pennsylvania Product to Displace Smokeless Coals—Court Decision Made Seizure by Railroads Costly Practice—Extensive Buying Unlikely for Several Months

By G. G. Wolkins
Boston, Mass.

CONTINUOUS turmoil marked the coal year just closed. After several months of intensive striving to stock enough fuel to insure full time operation through the winter, New England consumers were confronted in September with an abrupt reversal of economic conditions. Manufacturers of textiles, shoes, rubber and metal products and certain grades of paper were among the first to feel the change, but practically every other industry quickly followed suit. By November the letdown was so complete that railroads were laying off locomotives and train crews, and all prospects of a stable market for steam coal had gone glimmering. The end of 1920 saw reserves in this territory on a parity with those of 1918, a year when government distribution had almost submerged us with a great tidal wave of indifferent fuel.

The market reacted promptly to the withdrawal of price fixing on March



SPOT PRICES, BITUMINOUS MINE RUN, CAMBRIA AND SOMERSET COUNTIES, PENNSYLVANIA, 1920

Diagram of spot prices, in dollars per net ton, of mine-run bituminous coal from the Cambria and Somerset fields of Pennsylvania in 1920, compared with the contract market price for the same coal at the beginning of the coal year in April. Quotations taken from Boston weekly markets. Majority of the tonnage involved moved via all-rail.

Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on the diagram) through the operation of the automatic labor clause. Spot prices rose rapidly from April 1 and reached their peak Aug. 1. Thereafter the decline was steady. In the middle of September fewer traffic restrictions caused a temporary stiffening of the market. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices.

31. The railroads under government control were designedly left with small stocks and shipments generally were dealt with so sparing a hand that buyers here were ripening fruit for the broad market that was certain to follow. In too many producing quarters contracts were of little concern, and, later, assigned cars furnished so conclusive an alibi that large numbers of steam users who supposed they had made adequate provision in March felt themselves forced in May and June to enter the spot market and buy for the protection of business they then assumed would continue certainly to the end of the calendar year.

That is not to say that contract coal failed to come forward in volume; it is simply to stress the fact that interruption in the usual channels of supply, however well-intentioned, seldom has any but serious consequences. A few of the more widely known producers were consistent shippers of contract coal, but this was not characteristic of central Pennsylvania. The percentage of high-priced, low-grade fuel that came bouncing along from May to September too far exceeded decent limits to reflect credit on the industry.

It was a sellers' market, largely made possible by railroads whose equipment was entirely inadequate for the service demanded. A glance at relative receipts all-rail and by water, compared with earier years, will make it clear how far the pendulum has swung toward the land route for New England.

In the contract season, January to March, consumers here who had patronized for a generation the smokeless districts in West Virginia were then asking to be excused. So much high-grade fuel was offering from Pennsylvania and the delivered cost was so much less that most of the Pocahontas and New River agencies were obliged to turn to the export and bunker trade to keep their mines in operation. And then along came the quasi-political publicist, this time without the full power of the Federal Government, to raise so great a hue and cry that it was soon evident 1918 would be duplicated and that consumption would so far fall off as to make well-meaning "estimates" look ridiculous. The agitation "Get your coal now" was responsible in a large degree for the high figures bid for spot shipments in July, a situation to which frequent railroad embargoes, the export market, and the high cost of shipping were contributing factors.

Now, after tremendous efforts to increase motive power and ton mileage, and to provide trackage and terminal facilities, the New England railroads are facing bankruptcy because of extremely light traffic. Even modern-type steam colliers are a drug on the market, the export demand has faded almost to inconsequence, and to such extent are liners withdrawn from transatlantic routes that the bunker trade likewise, for most shippers, show signs of collapse. This is a strange sequel to the mad rush since 1916, but it has its counterpart in other lines and makes 1920 a year to be reviewed seriously for the informing lessons its record teaches.

Coal Seized for Railroad Fuel

The practice of seizing coal for locomotive use was a natural outgrowth of government operation and a fixed price. Purchase thereby became too simple. A court decision making plain that confiscation of private property involves adequate reimbursement put a new face on this comfortable pastime and the carriers have paid heavily for their failure to buy in the open market when contracts were being offered. We look to see more intelligent provision this year for locomotive coal. There will be the advantage of heavy reserves at the beginning of the season and it is not likely there will be any such feverish buying of water coal as prevailed at certain periods in 1920.

So many producers have now fixed a minimum below which they dare not go without selling at a loss that sundry large contracts will soon be made by the New England railroads on some understanding as to the present wage scale. In the judgment of representative coal men the present basis will have to be adjusted if mine-workers are to be given employment. The transportation lines, without much question, will take the lead in 1921, for the industries in general at the present rate of consumption hardly will be interested in coal purchases until well into the spring. It is now clear to railroad

Receipts of Coal in New England by Months, 1916-1920

(In Net Tons)

Anthracite by Tidewater

	1916	1917	1918	1919	1920
January	.....	311,096	155,595	289,463	218,611
February	.....	207,386	169,028	188,889	202,900
March	.....	444,996	368,206	79,225	325,455
April	.....	395,389	333,384	210,671	224,057
May	.....	346,017	461,549	374,014	288,694
June	2,457,109	414,951	444,241	322,334	363,274
July	466,515	431,456	499,822	348,671	283,894
August	538,239	464,251	464,211	317,106	391,321
September	498,869	470,008	383,453	351,487	321,145
October	485,172	363,788	309,801	266,135	339,421
November	429,582	345,903	255,394	276,377	253,334
December	352,460	225,828	271,656	285,432	.....
Total	5,227,946	4,421,069	4,116,340	3,309,804	.....

* January to June, inclusive.

Anthracite by All-Rail

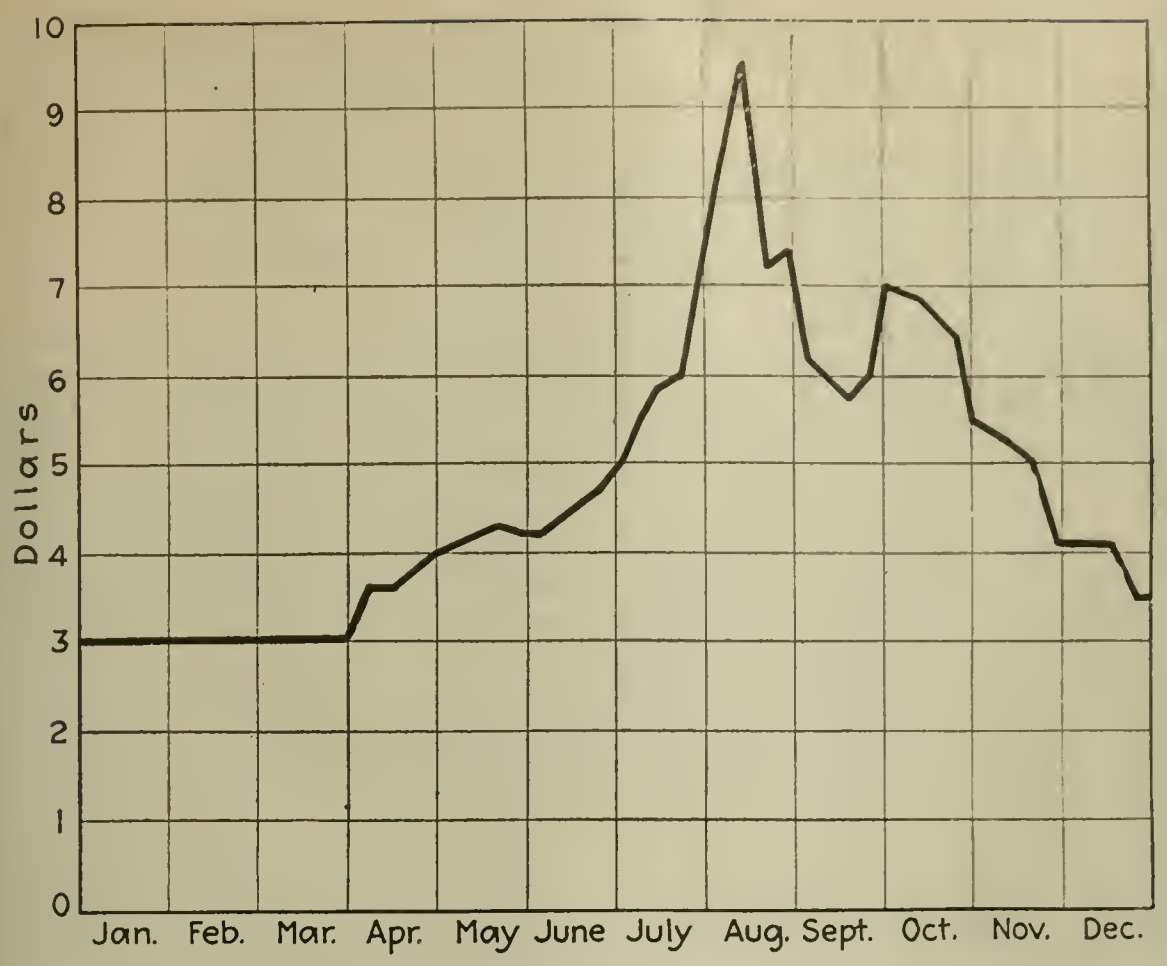
	1916	1917	1918	1919	1920
January	510,514	436,222	622,267	626,657	647,138
February	515,431	350,839	613,208	599,115	368,632
March	341,935	580,981	752,040	268,415	519,929
April	406,648	560,552	824,895	571,785	572,632
May	329,871	579,543	850,023	609,780	658,976
June	403,867	646,107	1,059,630	504,340	812,000
July	508,493	727,532	1,076,839	664,694	586,039
August	599,786	833,222	916,655	566,398	687,065
September	450,284	642,844	860,420	677,460	665,809
October	453,541	716,751	780,082	781,660	789,304
November	459,497	643,857	567,519	635,748	151,769
December	507,346	540,312	580,722	762,332	.....
Total	5,487,213	7,258,762	9,504,300	7,268,384	.....

Bituminous by Tidewater

	1916	1917	1918	1919	1920
January	First six	1,076,994	653,395	739,948	700,856
February	months	932,003	851,483	612,362	740,599
March	figures,	1,221,891	1,286,520	466,097	941,143
April	7,435,147	1,271,980	1,261,799	717,774	709,850
May	obtained	1,262,549	1,687,749	789,170	802,613
June	from Boston Chamber of Com.	1,260,944	1,469,654	752,045	783,429
July	1,081,224	1,023,216	1,833,944	694,702	992,679
August	1,314,263	1,080,177	1,857,545	816,151	956,710
September	1,106,316	1,006,619	1,537,058	791,921	1,188,374
October	1,106,840	969,588	1,422,045	636,606	825,967
November	1,145,415	915,610	1,339,985	714,991	706,770
December	1,004,100	670,810	856,378	795,593	.....
Total	14,193,305	12,692,381	16,057,555	8,527,360	.....

Bituminous by All-Rail

	1916	1917	1918	1919	1920
January	1,024,194	903,362	879,689	652,116	776,338
February	902,543	685,345	856,867	598,135	595,747
March	843,698	858,986	1,023,115	603,794	824,329
April	688,417	992,506	954,996	728,906	684,112
May	804,916	1,335,960	913,737	777,352	990,151
June	712,787	1,073,462	987,255	803,605	879,182
July	814,829	961,273	1,219,171	1,049,552	1,432,344
August	863,094	860,360	1,162,183	1,010,989	1,446,877
September	903,647	866,893	1,012,657	1,244,608	1,152,515
October	822,318	863,788	896,775	1,308,727	1,190,694
November	694,546	724,941	631,117	372,247	1,074,505
December	853,635	684,288	576,363	504,592	...
Total	9,928,624	10,811,164	11,113,925	9,654,623	.....



SPOT PRICES, BITUMINOUS MINE RUN, NORTHERN ILLINOIS FIELD, 1920

Diagram of spot prices in dollars per net ton, of mine run bituminous coal from the Northern Illinois field in 1920. Quotations taken from Chicago weekly markets. Through January, February and March, the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April 1 and reached their peak in August. Declining prices were checked late in September. Local strikes and shortage of equipment caused a temporary increase but prices quickly reverted downward again. It should be remembered that the greater part of the production was sold on contracts, that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower.

executives that they must resume their rightful place as part of the steam-using public andl that the privileges of a department of goverment in a state of war are no longer perquisites of the masters of transportation.

Apathetic Market Until April

In spite of heavy snowfall and unprecedented difficulties with cars frozen to the tracks there proved to be nothing like the broad market in March, 1920, that was expected. The various industries seemed well supplied and shippers were able to make spot sales only on the government basis; in consequence distribution went much by favor, both as to territory and as to individual consumers. In some producing districts shipments were on a 30 per cent basis, and on this proportion heavy inroads were made by the carriers. The trade was beginning to get anxious for some decision by the wage commission, then in session. At teh end of February cars were taking six weeks to come through to New England destinations. There were days when not a single empty was taken by the New York Central from the New England roads, and surely although slowly visible supplies were being cut down.

Wagon coal, an unfailing sign of impending distress, began to be offered in March, but of the standard grades at the fixed price there was relatively little spot coal available. High prices for export also made their appeal to political instincts and a limited volume of "emergency coal" forwarded by water with its export price and its accrued demurrage only paved the way for the sharp advances that came later, when regulations were suspended.

In more cases than one the trade agencies were obliged to pay demurrage on chartered ships, only to be loaded with high-priced coal, their own coal at the piers on a contract basis having been seized for railroad or other requirements in New England or elsewhere, regardless of ownership or the normal avenues of supply. It has also borne out that the Regional Coal Committee was hard put to it to find consignees for coal which they had represented as urgently needed. There were cases where cargoes were consigned to brokers, the ultimate destination to be determined by the broker—simply another instance of having cried "wolf" too long and too loud. There was then no urgency on behalf of the industries; they were well supplied for a considerable period, and it was not until the rail route proved its inadequacy in the spring that there was any real anxiety.

Contracts at Government Prices

The lifting of price regulations was much discounted. Most of the Pennsylvania shippers were actively soliciting contracts during March. There was a wide range of quotations, depending upon grade, but it was soon evident that coals available for export and bunker use would be in strongest demand. Taking into account all charges the relative cost of the better grades did not show a very wide margin over those inferior.

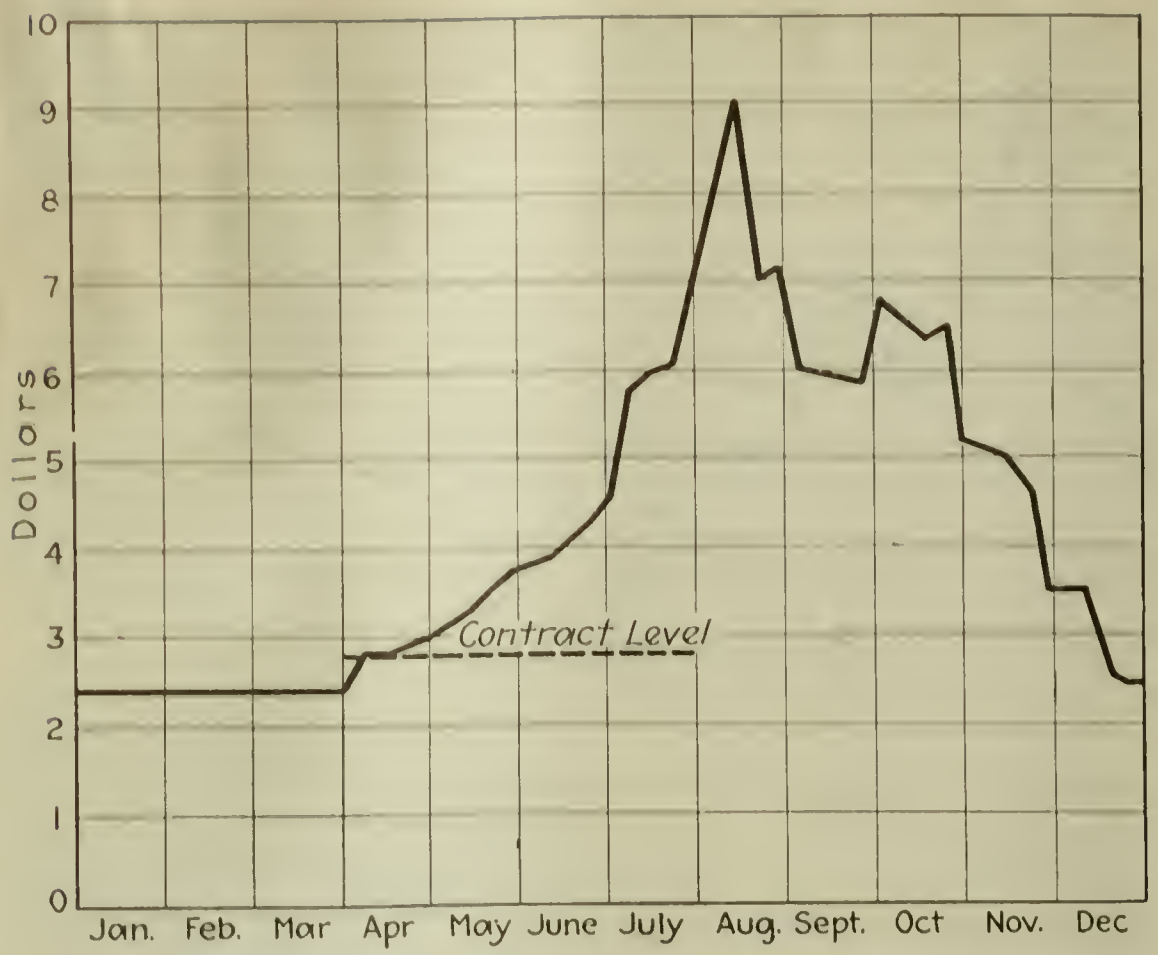
Ordinary grades from Clearfield districts were offered for the twelve months at practically the government basis—$2.95 per net ton—while Cambrias that were in the Navy acceptable list sold up to $4.75@$5, also per net ton, most prices April 1 having been made subject to such extra mining cost as might later be assesed. Pocahontas and New River were contracted at first hands on a basis of $4@$4.25 per net ton f.o.b. mines plus charges to destination.

The effort to procure a very large proportion of engine supply by the all-rail, or cheaper, route resulted in a breakdown on the part of many contractors. What seemed the desirable move for the railroads also was desirable for consumers generally. The net result was sheer inability of many Pennsylvania operators to live up to the heavy obligations they had undertaken.

Spot Market Develops in April

Labor and other conditions in the region grew so unsettled that buyers began to find it extremely difficult to arrange purchases with reliable shippers. The yardmen and longshoremen strikes in New York favorably affected rail movement, some shippers selling at quite remunerative prices and others confining themselves to better deliveries on contract. The switchmen's strike had a notable effect on shipments later on as the trouble spread, and there rapidly developed in May the unbalanced situation that made possible an upward swing in spot prices. Low-grade Clearfields rose from $3.50 to $6 50 in a few weeks. Pocahontas advanced from $4 to $6 at the mines, and $9 per gross ton was soon reached f.o.b. vessel at Hampton Roads. Heavy tonnages at the latter piers were moved overseas and for government requirements. What Pocahontas and New River came to New England moved in customary channels, but there was even less placed here on contract than in 1919, a year of extremely low coastwise shipments.

Active buying in Canada lent buoyancy to the current market through May, and prices were bid up to $7@$8 for low volatiles of only fair grade. Early in the season there was a strong feeling in the trade that operators would hardly dare mark up prices beyond $6 per net ton at the mines, but by June 15 an amazing upward trend was in full swing and the $11 mark had been passed. There was no sign of price recession and the clamor for quick coal was insistent and continuous. Every wholesale office was besieged with eager buyers. Middlehouses bought of one another, and conservative consumers who had been inclined to await developments became



SPOT PRICES, BITUMINOUS MINE RUN COAL, KNOX COUNTY, INDIANA 5TH VEIN FIELD, 1920

Diagram of spot prices in dollars per net ton, of mine run bituminous coal from the Knox County, 5th vein field of Indiana in 1920, compared with the contract market price for the same coal at the beginning of the coal year in April. Quotations taken from Chicago weekly markets.

Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April 1 and reached their peak in August. The general tendency was downward until Oct. 1, when prices rallied somewhat. By November the decline was again in full sway and soon passed below the figure set by the Indiana Food and Fuel Commission for state shipments. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those those shown in the diagram, while screenings or slack were lower

now thoroughly alarmed and sought coal at the best price obtainable.

The service order of the Interstate Commerce Commission stipulating priority for cars bearing coal destined (via Tidewater piers) for New England points in the name of J. J. Storrow were ill-advised and proved abortive. Movement had already improved when another makeshift priority was decreed, and it became apparent to the trade that the situation was in reality slowly on the mend. Coal was coming through in less time and embargoes were less frequent. Additional locomotives were put into service, and while there was no perceptible effect upon spot prices for several weeks, it was clear we were gradually emerging from the woods.

Only 30 Days' Supply in July

Early in July a careful survey of the larger consumers showed slightly over thirty days' average supply, but there was only a slight let-up in demand and certain producers continued in position to exact the limit on price. Conservative interests who, because of embargoes, found themselves with small tonnage of free coal to dispose of, made sales either at contract prices or at only a slight advance. It was hopeless then to expect that New England buyers would absorb any considerable increase in receipts by water, especially on the price basis that had to be asked, and that was why "emergency coal" efforts brought to bear at Washington were doomed to failure.

Prices Off In August

By Aug. 15 it was evident a pronounced change had come over the market. After July 4 receipts bulked so large that buyers showed much less concern over the future of the market. There even were cancellations of May and June purchases.

In September Clearfields had eased to $7.50 @$8 per net ton at the mines, and all-rail movement had diminished. Service Order No. 11, especially drawn to meet New England emergency needs, was cancelled. At the same time that there was congestion in high-ash high-volatiles at Baltimore and Hampton Roads there was an actual shortage of low volatiles due on contracts. The order had not worked advantageously for New Englnd, nor for anybody but the shippers of inferior coals, who had been handed a market on a silver platter.

The forty per cent advance in railroad tolls was another retarding factor. This added so much to the delivered cost that there was a distinct sag in spot buying, and prices shaded off consistently until late in December, when $3 was reached on fair grades from central Pennslyvania, and he was a right worthy salesman who could find an order for any grade at better than $4.

Smokeless Operators Disappointed

The drop in ocean freights from $20 to $4.50 and the abrupt change in export demand following closely upon the British strike turned the attention of smokeless operators again to New England, but to no purpose. Aside from a few purchases by a few large utilities this market has absorbed very little spot coal from the West Virginia districts. From $15@$20 per gross ton f.o.b. ship the market has dropped to the vicinity of $7. As the year closed coastwise freights had slumped to $2 and less, but still this section was so deeply overloaded with coal that no buying interest whatever could be worked up.

Shipping Board craft have been turned back to the government in squadrons and private owners are striving in every direction to employ their ships from trip to trip.

Trade Prospects for This Year

As 1921 opens, a few textile and other plants have resumed work on one-half to three-fourth time, not in response to any buying movement on the part of retail distributors but largely to help care for local labor problems. It is difficult at this writing to see where any buying interest can be aroused in the next sixty to ninety days. A few operators are angling for contracts, but the nibbles are going to be half-hearted, at least through January and February.

Shippers have been at pains to establish connections overseas. Exchange, however, is still unstable; and as Europe is beginning to rehabilitate, the American coal industry will have less its own way in the offshore market. Much remains on a saner basis than to many has seemed possible since the spring of 1917.

The Virginian Ry., which serves the Winding Gulf region, is rapidly recovering from the effect of government operation—probably more rapidly than any other railroad in the country. During the year it broke all previous records for certain performances. The average car miles per day during the month of August was 60.90, as against 40.36 for the month of August, 1919. The total number of cars loaded at the mines during the month of August, 1920, was 13,517, as against 9,862 cars for August, 1919, and the best monthly loading for any previous month was 12,251 cars. On Dec. 6, 829 cars, including fifteen 120-ton cars, were loaded at the mines, as against a maximum daily loading of 591 cars prior to 1920. During the month of October, 1920, 581,968 tons were dumped over the pier at Sewalls Point, as compared with 149,800 tons for October, 1919.

Wide Variation in Wholesale Prices Upset Philadelphia Market in 1920

Profiting by Lessons of War Years, Dealers Are Expected to Keep Business as Nearly on a Cash Basis as Possible—Heavy Bituminous Stocks on Hand Will Defer Heavy Buying

By W. D. Hammer

PROBABLY nothing upset the anthracite trade more in 1920 than the continued fluctuation of wholesale prices. Company prices for January, February and March were as follows: Egg, $6.35; stove, $6.65; nut, $6.75; pea, $5.30, and buckwheat, $3.40. Independent shippers were quite modest, at only 75c. above these figures.

Anthracite

Talk of a miners' strike stirred up the trade until all dealers were clamoring for coal, with only the lightest stocks available. Production was severely curtailed by a strike of the railroad men during April. In May one of the other large shippers, despite the unsettlement of the anthracite mine wage problem, increased prices to the following figures: Egg, $72.0; stove, $7.45; nut, $7.55 and pea, $5.75 per gross ton. The Independent producers added about $1 to this schedule.

On Aug. 26 the freight rate on prepared sizes via the Philadelphia & Reading R.R. was advanced to $2.66, and pea and smaller $2.38. Starting soon after May, the larger companies had been adding 10c. a ton to the price of the coal, all of which made it difficult for the retail men to keep a standard set of prices, especially as the independents during this time were adding even greater increases than the companies.

The summer was quite unsatisfactory to dealers, as they were far from able to get the amount of coal necessary to meet their orders. Conditions were made worse by another strike of the rail men on June 19. The loss of production occasioned by this strike was never made up. Just as rail conditions were assuming a normal state the miners went out on a strike from Sept. 1 to Sept. 15.

The dealers usually expect better shipments in the autumn, but during the past year, probably because of unusually mild weather, improved tonnage did not begin to arrive until Dec. 1. At the beginning of 1921 company prices were about as follows: Egg, $7.75; stove and nut, $8.05, and pea, $6.40. Quite a few of the independent shippers quoted prices as much as $2 to $2.50 above these figures.

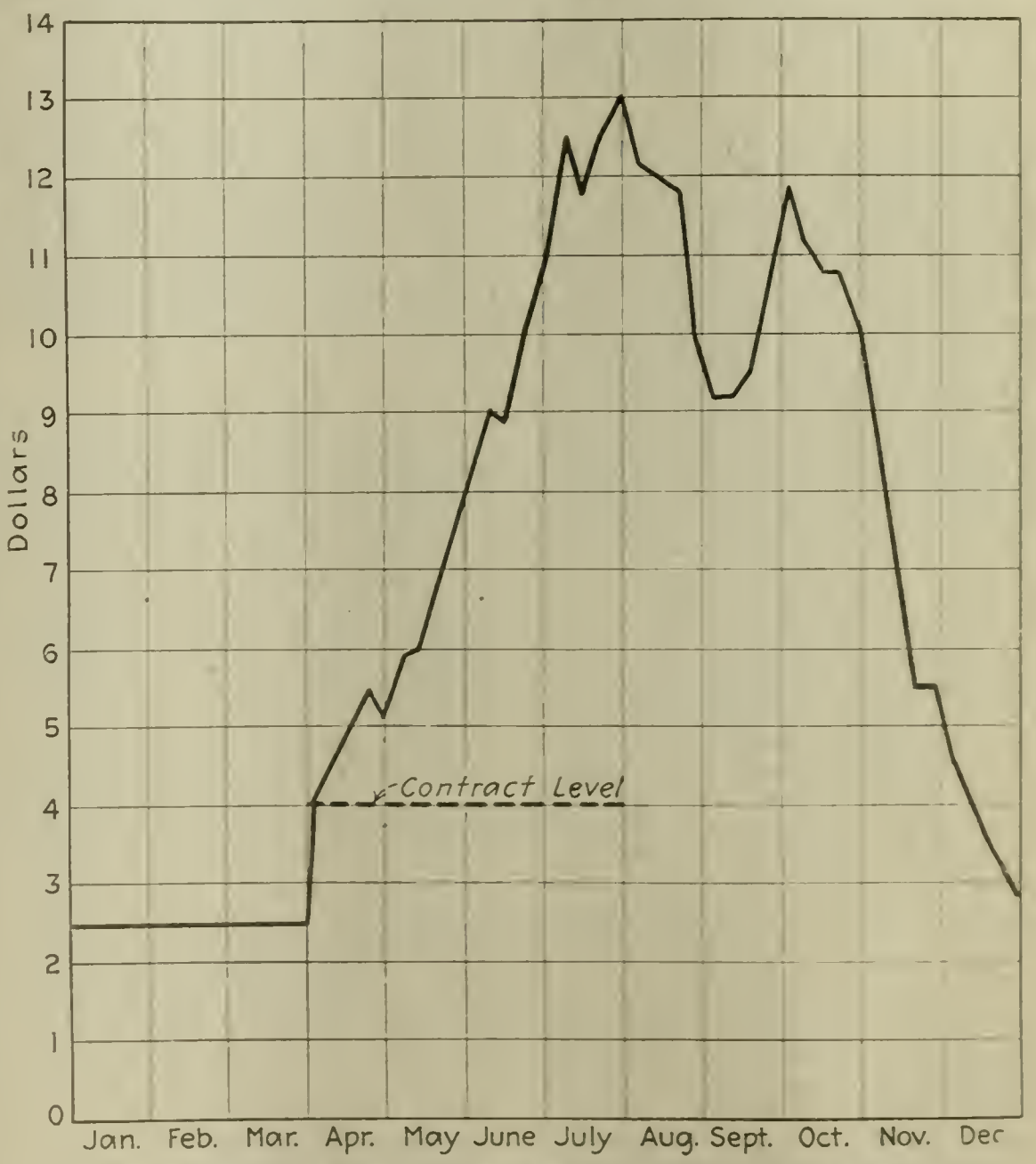
For the first nine months of the year steam coals were in the strongest kind of demand, due to the scarcity of bituminous coal, and the company price on buckwheat was advanced by easy stages from $3.40 to $4.25 per gross ton at mines. When the demand for steam sizes fell off, the independents, who had been getting as high as $5 and $6 for buckwheat, were glad to get $4. Rice and barley, which had not been particularly strong, became almost unsalable by the beginning of the new year.

Bituminous

From January to March, 1920, soft coal was sold at the government wartime prices, but in anticipation of a reliquishment of governmental control quite a deal of contracting was entered into late in March, for shipment beginning with April 1, at from $3.75 to $4 at the mines.

On April 1 the price regulations were removed and immediately there were heavy offerings of spot coal. Prices advanced steadily from the $2.95 mark, and $5 coal was soon common. In midsummer prices had climbed to $11 and there was a general feeling that the top had been reached, as there was much talk of government regulation again. However, due to the tremendous export trade, which had been growing all summer, spot prices continued to mount and were as high as $16 late in July, although the average was nearer $14.

In late summer prices showed a tendency to sag, on account of the industrial let-down, but the anthracite strike early in Sept. once more stiffened the demand and prices again reached $15. By October the lessened demand for coal, both export and domestic, caused prices to recede until something under $7 was the price for the best steam coals in November. The decline continued with greater force in December and the



SPOT PRICES, MINE RUN, FAIRMONT DISTRICT, W. VA., 1920

Diagram of spot prices, in dollars per net ton, of mine run bituminous coal from the Fairmont, W. Va., district in 1920, compared with the contract market price for the same coal at the beginning of the coal year in April. Quotations taken from Philadelphia market. Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April 1 and reached their peak late in July. A swift decline followed, ending in September, after which the price recovered about $2. From October until the end of the year the decline was steep. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above above those shown in the diagram, while screenings or slack were lower.

beginning of the new year finds pool 9 coal selling for $4.25 at mines, with pool 10 at $3.40, 11 at $2.50, and the Fairmont gas coals in pool 34 at $2.50.

Toward the close of the year there was much talk of contract coal, with very little business closed on account of the uncertain conditions. Both the shipper and consumer seemed to be sparring for position and while some of the larger companies were reported as closing agreements at $4.50 with their best customers, the trade in general is inclined to hold off. Late in the year the opinion seemed to grow that the original price of $4.50 announced would have to be considerably shaded for spring business, when the heaviest tonnage usually is put under contract.

Looking forward, there is a feeling that many changes are impending in the anthracite trade. On the whole no one expects that the coming year will be nearly as profitable to the retail men as was 1920. The chief reason for this is the decreased purchasing power of the consumer, which it is thought will begin to make itself felt in the early summer.

Profiting by the lessons of the war years there is no doubt that every dealer will strain the utmost point to keep his business on a cash basis. As a further incentive to this end it can be almost assured that shippers are not going to relinquish their plan of making the dealer make payment when due. However, if business becomes slack during the summer, many dealers will extend credit to a portion of the trade, and competition may become so keen that prices will be cut, as in the past. Dealers who have been in the trade during the last five years are strong financially, which fact, will be more than likely to induce shippers to extend credit in their turn to dealers.

During the last six months of 1920, when prices of commodities were moving downward, coal prices held and often increased. Likewise this year it is quite doubtful whether there will be any material reduction in anthracite prices other than those of the independents. The companies may give the summer reduction of 50c. a ton on April 1, but with wages at the present schedule there is little hope of anything like pre-war figures coming into vogue.

The future of the bituminous trade is one of great uncertainty. The new year has opened with spot prices—about $3.75 to $4.25 for the very best coals—apparently as low as mining costs will permit, yet the consumer is inclined to wait. No one, not even the consumer, expects anything like former figures for soft coal, and the buyer is convinced in many instances that present figures are fair. As it stands today everything depends upon the resumption of industry, but with the heavy stocks already above ground it is going to take some time before buying is resumed in earnest.

Another factor that must be seriously reckoned with is the large number of new openings started during the past year, all of which are making a strenuous effort to keep on the market. These new mines will exert an influence on prices for a long time and no doubt will be an unsettling factor.

The contract situation presents an interesting phase and every one is much in the air as to what the final price for April business will be. While most contract tonnage is placed as of April 1 there is always a certain amount agreed upon at the first of the year. This seems to be a sort of preliminary step to the regular contracting season. In December just past, following the lead of several of the larger shippers, an appreciable amount of tonnage was closed on the basis of $4,30 to $4.50 a ton. The feeling is now growing, however, that this is too high and that a figure nearer to $4 will be the correct one.

Baltimore in 1920 Had Largest Domestic and Export Demand Ever Known There

Export Loading of Bituminous Amounted to 4,296,679 Gross Tons, Compared with 1,717,342 Tons in 1919—Inadequate Car Supply a Constant Source of Difficulty During the Last Year

EDITORIAL CORRESPONDENCE

FOR the extent of interruptions through government control and regulation, strikes on the railroads and at the mines, for new price levels, for the margin of profit set, for the great increase in overhead charges, for the recording of the greatest export and domestic call in the history of the trade, and finally for the great collapse that came at the close of the year as a result of the general readjustment of business, the year 1920 was one of the most remarkable in the history of both bituminous and anthracite trading in Maryland.

BITUMINOUS

The total export loading at Baltimore during 1920 was 4,296,679 gross tons of bituminous coal. The 1919 record was 1,717,342 tons. By months the record was: January, 139,118; February, 59,462; March, 51,868; April, 313,-109; May, 424,614; June, 602,739; July, 290,912; August, 561,694; September, 422,832; October, 711,028; November, 499,442, and December, 219,861 gross tons.

Early in January the troubles of the trade began as the car supply became shorter and the government placed an ineffective ban on exports which left little coal at the piers. With the central coal commission's hand on embargoes coal men shipped as much as possible on high price contracts. Unreliable car supply continued throughout February and March with loadings at the mines not much more than one-fourth normal, and unemployment in the Georges Creek and nearby regions general as a consequence.

In March loads at the Baltimore piers were as low as one hundred cars and at times wiped out for a few hours; industries dropped to the danger line of supply and prices on individual sales began to mount. The trade was restive under heavy New England movement on priority and contracts were withheld in face of government technical maxima, although a few contracts were noted at from $4 to $4.50 a net ton f.o.b. mines for best grades.

April saw prices beginning to jump, with movement below 50 per cent of normal. Export trade began to offer up to $5 net at the mines, and later, with car supply varying from 40 to 70 per cent, went to $5.50 and a few sales at $6. The rail strike at this time saw many coal men patriotically aiding the government by disposing of coal at the old $2.90 figure when as high as $6 was to be had in open trading.

Export business came in heavily in May. Best steam and gas coals readily commanded a mine basis of $6.25 to $6.50 per net ton f.o.b. mines, and the rush caused many delays in loading, from thirty to forty ships being tied up off the piers at one time. At this time the city authorities, who had refused to make a contract early in the season protested because they had to pay as high as $14 a ton for anthracite and $9 a ton for soft coal delivered. Before the month ended as high as $7.50 to $7.75 was paid at the mines for export coal.

Prices continued to rise in June, $8 to $8.25 net being recorded early in the month at the mines. Domestic users, seeing the market still rising instead of falling, got heavily into the game also, and a scramble resulted over the limited deliveries here under a 40 to 50 per cent car supply at the mines. By mid-June prices of both steam and high-volatile screened of best grade were running riot at the mines at from $9 to $10, and by the end of the month from $11 to $12 and in some cases as high as $13. An odd situation developed then when on priority for public service and municipal use coal was offered as low as $7 to $8 at the mines.

July brought first the end of outlaw rail strike and then the end of the export ban. Government diversion to the Northwest and New England continued, and prices for best steam and gas coals were from $10 to $13 per net ton f.o.b. mines. Car supply while a little better, was not sufficient to break prices.

The real break came in mid-August, and coal over the balance of the month, while held firmly by some, was sold by other at from $7.50 to $9 per net ton f.o.b. mines.

Through September the market fluctuated between $8 and $10 for best coals

for the most part, and October came in fairly strong with both high-grade gas and steam coals held at $9.50 to $10.50 per ton, f.o.b. mines. Toward mid-October prices went from $1 to $1.50 higher again, but the end of the month saw a new retrograde movement when export demand for future shipment began to decline and home demand lessened as many factories began to curtail or shut down under the growing process of business readjustment.

Recession in November was rapid and each day saw cheaper coal. By the middle of the month and thereafter excellent coals were offering at from $6 to $7 per net ton f.o.b. mines, and as the month came to a close they had dropped to $6 with more offerings and fewer takers.

Early in December good coals were widely offered at $4.50 to $5 at the mines, and only a continued shortage of cars prevented a more sudden break. Weaker and weaker grew the market and at the close of the old year best steam coals were quoted at the mines per net ton at from $4 to $4.25, intermediate coals around $3.50 and lower grades at $3 or a little less. Best gas was freely offered at $3.50 and run of mine around $2.75. Car supply had jumped to around 100 per cent toward the close of the year, and coal began to pile up at tide.

Anthracite

The hard-coal trade had a very trying year in 1920—one full of more uncertainties than ever before experienced here. Failure to fix prices in the spring, as usual, caused a big upset, and pending the action of the Washington conference the old October, 1919, schedule of delivered prices was run over January, February, March and part of April, as follows: Broken, $12 a gross ton; egg, $12.50; stove, $12.75; chestnut, $12.85; pea, $10.25, and buckwheat, $8.20.

In April the trade in many cases refused to book any more orders at the old October schedule, finding that the coal was not coming in. Over the summer in fact the trade got only about one-third of its usual run and fall was met with more than 20,000 homes in Baltimore entirely out of coal. A tentative schedule, an advance of $1 a ton on that given above as for October previous, was adopted in May pending action of the wage conferese in Washington. At this time many dealers were paying premiums of from $1.10 to $1.50 on much of their coal. During early July, while no official schedule was set, many dealers advanced prices of white ash 25c. a ton and Lykens Valley 50c. a ton, to meet mounting premium costs, and later in the month the following schedule was set: Hard white ash, broken, $13.75; egg, $13.75; stove, $14; chestnut, $14.10; pea, $11.25; buckwheat, $8.70. Sunbury prices were the same as white ash. Lykens Valley was set at $14.70 for egg, and $15.10 for stove and chestnut.

The various freight and wage increases that came over summer are familiar to the trade, and the end of August, with the last freight jump adding $1.04, while the light shipments of company coal coming in stood the trade from $7.85 to $8 for popular sizes, and the larger run of independent coal all the way up to $9, brought the trade here face to face with a serious situation. It was natural, therefore, that the trade fixed a new schedule ranging up to $15.75 for white ash, as follows, on Aug. 26: Broken, $15.50 per gross ton; egg, $15.50; stove, $15.75; chestnut, $15.75; pea, $13 and buckwheat $10. Those prices held over the end of the year and are still in force.

After a marked falling off in supplies over spring, summer and early autumn and a premium line of coal in the autumn and early winter that caused some dealers to set prices above the local schedule—one who was paying as high as $11 a ton at the mines fixed his retail schedule here for several weeks at $17 a ton—relief began to come by heavier shipments in November. In November and December a total of 135,000 tons was received here, and the heavier movement still continues. The acute shortage has been covered by this movement and a mild winter.

St. Louis Coal Market in 1920 Gave Little Comfort to Domestic Consumer

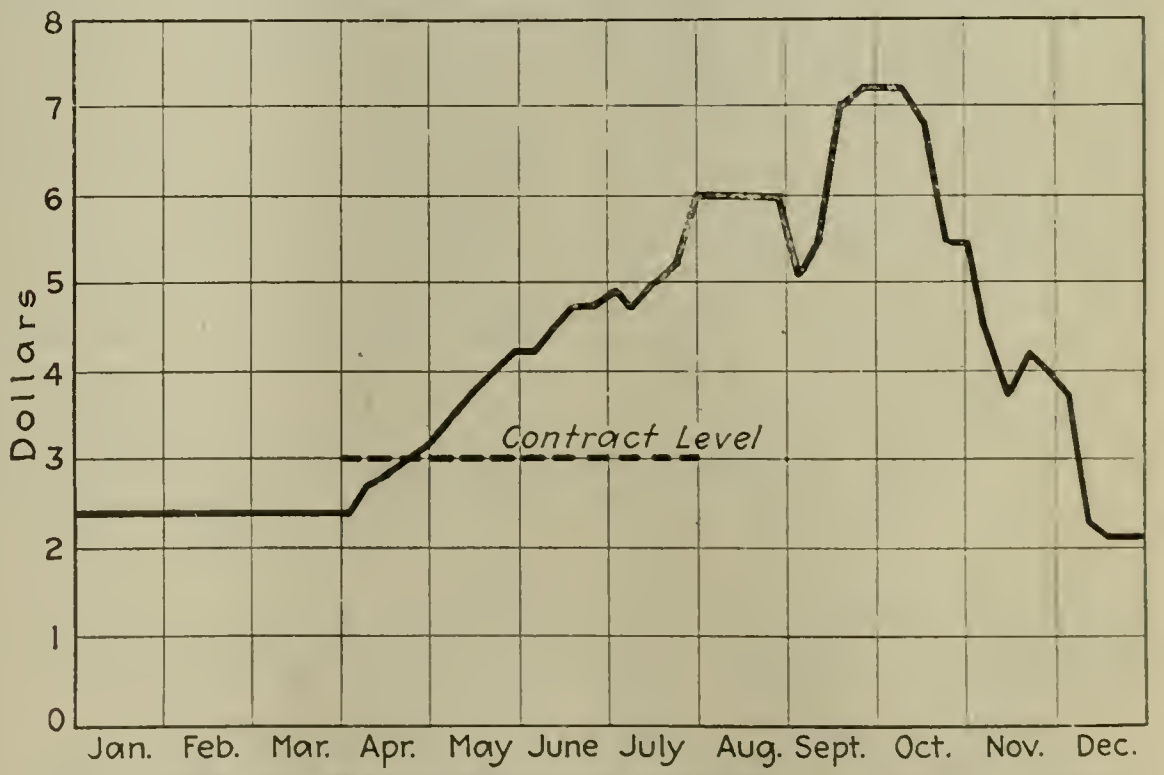
Railroads Confiscate What They Need, Speculators Manipulate or Bribe, According to Circumstances, While Householders Shiver or Hope — Governor's Committee Brings About Alleviation of Conditions

Editorial Correspondence

AS A GRIM reminder of the late war, the coal trade opened 1920 with Fuel Administration prices in effect. As a result of the miners' strike of November, 1919, and the shipment west of thousands of Eastern line hopper cars, the kind of equipment needed—flat bottoms—were not available. Hoppers could not be unloaded for local reasons and the trade was embarrassed. The railroads were all short of coal and the reluctance of consumers to take coal in hopper equipment gave the roads opportunity to help themselves to coal.

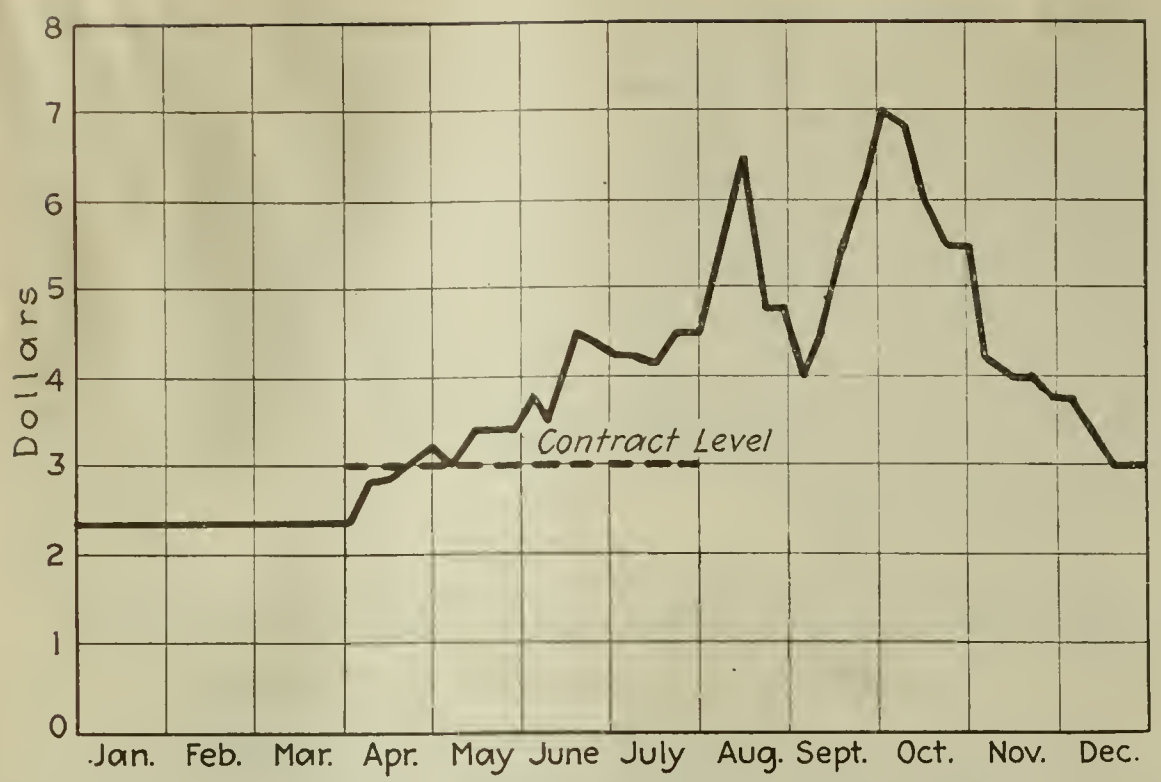
Toward the end of January the steam market picked up and screenings again held their own. The bulk of the coal for the St. Louis market was from the Mt. Olive and Standard fields, and some Carterville moved in from Williamson and Franklin County.

Although warmer weather prevailed at the beginning of February, the month as a whole was a seasonable one. Embargoes with the inevitable accompaniment of injustices prevailed throughout acute on record and miners were glad the month. Car shortage was the most



SPOT PRICES, BITUMINOUS MINE RUN, STANDARD DISTRICT, ILL., 1920

Diagram of spot prices, in dollars per net ton, of mine run bituminous coal from the Standard district of Illinois in 1920, compared with the contract market price for the same coal at the beginning of the coal year in April. Quotations taken from St. Louis market. Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April 1 to Aug. 1 and reached their peak late in September, after which the decline was precipitate. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower.



SPOT PRICES, BITUMINOUS MINE RUN, MOUNT OLIVE DISTRICT, ILL., 1920

Diagram of spot prices in dollars per net ton, of mine run bituminous coal from the Mount Olive district, Illinois, in 1920, compared with the contract market price for the same coal at the beginning of the coal year in April. Quotations taken from St. Louis market.

Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April 1 and reached their peak early in October, although a sharp rise and fall was observed in August. After Oct. 1 prices dropped swiftly and touched the $3-mark at the end of the year. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower.

acute on record and miners were glad to overlook chances for trouble and worked the one and two days per week that cars were furnished. In southwestern Missouri and points in Arkansas served by the Missouri Pacific R.R. conditions were worse. The few cars available for the mines on that road were barely sufficient for the fuel needs of the road and distress, suffering and heavy financial losses were common at those points. West of the river generally the supply equalled 50 per cent of the demand. Influenza raged through the mining towns, cutting down tonnage at commercial mines which already were hard hit because of miners going to mines with preferred car supply loading railroad coal.

When March 1 arrived there was a shortage of domestic and steam coal for St. Louis and little likelihood of the country districts getting much. About the middle of the month conditions eased up somewhat, whereupon a report was made public that there might be a walkout of the miners April 1. March ended with urgent demand for everything and heavy shipments of available coal went to the Chicago market. There had been no change in either mine or retail prices for the first quarter. Very little anthracite came through—possibly twenty-five cars in all—and no smokeless, with nothing from Arkansas.

At the beginning of April there was much uncertainty. The wage scale commission's award was not satisfactory to the Illinois miners and about one-third of them refused to work in some fields.

The Fuel Administration prices were lifted April 1, the new prices per net ton at mines being as follows: Standard 6 in. lump, 3 x 6 egg and 2 x 3 nut, $2.75@$3; Standard 2 in. lump, $2.75@$2.85; Standard mine run and screenings, $2.50@$2.60; Mt. Olive lump, egg and nut, $2.75@$3; Carterville lump, egg and nut, $3.25@$3.40; Carterville mine run and screenings, $2.65@$2.80.

The demand for local coal of all sizes was unusual. The roads were still in bad shape for fuel, especially the Missouri Pacific. This was the condition when, after ten days of threatening, the yardmen's strike on the railroads tied up nearly all roads and closed nearly all the Illinois mines. The carriers then seized nearly everything on their rails and held it for emergency.

Here and there a mine succeeded in working. The St. Louis, Troy & Eastern with its office force ran a train a day and kept some coal coming in, as did one or two other short lines. Gradually the trunk lines made slow but sure progress and with the aid of motor trucks from the mines on the bluffs between East St. Louis and Belleville kept St. Louis partly supplied. Mild weather helped and the 500 carloads of coal in the St. Louis terminals when the trouble started were distributed carefully.

One of the most arrogant abuses known in the trade appeared about that time, when ex-railroad men bought and sold cars to coal speculators, who controlled the movement and in many instances evaded the embargoes. Some of these speculators could not make $100 a month at honest work, but cleaned up as much as $10,000 a month by the "assignment" of cars, while honest operators who would not become a party to these practices had idle mines.

Without warning on July 19 miners in the Springfield (Ill.) district began quitting in sympathy with the drivers and draymen who asserted they were not given a reasonable increase in the wage scale effective April 1, and in a few days all the Carterville, Mt. Olive, Duquoin and Standard fields were idle, except for a mine here and there where for the most part the bonus system was in effect.

The unusual feature was that the public of the Middle West was in sympathy with the strikers. This brought St. Louis face to face with the most serious coal famine on record. The carriers promptly held all coal in transit for their own needs. It was at first thought the the trouble would be settled in a few days, but when it developed that the dispute could be adjusted only by a general conference, the little coal being mined sold for $8@$12 at the mine.

October saw the first slipping from monumental prices to depths that at the end of the year were bitter for the Standard shipper. The industrial depression became worse. The outside markets of a few months previous—Ohio, Michigan, Indiana, Canada and Chicago—began to cut off shipments. The Western and Northern markets were fair. Screenings dropped to $4 and continued to decline. There was a grand rush by operators then to get railroad contracts.

Domestic coal, of course, became scarce. It developed a condition that made country districts frantic for coal. Standard lump was as high as $8 and $9 and hard to get. Mt. Olive was going on contracts chiefly and hardly any Carterville moved west of the river. The unscrupulous element boasted of $10 coal from the independent mines in Williamson County and in the Duquoin field. In the Big Muddy field at Murphysboro similar prices were asked.

The country situation was so menacing that Governor Gardner appointed a committee consisting of Attorney General McAllister and the Public Service Commission to take such action as they found necessary to obtain coal for towns in Missouri. The Public Service Commission had already acted for the state institutions and public utility plants. This committee met in St. Louis on Oct. 12 with the representatives of all the Missouri carriers and representatives of Illinois coal operators. A committee was appointed with Henry Miller, president of the St. Louis Terminal, as chairman; S. E. Cotter, vice president of the Wabash, and John Cannon, of the Missouri Pacific R.R., representing the carriers, and W. J. Jenkins, of the Consolidated Coal Co.; John Henderson, of the West Virginia Coal Co., and F. A. Aid, of the Aid Coal Co., representing the Illinois operators from the Standard, Mt. Olive and Carterville fields. F. J. Wallace was selected to procure and distribute coal.

Loss in Output of 8,000,000 Tons in Eastern Ohio Caused by Poor Car Supply

Despite Numerous Obstacles, Production in 1920 Exceeded That of Previous Year by Nearly a Million Tons—Acquisition of Two Large Undeveloped Tracts Presages Early Expansion of Operation

By K. M. Pinaire

DESPITE the many negative factors which prevented maximum production during the year, the estimated output of the eastern Ohio No. 8 field, embracing some 170 mines, for 1920 exceeded that of 1919, as indicated by the following table:

ESTIMATED PRODUCTION OF COAL AT 170 MINES IN EASTERN OHIO
(In Net Tons)

	1920	1919
January	1,360,000	1,108,400
February	1,109,000	797,000
March	1,276,000	917,000
April	957,000	1,150,000
May	1,121,000	1,911,570
June	1,353,250	1,927,100
July	1,594,000	1,745,500
August	1,670,700	1,533,000
September	1,493,500	1,652,500
October	1,488,400	2,174,300
November	1,520,000	*3,774
December	1,500,000	*795,530
Totals	16,441,850	15,715,674

* General strike, six weeks, November and December.

The potential annual capacity of these mines is approximately 30,000,000 tons.

Car supply for the year was below normal, for the first six months averaging little better than 50 per cent of requirements, which resulted in a loss of at least 8,000,000 tons for the year. Service Orders of the Interstate Commerce Commission giving priority to the mines on open-top equipment and to movement of coal in the Lake trade effected an improvement in the car supply and production, as is indicated by the following percentages of full time operation by months:

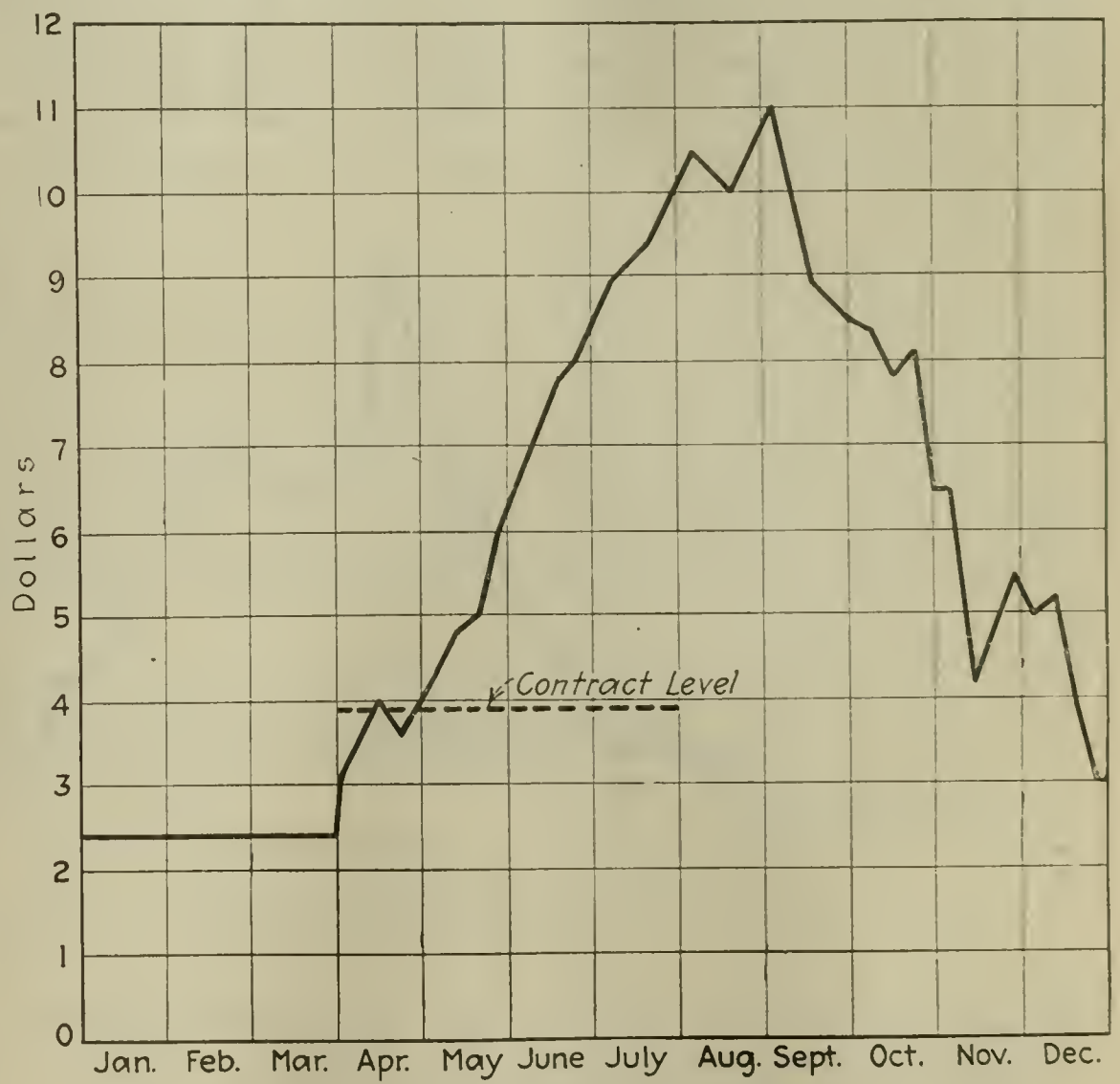
January	63%	July	66%
February	47%	August	73%
March	47%	September	76%
April	48%	October	87%
May	50%	November	74%
June	55%	December	71%

Mine labor was in a dissatisfied state of mind all year even though a 14 per cent advance in all wages was granted in Dec., 1919, and 13 per cent more in April, 1920. Agitators were particularly active in fostering unrest, mines were undermanned, and labor which had left the field during the coal strike to obtain employment in other lines of industry was slow to return. Sporadic local strikes were frequent and increasing. In August day and monthly men were given an additional wage increase of $1.50 per day, but dissatisfaction apparently was not appeased, for there was an outlaw strike in the district late in September which closed about half the mines for a week. Constant labor shortages and agitation, which lowered efficiency, contributed to underproduction during the year. By the end of the year an additional supply of labor was available.

Increased wages to miners a 40 per cent increase in freight rates, and the threat of a coal famine caused wide fluctuation in demand and prices. By August Ohio retail dealers were short of coal and were unable to fill orders on their books from thousands of householders who wanted to lay in their winter's supply. To increase shipments of coal to these dealers committees of eastern Ohio operators in September, acting with officials of cities and towns, developed a rationing plan and consigned sufficient fuel to needy points to take care of the situation. By late November, with moderate weather conditions, retail dealers were able to get all the coal they required.

Considerable progress was made in coal-mine development, consolidations, and the passing of undeveloped coal acreage into active hands. A notable achievement was that of the Youghiogheny & Ohio Coal Co., which developed and had on an operating basis early in the year the Dorothy and Budd mines on Little Short Creek, near Yorkville, Ohio, with a combined daily production capacity of 4,000 tons. A new mining town arose—Glen Robbins, named after Mr. S. H. Robbins, president of the Youghiogheny & Ohio Company. These new mines are equipped with the most modern labor-saving devices and Glen Robbins is rapidly becoming one of the prettiest of the newer towns in the eastern Ohio field. Its one thousand residents are living in comfortable bungalows fronting on concrete streets, and each home is equipped with modern conveniences. The town was built by the Youghiogheny & Ohio Company to house its employees.

During July the Youghiogheny & Ohio Company also took over the property of the Glens Run Coal Co., comprising the Edgar mine, at Dillonvale, Ohio, and the Rush Run Mine, at Rush



SPOT PRICES, MINE RUN, PITTSBURGH NO. 8 DISTRICT, OHIO, 1920

Diagram of spot prices, in dollars per net ton, of mine run bituminous coal from the Pittsburgh No. 8 district of Ohio in 1920, compared with the contract market price for the same coal at the beginning of the coal year in April. Quotations taken from Cleveland market. Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April 1 and reached their peak early in September, after which the decline was steady until the middle of November. Following a temporary strengthening, the decline continued throughout the balance of the year. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower.

Run, Ohio., Jefferson County, with a total capacity of 2,200 tons per day.

The Rosemary Coal Co. about mid-year took over Virginia Hill mine No. 1 of the Cleveland-Belmont Coal Co., at Lafferty, Ohio, with a capacity about 1,200 tons per day. It has since been operated as Rosemary No. 3. The Elm Grove Mining Co. in July acquired the property of the Oco Coal Co., Oco Mine, Lafferty, Ohio. It is still operated under the name of Oco Mine and has a daily capacity of 1,000 tons. Headquarters of the company are in Cleveland and J. A. Paisley is its president.

Two large tracts of undeveloped coal lands along the Ohio River in Monroe County, near Powhatan, were acquired during the year by large operating companies—16,000 acres by the Marcell Coal Co., and 11,000 acres by the Cleveland & Western Coal Co., both of Cleveland. Engineers are at work and it is understood that the properties will be developed to an operating basis as soon as railroad extensions can be built and equipment installed. Model mining towns will be erected on the properties.

Central Pennsylvania Output in 1920 Was Nearly Normal

For Ten Months Operators Were Unable to Keep Pace With Demand, Though All Available Labor Was Employed and Bonuses Paid—This Field Promises to Supply Usual Quota in 1921

By D. E. Sell
Altoona, Pa.

PRODUCTION of coal during 1920 in central Pennsylvania exceeded 58,000,000 net tons. Prices reached new high levels; for ten months the demand could not be supplied, although all available labor was utilized and many operators paid large bonuses to mine labor. During the year the central Pennsylvania field witnessed the most chaotic conditions that ever obtained in the history of its coal industry. Production as compared with the three preceding years maintained a fair average, being only half a million tons below 1917 and a little more than two million tons below 1918, the high record year for the district.

Two prices prevailed during the year: contract and spot. Contract prices ranged from $3.50 to $4.50 at the end of the year while the spot market ranged as high as $13 a ton. The peak was reached in July, when purchasers from all over the country were in the field bidding for coal.

Much of this high-priced coal went into New England and much more was purchased by agents and brokers for foreign shipment. The spot price began to drop as the demand decreased and by the close of 1920 coal was a drug on the market at $3 per ton and operators were begging for purchasers. Because this figure is less than the cost of production many of the smaller operators were compelled to close down their operations, it being estimated that fully 40 per cent of the mines in the field were thus affected.

Labor Review

Labor conditions were unsettled and there were numerous strikes and shutdowns. Violations of the scale agreement, bonuses and amounts demanded in excess of wage-scale agreements were a constant source of trouble to the operators. Some operators granted bonuses on the strength of the high spot prices. Mines shipping on contracts, however, found it very difficult to make both ends meet.

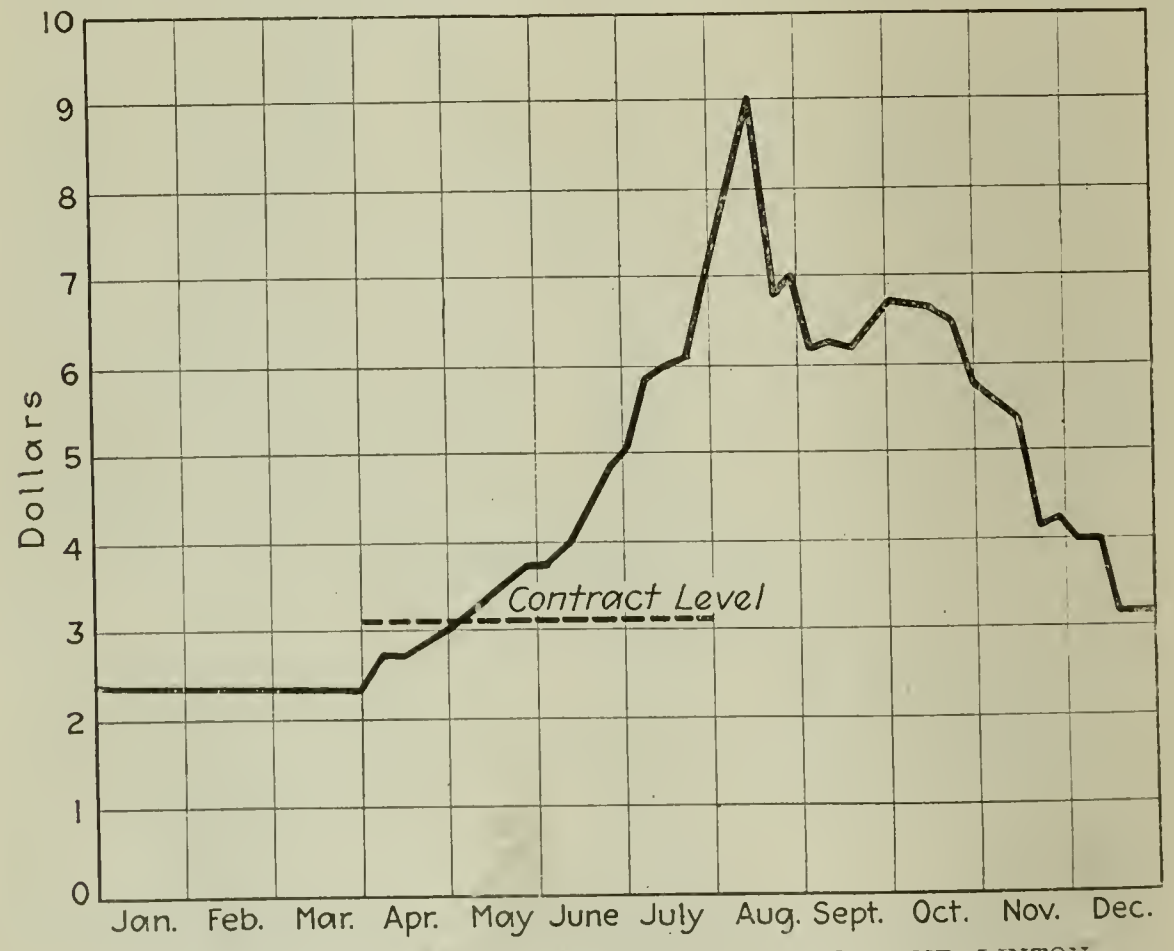
At the close of the year with prices down, operators who paid bonuses began rapidly adjusting their rates and reducing wages to the union scale. As a result of the Central Competitive field joint conference in July and August the central Pennsylvania field was forced to increase wages for day labor $1.50 a day on August 16.

Operators in the central Pennsylvania field assert that the so-called adjustment of inequalities in the U. S. Bituminous Coal Commission's award was not an adjustment of inequalities but the creation of a flagrant inequality.

Constitution Troublesome

The car situation proved to be a troublesome one for the mine operators in the central Pennsylvania field. Operators with contracts to fill could not get cars as fast as they could load them. The big demand for coal at spot prices created an additional demand for cars that the railroads leading into the field had not anticipated.

The rulings of the Pennsylvania Public Service Commission and Interstate Commerce Commission worked hardships upon the small operators, putting a stop to the loading of coal on cars at what are known as wagon mines—those having no opening near a railroad and which depend upon loading the coal from wagons. There are a large number of these mines in the central Pennsylvania field and most of those without a local market were compelled to cease operations for a time.



SPOT PRICES, BITUMINOUS MINE RUN, CLINTON AND LINTON 4TH VEIN FIELD OF INDIANA, 1920

Diagram of spot prices in dollars per net ton, of mine run bituminous coal from the 4th vein Clinton and Linton, Indiana field in 1920, compared with the contract market price for the same coal at the beginning of the coal year in April. Quotations taken from Chicago weekly markets.

Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April 1 and reached their peak in August, declined rapidly until September. After a brief rise, figures again took a downward course and before the end of the year had passed below the figure set by the Indiana Food and Fuel Commission for shipments inside the state. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower.

SPOT PRICES, BITUMINOUS MINE RUN AND GAS COALS, PITTSBURGH FIELD, PA., 1920

Diagram of spot prices, in dollars per net ton, of steam mine-run and screened gas bituminous coal from the Pittsburgh field of Pennsylvania in 1920, compared with the contract market prices for the same coals at the beginning of the coal year in April. Quotations taken from Pittsburgh weekly markets.

Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April 1 and reached their peak in July. Demand for gas coals held better than for steam, coming out of a decline in October. However, this was only temporary and thereafter the decline was steady. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower.

During the year there were a large number of new mines opened throughout the field. Some of them are large operations and were barely opened when the market slumped but the operators are proceding to open up, build tipples, sidings, etc., and be ready for the demand when the market again opens.

Many valuable tracts of coal land in Clearfield, Cambria and Somerset counties changed hands during the year and at prices far in excess of any heretofore paid, some of the deals involving millions of dollars.

Housing Conditions Improved

Several new towns have sprung up during the year, especially in northern Cambria County, where the coal operators were especially active and where they look forward to putting their operations on a permanent basis. Many houses were erected for the miners, the operators feeling that the greatest efficiency is obtained where the men are properly housed.

Ten per cent of the entire bituminous coal output of the United States comes from central Pennsylvania. Fifty million tons will be produced during 1921 and as much more as may be the share of this field of the demand over and above five hundred million tons. Production costs in central Pennsylvania, however, must be materially lowered.

PRODUCTION OF COAL IN CENTRAL PENNSYLVANIA, 1917-1920*
(In Net Tons)

	1917	1918	1919	1920
January	5,103,621	4,637,131	5,114,716	4,561,711
February	4,351,331	4,666,093	3,148,078	3,763,510
March	5,260,725	5,318,134	3,482,408	5,195,577
April	4,497,326	5,084,292	3,404,602	4,428,955
May	4,840,767	5,214,803	3,649,957	4,286,615
June	5,044,325	5,393,048	3,831,680	4,621,636
July	4,851,237	5,590,414	4,386,820	4,890,843
August	5,139,502	5,702,102	4,832,219	5,160,977
September	4,716,933	5,104,013	4,865,074	5,347,084
October	5,311,568	5,265,562	5,580,692	5,331,119
November	5,174,841	4,137,915	1,205,294	5,170,560
December	4,366,641	4,401,611	3,044,841	5,413,829
Totals	58,658,817	60,515,118	46,546,381	58,172,416
Monthly average	4,888,235	5,042,927	3,878,865	4,847,701

* Including local sales, coal coked and boiler fuel.

Western Kentucky Coal Proves Its Merit After Long Struggle

In past years, when the coal-consuming public measured the value of coal by its reputation rather than its merit, it was contended by many, through lack of knowledge, that western Kentuck coal was an inferior grade of steam coal. At that time the general attitude of the coal-consuming public was not conducive to increased production in western Kentucky coal—not that the quality of the coal at that time was not as good as at present, but the consumers had refused to be shown.

After many years of constant struggle in an effort to keep the wolf away from the mine shaft, western Kentucky operators succeded in placing a fair tonnage in nearby markets, thus enabling them to keep body and soul together. Previously western Kentucky operators were confined to nearby markets, as freight rates were not sufficiently reasonable to enable them to enter the more distant markets. Although subjected to these handicaps, coal production in western Kentucky increased more than 50 per cent during the period from 1912 to 1916.

During the World War, when coal demands were abnormal, western Kentucky coal was given a fair trial by hundreds of steam-coal consumers in the Middle West, who have subsequently adopted it. Thereafter the demand for Western Kentucky coal increased to such an extent that today, regardless of unfavorable freight rates, it is being marketed over a territory extending from North Dakota to Florida and from Ohio to Texas.

During the last year and a half Northern and Eastern capital has become interested in the field and there is further evidence of growth in the fact that the number of mines has increased from 140 to 222.

The western Kentucky coal operators, recognizing the importance of organization, maintain the West Kentucky Coal Bureau, which is furthering co-operation among the operators and improving operating and marketing conditions in the western Kentucky fields. The officers of the bureau are F. D. Rash, president; C. W. Taylor, vice-president, and Charles E. Reed, secretary.

Louisville Jobbers Had Poor Year; Kentucky Operators Had Best in History

When Prices Rose Producers Failed to File Contracts, Selling in Open Market — Operators' Associations Render Excellent Service in Traffic Matters — Kentucky Coal Spreads to New Markets

By A. W. Williams

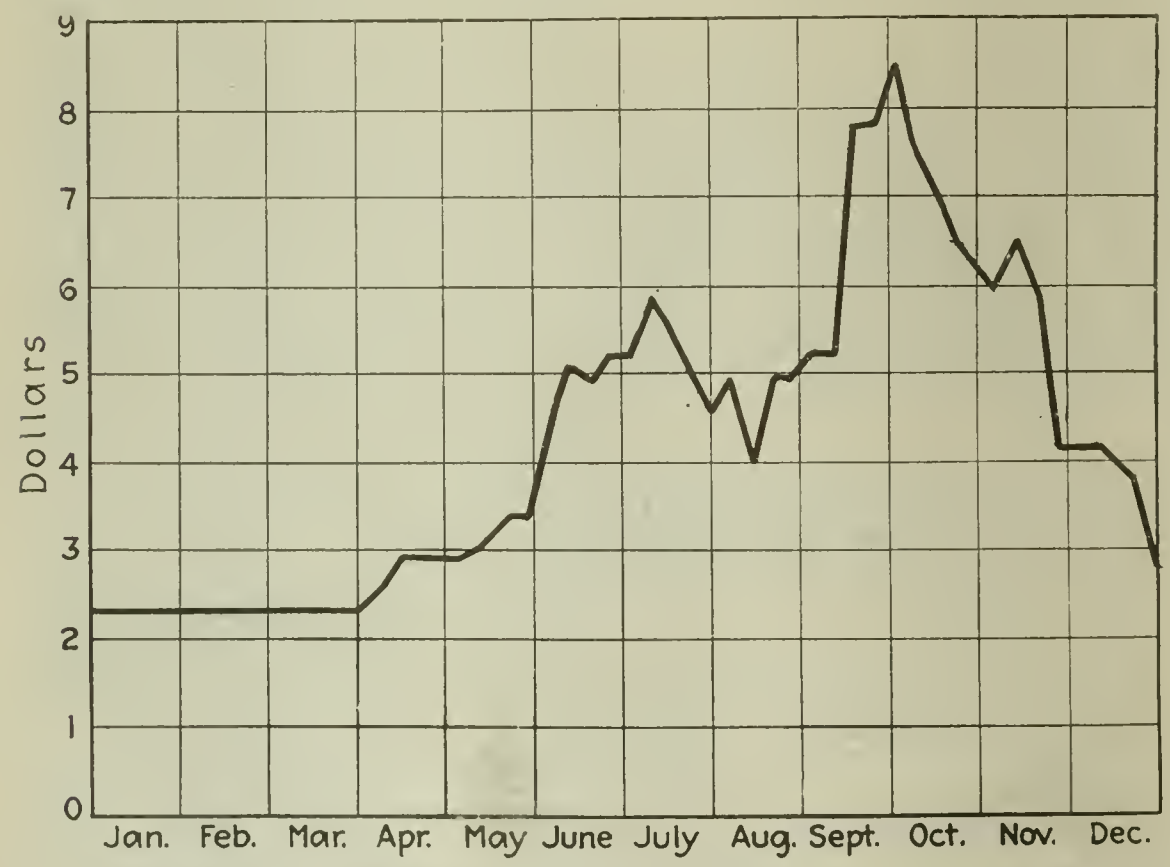
JOBBERS in Louisville for a while in 1920 received a commission of from 15 to 25c. per ton until coal became hard to sell, after which more was offered by operators for handling the coal. The jobber did not have a big year because many in the trade were not in a position to contract for mine output and were unable to obtain any coal during the rush. The operators had a ready market for production and sold direct. On the rising market operators failed time and again to fulfill contracts, and sold in the open market, filling contract orders only when there was a buying lull, and when they had excess supply.

The operators probably had the best year in their history. After April prices rose steadily, reaching well over $10 a ton for high-grade gas lump and mine run.

Industrial demand was good, buyers in the fields bidding up prices.

Kentucky operators suffered from discrimination in the matter of car supply. There are some sections of the Louisville & Nashville Ry., however, on which there is no possible hope of operators ever having a car supply to handle mine capacity until the railroad spends a considerable sum in laying heavier rails, lengthening sidings and providing additional sidings. The railroad has announced that it will spend $11,000,000 in the Kentucky section this year to give the needed relief.

The Southern Appalachian Coal Operators Association, Harlem Coal Operators Association and Hazard Coal Operators Exchange jointly maintained a traffic bureau at Louisville, under the direction of C. D. Boyd, which did fine work for the operators in handling traffic matters and fighting for traffic relief. Mr. Boyd also procured a number of reductions in freight rates and straightened out many incorrect conditions, saving thousands of dollars annually for the members.



SPOT PRICES, BITUMINOUS MINE RUN, SPRINGFIELD DISTRICT, CENTRAL ILLINOIS, 1920

Diagram of spot prices, in dollars per net ton, of mine run bituminous coal from the Central Illinois Springfield district in 1920, compared with the contract market price for the same coal at the beginning of the coal year in April. Quotations taken from Chicago market. Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April and reached their peak in the middle of August. A sharp decline followed in the next two weeks, after which came a brief period of fluctuation before the general decline commenced in October. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower.

The West Kentucky Coal Traffic Bureau at Louisville, under the direction of C. E. Reed, also did excellent work for its operators, managing to obtain several reductions in rates, combinations, through rates and changes, which enabled the western Kentucky field to get into new markets where its fuel was almost unknown, particularly for steam coal.

A good demand for this coal was developed in the Northwest, at Chicago, Detroit and elsewhere and in the Cincinnati market in competition with West Virginia and eastern Kentucky coal.

Develop Export Business

Western Kentucky operators also developed some export business through Gulf ports, principally to Cuba, and went into the South Atlantic district, to Atlanta and other points. There are cases now pending before the Interstate Commerce Commission relative to through rates for export through South Atlantic points, through rates to northern Arkansas and southeastern Missouri, and elsewhere. J. Van Norman, local attorney, has accomplished much for the organization before the Interstate Commerce Commission.

Western Kentucky was idle for several weeks on account of strikes.

One of the interesting features of the year was the purchase of mines in southeastern Kentucky by Henry Ford. Mr. Ford refused to recognize the union, and a strike was called, but the men could not go out after wages were raised above the union scale.

Statistics of river shipments to Louisville show that with the exception of October and November there were deliveries during every month of the year, the total being 64,600 tons by water, as against 52,000 in 1919. Prospects are that with increased railroad freight rates and cheap fuel for operating steamers there will be an increased movement by water during the coming year.

New Companies Organized

During 1920 there was a large number of new coal companies established in the state. They came in rapidly during the era of high prices, many being mere wagon mines, but there were several new companies developed on a big scale, especially in the Elkhorn field. One stripping operation, the Sunlight Coal Co., started in western Kentucky late in the year.

A number of wagon mines used their profits to improve their properties, many mines being equipped with tipples, trackage, electric drills, punching machines, and other modern devices during the year.

Some few mines in the state lost money during 1920, but in most of such cases there was gross mismanagement somewhere or such large salaries were paid to officers that there was no possible chance of making a profit.

Many operators believe that a return of conditions such as prevailed after the armistice is at hand and that by April

prices will be much higher and will continue climbing, but others can see no such prospects. On the other hand, still others are of the opinion that there will be a revival of industrial buying as soon as present winter stocks are depleted.

An interesting fact is that lime, cement and clay product dealers have litle confidence in the continuance of present low prices for coal. In these lines coal and labor are the big costs, and these manufacturers report that as labor isn't much cheaper than it was, they won't reduce prices on their materials until they are satisfied that coal prices will continue under $4 a ton for mine run, it being felt that it is easier to maintain a price than to increase it after having reduced it.

Operators' Maximum $6 Ton

During the early autumn months the Federal Grand Jury at Covington, Ky., following an investigation of coal companies' books, decided that $5 was a fair maximum price for lump coal for eastern Kentucky operators. Eventually, however, it was agreed to allow them a gross maximum of $6 a ton. In the event that some of the Blue Gem mines, operating on thin seams, were not to be able to produce at that price, they would have to show their operating cost if called upon. The regulations never amounted to much, however, as just after they become effective prices began to fall.

Western Kentucky was not bothered by regulations, as Judge Walter Evans, in the Federal Court, at Louisville, refused to consider the Lever Act as constitutional, and threw out all cases brought before the western Kentucky division of the Federal Court.

At the spring session of the Kentucky Legislature a warm fight was launched for a tonnage tax on coal. This was defeated, but another effort was made in the autumn to have a special session of the Legislature called to place a tonnage tax on coal, principally for the benefit of good roads. S. Thurston Ballard, Lieutenant Governor of Kentucky, a coal operator and miller, is one of the strongest backers of the tonnage-tax plan, as he is a good-roads man. He has been advocating passage of uniform coal tonnage tax laws in all bituminous states so as to give all operators and all fields a fair deal without discrimination.

Kentucky, according to Geological Survey reports, is now fifth in the list of coal-producing states. With railroad facilities equal to its present capacity, however, the state would rank much higher.

The outlook for 1921 is a hard one at best. No one has any very decided opinions concerning what may or may not happen, it being generally believed that the best policy is to wait it out. However, western Kentucky can say that it has made a place for itself in the producing lists. Eastern Kentucky has shown the world that it is producing very high grade gas coal. The Kentucky coal fields are among the leaders. Much depends on whether the operators will sell coal on a fair margin and make money, or return to cutthroat tactics and lose what they have gained.

Coal Prices in Detroit Now as Near Pre-War Level as Labor Costs Will Permit

Severe Weather, Unsettled Conditions, Government Regulation and Deficient Railroad Service Constitute Greater Obstacles to Business Success Than the War — Dealers Enabled to Get Rid of Product Consumers Had Rejected

By E. E. Dunbar

IN 1920 the coal trade in Detroit passed through a year of remarkable changes, a period so filled with uncertainties that it may well be said to have developed greater obstacles to successful continuance of business than any of the war years. As the year came in weather conditions were the severest in many years, characterized by almost continuous low temperatures, which made necessary plentiful supplies of coal for domestic consumers. With industrial plants and manufacturing establishments crowding productive capacity, there was an equally urgent demand for steam coal.

Effect of Strike Long-Lasting

Coal was available, however, only in limited supply. The strike which shut off production in the greater part of the bituminous coal fields late in 1919 made its influence felt long afterward in 1920 in the way of diminished supply, as well as through the operation of the rejuvenated Federal Fuel Administration, which functioned part of the time through the Federal Railroad Administration.

To the trials and problems created by shortage of coal supply at the mines were added difficulties in getting coal from the mines to local terminal yards and team tracks. The severity of the weather and frequent heavy snowstorms contributed in producing troublesome handicaps for the transportation lines. The railroads, with motive power and rolling stock far short of normal supply and greatly impaired in efficiency during the long period of Federal management, were unable to overcome the obstacles encountered in their effort to handle an unusual volume of general freight.

In consequence, there developed a long period of freight congestion, which occasioned a number of troublesome embargoes, sometimes on one day and off the next, and again of several weeks' duration. Coal shipments consigned to Detroit and other points in Michigan, practically all of which must be handled through the Toledo gateway, blocked terminal tracks in Toledo, Cincinnati and other points south, apparently defying all efforts to get them to their destination.

Allow Indiscriminate Confiscation

With Detroit steam plants and domestic consumers clamoring for fuel, which the coal trade in Detroit was unable to provide, the Railroad Administration injected new complications into the situation by authorizing practically an indiscriminate confiscation of coal on tracks for diversion to railroads and for the relief of towns and cities in the West that were facing a shortage in fuel supply. Some of the local dealers have not yet been able to learn the delivery point of part of their coal thus confiscated and diverted. Some of the dealers also had the novel experience of finally receiving consignments that had been diverted and sent back after having been hauled to remote points.

With embargoes in effect at the mines against loading cars for Detroit and Michigan, many Detroit factories were almost without coal during the early months of the year, while others were able to obtain temporary relief by clearing the retail dealers' yards of stocks that had accumulated there in 1918 during the operation of the zoning system. This, in effect was almost like the interposition of Providence for the retailers, who found themselves relieved of the product of Indiana and Illinois mines, which their customers rejected when coal of better quality from Ohio and West Virginia mines became available in 1919.

The deficiency in bituminous supply extended through the spring months, with brief intervals of temporary improvement, while the demand from steam plants and from domestic consumers continued pressing and almost constant. Little improvement in the transportation situation followed restoration of the railroads to private control, March 1, while the practice of confiscation was continued intermittently. Supplies of anthracite also were inadequate.

Buyers Bid Up Prices

Some of the large steam coal users with reserve stocks depleted sent agents into the mining districts in the late spring and early summer in the effort to assure supplies of coal for the later months of the year. These agents, through their rivalry in bidding against each other for such coal as was available, caused a material advance in prices. Efforts of local jobbers and wholesalers to maintain a more reasonable level were to a large extent thwarted by the continuance of car shortage as well as by the demand which arose for large shipments of bituminous to Tidewater markets for

the export trade and by the series of priority orders designed to supply the fuel requirements of New England and the Northwest.

Prices in the Detroit market consequently remained at a high level throughout the summer months, varying almost from day to day, while there was at the same time an inadequate supply of bituminous and anthracite. A further impediment to transportation developed with the strike of railroad switchmen. Manufacturing establishments and public-utility plants found it almost impossible to get sufficient coal to meet their needs, and because of this condition the Detroit Edison Co. found it necessary to impose drastic restrictions on the use of its current.

Through the Detroit Coal Exchange efforts to bring about a more liberal supply of coal for Detroit were made in July, including appeals to Governor A. E. Sleeper and members of Michigan's delegation in Congress, urging assistance. The Michigan Public Utilities Commission, after several general conferences in Lansing with representatives of public utilities companies in the state, undertook a survey to determine the quantity of coal that would be required for operation of these companies during the year. In August the Governor appointed a Michigan fuel committee to work for improvement of the state's coal supply, naming as its chairman W. K. Prudden of Lansing, who was State Fuel Administrator during the régime of Dr. Garfield.

Mr. Prudden, predicting improvement in the coal situation later in the year, recommended that coal buyers limit their early purchases to only part of the supply they would require for the winter. Even with the aid of considerable coal from Indiana and Illinois, Detroit dealers were heavily handicapped in the attempt to provide for their customers in the late summer and autumn months. With the support of a priority order from the Interstate Commerce Commission the Lake movement of coal was taking a considerable proportion of the supply and at the same time cutting down on the number of cars available for all-rail movement.

Toward the end of October, with the close of the navigation season approaching, jobbers and wholesalers began to observe an easing off of the buying demand from steam plants. With the lessening demand, coal became more plentiful and prices were shaded off. Through the succeeding weeks to the end of the year the demand for steam coal continued to shrink, while the unexpectedly warm temperatures of the last three months of the year produced a corresponding reduction in demand for domestic coal, with the result that the local market, which was so strong and active twelve months ago, was reduced to an almost comatose condition when the year passed out, while prices had declined to a point which the dealers say probably is as near the pre-war level as it will be possible for them to go in view of the increased labor costs of the mines.

New York Market in 1920 Suffered Acutely From Labor Unrest and Coal Shortage

Strike of Towboat Workers and Competitive Bids by New England and Canadian Buyers Intensified the Generally Disturbed Conditions — Increase in Freight Rates Boosted Prices Considerably

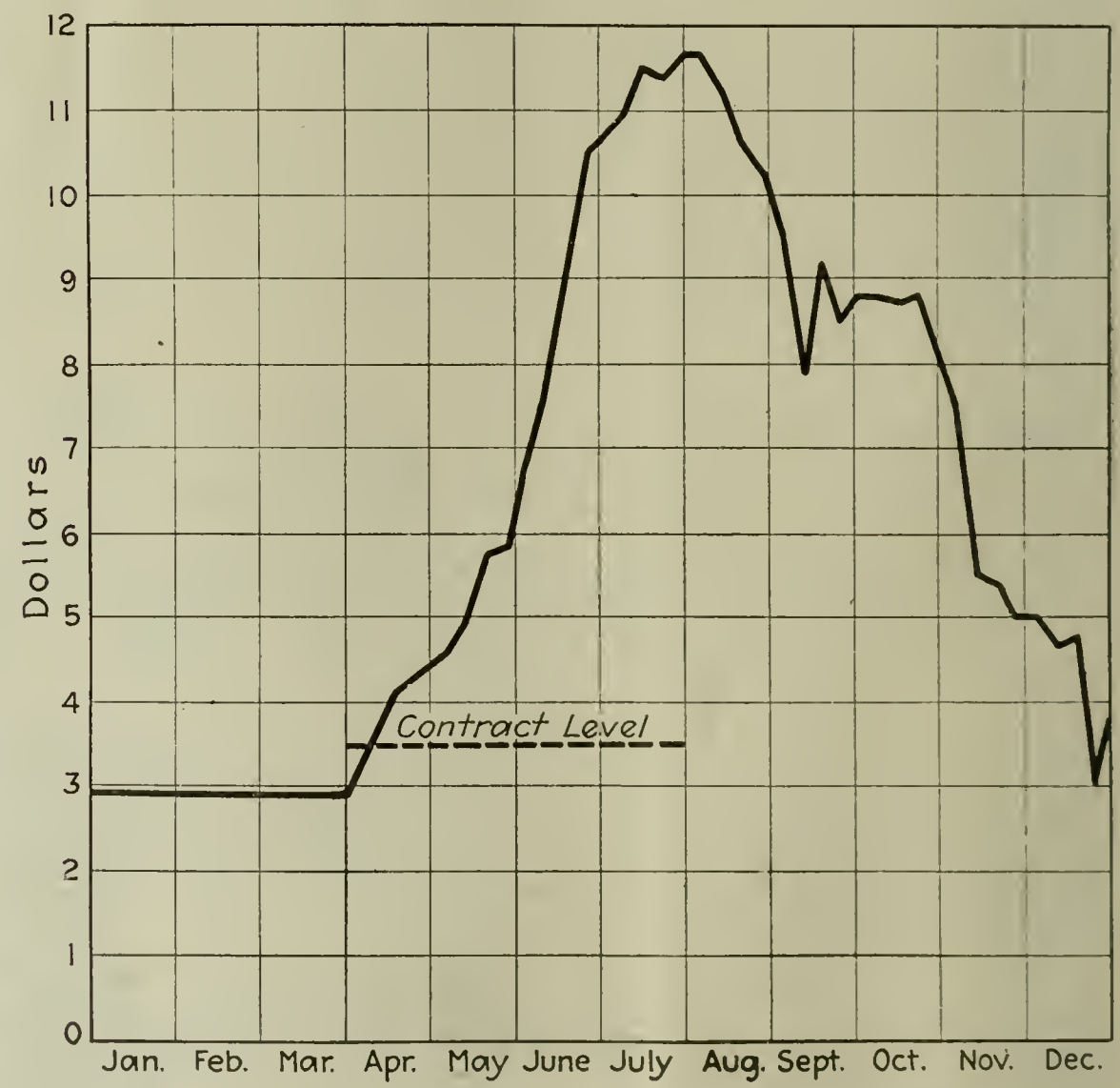
By R. W. Morris

In addition to being almost continually upset by the so-called "vacation" of the miners and the switchmen's and "outlaw" strikes of the railroad workers the New York market in 1920 had its towboat strike and a shortage of coal, to say nothing of contending with numerous investigations.

Anthracite

At no time in the entire year was there plenty of coal to meet the demands made upon the trade. At the end of 1919 domestic sizes were short, temperatures low and dealers as well as consumers were ready and willing to take all the coal they could get.

Conditions were becoming normal slowly when in February the towboat workers demanded more pay and when refused their full demands quit work. The tying up of upward of five hundred tugs and barges did untold damage and was immediately followed by extremely low temperatures and storms. Coal was blocked in transit and dumpings at the piers were far below normal. The Bay and rivers soon filled with ice and it was difficult as well as dangerous to attempt to move the few boats available for carrying coal. Even after the ice had cleared out of the Bay it was difficult to move sufficient coal because of the scarcity of boats, the strike of the marine workers still being in force.



SPOT PRICES, BITUMINOUS MINE RUN, CLEARFIELD DISTRICT, PA., 1920

Diagram of spot prices in dollars per net ton, of mine run bituminous coal from the Clearfield district, Pennsylvania, in 1920, compared with the contract market price for the same coal at the beginning of the coal year in April. Quotations taken from Boston market. Majority of the tonnage involved moved all-rail.

Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April 1 and reached their peak July 31. A sharp decline followed, which was checked in September by a firmer market lasting well into October, after which quotations dropped steadily until Dec. 23. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices.

No announcement was made in April regarding new mines prices but it was generally understood that there would be no reduction in view of the wage increases that were being negotiated.

The demand was strong and the supply short when, to cover wage increases, the companies in May advanced the price for the domestic coals an average of 85c. a ton with a proviso for monthly advances of 10c. per ton up to and including Sept. 1.

The Federal authorities took a hand in the situation in May because of the marine troubles, and there was a gradual improvement. All receipts were quickly absorbed. Demand for the domestic coals became easier but that for the smaller sizes increased, although warm weather was near at hand.

With the rail and towing conditions showing some improvement receipts were larger in June and shipments from the railroad docks were steadier. At about this time began the strike of 10,000 workers of the Pennsylvania Coal Co. Coal was being sent westward in large quantities so as to avert troubles in the winter months and complaint was made that the larger companies were not meeting the requirements of their customers. To add to the local troubles buyers from Canada, New England and other sections of the country began to invade the mining regions and to offer higher prices than those offered by competitors for the product of the smaller independent operators.

Increases in freight rates became effective early in September, resulting in a further increase for the f.o.b. prices for coal at the piers.

With the retail trade about 40 per cent behind in deliveries the miners took their "vacation" following the acceptance by President Wilson of the report of the Anthracite Wage Commission. Previous to the closing down of most of the mines hope had been held out that this market would receive its full quota of coal before winter arrived, but the action of the miners blasted these hopes.

The demand became so urgent in the autumn and early winter that some of the smaller independent operators, producing less than 1 per cent of the total output, took advantage of the situation and let their coals go to the highest bidders with the result that some of the tonnage was quoted as high as $15 f.o.b. mines. These high prices led to one investigation after another and agitation on the part of the public, so that retail dealers hesitated considerably before making purchases which would in any way affect retail price schedules.

When the demand from the West, New England and Canada eased off and the larger companies were in a position to divert more of their tonnage to the New York market, the demand for independent coals fell off, and a lowering of quotations followed.

Weather conditions remained favorable throughout the late autumn and early winter and there was a noticeable change for the better during the last two months of the year, so much so that in the holiday season it seemed that the crisis had been passed and that unless unforeseen circumstances arose the fear of a coal stringency had been passed. Quotations for independent coals were on the toboggan and in some circles it was predicted that by the midde of February these coals would be selling at or below the larger companies' schedule.

Bituminous

Those of the trade who delved in the export branch of the industry saw much of the trade go to smash with the drop in freight rates and the ability of the English miners to place their product in the hands of foreign consumers at lower prices than the American coal man could. Much of this phase of the situation could have been avoided, in the opinion of some of the trade, if care had been taken to see that the foreign trade was supplied with the best grades of coal.

Snowstorms, frozen coal and a boatmen's strike were part of the causes of trouble in January. Feb. 1 found recepits increasing, but the heavy storms and the strike of the boatmen interfered with deliveries and embargoes were placed on the piers to prevent further congestion.

The making of contracts was resumed in March and April and many ranging in price from $3.50 to $4.50 were made. There was a tendency to higher prices during the early summer, partly due to the wage increase given the workers by the Bituminous Wage Commission. The situation was considerably disturbed by the switchmen's strike in April. Contract holders continued to take their entire quota if they could get it and spot coal was scarce.

The marine strike was still in force and towing charges in some cases rose above $1 a ton. This condition of lack of supply and delay in deliveries because of the switchmen's and towboat men's strike continued for several weeks, with spot quotations increasing.

Many manufacturers and other large consumers who had been gradually filling their bins during the summer with high-priced coals dropped out of the buyers' market early in August. This tended to increase the tonnage of free coal and resulted in further lowering of quotations. The market showed further softening in September and quotations for the various pools varied as much as $1 per ton. Receipts steadily increased and New England buying fell off.

The local market did not show much activity the last quarter of the year. Prices softened and demand became easier. The feature of the market in November and December was the slump. Quotations dropped rapidly and cancellations of orders were frequent.

Industries of Northern Ohio Threatened by Inability to Obtain Coal in 1920

Abnormal Conditions Aggravated by Restriction and Transportation Difficulties—This Section Suffered Greatly Because of Priority Orders to Help the Northwest—Increased Business Confidently Expected

By John W. Hill
Lakewood, Ohio

ALTHOUGH located within easy access of the coal mines of eastern and southern Ohio, the great industries which are the foundations of northern Ohio's prosperity during a greater part of the year were hard pressed to obtain enough fuel to keep in operation. Under various priority orders coal was diverted to other sections or to preferred customers, with the result that many operations were curtailed or even suspended. Attempts were made in some instances to evade oppressive regulations. Heavy premiums were offered for spot deliveries and automobile trucks were employed for obtaining fuel to an extent never before believed posible.

The last month or two of 1920, in contrast with the hectic conditions prevailing during the greater part of the year, ushered in a period of dullness, with supplies increasing faster than the demand, due largely to decreased industrial activities and to continued mild weather.

The year 1920 opened favorably, with increasing quantities of coal arriving in Cleveland and vicinity, the demand, however, exceeding the supply because of a low rate of production at the mines and a shortage of coal cars. Prices on anthracite grades ranged from $11.75 to $12.70 a ton; on domestic bituminous, from $7.20 to $8.30 a ton for West Virginia splint, No. 8 Pitsburgh and Massillon lump; on Pocahontas shoveled lump, $8.95 to $9.55; and on steam coal $5.10 to $5.50 for slack and $5.25 to $6 for mine run.

The Cuyahoga County Fair Price Committee about the middle of January permitted an increase of 50c. a ton in retail prices to cover additional labor and delivery costs. Receipts at this time were not more than 50 per cent of

normal and by Feb. 1 had dropped to one-third of normal. Domestic orders were taken subject to indefinite delivery, and closing of schools and factories was threathened. Toward the end of the month many industrial plants were operating on a day-to-day basis. Conditions were complicated by an epidemic of influenza, which further reduced the labor supply.

Some shutdowns and curtailment of operations through the adoption of shorter work days and shorter weeks were reported during March and a number of schools were forced to close for a short time, but by the end of the month it was estimated that 60 per cent of the demand was being met. Receipts early in April increased to 70 per cent of normal and stock piles began to rear their heads. Mine operations also began to improve.

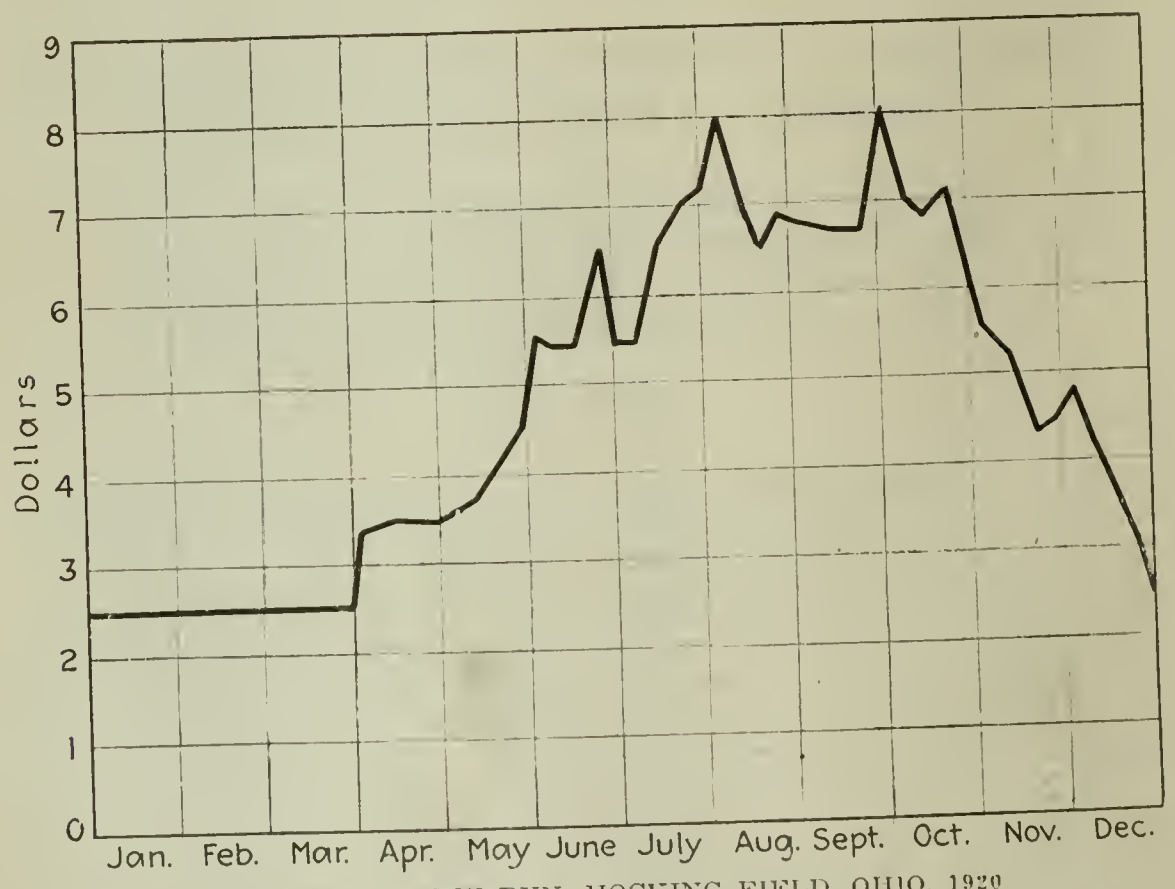
Difficulties Not at an End

The perplexities of the coal men, however, were not ended. The switchmen's strike, beginning early in April and continuing all through the summer, further added to transportation difficulties, already serious because of a shortage of coal cars. Industrial plants, particularly the iron and steel mills and foundries of this district, were unable to obtain enough coal to insure steady operation, although the plight of the domestic consumer was alleviated for the most part by the coming of warmer weather.

Coal shipments on the Great Lakes started about a month late and for April were only 307,000 tons as compared with 1,082,183 tons during the same month of the previous year. Lake shipments continued below normal for May and the first part of June, and as the season advanced it was feared that the Northwest would not receive sufficient fuel to carry it through the winter.

This situation led to the Interstate Commerce Commission's famous Service Order No. 10, issued through H. M. Griggs, manager of the Cleveland Ore & Coal Exchange, effective June 13, whereby operators were required to send to Lake ports priority quotas ranging from 35 to 60 per cent of the capacity rating of individual mines. The Interstate Commerce Commission in September, answering the pleas of consumers facing an acute shortage of fuel, permitted an additional allowance of 800 cars of coal a week for use in the state in order to avert threatened shutdowns.

Cargo freights on Lake shipments at the beginning of the season were advanced somewhat over those of 1919, one big Cleveland vessel interest contracting to take 1,000,000 tons of No. 8 Pittsburgh to the head of Lake Superior at 50c a ton. The rate to Milwaukee and Lake Michigan ports was set at 60c a ton. The previous season's rates were respectively 42½c. and 47½c. a ton, while those for 1918 were 48c. and 55c. respectively. Boats loaded late in November received $1 a ton, while a few loaded in December obtained $1.50 a ton.



SPOT PRICES, MINE RUN, HOCKING FIELD, OHIO, 1920

Diagram of spot prices, in dollars per net ton, of mine run bituminous coal from the Hocking field of Ohio in 1920. Quotations taken from Columbus market. Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April 1 and reached their peak early in August. After a decline this figure was again reached in October, following which came a steady descent throughout the balance of the year. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower.

would become more plentiful and cheaper with the closing of Lake navigation, which was expected to release large quantities of coal for local use, domestic consumers for the most part remained out of the market during the summer and early autumn. At the beginning of August it was estimated that not more than 2 per cent of the domestic users in Ohio had obtained their winter supply of coal as compared with 40 per cent in 1919.

Influenced by the belief that coal

Bids opened in August for supplying Cleveland schools ranged from $7.25 to $9.50 a ton for slack and as high as $10 for lump coal. No bids over $7.65 for slack and $8 for lump were accepted.

Anthracite Jumps $1-$2 a Ton

Increased freight rates effective Aug. 26 added from 40c. to $1.50 a ton to bituminous prices then in effect, the range at that time being from $11.80 to $12 for Massillon lump and No. 8 Pittsburgh. Prices on anthracite grades, then ranging from $14.50 to $15.50 a ton, and on Pocahontas ranging from $12.50 to $15, were advanced $1 to $2 a ton. Some dealers in anthracite and Pocahontas were four to six months behind on deliveries at the time that the new freight rates went into effect.

For a short time after the closing of the Lake navigation season coal continued scarce and prices remained high, due chiefly to an unexpected and more acute car shortage. However, production at eastern Ohio mines steadily increased, and as the car supply improved the demand also fell off, with industrial curtailment spreading rapidly. By the end of November dealers were receiving all of the coal they could handle and prices at the same time began to soften.

Steam coal, which a few weeks previously had held firmly at around $8 a ton, fell to $3.50 and $5 a ton. Hard coal and Pocahontas also declined 50c. to $1 a ton, although the supply was reported 50 per cent under the demand. Coal continued to come forward on contracts well into December, although many buyers withdrew from the market to await lower prices. Toward the end of the year cancellations of contracts appeared in great numbers.

Operators and Dealers Optimistic

The year 1920 closed with general dullness prevailing throughout the coal trade in Ohio. However, with an increase in industrial activities probable during the early part of 1921, coal operators and dealers regard the outlook cheerfully and feel that the coming year, whatever it may hold in store, cannot but be more satisfactory than the one just passed. Not all authorities are agreed that immediate prospects for prosperous trade conditions are directly ahead, but indications generally seem to point to a good volume of business for 1921, perhaps with the margin of profits smaller, but with risks of doing business less.

Sale of Large Coal Properties Foreshadows Expansion in Northern West Virginia

Output of 15,000,000 Tons in 1920 Likely To Be Surpassed During the Coming Year—Bethlehem Steel Co. and Coal Land Development Co. Acquire Large Holdings—New Rail Lines Will Increase Production—Labor Situation Tranquil

By H. A. Williamson
Fairmont, W. Va.

NORTHERN West Virginia probably produced more coal during the last year than ever before. The total output, as near as can be estimated at this time, will run between fourteen and fifteen million tons. The car situation improved steadily and this with other features permitted an increased tonnage to be produced. Of course the car shortage is still the controlling feature of shipments and probably will remain such for some years. Undoubtedly if it were not for this the price of coal would have dropped below its lowest point for the year. As it was the price dropped to a point where the snowbird, or wagon-loading, mine has about gone out of business and at the time of this writing (early in December) there is practically no coal being loaded by these operations.

Supply of Natural Gas Wanes

Coke is being produced in limited quantities and will continue so just as long as prices hold. As has been previously stated, there is no inducement to produce coke in this region unless the price is above that ordinarily obtained. The byproduct ovens just being put in blast at Fairmont will produce some coke—probably four hundred tons per day—but it is more than likely that this is all placed within the interests which control the corporation owning them and little or none of it will be on the market save locally for domestic use. As the natural gas supply is rapidly reaching the vanishing point, there eventually will be a large local demand for domestic coke, if properly worked up.

Predictions of falling prices and coming difficulties began to be heard early in the year and continued in constantly increasing volume up to its close. In spite of these there has been an undercurrent of confidence which at this time appears to have been justified. Almost everyone talked of retrenchment and strict economy yet the year recorded more extensive coal land purchases and the inception of more new operations than any preceding year in the history of the region. Some thirty or forty new charters have been issued by the state with stock issues ranging from $5,000 to $500,000 or more.

The largest transaction appears to have been the purchase by the Bethlehem Steel interests of the property of the Elkins Coal & Coke Co. and a part of the property of the Jamison Coal & Coke Co. The Elkins property is located in Monongalia and Preston Counties and is said to consist of 445,000 acres of coal, the recorded purchase price being $5,000,000. There are seven operating mines, six in the Upper Freeport Seam and one in the Pittsburg Seam. The Jamison property purchased consists of Jamison Mine No. 7 and Jamison Mine No. 10, both shaft operations in the Pittsburgh Seam near Fairmont, W. Va.

The Coal Land Development Co., of Clarksburg, W. Va., is reported to have acquired an area approximating sixteen square miles of Redstone coal and several companies are reported to have purchased areas of Pittsburgh coal to the southwest of Clarksburg. These latter are partly within territory which has previously been mentioned as having the mining problem complicated by a large number of oil and gas wells; therefore development will be watched with keen interest.

A large area of virgin territory is being opened by branches of the Monongahela R.R. and the Morgantown & Wheeling R.R. The territory being opened by these roads lies north of Fairmont and west of Morgantown. Approximately it extends from the line of the B. & O. R.R. between Fairmont and Wheeling on the south northward across the Pennsylvania State line, and from the Monongahela River on the east to the Ohio River on the west.

Railroads Increase Mileage

The railroads started construction on the eastern end, near Morgantown, the Monongahela Railroad extending branches westward from its main line, while the Morgantown & Wheeling has constructed and is operating twenty-three miles of its main line from Morgantown westward to Blacksville. On the eastern end of this area the Pittsburgh and Sewickley seams of coal are exposed to advantageous mining. The greater part of the Pittsburgh Seam is controlled by large holding companies and not much of it has been opened for operation. The Sewickley Seam, on the other hand, was not generally considered in years past, consequently it has been open to purchase and many small holdings have been taken up. Mines in this seam are being opened as rapidly as the railheads advance and there are now thirty or forty Sewickley mines operating within a very short distance of Morgantown.

Farther west the Waynesburg Seam is exposed, but so far the tracks have not generally reached this exposure and but one or two mines are operating in the Waynesburg. Purchases of areas of this seam have been made, however, and no doubt it will be opened as soon as it is possible to do so. When the Morgantown & Wheeling R.R. is completed the mines located on it will have a new and direct connection through Wheeling with the Lakes and they will have a certain advantage in obtaining this important business.

In February the Baltimore & Ohio R.R. purchased the Morgantown & Kingwood R.R., a line running through coal territory. This road is about forty-five miles long and has been in operation for a number of years. Both its terminals connect with the B. & O. R.R., the one at Morgantown connecting with the Fairmont-Pittsburgh line and the other at what is known as M. & K. junction on the B. & O. main line east of Grafton, W. Va. As a result of the purchase of the Elkins mines on the Morgantown & Kingwood R.R. by the Bethlehem interests, it is generally supposed that the B. & O. will substantially improve this road, which gives it an outlet for coal from the Morgantown district across to the main line without putting it through the more or less congested Fairmont-Grafton yard section.

Shipments to Lakes Below Normal

In the past the Northwestern trade, via the Great Lakes, was considered one of the standbys of the region and every endeavor was made to give this trade preference and take care of it, but the Lake trade suffered severely this year. Early in the year certain figures were given out as to about what should be consigned to Lake ports, but at the end of the year actual figures show that only about 35 per cent of this estimate had been shipped. The total coal sent to Lake ports from the region amounted to only 50 per cent of last year's shipments, and 1919 was a bad year for the Lake trade. The northwestern part of the United States and Canada normally draw a large part of their coal supply from this region, but it is understood that they will not suffer for want of coal this winter, because the companies controlling this business picked up other coal to take care of it and the upper Lake docks are amply supplied with coal—some perhaps of inferior quality but still sufficient to take care of the needs of the consumers for the winter.

While it is not admitted, and possibly not actually realized by the operators and railroads, one factor which has diverted coal from the Lake trade developed from petty inconveniences caused by various orders and regulations of the railroads. Probably the chief reason why the Lake trade has suffered, however, lies in the possibilities of better price in certain foreign trade. Much talk has been heard all over the country about our lack of interest in foreign trade and its possible loss from neglect. Certainly none of this criticism applies to the coal operators in that part of northern West Virginia termed the "Fairmont region."

So far as it has been possible to get railroad cars and boats for the business, coal has been going out of the region in a steady stream for the foreign

trade, particularly for South American and Mediterranean ports. It is not possible to secure figures on this business at this time. Shippers are not inclined to divulge much information on their foreign business and the further disturbing factors of confiscation and diversion of coal en route make it impossible to get any reasonably approximate idea of the volume of this business without careful and detailed investigation. There is no doubt, however, but that such business could be enormously increased were proper shipping facilities—railroad cars and vessels—available.

The byproduct plant of the Domestic Coke Corporation at Fairmont which has been in course of erection for several years was practically completed and ready for operation in August. The plant consists of sixty ovens (charging about twelve tons per oven) with other equipment and ground space for adtional ovens. A peculiar feature, emphasizing the inadequate railroad equipment, developed when this plant was about ready to operate. The byproduct people had made a contract for coal from a near-by mine and in August called on the operator to begin delivery. The operator replied that he was entirely unable to make deliveries of coal to the byproduct plant unless the byproduct company could furnish its own railroad cars. The coal company explained that because of lack of cars it was unable to fill its contracts. Of more than 7,000 cars sent out by this company in August more than 5,000 were assigned—that is, went either for railroad fuel or to some public utility. The byproduct company could not work except with a constant fixed coal supply and it was not until Dec. 1 that it was able to fire its ovens, at which time one of the railroad companies had placed in its service some forty crippled cars not fit for other than local service.

With the exception of one or two minor local flare-ups, the labor situation has been quite tranquil. When the union organization was introduced in the region considerable fear was expressed as to unsatisfactory results. So far this has not developed although there still exists a feeling of uneasiness in certain sections. There are certain elements in the region that tend to minimize labor troubles. A large proportion of the population is native and another large part, while foreign born, has been in the region for many years, and these have taken advantage of the excellent school system provided and they are more inclined to investigate and reason out their problems and reach a settlement without loss of time and money by striking. In fact, while these people show a decided inclination to hold out for what they consider their proper recognition they also show very little patience with any radical element, and the preaching of extreme doctrines is decidedly unpopular.

As a whole housing and living conditions are better than in most regions and are steadily improving; safety and welfare work are receiving considerable attention and the bond between employee and employer is constantly being made stronger. So far as can be observed more and better precautions are being constantly taken to prevent accidents and the year has been marked by great improvement along this line. While there was some loss of life during the year, it seems likely that when the record is finally made up it will be better than that of any preceding year. The same is true of fire losses—there were a few serious fires but the final record will show great improvement over the records of the past. Taken as a whole, when compared with other coal regions the record of northern West Virginia for 1920 has been particularly quiet, successful and satisfactory.

Buffalo Coal Market in 1920 Experienced an Unsatisfactory Year

Series of Changes Had a Distressing Effect—Unsettled Conditions Brought Up Usual Question on the Binding Force of Contracts—As a Rule Shippers Refrained from Demanding Top Prices

By John W. Chamberlain
Buffalo, N. Y.

THE year in coal at Buffalo was quite as unsatisfactory as elsewhere. The market is for the most part a jobbing one, though there are half a score of mine-owning companies, one or two of them having an annual production of more than a million tons. Therefore the selling of coal has seen a series of changes that were especially distressing. The jobber united with the operator in the spring to establish a year's trade by making the usual April contracts for bituminous. Up to that time prices had been regulated by the government and were sufficiently low for contracts to be freely made at less than $4 a net ton at the mines, some of them running as low as $3.40. As the season advanced it was found impossible to meet these obligations because both labor and cars were inadequate to produce and move the coal sold.

Prices on that account ran up rapidly, but in practically every case the shipper, whether operator or jobber, tried to fulfill contracts and some of them were able to say at the end of the season that they did not sell coal at the advanced prices when they had contracts unfilled. The situation, as usual, has brought up the question of the force of a sales agreement. Should it be regarded as fast and binding or as sufficiently flexible to be looked on as more of an option than otherwise? The later reversal of conditions, with more coal offering than could be sold, emphasizes the argument of those who do not consider a contract of force in extreme situations, if only from a matter of necessity, which it is said knows no law.

Conditions That Kept Prices Up

A steady increase in the cost of coal, both bituminous and anthracite, wages going up from time to time and a large increase in freight rates also, made it impossible to return to former prices in either case, so that anthracite, after the last freight advance retailed in Buffalo at $13.25 for stove and chestnut and $13 for larger sizes and continued to do so to the end of the year. The prospect is that anthracite will be high in future in spite of conditions that reduce the price of bituminous, for it is no longer plentiful and so cannot be produced much in excess of consumption.

It is held as a law of the bituminous trade in the Buffalo market that a car shortage is always needed to make bituminous coal pay a profit. The price of bituminous ran up after government control ceased on April 1, till it was selling as high as $10.50 at the mines early in September, though at the same time it should be said that the top price was obtained only in comparatively few instances, most of the coal going at prices running down to the lowest contract figures. When the decline set in it continued without check, till at the end of the year prices were seldom more than $4 net at mine, with considerable coal going for even less than that, as consumers were pretty well supplied and were not using nearly as much coal as during the peak period of prices. The bottom is now generally supposed to have been reached.

Shippers Accept 50c. Margin

As a rule Buffalo shippers did not try to obtain top prices, but they did try to settle down to a margin of 50c. a ton for services rendered. As the change in prices went on it was found that the position of the jobber was completely reversed. With high prices his business was to serve the consumer and obtain coal enough to enable him to carry on his business, but when the decline set in he was gradually turned over to the operator, who soon began to prod him to find a market for the coal. The year ended with much more coal produced than the consumer wants and a prospect of mine closing or drastic reduction of mine wages to meet the conditions. The chief uncertainty is due to lack of knowledge as to the probable duration of the present period of slow business and there is need of proceeding with extreme caution till the return of business activity. Employers

see in this an opportunity to force wages down.

During the year freight rates advanced from $2 to $3.24 on anthracite and on Pittsburgh bituminous from $1.75 to $2.51, with Allegheny Valley remaining 15c. lower than Pittsburgh rates. The freight on Connellsville coke advanced from $2.60 to $3.64. This is not an active coke market, for the reason that most of the larger furnaces buy their supply direct from the ovens, but during the period of shortage contracts were not filled promptly and jobbers were called on to furnish coke wherever possible. Coke prices ran up to about $18 a ton at the peak season, but again dropped to $7.50 for best foundry before the end of the year. Buffalo is a heavy consumer of coke. During the season of 1920 it passed all the Ohio ports but one in iron ore receipts by Lake. Jobbers now quote mine prices and have dropped delivery quotations on coal or coke.

The anthracite trade has been very unsatisfactory, though the end of the year again saw production gaining on that of the previous year. Buffalo has suffered severely by the decline in natural-gas fuel, which at one time displaced fully 600,000 tons of anthracite. When anthracite was called on this year to make up the shortage it did not do so promptly. The close of the Lake trade, which had moved 3,584,386 net tons to the upper lakes, as against 4,556,118 tons in 1919, found shippers unable to turn the flow of coal into the city trestles, as had formerly been done, and the shortage still exists, although not in a serious degree. Independent anthracite ran up as high as $17 at the mines during the worst of the shortage, compared with $8.50 company circular, but is now down to a premium of $2 or $3.

The establishment of the Wabash Fuel Co. at the opening of the year by George J. Mechau was followed by the organization of the Sinclair Coal Co., with Henry S. Hill, president, which is the only new mine-owning company. Agencies of the P. O. McIntire Coal Co., of Cleveland, with M. G. Siener, manager; the Premier Coal Co., a New York corporation, with H. Snyder, manager, and the Weston Dodson Coal Co., were established in Buffalo late in the year. The latest local corporation is the Maxim Coal & Coke Corporation, of which L. P. Zimmermann is president.

British Columbia's Output Expands; Plans Continued Development of Resources

Increase in Total Production of Coal During 1920 Conservatively Estimated at More Than 518,000 Net Tons—Gain in Crow's Nest Pass District Exceeds 50 Per Cent—Dominion Government Still Exercises Authority to Preserve Industrial Peace

By Robert Dunn
Victoria, B. C.

An increase in coal production will be shown by the collieries of all the coal fields of British Columbia for 1920 in comparison with the previous year. A conservative estimate places the output at 2,787,000 net tons, the figures for 1919 being 2,267,541 tons, a gain of more than 518,000 tons.

On Vancouver Island there has been a notable advance. The big producers, the Canadian Western Fuel Co. and the Canadian Collieries Ltd., have more than maintained the pace set in 1919. While the Island Field has lost the Jingle Pot mine, which ceased operation early in the year, the adverse effect of this has been fully compensated for by the speeding up of the regular producers and by the marked development of the production of the Granby Mining & Smelting Co.'s collieries at Cassidy. The output of the island aggregated approximately 1,783,800 tons as compared with about 1,700,000 tons in 1919.

Crow's Nest Pass Grows Rapidly

There also has been an improvement in the Nicola-Princeton field, where production during 1920 is estimated to total 151,584 tons as compared with 150,705 tons in the previous year.

The outstanding advance, however, is in the Crow's Nest Pass District of eastern British Columbia. The aggregate for 1920 is placed at 852,000 tons in round figures as compared with 562,000 tons in 1919. The explanation, of course, is that in 1919 there was a three-month strike at Fernie, materially reducing the output of the Crow's Nest Pass Coal Co.

There also were disputes in 1920, however; in fact for some months there was more or less open warfare between the two labor organizations, the United Mine Workers of America and the so-called One Big Union. In this section the authority of the Dominion Government, exercised for the purpose of preserving industrial peace in order that production might be maintained during and immediately after the war, still exists. W. H. Armstrong, as Director of Coal Operations, still is in control and it has been possible, by virtue of the mediatory service of his department, to keep the mines on a producing basis throughout the year. This, therefore, accounts for the fact that the mines of Coal Creek and Michel had an output for 1920 of about 686,000 tons as against 480,000 tons during the preceding year, while the Corbin Coal & Coke Co.'s production amounted to something like 166,000 tons as against 82,000 tons in 1919.

It is interesting to note that on Vancouver Island the Canadian Collieries, Ltd., has conclusively demonstrated its ascendency with an estimated total of 746,000 tons. The nearest to this production is that of the Canadian Western Fuel Co., Ltd., the long-established colliery of Nanaimo, B. C., with about 459,000 tons. The Cassidy Collieries of the Granby Company was in its infancy in 1919 and it is only necessary to state that its product for 1920 will aggregate something like 210,000 tons to indicate that it has grown into a business of importance in the course of the last twelve months. The Pacific Coast Coal Mines., Ltd., with 99,800 tons, also has commenced to climb, while the Nanoose-Wellington Collieries, Ltd., Nanoose Bay, has done well with approximately 45,000 tons to its credit.

Installing New Equipment

In the Nicola-Princeton district the chief producer is the Middlesboro Collieries with a total of about 95,000 tons. Other producers are the Fleming Coal Co., with 30,000 tons; the Princeton Coal & Land Co., with 19,000 tons, and the Coalmont Coal Co., with 7,584 tons. The latter company was reorganized recently and is developing its holdings so that it may be expected to take a more important part from this date forth. Several million tons of coal are being developed, an aërial tramway is being installed between the mine and Coalmont on the Kettle Valley Ry., a screening plant is being installed and a tipple constructed at the railway.

The Chu Chua Coal Mining Syndicate is opening up a new field situated on the Indian reserve a short distance south of Chu Chua station and not far from the City of Kamloops. The coal is of excellent quality and, although the seam now under development is only about three feet in width, it is expected to improve as the work continues. The Kamloops Natural Gas, Oil & Coal Co., Ltd., also is drilling in the coal measure of Coal Hill, a short distance from Kamloops.

Production Soon from New Seam

The Telkwa Collieries, located near the Grand Trunk Pacific Ry. in northern British Columbia, has not done much this year, its production, as far as can be judged, being about 1,300 tons. A short distance from this property a new seam is being opened up which contains high-grade coal, some of which soon will be marketed. It seems probable that the immediate future will see extended development of the coal areas of this district.

The ever-increasing price of fuel oil and its scarcity in the world's markets is causing renewed interest in all the promising coal fields of the North. The Telkwa, Morice River, Peace River and Groundhog fields have attracted interest during the last year and large scale development may be expected before long. Undoubtedly these areas contain large quantities of good grade coal and but for transportation difficulties they now would be in the productive class.

Last Year Was the Worst in History of Coal Industry in the Northwest

Transportation Difficulties the Root of the Trouble—Judge McGee Gives "Hang-the-Expense" Advice and Too Late Yells "Robbery"—Mild Weather Helps Demand Keep Pace with Supply

By G. A. Welch
Minneapolis, Minn.

A REVIEW of the Northwestern coal situation for the past twelve months is considerably like those surgical operations which are entirely successful in every way, except that the patient lacks sufficient resistance and dies. The coal business had been most unsatisfactory all though the war but 1920 probably was the worst year for the coal trade in the Northwest to endure. There was not a time during the year when things were anywhere near normal.

The year opened with endless difficulties in transportation—the root of all our trouble. Stocks of coal on the docks at the beginning of the year were limited, but they proved sufficient to meet requirements. When it comes to estimating the future needs of the Northwest, there must always be allowed a certain leeway, as it is impossible to anticipate precisely either domestic or industrial needs. A mild winter like the present one will cut down domestic consumption materially. Industrial slackness will do the same on steam coal. Hence when estimates of the needs of the Northwest are made, they can never be close, for a variation may follow in either direction.

The delivery of steam coal from the all-rail territory of Illinois and Indiana was intensely handicapped in 1920 by lack of cars, and public service corporations were greatly disturbed by the short supply, which threatened to leave them without sufficient coal for current needs.

However, the spring was reached with only a continuation of the uncertainties which had held over from the preceding season. Before cold weather was over, the coal trade in the Northwest concluded that the possibility was slim for getting adequate fuel forward to the docks at Duluth, Superior, Ashland and Washburn for the Northwestern States. In order to avoid a repetition of former difficulties, steps were taken early in the season—in March—to estimate the needs of the docks for the 1920-21 winter. So far as the dock trade was concerned, it did all that it could do to get up sufficient coal before the pressure of needs from other directions would cut down the free movement. But working out approximate needs and placing the orders did not complete the delivery. The car shortage was still on hand and working overtime—the only thing in railroad operation during the summer which seemed to be functioning.

Although the Lakes opened for navigation somewhat earlier than usual, little coal was sent forward to the lower Lake docks. May slipped by and June arrived, and still there was no improvement. It is difficult to place the responsibility for the situation, as each faction blamed another for the delay. Looking backward, it seems that more could have been done in the early summer to get coal forward. It is true that there was a coal strike, under the euphemism of a "suspension," and it was very natural for the operators to seek to let things run as slowly as possible while wearing out the situation to a conclusion. But after all allowances are made, it still appears that the Northwest might have had more attention early, and thus have been spared much of the trouble that came later, to the discomfiture of other sections.

It is one of the advantages of the Northwest that from the dock standpoint it is almost unique in the coal business—one of the few sections where the trade stores coal in the summer for use in the winter. This has been most advantageous heretofore, giving an outlet for summer production which would otherwise have to be reduced. Because of this system, producers in the East have built up a business which they should maintain as a moral responsibility. In the face of the obligation thus assumed, those operators defaulted lamentably during the summer of 1920. When midsummer was past and there was not a third of the usual stock on the docks, Governor Burnquist of Minnesota sent Judge McGee as fuel commissioner to the lower Lake ports to expedite coal movement.

SPOT PRICES, MINE RUN, KANAWHA DISTRICT, W. VA., 1920

Diagram of spot prices, in dollars per net ton, of mine run bituminous coal from the Kanawha, W. Va. district in 1920. Quotations taken from Columbus and export markets. Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In August increases in wages of day labor resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Prices for export are shown separately from the inland market. A wide differential is indicated for a part of the year, when demands from both sources were heaviest. This margin vanished in September and the decline in both markets was steady throughout the balance of the year. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower.

This step was taken in July. Shortly after, due to the efforts of W. H. Groverman, secretary of the Northwestern Coal Dock Operators' Association, Judge McGee and others, a priority order was issued by the Interstate Commerce Commission, effective from July 26, to assure sufficient cars to move from the mines the coal so greatly needed for the Northwest. The commission seems to have operated as does the ostrich which deposits its egg in the sand and leaves all further development to chance and nature. The order did not produce the cars, and the Northwest did not get its coal. The advance in freight rates followed in due time, resulting in an advance of from $2 to $4 a ton on coal, while the open market, which was the only place that soft coal could readily be obtained, went kiting.

The dock trade was drawn between two dilemmas. The cost of soft coal for domestic and steam use reached a point which would not willingly be paid, yet it was almost certain that unless the dock companies did put in coal at whatever price they had to pay in order to get it, there would be a serious situation in the Northwest during the winter. They could not get their supplies through the usual sources and at the prices available at the time they ordered in the spring. The pressure from other markets forced the spot market up and the Northwest had to meet it or go without. Almost no support came from the dealer trade. The latter admitted the seriousness of the situation, but also practiced the first law of nature, which is safety first.

The priority order, while not successful, did help, and coal deliveries to the docks picked up during the autumn, though far from the probable needs. All this time all-rail deliveries were restricted to less than the normal delivery for slack time. Nothing could be approximated as to what the rail fields could be depended upon to do. So serious was the outlook in the autumn that about Nov. 1 Judge McGee wired to Minneapolis business men urging that dealers and consumers buy coal at whatever price it could be obtained, to keep from "freezing to death." These are the prices which only a month later, in his letter to the Calder committee of the United States Senate, the judge characterized as rank robbery and genuine extortion. The figures seem to justify the statement, but the fact arouses wonder why they were not denounced when they were made, in an effort to break up the combination instead of conniving with it until the mischief had been done.

By means of constant pounding and pushing and the extension of navigation beyond the usual date, deliveries of coal to the docks finally were brought up to last season's totals. The situation has been greatly aided by the very mild autumn, which resulted in a lower rate of consumption of domestic coal, while a lessening of industrial activity did the same for steam coal. This decrease in requirements is expected to be sufficient to offset the difference in stocks. At the beginning of 1919 there was a total carry-over of more than 3,000,000 tons of hard and soft coal, but there was almost none at the beginning of 1920.

Early in December it became apparent that the need of coal was not going to be up to expectations. Instead of a famine market and buyers imploring the trade to sell regardless of price, the other extreme was experienced—a weather market, with ample supplies and consumers not at all alarmed over getting coal, but very much inclined to scrutinize the prices asked. The Illinois market had become a factor in the Twin Cities and the territory south and west, and the car situation had cleared up immensely. It was no longer necessary to kidnap a car and bribe a train crew to get a car of coal. The Illinois market sagged, weakened, slipped and then went headlong. Screenings, which had been worth more than mine run, could not be given away. This applies mainly to the lower grades of Illinois coal, which were promptly neglected as soon as the market became free and buyers could select what they wanted instead of taking anything they could get. But mine run soon followed suit, with a decline of from $1 to $3, and only the best grades of prepared sizes were able to maintain a semblance of their former list price. Extreme top prices on dock coal also succumbed, although lists did not appreciably change.

All things have an end, and the exceptionally mild weather finally succumbed to a little real winter—sufficient to give a little brace to a sadly demoralized market and restore the idea that there might be winter in December and January. At the same time the uproar created by the Calder committee announcements tended to unsettle the public and to create the hope that there will be a revision of coal costs. So far as the Northwest is concerned, the revision must be at the mine, for there is very little leeway at this end to allow for shrinkage.

Ohio Coal Trade in 1920 Enjoyed Greatest Prosperity in Its History

High Prices Brought Success to Producers, Wholesalers and Retailers—Production 11,000,000 Tons More Than in 1919—With Adequate Car Supply Output Would Have Been 20 per Cent Greater

By J. W. Lehman
Columbus, Ohio

FROM almost every standpoint the year 1920 was the best in the history of the Ohio coal trade. Big production with extra high prices brought unusual prosperity to every branch of the industry, including producer, wholesaler and retailer. The lake trade was generally active and a fair tonnage was shipped to the Northwest during the unusually long lake season.

It was only toward the last of the year that prices began to descend to more reasonable levels and when demand fell off to a point where effort was required in the sales departments. Previous to December the demand was unusually strong and every ton that could be produced was easily disposed of, whether properly cleaned or dirty.

It is estimated both by the Ohio Industrial Commission and the Southern Ohio Coal Exchange that production was 11,000,000 tons greater than in 1919, being exceeded only by 1918. Total production in 1920 is estimated at 45,000,000 net tons.

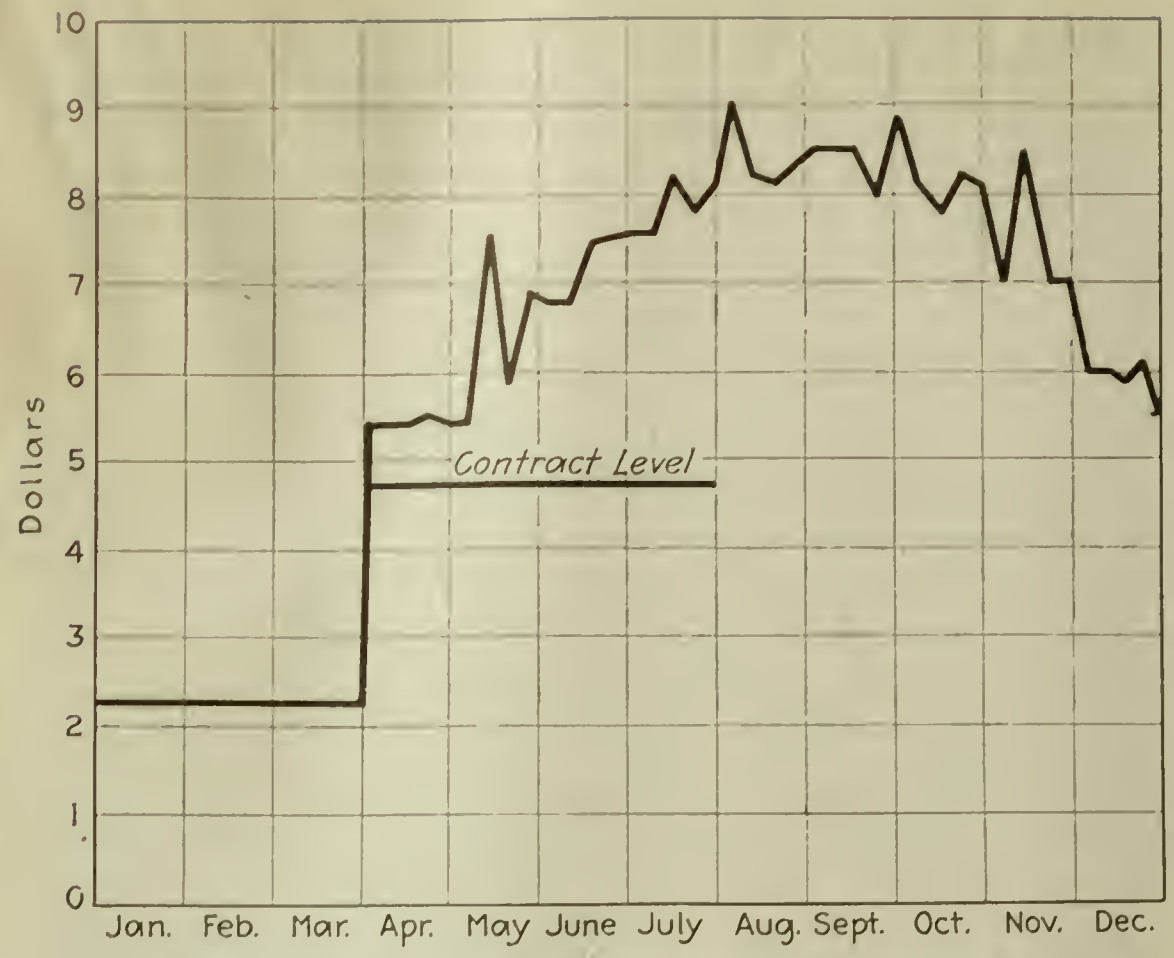
Figures compiled by the Southern Ohio Coal Exchange show that for the nine months ending Sept. 30, 1920, the total shipments of revenue tonnage were 26,738,439 tons, to which should be added approximately 7,500.000 tons for fuel coal used by originating railroads for coal hauled from mines by wagons and coal used locally by industrial concerns. This estimate is believed to be within 200,000 tons of what first reports will show.

Figures showing the distribution of the commercial tonnage shipped from Ohio mines in the first nine months of 1920 show the wide distribution of Ohio-mined coal and the important part played by the Buckeye State in the industrial life of the Middle West. Of the commercial tonnage mined up to

SHIPMENTS ORIGINATING ON RAILROADS IN OHIO, JANUARY-OCTOBER, 1920
(In net tons)

Railroad:	Commercial	Railroad Fuel	Lake	Totals
Hocking Valley	2,922,265	702,541	1,239,134	4,863,940
Toledo & Ohio Central	1,403,053	699,512	474,888	2,577,453
Zanesville & Western	926,836	466,730	378,600	1,772,166
Kanawha & Michigan	484,329	36,159	125,159	645,647
Detroit, Toledo & Ironton	510,542	4,180	4,860	519,582
B. & O. (Ohio Div.)	459,824	2,632	3,336	465,792
B. & O. (Toledo Div.)	190,289	1,277	5,208	196,774
Other railroads*	11,637,682	2,535,441	5,078,621	19,251,744
Totals	18,534,820	4,448,472	7,309,806	30,293,098

*Includes P. R. R. Lines West, N. Y. Central and several small roads.



SPOT PRICES, BITUMINOUS MINE RUN, POCAHONTAS FIELD, W. VA., 1920

Diagram of spot prices, in dollars per net ton, of mine run bituminous coal from the Pocahontas, W. Va., field in 1920, compared with the contract market price for the same coal at the beginning of the coal year in April. Quotations taken from Columbus market.

Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. On Oct. 1 a 25 per cent increase in all wages resulted in a corresponding increase in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly on April 1 and reached their peak early in August, after which the market showed considerable fluctuation. The general trend was downward, a figure of $5.60 being reached by the end of the year. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower.

Sept. 30, Ohio received 11,786,157 tons,; Michigan, 2,761,155 tons; Indiana, 327,-896 tons; the Chicago district, 143,040 tons; Canada, 675,620 tons and miscellaneous points, 1,172,107 tons.

A study of production in all fields of Ohio during the year shows that the output was fairly steady, excepting during the midsummer months, when car shortage was the worst and when the output of all mines was curtailed to a large degree.

Until December "No market" was not a factor in limiting production. Labor shortage played its part, however, after the miners by mutual understanding among themselves took Saturday as a holiday.

Price fluctuations during the year were most unusual. The highest prices ever paid for coal in Ohio were registered and the top levels continued for an extra long period. Prices started up late in May, when some industrials entered the market with bids of $5 and $6 for steam coal at the mines. Coal for export was bought in Ohio.

Automobile and accessory factories were the biggest consumers and as their business was active, their purchasing agents went wild over prices. Mine run and screenings rapidly mounted from $3@$4 at the mines to as high as $7.50@$9. Prices of lump followed this trend and prices around $10 at the mines were paid for prepared sizes. This movement continued until the latter part of October, when some easing off was noted. Toward the latter part of November and early in December the slump was more marked and closing quotations were at lower levels than prices prevailing at the start of the year. Lump sold from $4 to $5, mine run from $2 to $2.75 and screenings from $1.50 to $2.25 at the close of the year.

With the opening of the Lake trade in May, little attention was paid to procuring tonnage for Northwestern shipments. No activity was evidenced for several months until coal men and the public generally arrived at the realization that there would be a marked fuel shortage in the Northwest unless some heroic steps were taken. Pressure was brought to bear on the Interstate Commerce Commission and priority was given Lake coal, which took 40 per cent of the output of all Ohio mines. Prices on Lake fuel thereafter rose rapidly although they never reached the levels of commercial tonnage in the open market.

The production of coal in Ohio would have been fully 20 per cent greater if an adequate car supply had been available all year. The loss from insufficient cars ranged from 6 per cent in April to 20 per cent in November. The Southern Ohio Coal Exchange statistical department estimates that a total of 52,000,000 tons would have been produced in Ohio had the car supply been sufficient.

Comparatively little loss in production resulted from strikes. Strikes of minor importance were quite numerous but in most cases they were speedily adjusted.

Accidents were not as numerous as in 1919, according to a report of the Ohio Industrial Commission. Up to Dec. 24 there were 135 fatal accidents, as compared with 141 in 1919.

Prominent among the Legislative acts affecting the coal industry in Ohio was the law making it obligatory on the part of operators to supply washhouses for their miners. A law establishing five rescue substations of the Ohio Mine Department was inoperative because the Legislature failed to make an appropriation for their upkeep and operation.

Business with Coal Speculators a Costly Experiment in the Southwest

Operators Who Sold to Profiteers are Now Without a Market — Press Blamed for Precipitating Panic Through Ignorance and Misrepresentation — No Actual Coal Shortage — Prosperity Forecast.

By E. J. Knickerbocker
Kansas City, Mo.

BEGINNING unfavorably, 1920 was the most erratic year in the history of the coal business in the Southwest. In the early months potential production was greater than expected demand and operators, believing this condition would continue throughout the year, took on contracts to the limit of their production in order to insure running time. Then the miners began the agitation for a further increase in wages, notwithstanding a two-year contract had been entered into in April. This agitation made consumers and dealers apprehensive of their coal supply, and this with the stories of shortage in the East caused a buyers' panic.

The speculator, seeing his opportunity, stepped in and made bids to the operator higher than the contract prices and, unfortunately for the coal trade, some operators could not withstand the temptation and accepted the speculator's bids. The consumer and dealer, being in a panicky frame of mind, paid the speculator's price and passed it on to the householder or to the steam plant. Many of the operators, especially

the larger producers, who have been in business a great many years and expect to continue in business a great many more, did not accept the tempting offer made by the speculator, nor did they take advantage of the situation to advance prices, but continued to take care of their contracts in full and to keep their open or spot prices on a basis of cost plus a fair profit.

Some retail dealers, with orders placed early in the season at low prices, instead of handling this coal through their yards as had been their custom for years, turned speculators and sold the coal in carload lots, thereby making a much larger profit than if they had retailed to their regular trade.

As a result of this the whole coal trade has been placed in an unfavorable light with the public, and the responsibility lies entirely with the operator who did not have sufficient moral courage to ignore the bids of the speculator.

It is an old proverb that "what goes up must come down," and, applying it to the coal trade of 1920, it would seem that those who went the highest are falling the hardest. The coal panic is over, due to stimulated production, and the operators who sold their coal to the speculators rather than to their regular trade at fair prices, now find themselves without a market and without friends among consumers or dealers. Some of the operators now see their mistake and are frank enough to say that all the profits they made during the panicky period will now have to be expended to recover the trade which they lost on account of short-sighted policy.

The daily press is equally as guilty as the operator who sold to the speculator, for the reason that in its desire to gather news it did not go into the matter and publish all the facts, but published only a part and misrepresented the coal trade. Selling prices for the higher grades of domestic coal were compared with the cost prices for mine run, whereas in the case of the Kansas field only 18 per cent of lump is obtained from mine run coal. Then again, the press failed to discriminate as between localities, and the ignorance of Kansas reporters can be judged from the fact that they apparently do not know the area of the United States. At no time during the last year has there been any shortage of coal in the Southwest, but the press constantly harped about conditions in New England, causing a buyers' panic in this territory, where there has been no occasion for anyone to be apprehensive of his coal supply.

The Southwest is not a manufacturing territory. More dependence is here placed in grain and live stock, therefore whatever effects grain and live stock in the great Southwest affects all lines of business, whereas in the East whatever affects steel to a greater extent affects all lines of business. Steel is the business barometer east of the Mississippi River, while grain and live stock constitute the business barometer in the Southwest.

Everything in the Southwest points to a prosperous year in 1921.

Coal Trade on the Pacific Hard Hit by Readjustment in 1920

Mine Shutdowns Because of Oversupply of Fuel and Small Demand, Higher Wages and Surplus of Labor Outstanding Features — Production Slumps 1,000,000 Tons in Washington—Costs Rise While Sales Realization Shrinks

By A. M. Kidston
Seattle, Wash.

As THE coal trade probably was the first in the Northwest to feel the effects of the World War, through tremendously increased demands for fuel from long-established as well as new industries, so it probably was the first to reflect the readjustment period in commerce which plagued the coal operator along with his many other problems in 1920.

During the high point of the war period in 1917 the coal trade in the Northwest rose from the estate of pauper to that of prince and then was dethroned through government price fixing. The year was an active one and scarcely ever did supply equal demand. There also was a great scarcity of labor, due to the inroad made upon the mine payrolls by the lure of greater wages in shipyards and other war industries.

Far different conditions prevailed during the last year. It was marked by numerous shutdowns in practically all coal fields, an oversupply of fuel and little demand, higher wages at the commencement of the year and an oversupply of labor as a result of the closing down of industries previously sustained by war contracts. While every coal field in the Northwest showed an increase in production in 1917 over the previous year, not a state in the entire district last year but what will show a decrease compared with 1919, in Washington alone the decrease being practically 1,000,000 tons. This decrease last year in Washington does not convey a true index of the loss to commercial mines in the state, for while in previous year, mines owned by railroad companies have not been a serious factor, they last year produced to a greater extent than ever before.

Carrying the comparison a step further to indicate the sad fall of King Coal, during 1917, 1918 and 1919 importations from other states were small compared to 1920. During the peak of the war period of 1917 labor strikes in British Columbia tied up production and any surplus was needed for her own industries. During 1920 between 10,000 and 12,000 tons a month were sent into the Northwest from Vancouver Island alone and the Washington Coal Operators Association is authority for the statement that fully 20,000 tons a month was sent in from other states.

The same authority goes further and states that fully 50 per cent of the coal used in Washington last year was imported, of which one-third came from British Columbia. Costs of production the last half of the year were higher than at the opening of the season, prices were lower, labor was higher and demand less. As an example of costs and sales margin, eleven operators in Washington reporting for March show sales realization per ton to have been $3.42; labor costs, $2.27; supplies, 28c; general expense, 48c; total mining costs, $3.03, and margin per ton 39c.

In comparison with the above totals those for the same month of 1918 show a sales realization of 3c. per ton higher with all costs per ton less than in March last year and a margin of 59c. per ton as against the March, 1920, margin of 39c. For the state there is shown a decrease in the cost of mining in March compared with the cost in February amounting to 6c., or 2 per cent per ton. However, there was a decrease in the output per working day amounting to 14 per cent. For the entire district a drop of 20c. per ton is shown in the sales margin in March last year as compared with 1918.

During the year the foreign situation made itself felt on the Pacific coast. The inability of the Japanese to obtain coal from Chinese mines increased the demands upon British Columbia and Washington mines. Australia experienced a shortage and New Zealand, which has always depended upon her sister continent, experienced such a scarcity that ships were sent here in ballast just to obtain return coal cargoes.

Increases in prices were numerous, a during the year advances in pay of coal miners and increases in freight charges alternated in boosting the charge to the consumer. On Aug. 1 a new wage agreement advanced contract labor pay 20 per cent and day labor $1 a day. This was the advance ordered by the National Bituminous Coal Commission. During the year wages in the Northwest fields increased a little more than 27 per cent over 1919. Coal prices in Seattle in September were as follows: Newcastle and Issaquah lump-nut, $8.50; Black Diamond nut, $11; Black Diamond mixed steam coal, $8.50; Hyde mixed steam, $8.50; Hyde lump-nut, $10.50. Increases ranging from 19c. to $1.94 per ton also were added to the delivered prices of coal throughout the Northwest because of increased freight rates.

The advance in the price of coal in Montana may be illustrated by Sand Coulee coal. In 1919 this coal sold at the mines for $3.75 per ton but later advanced to $4.75, and in August to $7.50 and in September to $8.50. Bear Creek coal sold in the Great Falls, Mont., market in November for $12.

The winter in the Northwest has been unusually dull for the retail trade, with light demand. The false hope held by the consumer that the price of coal would later drop kept many from making purchases in the first part of the winter.

Dealers and operators are of the opinion that coal prices will not decline to any extent in the first half of 1921, due to the fact that many of the conditions, notably wages, which govern the price of coal will remain as at present. Costs of mine supplies show an inclination to decline but not to an extent that will be reflected noticeably in the coal bill. The labor situation promises to remain satisfactory, as is usually the case in an easy market, and with a decrease in the cost of living no new demands for higher wages are anticipated.

Development in Southeastern Kentucky Limited Only by Railroad Facilities

Received Lower Percentage of Car Supply Than Any Other Field Last Year—Extensive Additions and Betterments Promised by Louisville & Nashville R. R.—Operators Optimistic—Improved Terminals Will Encourage Exports

By A. R. Anderson
Pineville, Ky.

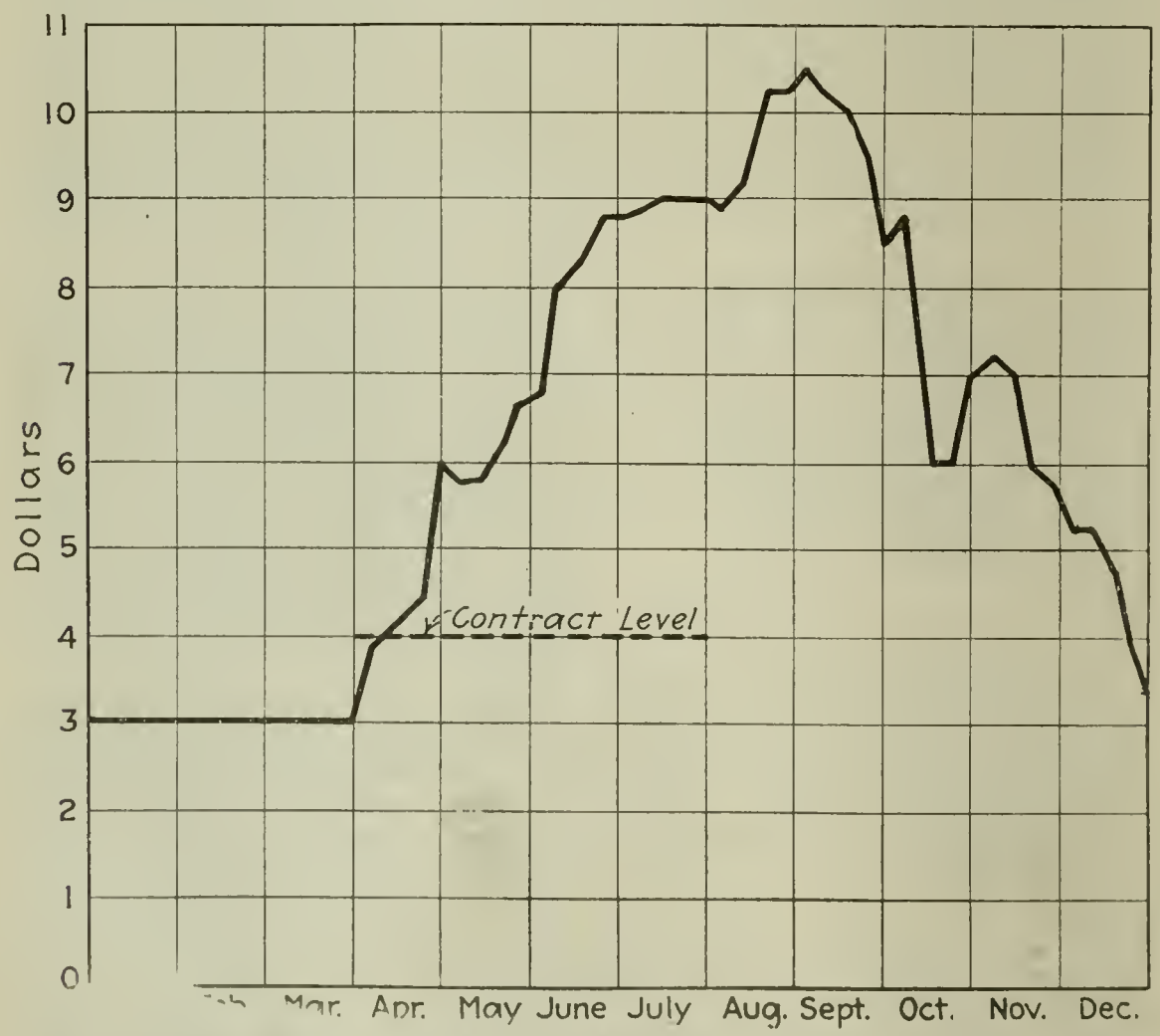
PROBLEMS and difficulties in great variety were brought to the coal men in the southeastern Kentucky in 1920. The year brought government interference, acute car shortages, abnormally high and low prices, and sporadic labor troubles.

The year began with an active sellers' market under government control and closed with a dull market under control of the old reliable law of supply and demand, with the demand end of the law more or less A. W. O. L.

Southeastern Kentucky received a lower percentage of cars than any other field in the United States in 1920, largely because of the inability of the Louisville & Nashville R.R. to handle the potential tonnage on its two eastern Kentucky lines. The Lexington & Eastern branch, extending from Winchester to McRoberts, Ky., for instance, has a potential mine capacity of about 80,000 tons of coal per day, whereas the railroad is unable to handle more than 30,000 to 35,000 tons per day. The average car supply for this road for the year did not exceed 37 to 40 per cent. This poor car supply has greatly hindered development in the field, and new development was limited to the tributaries of the north fork of the Kentucky River.

The Hazard Coal Operators Association has been persistent in its efforts to obtain better transportation and the railroad has recently announced that around seven million dollars will be spent in 1921 to increase facilities for handling coal traffic from this field.

The Cumberland Valley division of the Louisville & Nashville R.R. extends from Corbin, Ky., to Norton, Va., with a 60-mile spur running from Pineville to Lynch, Ky. This division has a potential mine capacity of about 85,000 tons per day, and the railroad officials state that 35,000 tons to 40,000 tons per day is the maximum that can be handled with present facilities. Development in this field is about on a par with that in the Hazard field, being limited to short extensions of lines reaching up the various streams that flow into the Cumberland River.



SPOT PRICES, MINE-RUN COAL, SOUTHEASTERN KENTUCKY FIELD, 1920

Diagram of spot prices, in dollars per net ton, of mine-run bituminous coal from the southeastern Kentucky field in 1920, compared with the contract market price for the same coal at the beginning of the coal year in April. Quotations taken from Louisville market. Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. In the summer increases in wages of labor resulted in corresponding increases in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April 1 and reached their peak early in September. The price declined rapidly but rallied slightly in November, after which it fell steadily throughout the remainder of the year. It should be remembered that a great part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower.

Coal Company Has Its Own Cars

The Black Mountain R.R., which extends up Pucketts Creek, was about completed during the year and considerable development is under way on this line. The plant of the United States Coal & Coke Company at Lynch Mines, Ky., is nearing completion, and development of tonnage from these mines is rapidly approaching the planned capacity of from 12,000 to 15,000 tons per day. This company owns its own cars and for that reason is more or less independent on the question of car supply. At present the company is producing around 7,000 tons per day, and is getting more than its proportionate share of the available motive power of the Louisville & Nashville R.R. The Wisconsin Steel Co. at Benham, Ky., also has purchased a large number of private cars and thus will place an additional drain upon the motive power of the Louisville & Nashville road. Considerable double tracking and a large increase in the number of coal cars and engines will be required to give anything like adequate service for both divisions serving eastern Kentucky.

If the Louisville & Nashville makes good its promises of greatly increasing traffic facilities, much development may

be expected in the near future, for this region has almost unlimited unmined reserves of coal of the highest quality now awaiting development. The topography of this field is such that it is almost impossible to build a main line railroad through the field and development for this reason is limited to spur lines of constantly increasing length, which with every added mile complicate the traffic problem.

Operators are generally in an optimistic frame of mind about the future, although it is admitted that the immediate future probably will provide rather rough sailing, due to the condition of the market. However, as a large percentage of coal mined here is of a quality that sells quite readily even upon a poor market, being largely used for byproduct and gas purposes conditions promise to be better than in some other fields.

Export business ordinarily does not interest shippers from this field because of the long haul to Tidewater ports, although a special export freight rate recently was obtained for the southeastern Kentucky field to the ports of Charleston, S. C.; Savannah and Brunswick, Ga., and Jacksonville, Fla.

Terminal facilities at these ports are under process of improvement, which probably will insure a material increase in the amount of coal exported from this field.

West Virginia Coal Mining Operations Show Unprecedented Growth in 1920

More New Companies Launched Than Ever Before—Large Industrial Concerns Add to Holdings to Insure Steady Fuel Supply—Labor Conditions Unsettled — Output Increased 3,157,853 Gross Tons

EDITORIAL CORRESPONDENCE

UNPRECEDENTED growth of the scale upon which mining operations were conducted in West Virginia and violent fluctuations in the market featured the year 1920. The mining of coal in 1920 seemed to afford such golden opportunities that coal lands were as eagerly sought as gold mines and prospecting was carried on during at least nine months of the year on an unheard of scale. Not only were more new companies launched during the year than ever before, but at the same time large producing companies were bought and sold at large figures.

Not only were properties bought as an investment, and many new companies formed as a matter of private enterprise, but to a greater extent than ever they were acquired by great industrial concerns in order to insure a regular supply of fuel.

The industry in West Virginia for almost eleven months of the year was keyed to the highest tension because of the extraordinary foreign and domestic demand for fuel. Despite the utmost endeavor of the coal producers of the state, it was utterly impossible to supply the demand because of inability to get coal to the markets. The makeshifts of service and priority orders served only to intensify the difficulty of the markets in obtaining coal. It would have been an easy matter at times for the mines of West Virginia to produce twice the amount of coal actually mined if there had been transportation facilities for it.

In the middle of the summer prices reached such a pinnacle that every mine was being operated at full blast, but by December the market had so changed that hundreds of mines were closed down. First the wagon mines were affected and then the smaller tipple mines and finally some of the larger mines began to mark time as the end of the year approached. In fact the Christmas suspension was seized upon as a favorable opportunity to discontinue operations until orders warranted reopening mines.

During most of the time of high prices operators were helpless in meeting the demand because of the limitations on distribution imposed by the service, priority and assignment orders of the Interstate Commerce Commission.

The year was a profitable one to many producers of coal and prices for a part of the year were at high water marks, yet there were hundreds of operators who sold their coal on contracts at prices far under the market, sacrificing large profits in order to stabilize market conditions to the greatest extent possible. That they did not succeed in doing so was not their fault.

PREPARED FOR READJUSTMENT

The end of the year found West Virginia operators well prepared to meet the period of adjustment and transition from high demand to normal conditions because of the profits of the summer.

The era of high prices in West Virginia in 1920 did not exceed six or seven months at the most. Efforts of producers and others in the industry to keep prices within reasonable bounds were unavailing, but it was the speculator rather than the producers who reaped the harvest of high prices, which reached their crest in August and which after that month began to decline very rapidly as the era of retrenchment was entered upon. Buyers then began to withdraw from the market and industries began to shut down, coal requirements of the Northwest alone at that time tending to sustain the demand.

It was largely the smaller and newer mines which derived the greatest profit from the reign of high prices, as they took a chance on sustained high prices rather than depend upon less compensation and a longer run of business. It was the frantic speculative bidding for tonnage for resale, however, which gave prices their upward impetus.

The labor troubles of southern West Virginia in 1920 were marked by greater violence and more loss of life than at any time since the Cabin Creek strike of 1912-13. The most serious trouble was in Mingo County, at the gateway to the other non-union fields of the state. The powerful organization of the United Mine Workers turned

WEST VIRGINIA COAL PRODUCTION BY COUNTIES

County	1919	1920	Increase	Decrease
Barbour	1,308,167	1,477,714	169,547	.....
Boone	1,248,408	1,499,843	201,435	.....
Braxton	309,108	245,131	.....	63,977
Brooke	1,326,429	1,361,646	35,217	.....
Clay	449,434	498,427	48,993	.....
Fayette	8,062,999	7,775,010	.....	287,989
Gilmer	88,675	139,062	50,387	.....
Grant	122,476	112,733	.....	9,743
Greenbrier	33,695	49,207	15,512	.....
Harrison	4,712,132	5,181,664	469,532	.....
Kanawha	5,176,533	5,237,406	60,873	.....
Lewis	32,349	66,499	34,150	.....
Lincoln	206,255	222,531	16,276	.....
Logan	9,342,441	9,533,064	190,623	.....
Marion	4,400,008	4,888,841	488,833	.....
Marshall	939,281	947,602	8,321	.....
Mason	128,352	180,833	52,481	.....
McDowell	16,209,411	15,834,950	.....	374,461
Mercer	2,582,148	2,220,036	.....	362,112
Mineral	462,253	466,029	3,776	.....
Mingo	2,457,937	2,627,657	169,720	.....
Monongalia	2,158,219	2,764,196	605,977	.....
Nicholas	148,099	211,812	63,713	.....
Ohio	637,309	1,057,890	420,581	.....
Preston	1,325,451	1,704,579	379,128	.....
Putnam	285,075	328,791	43,716	.....
Raleigh	6,316,678	6,773,878	457,200	.....
Randolph	847,257	789,942	.....	57,315
Summers	24,210	30,029	5,819	.....
Taylor	1,021,539	1,048,187	26,648	.....
Tucker	1,117,058	938,270	.....	178,788
Upshur	423,816	526,981	103,165	.....
Wayne	25,174	64,046	38,872	.....
Webster	6,599	7,371	772	.....
Wetzel	43,415	.....	.....	43,415
Wyoming	897,103	1,271,489	374,386	.....
Estimated, small mines	1,000,000	1,000,000	.....	.....
Totals	75,875,493	79,033,346	3,157,853	.....

its attention from the union fields to the non-union fields after having failed during the latter part of 1919 to organize the Logan district.

After the failure of the strike of 1919 the United Mine Workers considered the non-union area of West Virginia the one vulnerable spot in the country, without which it was not possible to wage a successful strike. It was openly announced by the union officials that they proposed to organize the non-union mines of southern West Virginia. Early in the spring of 1920 the United Mine Workers succeeded in enrolling a number of the miners of the Mingo or Williamson field in their organization, and on May 19 serious trouble developed as a result of the attempted organization of the mines, ten men being killed—seven of them Baldwin-Felts detectives—on the streets of Matewan.

Output Grows During Strike

On July 1, when the operators refused to treat with the United Mine Workers or recognize the union or its leaders, a strike was called—a strike marked by frequent violence, the mountainous section along the Norfolk & Western lending itself to a species of guerrilla warfare. From the very beginning of the strike coal was produced in increasingly large quantities from week to week and month to month.

Two wage advances were granted in 1920, the first as a result of the award of the Bituminous Coal Commission, and the second in September and October, when day and monthly men were granted an increase averaging $1.50 a day. The increase in wages not only applied in the union fields but the advance in such fields was met by a corresponding increase in most of the non-union fields, the Pocahontas, Tug River, Gulf and Williamson fields in particular making a sweeping readjustment of wages paid not only to day and monthly men but to executives as well.

Output Totals 79,033,346 Tons

Incomplete figures show production of coal in West Virginia for the fiscal year ending June 30, 1920, as 79,033,346 gross tons compared with 75,875,493 gross tons in the preceding year, a gain of 3,157,853 gross tons. It is believed that final returns will show a gain of 5,000,000 gross tons. The largest increase was 605,977 gross tons in Monongalia County. Decreases were greatest in Mercer and McDowell counties in the Pocahontas region.

A comparison of production in gross tons for the two fiscal periods is given on page 157, the figures for 1920 being incomplete, but according to a tabulation made by the West Virginia Department of Mines.

According to figures tabulated by the State Department of Mines the United States Coal & Coke Co. was the largest producer with an output of 3,897,424 gross tons. The Consolidation Coal Co. increased its production from 2,659,901 to 3,177,933 gross tons, ranking second in production. The Pocahontas Fuel Co. was third with 2,103,589 gross tons. The Island Creek Coal Co., in Logan County, was fourth in rank, with an output of 1,693,896 tons. The New River & Pocahontas Consolidated Coal Co., the Davis Coal & Coke Co. and the Solvay Collieries Co. each produced in excess of 1,000,000 tons.

As to what the future may hold, what the new year may bring forth, when a change for the better may be expected, no one can venture a prediction and the uniform answer to all queries as to when the pendulum may be expected to begin swinging the other way is "one guess is as good as another."

Colorado Operators Had Successful Year; Output Nearly Stationary

Central Competitive Field Breaks Into Market in Missouri River Valley—Production Nearly Equals That for 1918—Re-adjustment Promises To Be Devoid of Violent Features

By W. E. Boyer
Denver, Col.

COLORADO'S progress in the last decade, showing satisfying gains in population, industrial pursuits and agricultural lines, does not find a corresponding expansion in its coal activities. While 1920 was a successful year for operators, coming within 250,000 tons of the 1918 record production, its passing has brought an outlook that promises careful scrutiny of the industry's barometer for 1921. The unsolved question is this: "Why has the Colorado output been stationary for ten years?"

Keen competition from the Central Competitive Field, making inroads on the trade at Missouri River points that heretofore were easily supplied with Colorado coal, has had its effect on Colorado's coal-trade expansion. For the year 1920, of course, the answer is readily found. Tremendous demands of the World War in the previous two years pushed the abnormal trade demand to the Atlantic seaboard, and recent months found the country's business gradually settling backward to its industrial equilibrium.

Although not the only source of trouble, freight rates have been a disturbing factor with operators as well as dealers, and a source of resultant discontent among consumers, who every once in awhile start the legal machinery to probing seemingly high prices. One of the things Colorado operators expect to do in 1921 is to pay more attention to traffic problems involving Colorado shipments within and beyond the boundaries of the state.

Production in bituminous and lignite fields during 1920 was 12,379,362 tons, December figures being estimated. In 1919 the production was 10,498,000 tons, the year just closed showing a gain of 1,881,362 tons. The highest tonnage ever reached was 12,638,000 in 1918, while in 1910 the production was around 12,000,000 tons.

The average number of men employed in and about the mines during 1920 was 13,429, an increase of 630 over the preceding year's average. The men averaged 212 working days during the year as against a fraction over 221 in 1919. Output last month is estimated at 1,100,000 tons.

Wyoming's strides in coal production, on the other hand, are seen in a tonnage for 1920 that will exceed Colorado's output by about 1,000,000 tons, while prior to the year just closed Wyoming's output fell short of Colorado's by 3,000,000 tons. Wyoming therefore seems to be keeping abreast of the country's gains in coal output, which were something like 25 per cent during the last decade. Colorado doubled its production in the ten years prior to 1910.

Coal miners in 1920 were paid $10 to $12 a day, against $6 to $8 in 1919; laborers got $7.50 in 1920, against $5 in 1919.

John G. Kerr, secretary of the Colorado Coal Operators' Association, speaking of the readjustment period and its demands, said: "There has been no runaway price market in Colorado. We will slide back to normal conditions without experiencing the friction that certain sections of the East must face. Our storage situation, which was upset during 1920, will get back to a normal basis during 1921.

"The extremes were crowded into the year just closed; in fact, production and prices brought radical fluctuations within a period of four months, almost eliminating at times the recognized fundamentals of supply and demand. Consumers as well as retailers were actually begging for coal, only to be canceling orders shortly thereafter."

Operators do not discuss the open shop outside of their own councils. The Colorado Fuel & Iron Co., the largest producer and distributor of domestic and steam coal in Colorado, has been using the Rockefeller plan in handling labor since the strike in 1914. Miners and heads of departments and foremen get together and settle their differences.

The miners' union has less than a 50 per cent organization in Colorado, and the events of recent weeks, which, among other things, included withdrawal of Colorado operators from the National Coal Association, have shown a tendency to get away from any influence that harbors recognition of the United Mine Workers of America.

Mine prices in both the Routt and the Cañon City fields for bituminous lump showed an advance in 1920 over the previous year, from $4.50 to $6, and steam from $1.60 to $2.50. An aver-

age increase in lignite was noted. First grade, from $4.60 in 1919 to $6 in 1920; second grade, $3.60 to $4.60 in 1919, and $4.25 to $4.75 in 1920. Lignite steam advanced from $1.85 in 1919 to $2.40 in 1920.

Freight rates on bituminous lump advanced 80c. a ton and lignite domestic 35c. in August. The advance on Routt County steam was 70c. and on lignite steam 31½c. per ton.

Denver, with one-fourth of the entire population of Colorado, consumed about one-third of the coal produced in the state in 1920. This included domestic and steam sizes for apartments, small hotels and business blocks. Total consumption was 1,500,000 tons against 1,300,000 during 1919. In 1920 prepared sizes of household coal totaled 600,000 tons, small steam 300,000 tons and industrial steam in carload lots, 600,000 tons.

The per capita consumption of domestic and industrial coal in Colorado during 1920 was three tons, while in Denver alone it was five tons. There are no available figures on the coal used for all purposes in Colorado during 1920, but it is estimated that the total tonnage was 4,500,000 tons.

Edgar Hopper, manager of the Colorado Retail Coal Dealers' Association and commissioner of the Denver Coal Merchants' Association, in discussing the events in retail channels, said:

"Colorado trade in general—wholesale and retail—has been marked by conservative movements in a trying period of unsteady sales. Margins of retailers have been reasonable, and I do not believe it necessary to consider drastic steps to bring about a complete readjustment of affairs in Colorado. We welcome any fair and unbiased investigation from any authoritative sources at any time.

"There is a tendency to put in heating plants with greater heat-giving returns. Dealers are doing what they can to educate the public as to the best manner of handling the various grades of coal. The decreased consumption from this source helps a little, I believe, to offset the larger tonnage required to take care of the increase in population."

Routt County bituminous lump late in 1919 retailed in the larger Colorado cities for $9.25, and at the close of 1920 brought $12.50; Cañon City lump advanced from $9 in 1919 to $11.50 in 1920. Freight differentials in southern Colorado caused a price variation in Walsenburg and Trinidad and Cañon City grades of bituminous.

Bituminous steam was selling for $6.25 delivered late in 1919 and brought $6.75 late in 1920. The freight advance on this grade was 70c. Lignite steam brought $4.65 in 1919 and $5.30 at the close of 1920.

Weld County lignite climbed from $8.10 in 1919 to $10.15 in 1920, where it is at present, and Louisville lump from $8.10 to $8.90. Although there is a difference in heat qualities, the 1919 strike brought second grade lignite to the first-grade price of $8.10 a year ago.

Alabama Production Shrinks Because of Car Shortage and Labor Troubles

Market Active During First Nine Months of 1920, When Demand Weakened — Coal Trade Affected by General Business Depression — Improved Labor and Transportation Conditions This Year

By H. B. McLaurine
Birmingham, Ala.

During the first nine months of 1920 Alabama's coal market was quite active but steam demand weakened sharply and domestic trade also was easier in the last quarter. Because of a scarcity spot prices reached high levels, but when greatly increased production and depressed trade conditions appeared in the last quarter, quotations receded to a normal basis. Car shortage, strikes and labor delinquency crippled production badly.

Alabama's contribution to the national coal pile in 1920 was between 14,750,000 and 15,000,000 net tons, or approximately 1,000,000 tons under the output in 1919. During the greater portion of the year operations in Alabama suffered more or less from car shortage, which at times became acute. This accounts in part for the heavy loss in output compared with previous years. Discrimination in the distribution of the available open-top equipment also handicapped commercial operations, for the railroads preferred the mines with railroad fuel contracts.

During the first quarter of 1920 the market suffered from the general unsettled industrial conditions that followed the close of the war and the demand for steam fuel was more or less restricted. However, production was far below normal during the last three months of 1919 because of labor delinquency and other causes, and producers were far in arrears on contract deliveries. Trade requirements were ample therefore to take the limited amount of free coal available during the first quarter of 1920. Stocks in the hands of railroads and other utilities and industrial plants were low, and these interests had to enter the spot market prior to April 1 to supplement receipts from contract mines, and a strong steam market developed early and was maintained until the end of September.

During the second and third quarters the steam trade was exceptionally strong, the scarcity of coal accentuating the demand and spot prices reached $8 and $10 per ton at the mines for both low- and high-grade coal. Following the issuance of government price regulations April 1 practically all of the larger commercial producers contracted the bulk of their anticipated output for the coal year at figures closely approximating government schedules, and there was little Cahaba, Black and similar grades of coal above contract requirements to offer the spot trade, as car shortage, preferential placing of equipment, local strikes and other hindrances to production so curtailed output that practically 90 per cent of coal removed from the mines was applied against contracts. The fuel shortage became so acute in July that there was not enough coal to offer the trade to justify quotations and the small tonnage to be had went to the highest bidder, such product coming mostly from wagon mines and small rail operations developed by the strong market demand.

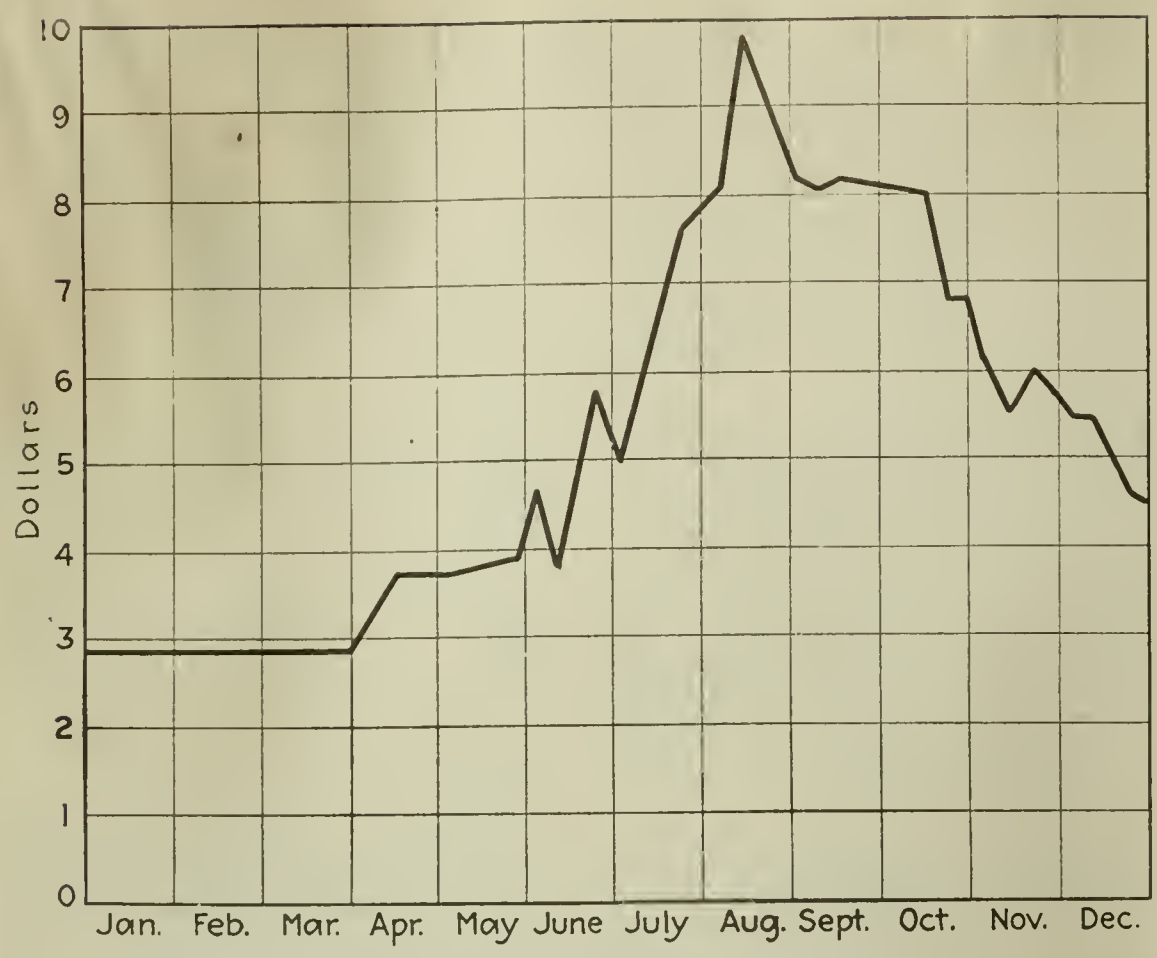
Inquiry for bunker and export coal over 1919 was marked, and while a considerable amount of this business was taken on and moved through the ports of Mobile, Pensacola and New Orleans, the bulk of the orders were rejected because of the shortage of transportation facilities for moving it.

A return to practically normal operating conditions after the general strike of Sept. 7 was closely followed by a weak steam market, occasioned by the general business depression and slackened industrial activities, and with a heavy output of coal thrown on the market, spot prices on some grades experienced a decline of 50 per cent within a period of a few weeks. Quotations for the year ranged about as follows per net ton mines for mine-run coal, prepared grades bringing from 25 to 75c. more per ton:

Black Creek	$4.00@$5.50
Cahaba	4.00@ 5.50
Carbon Hill	3.50@ 4.50
Big Seam	2.95@ 4.25

The domestic trade showed great strength throughout the year, easing up slightly during the last quarter, as this grade of coal was scarce during the year. Local strikes in the early spring materially checked the output of domestic operations and caused mines to fall far behind on contract deliveries, and car shortage prevented the producers from making good the deferred shipments, which were later cancelled by the buyers. Retailers were prevented from accumulating in the summer the usual winter stocks and were compelled to supply their customers from daily receipts, and the majority of consumers purchased coal only as needed. The weather was mild except for several coal spells which developed temporary acute situations in the domestic supply. This resulted in the Legislature passing a bill creating a fuel administration.

To enable the Fuel Administrator to promptly supply coal where acute shortages existed operators representing about 85 per cent of the coal production of the state agreed with the Governor to turn over all their output above contract requirements at prices



SPOT PRICES, MINE-RUN COAL, ALABAMA FIELD, 1920

Diagram of spot prices, in dollars per net ton, of mine run bituminous coal from the Alabama district in 1920. Quotations taken from Birmingham market. The prices on this diagram do not represent any one Alabama coal, but are averages of quotations on all varieties, from steam to high grade gas coal. Through January, February and March the spot price was legally limited to the Government maximum, despite the fact that the market was strong and wages had been advanced 14 per cent over 1918, on the basis of which this Government price had been fixed. Increases in wages of labor resulted in corresponding increases in contract prices (not shown on diagram) through operation of the automatic labor clause. Spot prices rose rapidly from April 1 and reached their peak in August. After receding to the $8 mark this level was maintained well into October, when the price joined the general decline observed in all fields. It should be remembered that the greater part of the production was sold on contracts and that the average realization of all producers will be more nearly the contract level than the average of spot prices. In general, spot and contract prices for prepared sizes ranged above those shown in the diagram, while screenings or slack were lower.

ranging from $4 to $6 per net ton mines, which was approximately the prices embodied in contracts. A margin was fixed for the retailer to keep him within the bounds of a fair profit.

What happens to the coal trade in 1921 will depend on a return of industrial conditions to normal. Producers are in position to mine coal to capacity of their operations, there is a plentiful supply of labor, and transportation facilities as a whole promise to be much better than in 1920. Several new self-propelling barges and a number of towboats have been added to the Warrior River equipment and these facilities will be greatly increased during the early part of the year by the addition of equipment now building. Coal bins are in course of construction at loading points on the river, and construction will begin soon on the $400,000 coal terminals at Mobile. These terminals, however, will require considerable time for completion and will not be available for use in 1921.

Decline To Meet Union Officers

On April 1, 1920, Alabama operators placed in effect the 27 per cent increase awarded mine workers by the Robinson Coal Commission. The operators declined to meet in conference the officials of the United Mine Workers for the purpose of formulating wage schedules and arranging working conditions, it being ascertained that in reality the miners had no complaint against either the wage schedules or working conditions but would contend for union contracts at all operations and full recognition of the organization. Refusal to negotiate contracts with the union brought on local strikes at numerous small commercial operations and at domestic mines in the district, practically all of which were partly or permanently closed down for a time. Production was badly crippled as a consequence, but the operators later reorganized their forces and resumed operations on the open-shop basis.

Strike Affects All Mines

This failure early in the year to tie up coal production and win recognition for the union brought on a general strike call in September, which affected the output of every coal mine in the State for several weeks. The strike was broken inside of a month with the return of many of the strikers to their old positions and the introduction of new labor from other sources and coal production soon assumed normal proportions, with mines operating with a very few exceptions on the open-shop basis. By the end of the year there was no evidence of the strike being in effect. Production of coal is normal although the strike call has not been officially rescinded and State militia is still patroling the coal fields, after having been called out in September to maintain order following the killing of a mine official and deputy by strikers.

Production in Indiana in 1920 Increased 27 Per Cent

Production of coal in Indiana for the year which ended Sept. 30 increased nearly 28 per cent, according to the annual report of Cairy Littlejohn, state mine inspector. Thirteen new major mines were opened in the year and seven worked out mines were abandoned.

The total amount of coal mined during the year was 30,415,675 net tons, compared with 23,859,562 net tons in the preceding year, an increase of 6,556,113 tons, or 27 per cent. Small mines produced approximately 2,000,000 tons in 1920, compared with 713,213 tons in the preceding year. This is attributed to the higher prices paid for coal in 1920, which encouraged the operation of smaller mines. Excluding the tonnage of the small mines 16,469,309 tons were consumed in the state and 9,946,566 tons were shipped out of the state. In 1919 13,788,197 tons were consumed in Indiana and 8,358,152 tons were shipped out of the state.

The total number of employees in 221 major coal mines was 27,076, approximately 2,000 men were employed in the 344 small mines and stripping operations. The average wage for the year was $1,480.90, as compared with $1,116.42 in 1919. In 1920 the average number of days worked by employees was 148, as compared with 157.9 in 1919. Mr. Littlejohn received reports of 4,282 accidents, of which ninety-five were fatal.

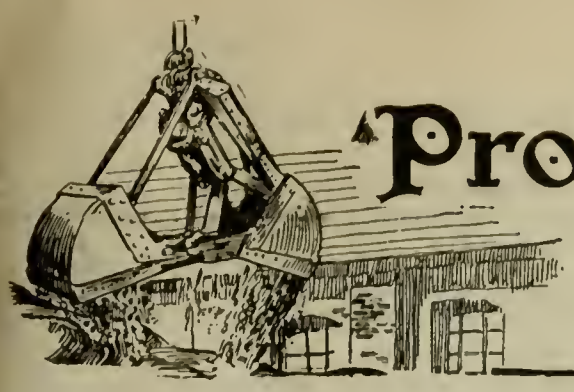
Attention is called to the need of conserving coal. Under the present system of mining 50 per cent of the coal is lost to future generations and regulatory methods should be adopted by the state. The principal causes of this waste of coal, said Mr. Littlejohn, are mining of thicker seams below thin seams, abandonment of mines before the territory is thoroughly excavated, and the fact that much slack and small coal is permitted to accumulate in the mines, creating favorable conditions for spontaneous combustion.

Prevailing Prices of Contract Coal, Illinois and Indiana, April, 1920

Southern Illinois—Franklin, Saline and Williamson Counties

Domestic Sizes: (Retail Dealer Contracts), $3.90 to $4.15 for the month of April, then increasing 10c per ton per month, until Nov. 1. Thereafter contract price was $4.50 to $4.75

Steam Coal:	
Prepared sizes	$2.75 to $3.50
Mine run	2.45 to 2.70
2-in. screenings	2.25 to 2.50
1¼-in. screenings	2.05 to 2.25
No. 5 carbon	1.75 to 2.00
Clinton, Ind. (Fourth Vein District):	
Prepared sizes	$3.00 to $3.50
Mine run	3.00 to 3.25
2-in. screenings	2.65 to 2.85
Knox County, Ind. (Fifth Vein):	
Prepared sizes	$2.90 to $3.10
Mine run	2.65 to 2.85
Screenings	2.05 to 2.40
Springfield, Illinois District:	
Prepared sizes	$2.75 to $3.10
Mine run	2.25 to 2.75
Screenings	2.00 to 2.25



Production and the Market

Weekly Review

OPTIMISM pervades the coal industry despite the continued hammering down of prices, lack of seasonable demand and immense curtailment of industrial consumption. There has been some resumption of operations by textile, automobile and other manufacturing interests, but the coal man is still languishing in the doldrum of an extremely sluggish market.

Notwithstanding the present general industrial condition, shippers are gratified by the way contract orders are holding. Movement to New England, both by water and all rail, shows a substantial increase for the week ended Jan. 8. Public utility coal stocks in New York City increased 224,000 tons for the same period. Tidewater dumpings also show considerable gains.

Sell Coal for Freight Charges

Railroads are "plugged" with coal, due to heavier offerings and lighter consumption made possible by the decline in general freight movement. Rejections are numerous and these and other forced sales have been made at ruinous figures, coal having been sold for the freight charges.

Middle Western operators have generally abolished the practice of consigning coal unsold to their sales connections, finding it an unprofitable procedure. The increasingly numerous sales of Eastern coal at forced figures indicate the state of overproduction which prevails in those fields.

Bituminous production during the week ended Jan. 8 is estimated at 11,083,000 net tons, according to the U. S. Geological Survey. The new year opened with ample car and labor supply, and with "no market" losses the main factor in holding down the output.

With the exception of the strike center of West Virginia, nearly all fields have an oversupply of labor. Practically all bonuses and other inducements have been abolished and the men are working efficiently at the wage scales established for the various districts.

Coal Plentiful and Cheap; Buyers Few

One of the things that illustrates the uncertain attitude of mind of consumers today is found in the way coal is not being bought. Six months ago industrials invested hundreds of thousands of dollars in high-priced coal—today when coal can actually be had at sacrifice figures in many instances and in special cases well below our current quotations, the coal goes begging. It goes begging in part because there is no ready means of getting buyers and sellers together, and coal is left standing on track without buyers in sight. Such occurrences are necessary concomitants of an unsettled coal market and will soon pass as the trade settles down to business and better appraises present demand. For a few weeks at least bargains in coal may be picked up. Present quotations represent the basis of trading today —actual figures at which individual sales are made are meaningless unless accompanied by full details covering the particular circumstances surrounding the transaction.

The following table shows the trend in the spot steam market (mine run basis, net tons, f.o.b. mine):

	Nov., 1919*	May, 1920	Aug. 5, 1920	Jan. 6, 1921	Jan. 13, 1921	Jan. 20 1921†
Pittsburgh steam	$2.35	$4.00	$10.00	$2.60	$2.50	$2.50
Pittsburgh screened gas	2.35	4.50	12.00	3.15	3.15	**3.50**
Hocking	2.50	4.75	9.00	2.50	2.50	*2.25*
Franklin, Ill	2.35	3.75	6.50	3.00	3.00	*2.85*
Indiana, 4th vein	2.35	3.40	7.50	2.75	2.75	*2.50*
Eastern Ohio, No. 8	2.35	4.50	10.50	2.75	2.75	**2.75**
Fairmont	2.50	6.75	13.50	2.40	2.20	*2.15*
Kanawha	2.60	6.75	14.00	2.80	2.70	2.70
S. E. Kentucky	3.00	6.00	10.50	2.90	2.80	2.80
Western Kentucky	2.35	3.50	5.25	2.60	2.60	*2.25*
Clearfield	2.95	6.25	12.00	3.25	3.00	*2.85*
Cambria and Somerset	2.95	6.75	13.50	4.35	3.60	3.60
New River	2.70	6.50	14.00	4.50	4.50	**4.60**
Pocahontas	2.35					

* Government prices.

† Advance over the previous week shown in **heavy type**, declines in *italics*.

Tidewater movement during the week ended Jan. 9, recovered sharply from the holiday depression and reached the highest point attained since the last week in October. According to the U. S. Geological Survey, 1,261,000 net tons were dumped over the tidewater piers. New England shipments were 251,000 tons, while exports were 371,000 tons. Bituminous dumpings during December amounted to 4,311,000 net tons, a decrease of 1,425,000 tons compared with the October record.

Total shipments to Tide, as shown in the following table, amounted to 53,784,000 net tons during 1920, of which 21,778,000 tons or 40 per cent went for export. This is the record exportation of bituminous coal by water.

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England	2,717,000	809,000	783,000	6,142,000	6,000	10,457,000
Exports	17,000	2,770,000	4,951,000	13,290,000	750,000	21,778,000
Bunker	3,965,000	662,000	868,000	3,550,000	106,000	9,171,000
Inside Capes	.....	1,934,000	1,163,000	304,000	4,000	3,410,000
Other ton'ge	8,126,000	16,000	41,000	740,000	45,000	8,968,000
Total	14,825,000	6,191,000	7,831,000	24,026,000	911,000	53,784,000

Anthracite production during the week ended Jan. 8 is estimated at 1,793,000 net tons, greater by 211,000 tons than production during the 5-day week immediately preceding. The wholesale market showed a decline of from 50c. to a dollar under the prices of the preceding week. Independent quotations ranged $10@$10.50 f.o.b. mines, while company figures remained unchanged.

Beehive coke production continued to decline during the first week of the new year. Estimates of the Geological Survey place the output at 272,000 net tons, a decrease of 6,000 tons when compared with the preceding week. The Connellsville spot market is quotable $5@$5.50 for furnace and $6.50@$7 for foundry. Merchant producers have vigorously restricted production so that offerings are light. Furnaces are taking no interest in contract overtures.

Reports From the Market Centers

New England

BOSTON

Dull Market Unrelieved—Some Interest in Contracts — Spot Quotations Very Low — Distress Coal Occasionally at Tide — Anthracite Conditions Improve.

Bituminous—The current situation shows no symptoms of change. The patient will get well, but there seems no one in the trade wise enough today to fix a time for recovery. Most steam-users have all they can do to store shipments now coming forward on contract; others are yielding somewhat to the blandishments of shippers who are now, at this late day, offering to deliver coal that was sold nearly a year ago for season shipment. The volume of this tonnage is not large, for the number who consider inferior or medium grade coal a purchase at last year's contract figure between $3 and $4 is relatively small. Receipts are again falling off both all rail and by water, and there has been no significant development in the industrial situation to warrant any more hopeful forecast than we have been able to hold out for some weeks.

A very mild interest in contract figures has come to light the last few days. Buyers are for the most part rather diffident, however. Operators who are producing coal on a large scale must know what their commitments are to be before they lay out plans for the twelve months beginning in April. There is so much guessing as to conditions later on that it will be very interesting to see what progress is made in closing up tonnage on anything like last year's basis.

Spot prices continue very low. Good grades from the South Fork district have been sold the past week at $3 for January shipment, and coals from Somerset and Fairmont have been reported down to $2.50@$2.75. The New England railroads seem now to have pretty well disposed of coal on their hands either because rejected on account of quality or held for freight charges.

At Tidewater there are many reports of distress coal that has been moved at extremely low figures. A price of $1.28 per gross ton at the mine is said to have been realized on some demurrage coal at one of the New York piers, and doubtless similar tales can be verified at the Philadelphia terminals. At Baltimore also there are lots of high-volatile coal that have been offered freely in this market, but with no takers.

Hampton Roads remains extremely quiet. Daily dumpings are far below the figures for last summer, and there are light steamers in every port awaiting charter. Prices per gross ton f.o.b. vessel at Norfolk are around $7@$7.25, but inquiry here is still very much restricted. One of the railroads that was taking coal freely has now shut it off because of accumulation.

Current quotations on bituminous at wholesale range about as follows:

	Clearfield	Cambrias and Somersets
F.o.b. mines, per net ton	$2.25@3.50	$3.00@4.25
F.o.b. Philadelphia, per gross ton	5.18@6.60	6.00@7.40
F.o.b. New York, per gross ton	5.65@7.10	6.50@7.85

Anthracite — While producing companies are not increasing shipments in the volume expected, yet output has increased and we shall doubtless get our share before many weeks have passed. A few of the smaller producers are offering cargoes of assorted sizes for immediate shipment and this makes the task of distribution all the harder for those shippers who have been delivering coal consistently throughout the season. Most retail dealers are very loyal, however, to their more dependable sources of supply, and in another month we shall probably see anthracite requirements measurably well cared for, at least for the current season.

Tidewater—East

NEW YORK

Anthracite Situation Easier—Urgency for Shipments—Steam Coals Are Slow —No Demand for Bituminous—Stocks Accumulate—Several Piers Embargoed.

Anthracite — Unusual weather conditions play an important part in the hard-coal situation. Larger tonnages are coming to Tidewater only to be quickly absorbed, but the feeling that there is going to be a shortage of coal is lacking. While most retailers have only limited stocks on hand and are still willing to take all the coal they can obtain, they are not urging the matter of deliveries, so confident are they that they will be able to get plenty of coal to keep their customers supplied.

Independent operators are having no trouble to dispose of their product but quotations are lower, in most instances ranging $9.50 @ $11. That conditions are improving is evident from the attitude assumed by some New England dealers who refuse to pay independents more than the 75c. differential above the company schedule.

Steam coals are accumulating rapidly, as demand is slow. The best grades of buckwheat are quoted $3.50 @$3.75, rice $2.50@$2.75, and barley $1@$1.50.

Bituminous—The market is almost at a standstill. Demand is slow and quotations low. Stocks are rapidly accumulating, although it is said that about 75 per cent of the mines are not operating, due to the lack of demand and low prices.

The partial resumption of various industries throughout the country leads some operators to believe that business will soon improve and that there will be a ready market for most of the coal produced. Inquiries regarding contracts for the coming coal year are numerous, but few have been closed to date.

Due to the lack of demand and the shipments to Tidewater, embargo orders were placed against several of the loading piers. There are many loaded boats in this harbor, some of which were let go at prices said to be below the cost of mining.

Quotations for the various pools, at the mines, range about as follows: Pool 9, $3.25@$3.75; Pool 10, $2.75@$3.25; Pool 11, $2.25@$2.50 and Pool 18, $2@$2.25. Tidewater quotations are about as follows: Pool 9, $6.25@$6.75; Pool 10, $5.50@$6 and Pool 11, $5@$5.50.

PHILADELPHIA

Hard Coal Demand More Easy—Dealers Accumulate Light Stocks — Steam Prices Cut—Bituminous Unimproved—Prices Shade Down.

Anthracite—Cold weather visited the city this week, but this contributed little to the demand for coal. Dealers have sufficient stocks to take care of the demands from day to day. It will take weather of the severest kind to cause any actual suffering and dealers are fast coming to realize that they do not need a great quantity of coal to meet the public need. The expected break is not yet in sight, but the local situation is approaching a state of quietness, with receipts showing signs of gaining in the yards.

Consumers are really concerned over the question of price. Dealers are experiencing calls of customers who inquire whether there is not going to be a considerable price drop. Their idea seems to be something like $3 or $4 a ton. This is actually becoming annoying to the dealers, especially in view of the fact that no decrease in price seems at all likely until spring, and then only a most moderate one.

Pea is inclined to be slow, and some dealers using considerable independent coal have complained that shippers are sending more of this size than they wish. The individuals are believed to be somewhat concerned over this phase. Independent prices are all holding firm, but some of the top-notchers are inclined to let down a trifle.

Steam coals continue very week and although the big companies have not as yet been compelled to dump coal in storage, they are coming quite close to it on rice and barley. It has been said that one of the companies has accepted

a price as low as $1.75 for barley per gross ton for Tide delivery. There are instances where the individuals have made even greater cuts. Company buckwheat is kept to the $4.25-price, but smaller producers are glad to get $4.

Bituminous—There has not been the least sign of increased demand, while prices have again shaded off. Pool 1 is offered $4, Pool 9 at $3.50, Pool 10, $3, while Fairmont gas coals in Pool 34 are $2.25.

Reports that large numbers of mines are shut down is giving the feeling that this curtailment of production will be the means of halting the downward trend of prices. With the lessening of production the demand for prompt shipment will have a tendency to stiffen the market.

Consumer buying is centered on current demands, with a fair number of inquiries as to contract prices. Quite a few consumers appear to be willing to close contracts at the prices they are buying on the market at this time, but the producer is not at all inclined to close on this basis.

Coke—There is little demand, even at quotations of $7.25 for 72-hour standard Connellsville and $6 for 48-hour. Medium sulphur foundry is quoted $5.50 and furnace $5.25. The market for sized coke is becoming more restricted, prices for large stove and egg being $7.75 and small stove and nut $7. These prices are all net tons at ovens.

BALTIMORE

Increasing Number of Mines Closing Indicates Bottom of Decline Has Been Reached—Turn-Over of Pool Credits—Hard Coal Run Continues Good.

Bituminous—The feature of the market is the increasing number of reports of closing of operations. This is true in both the gas and steam coal fields. On the face of things this may mean discouragement, but many coal men here look upon it as a determination not to sell below actual production costs and at least a small margin of profit. The firm holding of prices to a dead-line and then closing will certainly mean a curtailment that will start the market again.

Best steam coals are selling around $3.15@$3.25. Some sales have possibly been as low as $3, but this is the exception. Pool 11 has sold as low as $2.15, but around $2.40 is the more general price. Gas coals are offering freely, $2.75@$3, with best gas screened around $3.15. There has been much trading in pool credits here. In this widespread bargaining there have been sales of credits as low as $1 a ton. The feeling of some is that the price should be $2@$2.50. The trading in credits and debits seems to have been started largely to clean out accounts and get a fresh start. Some trading of debits and credits has been without money consideration, one being traded for the other. A side-line feature just now is the howl from some mines which sent through coal to Tide at the highest price-level periods without proper consignment and leaving the consignee in doubt as to his credit rights. Some such credits are now being "squared" on the basis of the present market level, and lively kicking is in progress.

Car supply continues 100 per cent on all roads. The number of ships at piers and awaiting loads is now averaging daily around ten. Export movement is only fair, the record for the first half of the month being around 95,000 tons cargo.

Anthracite—The run of hard coal continues good, and the trade is hoping that the record made in December, when 1,708 cars were delivered, will be repeated for January. While there were a couple of cold days the past week, the run of exceptionally mild weather holds. The average person calls the condition a blessing in these days of business reconstruction and unemployment, and the coal man who feared real famine troubles earlier in the season is rather inclined to join with this view.

BUFFALO

Bituminous Trade Dull as Ever—Consumers Have Heavy Stocks—Coal Selling Below Cost—Anthracite Doing Well.

Bituminous—Demand as light as ever, so that it is hard to stimulate buying, even by making deep cuts in the price. Many reports of good coal offering at a fraction above $2 are enough to show that the consumer is indifferent to the trade. The jobbers' offices are full of letters from operators with whom they have not dealt regularly, asking if they cannot dispose of just a few cars that have been left over.

There are two closely allied reasons for the stagnation. Consumers are not using much coal and they do not want to buy on a falling market. Besides, they are loaded up with stock. If the consumers really understand the condition of the market, that coal is now at bottom prices and will bring more before it does less they would make a special effort to put in stock and protect it, but they are so given to look on the advice of jobbers as a mere scheme for selling coal that they often miss a chance.

Car efficiency is as good as the best. Shippers are astonished at the quick deliveries. The weather favors rapid movement and this also hurts the trade, for about the only real advancer of bituminous prices is car shortage. Months ago it was said that mining was 20 per cent over consumption and that there was twice the amount of coal above ground than there usually is at this time of the year. In spite of quite a good many mining suspensions these conditions continue to grow worse.

Bituminous prices are about what the consumer will pay, but at least some coal is selling at $4 for Youghiogheny gas, $3.50 for steam lump, $3 for mine run and $2.25 for slack. Much of it is selling for less.

Anthracite—The seller and the consumer of hard coal do not quite agree over the situation, but it appears that the shortage is slowly disappearing, though it may be a considerable time before anyone can get as much as he wants. Those who bought in the summer time are supplied, others are getting enough to keep them going.

The better state of things all turned on the steadier work of the miners and if there is no further trouble there the trade will be back to normal before long, especially if the winter continues mild. A winter like the last one would have seen much distress.

Coke—Demand does not improve, for all furnaces are neither running at a slow rate or are shut down. There is prediction of a good season, if only because the supply of iron is not heavy, but the furnaces continue to buy sparingly. With a great part of the coke ovens shut down on account of contracts not all being accepted now, there is but small demand on the city jobbers for coke. About all they get is quotations from the ovens; $7.25 for 72-hour Connellsville foundry, $5.25 for 48-hour furnace, and $5 for off-grades and stock.

Northwest

MINNEAPOLIS

All-Rail Market Demoralized — Dock Prices Fairly Well Maintained — Much Demurrage Coal Weakens Illinois Prices.

The coal trade of the Northwest can sympathize with the farmer this winter. The farmer had to pay high priced labor last summer and fall for raising and harvesting his crops and when he had his grain to market he found a falling market. The coal man had to do the same thing—work in season and out, to get forward a supply of coal for the winter, paying extreme prices, and so far he has had hard sledding to get a return on his investment.

The past few days has seen continued demoralization in this market. All-rail screenings have simply gone to pieces. Some are almost offered for the freight. The mine price on northern Illinois screenings is not quotable. Mine run is from $1.50 up. Better grades of Illinois coal are a little stronger. Much demurrage coal has been offered, making a steady market price impossible. Only prepared sizes of the best grades of Illinois coal have held at all steady.

Dock coal has escaped much weakness. Screenings are off from the high prices, and show a drop of 50c. or more. On regular sizes, there is a steady drawing down of the top prices, so that the range is now around $9@$11 at the dock. As yet it is hardly so much a question of price as of a demand, for buyers are not at all inclined to take hold at any price. As long as dock operators feel that they can clean up their holdings during the remainder of the season, they will be inclined to hold closer to their price.

They feel that they can get one price about as readily as another. It is only when competition for business reaches the point of seeking each other's trade, that price-cutting is likely to set in seriously. But since there is now little chance of there being a shortage, an effort to get from under is likely to be started any time.

The four or five weeks remaining of the active part of the winter season will have to develop more business than seems probable, if there is not to be some coal left over on the docks, on which a loss will probably be taken. It will not be much in tonnage, as such left-over stocks run, in fact, it is certain to be less than the average. But whatever it is, will mean a loss if the new season's prices are materially lower, as they are expected to be. There is already a start being made toward lower costs. Yard men's wages are being reduced. So far it applies only to laborers in the yards, but the same cause which brought this about may extend the cuts further.

The only thing that the coal trade has not to contend with this winter, has been car trouble. The railroad situation for the past two months has been about all that could be asked. There has been no shortage of cars, no serious delays in traffic movements, and nothing to handicap the prompt distribution of coal. Had this been the case last spring, this winter's grief, as to extreme prices, could never have occurred.

Inland West

MIDWEST REVIEW

Steam Demand Unimproved — Cold Weather Aids Domestic — Prices Stabilize.

During the past few days the weather has been fairly seasonable although not cold enough to bring much strength to the domestic market. Dealers are buying very closely and in abnormally small quantities, while buyers of steam coal appear to have left the market in a body.

The most popular coal in the Middle West today comes from Franklin County and districts in southern Illinois producing high grade coal. This is because coals from the two fields are not expensive and quality and preparation is assured. The retail trade wants quality coal but on account of the general situation both from an industrial and farming standpoint, is not able to pay high prices.

A careful survey of the industrial situation is not particularly hopeful. Reliable reports give the observer the impression that about the same number of factories are closing down as are resuming activities, although some of the more optimistic coal operators had hoped for better things after the first of the year.

Very little coal is now being shipped on consignment to our industrial centers. Indiana and Illinois operators had a pretty stern lesson driven home to them lately when they consigned large shipments of steam coal to Chicago and other steam using points. The coal was moved but at great sacrifice in price, which thoroughly demoralized the market. The thoughtful operator, who is looking ahead and bearing in mind that the contract season is approaching rapidly, is refusing to operate his mines at a loss and is preferring to close and wait until such a time as the industrial situation warrants the resumption of operations.

The question of car supply has vanished in thin air, as have practically all labor troubles. The labor situation demonstrates that miners are fully aware of the conditions which are faced by the coal industry and are doing their full share to produce coal efficiently, and consequently cheaply.

Market quotations are varying some but there is a decided inclination toward stabilization of prices, as quotations received from day to day do not vary nearly as much as they have heretofore. Current prices are as follows:

Southern Illinois (Franklin, Saline and Williamson Counties):	
Prepared sizes	$3.50@$4.50
Mine run	2.50@ 3.25
Screenings	2.00@ 2.75
Springfield District (Central Illinois):	
Prepared sizes	$3.00@$3.75
Mine run	2.00@ 2.50
Screenings	1.00@ 2.15
Northern Illinois:	
Prepared sizes	$4.00@$4.25
Mine run	3.00@ 3.50
Screenings (washed)	2.50@ 3.00

Indiana (Clinton and Linton Fourth Vein):	State.	Outside State
Prepared sizes	$3.45	$3.15@$4.25
Mine run	3.20	2.25@ 2.75
Screenings	3.00	1.75@ 2.50

Indiana (Knox County, Fifth Vein):	State.	Outside State
Prepared sizes	$3.25	$3.10@$4.00
Mine run	3.00	2.00@ 2.75
Screenings	2.80	1.00@ 2.25

Pocahontas and New River:	
Prepared sizes	$5.00@$5.50
Mine run	4.50@ 5.00
Hazard and Harlan (Southeastern Kentucky):	
Block	$5.25@$6.00
Egg	4.75@ 5.75
Hocking lump	4.25@ 4.75
Smithing	5.25@ 6.00

CHICAGO

Market Very Stagnant — Opportune Time for Steam Buying.

The local market continues very stagnant, although when compared to such markets as Detroit and Cincinnati, is in pretty fair shape, as there have been no instances so far where coal was given away for the freight.

The domestic market is not too good, because some Eastern operators with mines in West Virginia and Kentucky have been consigning train loads of coal to Chicago. In a great number of instances this arrived before it had been sold and after it began to draw demurrage it was sold at very low prices.

The steam coal situation remains just about where it was a week or two ago with plenty of coal offered and few buyers found. Practically all of the big industries are slowed down. Railroads are not purchasing much and are not planning to until they reduce their storage piles. It is hard to understand why some of our big industrial concerns do not step into the market and buy some coal. It is no trick at all to pick up quotations below actual cost on almost any kind of fuel. Nearly everybody has confidence in the belief that the industrial situation will soon straighten out and manufacturing activities once more resume. This being the case, it is our opinion that it is an opportune time for some big steam users to buy.

CLEVELAND

First Lake Contract Made at $3.50— Railroads Urge Early Shipments— Steam Prices Shaded Further—Anthracite and Pocohantas Easier.

Bituminous — Last week's outstanding feature was the closing, on Jan 13, of the first contract of the year for Lake coal. A price of $3.50 a ton on 50,000 tons was obtained. Involving as it does a fairly large tonnage, this indicates the price which may be expected to rule on bituminous lump coal for shipment to the Northwest during the coming season.

Interest in 1921 Lake contracts has appeared much earlier than usual this season, despite early reports of mild weather and decreased industrial consumption at the Head-of-the-Lakes.

Railroads serving the eastern Ohio mine fields are urging operators to prepare for an early movement of coal to Lake ports this year. March 15 is set as the time when shipments from the mines to the docks will probably be started. Cars are now plentiful and the roads fear that a shortage may develop in the early summer when general business conditions may be improved.

Continued dullness exists in the coal trade with prices showing a tendency to sag still further. Industrial consumption has not picked up greatly and unusually mild weather has limited the domestic demand.

Steam coal is selling around $2 a ton for slack and in some instances even lower prices are reported. Steam ¾-in. is obtainable at No. 8 mines for $3@$3.25 and domestic lump is $3.75@ $4.50. West Virginia splint is quoted $5.60@$6 at the mines.

Bituminous receipts at Cleveland for week ended Jan. 8, were: industrial 1,336 cars, retail 514 cars; volume of industrial representing a minimum.

Anthracite and Pocahontas—Shipments are showing improvement and continued mild weather has served to keep the demand rather light. There has been no change in retail prices.

Following are the retail prices of coal per net ton delivered in Cleveland:

Anthracite — Egg, grate, chestnut and stove, $15.45.

Pocahontas—Shoveled lump, $11.90; mine run, $11.

Domestic Bituminous — West Virginia splint, $11.75; No. 8, Pittsburgh, $9.30; cannel lump, $15.75.

Steam coal—No. 6 and No. 8 slack, $7.50; No. 6 and No. 8 mine run, $9; No. 8¾-in. lump, $8.90.

ST. LOUIS

Continued Slump in Standard Coal—No Market for Steam or Domestic—Many Mines Idle.

Even with a continued cut in Standard prices there is no market for the coal. Screenings are down to 90c. Mine run is $1.90. Two-inch lump has been offered as low as $2 with 6-in. as low as $2.75. General prevailing prices are: screenings $1.15, mine run $2, 2-in. lump $2.50, 6-in. lump $3. Many operators, however, are unable to produce the coal at these figures and such mines are idle. Reports show an average of 30 mines idle every day for the past week or more on account of no market. The manufacturing business has not resumed as yet in the volume that the shipper anticipated. The industrial situation in the country and in the out-of-town markets is not any better than in St. Louis so that steam coal is unusually hard to move.

Mines that are working get from one to four days a week. Railroad mines get three to four days, but the railroad tonnage has been curtailed lately and some big losses are being taken in the Standard field where outputs for contract brought big prices several months ago.

In the Mt. Olive field a little better working time prevails. Railroad coal keeps the mines going, as the domestic business does not amount to more than a day and a half per week. Circular prices are pretty well maintained at $4 for all sizes. Coal from Montgomery County that is sold as Mt. Olive in this market is going as low as $3.25 for domestic sizes, and Worden coal is $3.50.

In the Carterville field steam coal is a serious handicap. It is almost impossible to move it and many mines are shutting down on account of no market. Domestic mines get from two to four days work a week as a rule and the railroad mines get a little better working time. The car supply is good and no labor troubles in any of the southern Illinois fields. Carterville prices with the larger operators are circular, $4@$4.25 on domestic screenings about $2.25 and mine run $3@$3.25. Independent prices are getting down to $3.50 on domestic sizes, $2.75 on mine run and $1.75 on screenings.

COLUMBUS

Dullness Continues—Some Industries Resume Operations—Production Is Decreased—Steam Prices Are Extremely Low.

Unfavorable weather conditions, coupled with the let-up in industrial circles have reduced the demand to a rather low point. Price tendency is still downward. Practically all small mines and a number of larger operations in Ohio have ceased to operate. Coal men generally are not discouraged over the outlook as better things are anticipated after April 1.

Domestic trade is still the strongest point in the market. Retailers are buying to a certain extent. But dealers are not inclined to accumulate large stocks under present circumstances and there are still quite a number of cancellations. Prices are still declining but the movement has been arrested by the fact that so many have high-priced coal to sell.

The steam trade is dull to the extreme. About the only steady source of business is from railroads which are taking only a fair tonnage. Some industrial plants are getting under headway again and this movement is expected to be widespread. On the other hand, many of the suspensions are indefinite and there is no way of determining the time of resumption. Recent developments have shown that a large part of the coal shipped on consignment is used up and mine owners are operating only when orders are booked.

Production is at a rather low ebb shown by the report of the Southern Ohio Coal Exchange for the week ended Jan. 1. Out of 382 mines reporting, with a capacity of 515,546 tons, a total of 295,362 tons was produced.

Prices at the mines of the principal coals used in central Ohio are:

Hocking lump	$1.75@4.50
Hocking mine run	1.00@2.50
Hocking screenings	1.35@1.50
Pomeroy lump	4.00@4.75
Pomeroy mine run	2.00@3.00
Pomeroy screenings	1.50@2.00
West Virginia splints lump	4.75@5.50
West Virginia mine run	2.25@3.00
West Virginia screenings	1.00@2.50
Pocahontas lump	5.75@6.50

CINCINNATI

Slight Improvement in Demand—Some Industrial Resumption — High-Cost Mines Still Out of the Running.

A slight improvement in the market was noted during the past week, mine prices of steam coal showing a slight advance, while the demand was brisker, due to resumption of operations of several large manufacturing plants in the Cincinnati district.

While the outlook, judging from the week's transactions appears to be encouraging, the demand for steam is not yet strong enough to warrant the re-opening of many smaller mines in Kentucky and West Virginia which shut down more than a month ago. Operators say that the prices being received for steam coal are still and will be for some time, below actual cost of production at many mines.

Too much faith in the outlook, based on these re-openings, cannot be placed at this time. While this resumption may be a forerunner of better conditions this fact is not yet assured and it is doubtful whether market conditions will show any decided change as a result.

Continued mild weather is the cause of the dead domestic market. Many consumers are laying off buying any extra coal, believing they will be able to manage with the coal now on hand.

No change is noted in retail prices which are: bituminous lump, $9.25@$10.50; mine run $8.50@$9.25; smokeless lump and egg, $11.25; mine run, $10@$10.50; anthracite egg, $15@$16.25; domestic egg coke, $14.50@$15.

DETROIT

Bituminous Continues in Light Demand—Some Further Slight Price Concessions.

Bituminous—Wholesalers and jobbers find it difficult to interest buyers to a point where orders will be released. In the case of a number of factories practically no additions are being made to coal supply except the small amount that is arriving to apply on long standing contracts. Jobbers say they find few attempts to abrogate contracts and that buyers feel that although present prices in the open market may be lower, they will strike a fair average in view of the saving made possible under contract prices at the time when coal in the open market was selling much higher last summer and fall.

The circumstance that not very much bituminous coal is being sent to Detroit is regarded as fortunate in preventing the accumulation of demurrage stocks. The difficulties of this nature so far encountered have been little more than incidental.

West Virginia lump is quoted at the mine around $4.75. Mine run is offered at $3 and nut and slack at $2.25. Domestic lump from Ohio mines sells at $4.50 while mine run is around $2.75 and nut and slack about $2. Small quantities of smokeless mine run are being offered at $4.75.

Anthracite—With moderate weather conditions, household consumers have not felt the shortage as seriously as was expected last fall. Receipts are light and deliveries uncertain.

Southwest

KANSAS CITY

Demand Is Low, but Call Seen with Colder Weather—No Change in Circular Prices.

There have been heavy snows all over the state, and while the temperature is not low for this season of the year, it is much colder than so far this winter. Generally, the smaller towns have very small stocks of coal and have refrained from buying, hoping for a further decline in prices. It is a well known fact that a condition of this kind is always followed by a demand for coal as soon as stocks are exhausted, and this demand results in a shortage, consequently an advance in prices.

The larger cities are better supplied with coal than the smaller towns, due to small producers consigning to jobbers who were forced to dispose of it. These consignments were, without exception, made to the larger cities. Even these people are being cleaned up fast, and without doubt we will see a heavy demand for coal within the next six weeks.

Kansas lump and nut is $6; slack $4 and mill $4.25. Arkansas lump is $6.75; slack $3.50@$4; Missouri lump $5.50; washed slack $4.05.

South

BIRMINGHAM

Trade Devoid of Activity Except for Domestic—Some Contract Renewals—Mines Curtail Output to Await a Market.

There has been no noticeable improvement in the inquiry for steam coal here, buying being represented by orders here and there for a few cars to meet current needs only. Some contracts are being renewed, but most of the agreements have from two to five months yet to run. A small tonnage of Mt. Carmel, Brookwood and Pratt mine run has been disposed of to the spot trade at $3.50 mines. Some Pratt and Big Seam contracts have been renewed at $3.75 and $3 respectively for mine run, while Black Creek and Cahaba renewals are said to be around $4.50 for mine run and $5 for prepared.

Demand for domestic has been a little stiffer, due to several days of cold weather and the absence of any stocks on the yards of retailers. The class of householders who await the arrival of cold weather to provide their fuel have drawn heavily on the retail yards.

Production, while being curtailed to some extent, is still on practically a normal basis. However, numbers of the smaller commercial operations, which depend almost entirely on spot trade requirements for disposition of their output, are running on short time. The movement of coal against contracts is being held down to minimum quotas in many cases, and this will also serve to reduce output at operations where such agreements are held.

LOUISVILLE

Distress Coal Injures Spot Market—Domestic Demand Improves Slightly—Some Resumption of Manufacturing Bolsters the Trade.

A good deal of very cheap mine run and screenings is being offered at the present time, some excellent grades of eastern Kentucky and West Virginia screenings have been offered at $2 and under, some distress shipments going at $1.75. West Virginia is weaker on screenings than eastern Kentucky, but freight rates offset the lower prices quoted. Jobbers are complaining that operators have been offering coal so cheaply and there has been so much distress fuel on the market, that it has been almost impossible to secure a fair volume of business, or a price high enough to allow a fair commission.

Rather than shut down, some operators have been consigning coal unsold, resulting in any kind of price being taken to avoid demurrage. This condition has made for some very cheap mine run, selling at a screenings price. Lump coal has generally been disposed of without loss.

Retailers report a slight improvement in demand, but orders continue for very small quantities only. Lower prices are attracting a little business, but rumors of still lower prices are also holding back some buyers.

Industrially things are opening up slightly, and a number of manufacturing plants which have been down are operating in a limited way. Rumors of resumption by several of the automobile manufacturers are giving more confidence to the trade.

Mine quotations show:

	Prepared	Mine Run
Harlan	$4 75@ $5 25	$3 25
Hazard	4 50@ 5 00	2.75
Elkhorn	4 50@ 5 25	3 @ 3 25
Jellico	5 00@ 5 25	3.25
Straight Creek	5 00	3 25

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Spot Market Stagnant—No Interest in Contract Offers—Merchant Production Is Extremely Light.

The spot market in coke continues very quiet. There is only very occasional demand for furnace, while demand for foundry is of limited volume, carload lot consumers coming into the market at much longer intervals than usual. Merchant producers have vigorously restricted production, so that offerings are light, but even at that furnace coke is frequently sold for heating purposes to get rid of it. In the spot market furnace coke is down a trifle while foundry is down 50c.

Several operators have now made up their minds that they are willing to sell furnace coke on contract for the half year at a flat price of $6. Formerly they wanted a 5 to 1 ratio against basic pig iron with provision for a stiffer ratio in case pig iron should advance. To quote a flat price of $6 is, however, no concession, since the present outlook is that pig iron will decline, and if it declines will not get back even to $30 within the half year. Furnaces are taking no interest in contracts.

The spot market is quotable $5@ $5.50 for furnace and $6.50@$7 for foundry, per net ton at ovens.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended Jan. 8 at 175,350 tons, an increase of 10,365 tons. Furnace oven production increased 11,875 tons to 146,050 tons, while merchant oven production decreased 1,510 tons to 29,300 tons.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total bituminous, including coal coked

	Production	Average per Working Day
Annual production:		
1917 (calendar year)	551,790,000	1,794,000
1918 (calendar year)	579,386,000	1,880,000
1919 (calendar year)	458,063,000	1,485,000
1920 (calendar year)	556,563,000 (a)	1,805,000
Weekly production:		
New Year's week (b):		
Ended January 5, 1918	9,312,000	1,757,000
Ended January 4, 1919	8,459,000	1,596,000
Ended January 3, 1920	11,062,000	2,087,000
Ended January 1, 1921 (a)	9,615,000	1,814,000
Week after New Year's:		
Ended January 12, 1918	10,032,000	1,672,000
Ended January 11, 1919	10,361,000	1,727,000
Ended January 10, 1920	11,323,000	1,887,000
Ended January 8, 1921(c)	11,083,000 (a)	(a) 1,847,000

(a) Revised from last report. (b) Counting New Year's Day in 1918, 1919, and 1920, as equivalent to 0.3 of a working day; in 1921, to 0.17 of a working day. (c) Subject to revision.

ANTHRACITE

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date (a)
Dec. 25 (b)	1,626,000	66,544,000	1,356,000	68,708,000
Jan. 1 (b)	1,582,000	68,126,000	1,512,000	70,220,000
Jan. 8	1,793,000	69,919,000	1,846,000	72,066,000

(a) Less two days' production during first week of April, to equalize number of working days covered for the two years. (b) Five-day week.

BEEHIVE COKE

United States Total

Week Ended Jan. 8 (a) 1921	Week Ended Jan. 1 (b) 1921	Week Ended Jan. 10 1920
272,000	278,000	427,000

(a) Subject to revision. (b) Revised from last report.

PITTSBURGH

Production Maintained Fairly Well—Spot Demand Insufficient to Make Regular Market—Best Grades Gas Command Good Prices.

Production is maintained better than in some nearby districts, there being a steady but only slight decline. Prices are very irregular, since there is not enough demand to establish a regular market, and occasional lots that are forced on the market to avoid demurrage have to be sacrificed at less than cost of production. There is some business going at prices that would not show a loss if the mines were operating full, although with light operation there might be a loss on account of poor distribution of overhead. All sales at less than $2.50 are regarded as distinctly sacrifice sales, and are not regarded as making a real market price.

Mines having regular contracts are making fair shipments and can maintain a moderately good rate of operation without selling in the spot market. This condition is particularly to be noted in the case of gas coal. There is little if any good grade gas coal being forced on the market, the result being that the best grades command good prices, and up to $4 for screened.

Railroad officials state that a car shortage is probable in the height of the Lake season, and counsel a start in March as the only feasible means of mitigating the situation. Whether market prices can be developed by March 15 is a question, but as in some previous seasons coal could be moved subject to price adjustment later.

The spot market is quotable at about $2.50 for steam mine run, $3@$3.50 for gas and byproduct mine run, and $3.50 @$4 for best grades of screened gas, per net ton at mine.

UNIONTOWN

Both Coal and Coke Markets Are Inactive—Downward Revision of Wage Scale Is Anticipated.

The spot coal market entirely disappeared this week. Virtually no coal is moving from this territory, with the exception of contract deliveries. As a result, mines of the smaller class which had been disposing of their output through local jobbers have suspended operations. Jobbers themselves have been able only with much difficulty to dispose of tonnage under contract.

Only sufficient coke is being manufactured by merchant operators to meet contract requirements and these have been pared very sharply.

Suspension of coal and coke production has been brought about by price views of consumers. Coal is quotable at $2 by the operators but consumers seem unwilling to pay even that figure. There is no quotable figure on spot coke for furnace purposes. Buyers are offering $5@$5.50 but operators have been unable to take these prices and there are therefore no sales. Some "distress" tonnage is being sold at those figures but it is a case of the operator being willing to sacrifice price to get it off his hands.

The crux of the local situation, in the present wage scale and well-informed operators believe it will be some time yet before a general readjustment downward is even commenced. That view is taken because of the action of the H. C. Frick Coke Co. in increasing production during the present period. Operators hold that if the Frick interests intended to reduce wages they would not continue capacity operations now at the present high scale. The Frick company for many years has set the wage scale in this territory.

CENTRAL PENNSYLVANIA

Demand Is Unimproved—Prices Steady, Apparently at Bottom—No Market Losses Grow.

Demand for coal in the central Pennsylvania field for the second week of January was materially lessened by reason of no demand from the big industrial plants in sections of the Eastern market and the lack of demand for Tidewater coal. Mines in operation during the week all had contracts and there was but little coal sold except for domestic purposes.

The low prices of the opening of the year prevail and retail prices for domestic coal have dropped to $6@$7 per ton, the price delivered being generally around $6.50. Railroads reaching the field are able to furnish all the cars demanded and make prompt delivery. Fully half the mines in the district are idle or running on exceedingly short time. No market losses are mounting steadily, although a generally optimistic view of the future is held by the trade.

EASTERN OHIO

Prices Touching Bottom—Production Well Maintained—Railroads Take Heavy Tonnage—Demand Is Unimproved.

Car shortage as a factor limiting production has disappeared. Open-top cars, available on all railroads, during the week ended Jan. 8, exceeded requirements of the mines. Owing to "no market" conditions which have developed and consequent spot sales in many instances at prices approximating bottom, operators are apprehensive and more mines are closing down on account of no orders.

Prospects of early revival in demand are not encouraging. With restricted activity in manufacturing plants generally and steel mills running about 25 per cent of normal, the trade is at a standstill.

Production for the week ended Jan. 8 at approximately 170 mines amounted to 401,000 tons or 62 per cent of a weekly potential capacity of 643,000 tons. However, it is reported that mines in the Pittsburgh Vein Operators Association averaged about 75 per cent of full-week operating time. At the present volume of output it is understood that railroads are taking around 50 per cent of production.

Continued moderate temperature has resulted in retailers having a slow turn-over. Retailers state they are receiving unusually quick deliveries from the mines, railroad performance being the most expeditious experienced in many months. The backing up of arrivals on track has resulted in demurrage, notwithstanding the fact that free-time allowed for unloading was extended from 24 to 48 hours about the middle of December.

Under present market conditions there has been wide recession in prices, the range being: mine run $1@$2.75; mine run $2.50@$3; 1 in. lump $3@$3.25; 1¼ in. lump $3.50@$4; domestic lump $3.75@$4.50.

FAIRMONT

Inactive Spot Market Continues—Prices Touch Bottom—Some Contract Inquiry—"No Market" Idleness Growing.

Idleness at northern West Virginia mines grew during the week ended Jan. 8, there being fully 200 mines out of operation at the close of that period, 125 of such being on the Monongah Division of the B. & O. There was little or no spot demand and to continue operations simply meant piling up dead loads. Notwithstanding the sluggish spot market considerable coal moved on contract to Eastern points. Western shipments were far less in volume.

Owing to inactivity in spot buying, quotations are difficult to give, but the general range on mine run was $2@$2.25. The fact that some buyers were making contract overtures indicated that the price-bottom of the market has been reached. The car supply was above par. Considering general conditions, unconsigned loads were not large in number.

Middle Appalachian

HIGH-VOLATILE FIELDS

"No-Market" Losses Are Heavy—Spot Call Is Unimproved—Production Declines Steadily.

Kanawha

Loadings were light throughout the first week in 1921, growing smaller from day to day. Lack of business was responsible for the lowered output, practically the entire production going on contract.

Loads were beginning to accumulate particularly on the Coal River. There were few takers of steam coal at quotations of $2.75. Gas coal at $4 moved better. Prepared sizes were a drug. There was a surplus of cars at all times during the weekly period.

Logan and Thacker

Car supply was far in excess of Logan requirements throughout the week, the daily output being almost wholly restricted to contracts. Spot business was lacking at any acceptable prices. Mine run offers from buyers ranged

$2.50@$2.75, with gas about $4. Contract shipments were scaled down through cancellations and suspensions.

As a rule, more coal was being produced in the Williamson field than in adjoining districts, with miners in excess of those on hand before the outbreak of the strike, ready to work whenever possible. Unions have been the first to close because of no markets and others are expected to follow suit. There have been several outbreaks of the strikers, but the military authorities appear to have the situation well under control.

NORTHEASTERN KENTUCKY

No market losses during the week ended Jan. 8 amounted to 127,765 tons, or 51 per cent of potential capacity. The supply of empties was so plentiful that many cars were left over at the close of each day. Spot business was at a standstill, distribution being confined to contract customers.

Lump ranged $4.50@$5.50, mine run $3@$3.25 and slack soft, $1.75@$2.25.

VIRGINIA

As a result of the falling market production was reduced to about 65 per cent of potential capacity. Spot demand was almost completely eliminated and operations were only kept going by shipments on contracts. Many mines without these agreements have been forced to close down until the demand becomes more lively.

LOW-VOLATILE FIELDS

Contract Shipments Holding Well—Prices Steadier—Western Domestic Demand Is Revived.

NEW RIVER AND THE GULF

A number of Gulf mines were still down at the close of the week ended Jan. 8, not having reopened since the holidays. Cars were plentiful but orders few. Business was limited to contract shipments. However, production was larger than during the final week of 1920. Prices underwent little change, remaining quotable $4.50@$5, with few sales made. All mine sidings were crowded with empties.

New River production recovered slightly. Aside from contract orders there was nothing to keep mines going. Some renewal of domestic demand was observed from Western markets. Mine run remained steady at $5.

POCAHONTAS AND TUG RIVER

Production in the Tug River field reached 105,400 net tons during the first week in 1921. Producers feel that with mine run at $5 the bottom has been reached. The view is strengthened by scattered indications of a resumption of manufacturing. Cars and labor are plentiful. Much contract coal was being moved and a growing Western demand for domestic helped production.

Pocahontas mines had rather a good week, despite inactivity in the spot market.

Contract orders held well. Cars were plentiful throughout the week. An encouraging sign was the increasing demand for slack. Prices appeared somewhat steadier, mine run unchanged at $5.

Middle Western

WESTERN KENTUCKY

Distress Coal Is Forcing Lower Prices—Better Conditions Anticipated.

Western Kentucky is standing the present slump nicely, and while coal is selling at very nearly production cost the situation is much better than it was in years gone by, when big slumps caught the trade with limited markets in which to dispose of production. This field has new markets, created through better tariffs and hard work in convincing consumers and dealers. Demand for all grades is light with domestic as usual one of the best sellers.

Quotations during the past few days show lump quoted $3.75@$4; mine run, $2@$2.50; nut and slack, $1.75@$2; screenings, $1.50@$1.75. Reports show averages for the field for prepared sizes $3.45 on a range of $3@$4; mine run, $2.85 on a range of $2.60@$3.25; nut and slack, $2.80; range, $2.50@$3.25.

Operators are merely playing a safe game and not overproducing, although some have loaded coal without orders, and were forced to dispose of it at low prices. There have been some cancellations also, as some industrial buyers have looked through their joke books for good excuses to get out of contracts, arguing anything from off grade, to size of car shipped.

DUQUOIN

"No Markets" Close Mines—Prices Range Lower—Railroad Buying Curtailed.

Market conditions are at a low ebb and tonnage being loaded is greatly reduced in volume. In domestic grades only is there anything like a demand. Mines in many districts have closed down, some entirely and others two or more days a week on account of "no market" conditions.

Prices range still lower, screenings $1.90@$2.75, lump $4.25@$5 and mine run $3@$3.75. Railroads which had been buying actively are now out of the market entirely.

INDIANA

"No Bills" Accumulate—All Demands Slump—Domestic Market is Firm.

The coal market in Indiana is slumping. Each day several mines in Indiana fields, including District 11, are idle because they have no market for the coal which has been produced the day previous. Side tracks at all of the mines are filled with loaded cars.

Mines which had limited their production to the demand from the manufacturers with which they had contracts have been compelled to continue mining as long as possible to abide by these contracts. Domestic use is not nearly great enough to take all the coal which has been produced and is now standing on track.

Coal prices will not be reduced by the unusual slump, according to all indications. It is probable that the wholesale value will decrease a little over one dollar. But it is doubtful if the retail markets will be cut because of the decrease. Many mining concerns declare that the costs can not be reduced as the original costs are too high to allow a sufficient profit.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Steam Prices at Bottom—Open Weather Cuts Domestic Demands—Wages Are Cut.

Demand continues to decline. Steam prices have apparently reached bottom but domestic and gas coals continue to soften. Quotations find few buyers. Best gas mine run is now bought at $3, domestic sizes $4@$5.

Open weather makes ideal traffic conditions but has killed the domestic market. The car supply is perfect for such mines that continue to operate. All high-scaled mines have reduced wages to the union figures. Some grumbling has been observed but the majority of the men have accepted the cut in a stoical manner.

Western

UTAH

Market Is Quiet—Prices Are Firm—Mild Weather Reduces Demand.

The coal business is very quiet, partly due to the return of mild weather. Many mines are operating only 50 per cent of capacity because of the poor market conditions.

Prices remain firm, despite the low demand. The Coast trade is also very poor just now. Some producers are crowding dealers with coal, but the majority of retailers are not actively in the market, reflecting the low rate of consumption by householders.

Coming Meetings

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York, Feb. 14 to 17, 1921. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

Northwest Mining Congress will hold its annual convention Feb. 28 to March 5, 1921.

Northern West Virginia Coal Operators' Association will hold its annual meeting Feb. 8, 1921. Secretary, H. S. Rogers, Fairmont, W. Va.

Pittsburgh Vein Operators' Association of Ohio will hold its annual meeting, Feb. 14, 1921, at Cleveland, Ohio. Secretary, D. F. Hurd, 415 Marion Building, Cleveland.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Ottawa, Ontario, Canada. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Canada.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 19 NEW YORK, THURSDAY, JANUARY 27, 1921 Number 4

Hanging the Wrench on the Safety Valve

UNMISTAKABLE evidence of the public belief—amounting to conviction in fact—that coal must be regulated is offered by the reception of the Calder Coal Act. Coal is an essential to our comfort, industrial progress and prosperity; the industry has recognized and proclaimed this every time it has asked for preferential treatment, as in transportation. Clever publicity on the part of the Senate committee has crystallized public sentiment, aroused for months last year, and in the case of anthracite even yet, by high prices, to the point where the public has come to believe that Federal legislation regulating and controlling coal is essential and more than warranted and that the Calder bill must be quite the proper thing because it is proposed by the Senator who has "exposed" the inequities of the coal trade.

As a measure intended to fully assure the consumer of a cheap supply of coal the Calder bill has several serious faults, the most obvious of which is that it specifically exempts the small fry who in every market flurry have been the chief cause of trouble. However, we will not now discuss the technicalities of the bill but rather the premise on which it is based—namely, that "coal, its production and distribution are charged with public interest and use." If this be the dictum of Congress, then coal becomes in a class with regulated public utilities. Though the measure now being considered does not go so far with the coal industry as other laws do with the railroads and municipal utilities it is plain that this is but the first step. And because it is the first step toward permanent and more or less complete regulation the coal industry has been and is opposed to it, just as it was openly opposed to any form of government interference with the industry last year.

The point of view of the man who produces, sells and trades in coal in this regard is perfectly reasonable and natural. It is but that of any American business man who prefers to conduct his own business in his own way without interference. The all-important question for the coal industry to decide is whether the public has concluded it necessary to take a hand in his affairs, and, if so, if the conclusion is warranted. A manufacturer of woolens said to us recently that until 1920 his industry had never recognized public opinion as a factor in its affairs, but that public opinion was a factor and had made itself felt in no unmistakable manner. The public revolted at the high prices of woolen goods and by refusing to buy even needed clothes had forced prices from $6 per yard down to $3 and even lower.

The public cannot get along without coal, however, as it can without new clothes, and that is one reason why coal will get different treatment than some of the other industries that have touched the "pocketbook nerve" of the people during the last two years. Coal is coal to the consumer; talk coal to any individual in the East, and though he be a large manufacturer and therefore a user of steam coal, his thoughts turn to his personal expenditures for anthracite. So far it has not been possible to get the outsider to differentiate between the two industries, anthracite and soft coal, regarding which we have said that what can be said with respect to the one cannot be said to be true with regard to the other. Anthracite is a natural monopoly; its production is in the hands of a few closely-controlled companies; it has not suffered from lack of car supply and a vastly greater percentage of the total output is used in homes and it therefore concerns the individual Anthracite has become a luxury for many and unless adequate substitutes are found and developed quickly the hard-coal industry must be regulated, either from within, as by legislation permitting the large companies to absorb the independents, or by the Federal Government.

Bituminous, on the other hand, has none of the earmarks of a monopoly. There is no possible means by which the supply can be monopolized. Were there no Sherman law and the going concerns engaged in the production of bituminous coal were formed into one or more huge combines agreeing to sell the public its soft coal at cost, we would have no solution for the problem of high prices in times of shortage. Just as soon as a condition should arise that the demand exceeded the car supply at the mines of the combines, other individuals would enter the field in competition with such a trust, and because it is so simple to find coal land and to open a mine we would within thirty days after a shortage developed have free-lance coal at fancy prices, and the quantity of such high-priced coal that would be available would increase not slowly, as the oak grows, but swiftly as weeds thrust up their heads. Incidentally the Calder bill would let the weeds grow to plague all.

The soft-coal industry has none of the elements of a monopoly. The government cannot give to a limited number of producers a franchise limiting their activities and protect them in their profits by any such simple methods as are proposed by the Calder bill. The legislation proposed merely hangs a monkey wrench on the safety valve; it does not provide for reducing the pressure. Back of the inability of the soft-coal producers to meet the demand for coal last summer was a lack of car supply, and the fundamental cause of failure to fulfill contracts was the needless dispersion of available transportation and of labor. Licensing producers and jobbers and requiring any number of reports from them should not in itself be objectionable to the coal trade. Our opposition to the work of the Calder committee has been based on the fact that it has spent its time proving the already admitted fact of high prices and endless

passing of coal from jobber to jobber, with added increments of price, and that it has shown no disposition to study the problem, and our objection to the Calder bill lies in its objective—namely, to sit on prices, without attempting in any way to control or remedy the cause of the high prices.

It is no cause for dismay that the fight in Washington has centered on the National Coal Association, but rather one for self-congratulation, for the industry put its national organization there for just that purpose—to look after the interests of the coal producer. Every issue has been fairly and squarely met by its officers; there has been no dragging of a herring over the trail. Rather than admonish the jobbers to cease gloating over the position of the coal association we would suggest that they take their heads out of the sand and take a squint at the black cloud on the horizon. The record of the wholesalers in New York City shows that they were far more foresighted than many of their brethren, for their membership long ago made a part of their published creed the essential requirements of Senator Calder's bill in regard to the jobbing of coal.

Mixing Technical and Trade Functions

PURCHASE by a central agency in the Bureau of Mines of all coal used by the government except that for the navy is proposed in a bill now before the Calder committee of the Senate. Arguments in favor of this legislation are predicated on the excellent record of the Government Fuel Yard at Washington, conducted under the auspices of the Bureau of Mines. It is argued that the actual selection and purchase of millions of tons of coal used by Federal agencies at a thousand points in the United States should be turned over to a technical bureau, as a measure for insuring an uninterrupted supply of cheap coal.

Coal for Federal buildings scattered throughout the country is now purchased through the General Supply Committee in the Treasury Department, for Indian schools by the Bureau of Indian Affairs, for the army by a bureau of supply in the War Department, etc.

We have serious doubts as to whether, had the Bureau of Mines been charged with the coal supply for all Uncle Sam's requirements, the record made in handling that for the District of Columbia could have been extended over all transactions. It will be recalled that the chief engineer of the Fuel Yard was unable to obtain bids last spring for his requirements and that he has been obliged to get much of his supply in the open market this fiscal year. That coal was obtained during the summer of 1920 to meet these needs at prices averaging less than half the open-market quotation reflects credit not so much on the superior buying ability of the Bureau of Mines as on the good will of those operators who, at the solicitation and behest of the officers of the National Coal Association, "squeezed" out a car or so each week and patched up the needs of the government departments. Mr. Pope, who handles the Fuel Yard at Washington, gives full credit to the operators in his published report of operation.

This proposal to buy all Federal coal (except for the navy, which Mr. Daniels would continue to commandeer by permanent legislation) is supported mainly on this record, which to us appears a mighty dubious argument. What has proven to be an excellent method of handling a large tonnage in such a restricted area as the District of Columbia would, we fear, be a top-heavy arrangement for the United States as a whole.

Director Bain of the bureau advances off-handedly the argument that his field force of safety engineers and mine-rescue crews is available to buy this coal, as if anyone could perform this function without special knowledge and without interference with regular tasks. Why not put them also on the work of army recruiting and grain inspection?

Should the Bureau of Mines procure this legislation and the necessarily large new organization be built up to execute it, there would follow no decrease in the personnel or of expenditures in the other Federal offices now buying coal, for such is not the way governments function. Rather we should have only a large increase in annual appropriation by the Congress without a compensating saving.

We would suggest instead that provision be made for technical supervision by liaision engineers from the Bureau of Mines in the other offices buying coal for Federal account, for it is because of its technical knowledge of coal, both as to kinds and utilization, that the Bureau of Mines can lay superior claim, and certainly not because of demonstrated better business organization or commercial talent.

The government can and should pay more attention to how, when and where its coal is purchased, but turning the whole job over to one bureau is not necessarily a panacea for all fuel troubles.

Every Workman Should Be a Capitalist

HAPPY is that country where every man is a capitalist, where every worker is producing a little more than he and his family is consuming and so is building up the fund for productive equipment whereby the world's future work is to be done. In too many countries capitalism represents the few and not the many, and if it were not for the savings of the few rich there would be no progress from year to year.

We have just passed through Thrift Week, but thrift is not a matter for a week's thought and fifty-one weeks of neglect. It is the daily duty of every good citizen. At the close of the past year the Lehigh Coal & Navigation Co.—a pioneer in the production of coal, a leader in company beneficial funds—led the way among anthracite companies in offering stock to its own employees and to the employees of its subsidiaries, the Alliance Coal Mining Co., the Cranberry Creek Coal Co. and the Panther Valley Water Co.

Other companies might well do the same. Thrift is abundantly worthy of encouragement. As has been well said, much of the crime and still more of the misery of the world and much of its hard times, the jerky stops and starts of industry, would be saved if all men and women were prudent investors. The offer of the company is so extremely generous that it would be indeed strange if at least 50 per cent of the employees failed to express a desire to avail themselves of it. As the number of shares is 2,500 and all who apply can get from two shares to five shares, doubtless there will be many of the 8,500 or more employees who will put in their applications too late to receive the excellent offer made them. Unfortunately there are too many whose desire to clip bonds and draw dividends is not backed up by a readiness to lay by for that end. They want to participate in the earnings of capital but not to contribute their savings to operating investment.

FIG. 1. EXTERIOR OF WESTON BREAKER, LOCUST MOUNTAIN COAL CO.

New Methods Are Used for Preparing Small Sizes by Locust Mountain Coal Co.

At Their Weston Colliery Breaker the Sizes Below Pea Are Scrupulously Cleaned by Concentrating Tables and a Specially-Designed Jig—Success Is Attained in the Washing of These Fine Coals

By Dever C. Ashmead
Wilkes-Barre, Pa.

ANTHRACITE coal companies have differing views as to the importance of a careful preparation of their product. Some firms feel that all that is necessary is to give the coal sufficient preparation to enable it to "get by." Others take pride in the excellence of their preparation and strive to make their product as clean as is physically possible. This latter attitude, while quite marked as to the larger sizes, is gradually manifesting itself in regard to the entire output of the mine, and many companies are installing devices and equipment to reduce the amount of refuse contained in the smaller grades of coal.

One reason for the little care being exercised in the preparation of the small sizes lies in the fact that impurity is less readily detected by visual examination in them than in the larger sizes. Any great amount of extraneous material, such as bone or slate, mixed with the larger pieces of coal may be readily perceived, whereas with the small sizes this would be difficult, if not almost impossible.

Within recent years the art of coal preparation has advanced and many new devices have been placed on the market to obtain better results than were formerly possible. It is not my intention to discuss here the various types of preparation machinery, but to deal with the methods now in use at the breaker of the Locust Mountain Coal Co. near Shenandoah, Pa., and to call attention to some new devices employed at this plant.

The breaker is a comparatively new one, its construction having been completed in 1914. The owning company has been by no means satisfied with existing methods and has been, and still is, making improvements wherever possible, particularly in the methods employed upon the sizes of coal smaller than buckwheat No. 1. No marked improvements have been made in the methods used in preparing the larger sizes, although even these receive a preparation somewhat different from that ordinarily accorded them at other breakers.

Coal Comes from Mines and Strippings

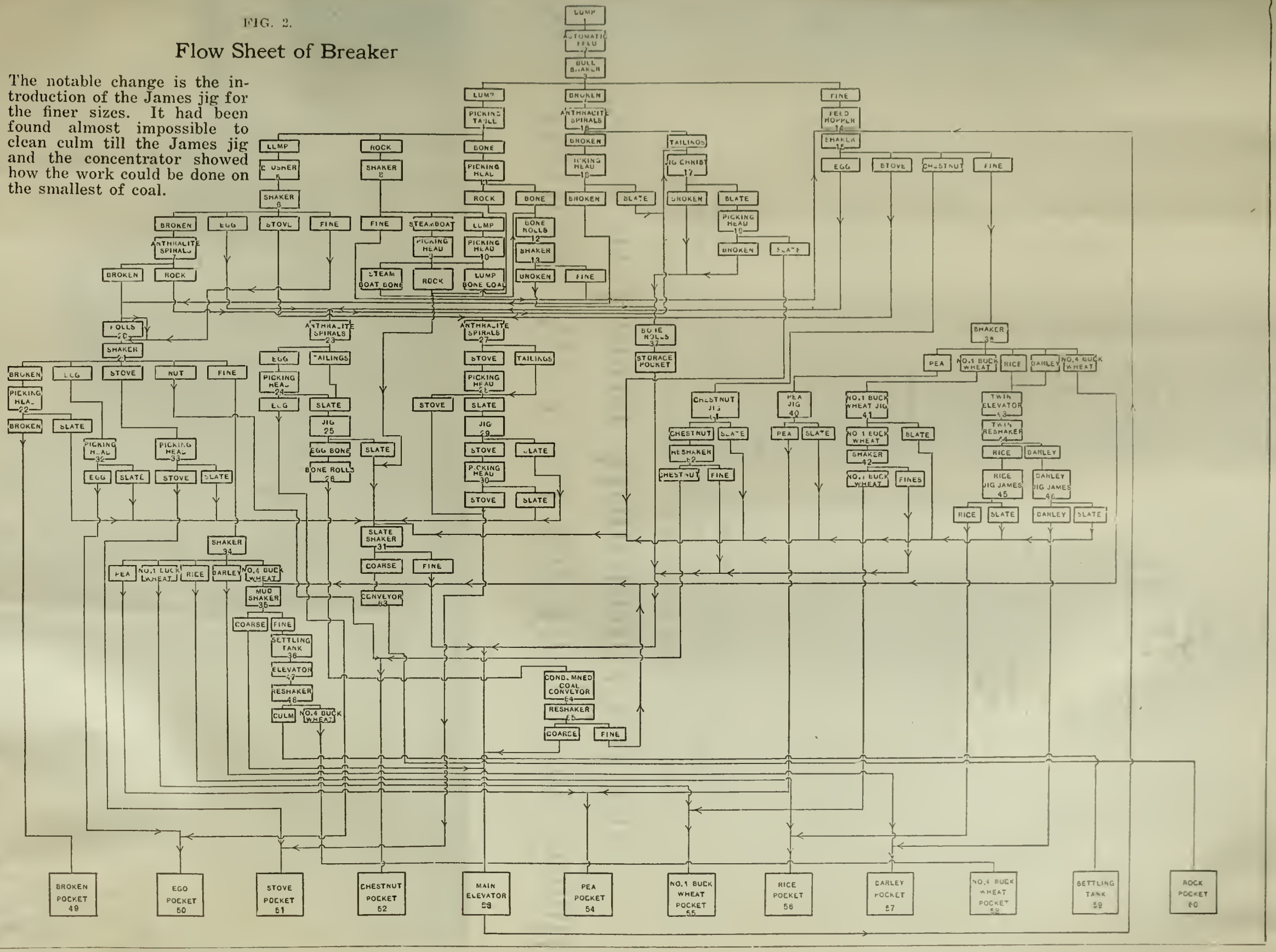
During the war just passed some anthracite-producing companies reduced the requirement that their output had to meet. This firm, however, maintained its pre-war criteria of excellence and did not allow any more refuse to enter the product shipped during the period of hostilities than was permitted before or is allowed at the present time.

Raw material treated in this breaker comes from two distinct sources, both lying, however, in the same coal

FIG. 2.

Flow Sheet of Breaker

The notable change is the introduction of the James jig for the finer sizes. It had been found almost impossible to clean culm till the James jig and the concentrator showed how the work could be done on the smallest of coal.



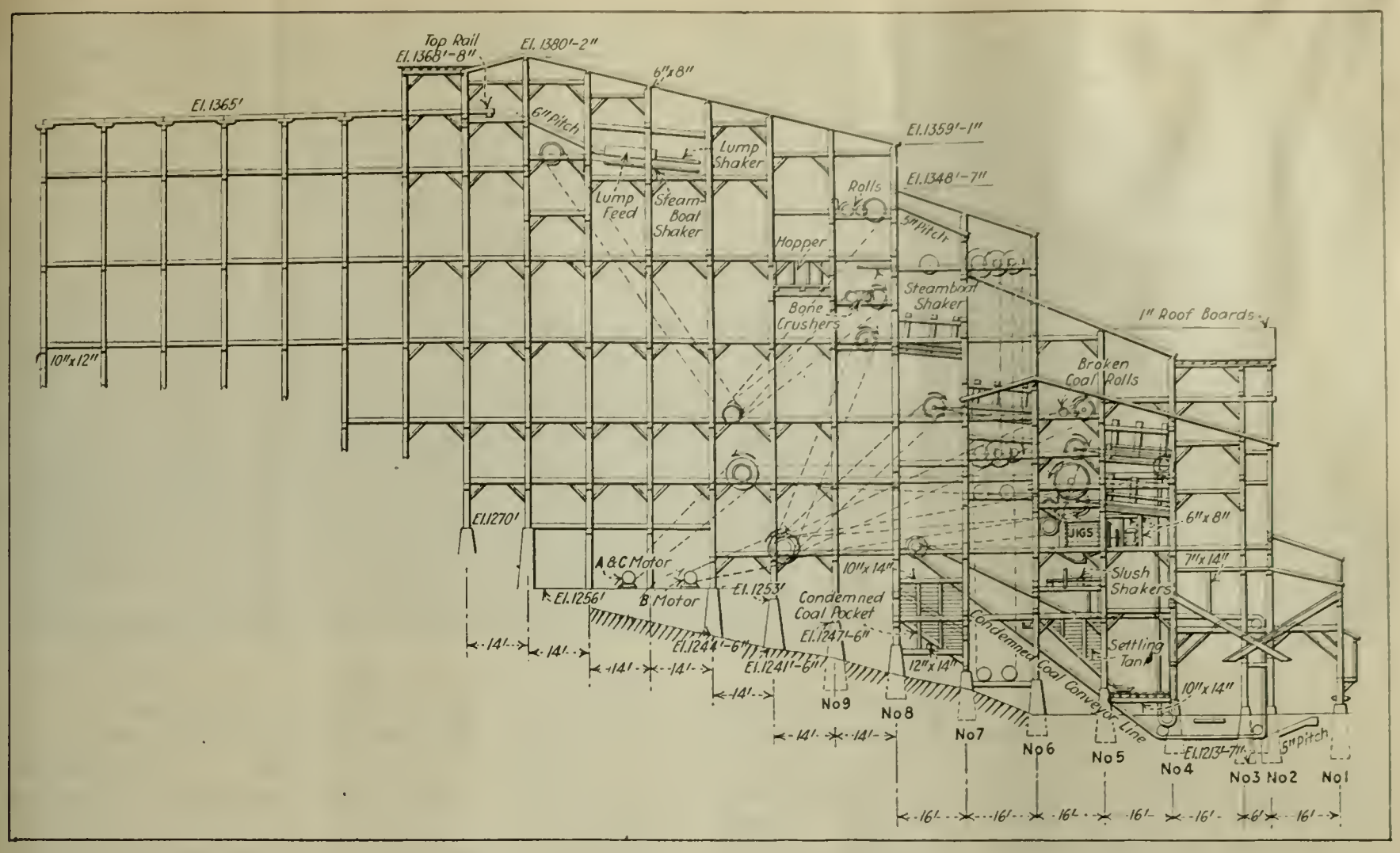


FIG. 3. CROSS-SECTION OF BREAKER

From the top of the lower foundation piers to the comb of the roof the difference in elevation is almost 154 ft. This illustration and Fig. 4 give some idea of the multiplicity of machinery and mechanical appliances through which anthracite coal is passed in the process of preparation.

measures. Approximately one-half of the coal comes from strippings and the other half from underground operations. Fig. 1 is an illustration of this breaker and gives some idea of its size. Owing to the extremely complicated nature of the flow sheet as prepared by the company it is impossible to reproduce it in its entirety here. A somewhat simplified flow sheet, however, is shown in Fig. 2. Reference numbers appearing in the text appear also in this diagram, making it thus somewhat easier to follow the movement of the coal through the various processes. Cross-sections of the breaker are shown in Figs. 3 and 4.

Dumpman Controls Approach of Mine Cars

From the thaw shed, which is not shown in any of the illustrations, the coal cars are dropped by gravity across the trestle shown in Fig. 5 to the dump (1). Just before reaching the dump the cars come to a dead stop and are moved from this point by a small go-devil to the block shown in Fig. 6. From this point the man operating the dump may release the cars as fast as he chooses, whereupon they move by gravity to the point of discharge. This gives the dumpman complete control of the rate of approach of the mine cars and prevents clogging. The dump shown in Fig. 7 is operated by compressed air and has a capacity of one hundred and thirty 5-ton mine cars per hour. Only one man is required to handle and operate this arrangement. Two men are, however, kept on the job to be ready in case a car should leave the track, or the wheels should stick.

The coal thus discharged is deposited in a bin. In this process it is separated into two approximately equal parts by a gable or ridge in the center of the pocket. From this container the coal is fed by an automatic feeder (2) to the bull shakers (3). This gives an even feed to the screens. Two sets of these shakers are employed, one of which is shown in Fig. 12, and they make three separations—lump, broken and finer coal.

Lump coal from the upper deck of the bull shaker passes to a picking table (4). There are two of these tables, one for each shaker. On these picking tables three separate products are made. The rock is picked from the coal, and the bone is removed separately. The lump coal itself goes to a crusher (5), from which it passes to a shaker (6) which has three decks and makes the following sizes: Broken, egg, stove and finer material. The broken goes over a set of anthracite spiral pickers (7), wherein the rock is separated.

Broken coal from the bull shaker (3) passes over a set of anthracite spiral pickers (16), where the coal is cleaned, after which it goes to a picking head (18), where the slate is separated from the coal and the cleaned product then mixes with the broken coal from the first anthracite spirals (7). This material then goes through a set of rolls (20), from which it proceeds to a shaker (21), which separates it into broken, egg, stove, chestnut and fine. The broken coal then goes to another picking head (22), where the slate that it still contains is separated from it and where the cleaned product is sent to the broken pocket (49).

Fine coal from bull shaker 3 passes into a feed hopper (14). Thence it is sent to a shaker (15) which makes four sizes—egg, stove, chestnut and fine. The egg coal from this shaker unites with the egg from shaker 6 and goes by means of a shaking chute to a battery of anthracite spiral pickers (23). These separate the clean coal from the tailings. The coal goes to a picking head (24), where the slate is re-

moved from it. The cleaned product then passes directly to the egg pocket (50) by the spiral chutes shown in Fig. 14. The egg coal from shaker 21 goes to a picking head (32) where the slate is removed, from which point the cleaned product goes to the egg pocket (50) above mentioned.

Stove Coal Goes to Spiral Pickers

Stove coal from shaker 21 receives exactly the same treatment as does the egg from the same shaker, the cleaned product going to the stove pocket (51). The stove coal from shakers 6 and 15 is united and goes to a bank of anthracite spiral pickers (27) shown in Fig. 15, where it receives the same treatment as was accorded the egg coal from the same shaker.

From shaker 6 the fine coal goes to shaker 21; the treatment of the material passing this shaker has already been described. The chestnut from shaker 21 is sufficiently clean and passes immediately to the chestnut pocket (52). The chestnut coal from shaker 15 is not considered clean enough, and therefore goes to Lehigh Valley jigs, the cleaned product of which is resized, going to the chestnut pocket (52).

Rock from the picking table (4) is sent to a shaker (8) and is sized into three grades—fine, steamboat and lump. The fine rock, which contains a large amount of coal, goes to shaker 15, where it is treated along with the fine coal from shaker 3. The rock of steamboat size goes to a picking head (9) shown in Fig. 9. The lump rock likewise goes to a picking head (10). Three separations are here made—steamboat bone coal, rock and lump bone coal. The bone from picking table 4 goes to a picking head (11), where the rock is separated from the bone. This bone and the steamboat bone, heretofore mentioned, pass to a set of rolls (12), where they are crushed. From this point they proceed to a shaker (13), where the broken is removed from the fines. This broken goes to a set of bone rolls (37) and thence to a storage pocket. From that point it is sent to the main elevator (53), which discharges to the shaker (15) for re-treatment.

Rock from the picking heads (9, 10 and 11) goes to the slate shaker, where it is joined by the rock and slate from the picking heads (22, 32 and 33), and from the chestnut jig (61). It is also joined by the slate from shaker 31 at this point.

Lump bone from picking head 10 goes to the bone rolls (12) and receives the same treatment as that to which the steamboat size of this same material was subjected. The fine bone from shaker 13 goes to shaker 15 for re-treatment. Tailings produced on the broken-anthracite spiral pickers pass to a Christ jig (17), as does also the slate from the picking head (18) and that from the anthracite spiral pickers (7). Broken coal from this jig then goes to the bone rolls (37) already mentioned. The slate from the jig goes to the slate shaker (31), which also has been mentioned.

All Sizes of Coal Are Carefully Prepared

Tailings from the anthracite spirals (23) and the slate from the picking head (24) are sent to a jig (25), and the egg bone from this jig goes to the main elevators and down through the dirty-coal side for preparation. Slate from the jig goes to the slate shaker (31).

Slate and tailings from the stove spirals (27) and the picking head (28) likewise pass to jig 29, but the stove coal from this jig is not crushed, but goes to a picking head (30) and the cleaned coal to the stove pocket (51). The slate from the jig and from the picking head goes with the rest of this material to the slate shaker.

It is a mistaken idea to suppose that in a modern breaker of this kind only the sizes above pea are

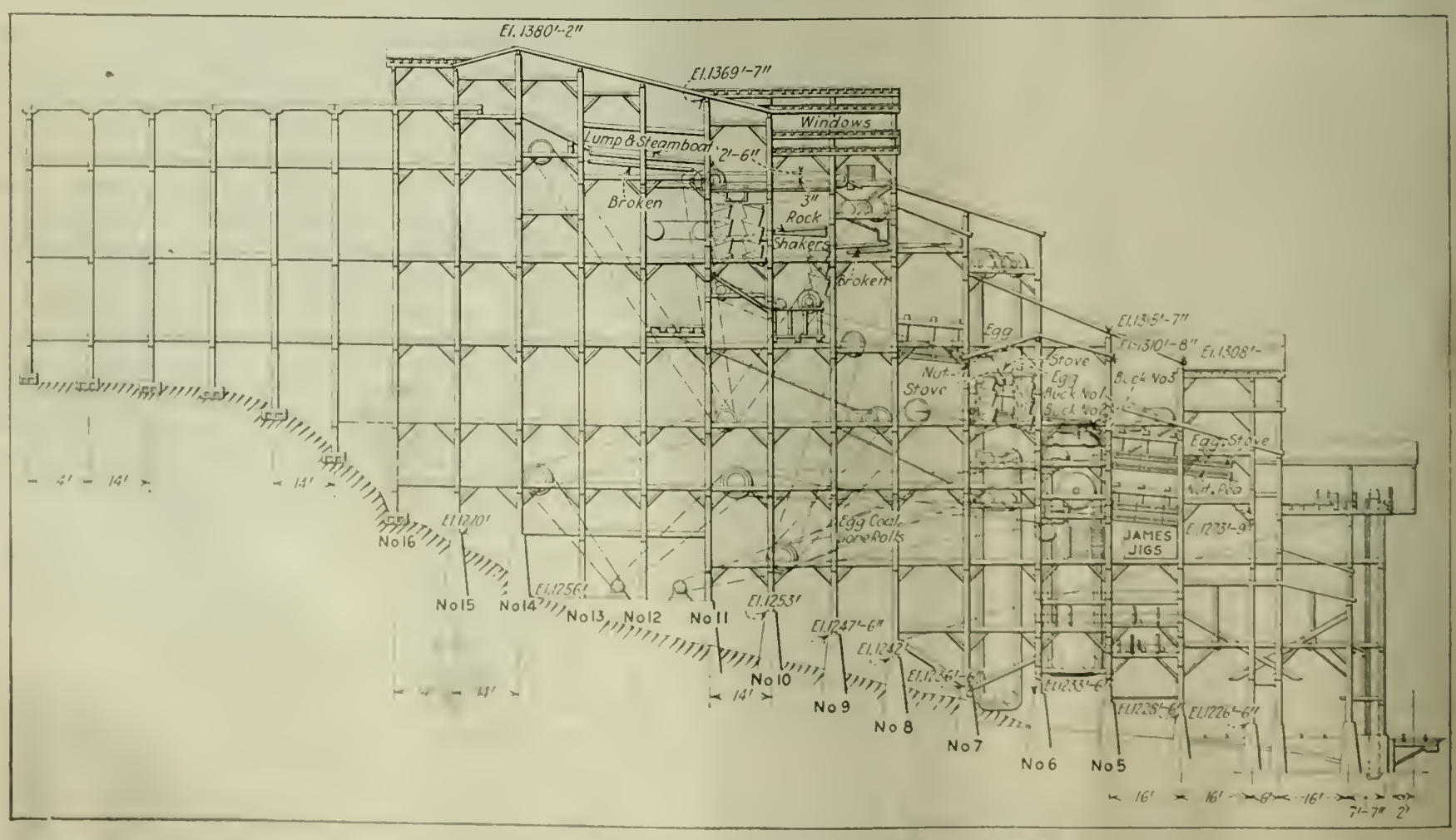


FIG. 4. ANOTHER CROSS-SECTION OF THE BREAKER

Here can be seen more details of that part of the breaker which handles the fine coal—the jigs, the slush shakers, the settling tanks and condemned-coal-conveyor line and pocket.

FIG. 5. SIDE VIEW OF BREAKER BUILDING AND OF THE TRESTLED TRACKS BY WHICH IT IS APPROACHED
At the end of the trestle to the right beyond the edge of the illustration is the thaw shed, which during the winter raises the coal to the right temperature for treatment in the breaker. Coal taken from strip pits and coal from the mine that has been long in transit is apt to be frozen hard in the cars and must be thawed out.

prepared. As a matter of fact the smaller sizes are nowadays receiving as much, if not more, and also equally careful treatment as are the larger sizes of anthracite.

Really two complete methods of treatment for the finer sizes of coal are found in this breaker. The fine coal that comes from the clean-coal shakers is treated by one method, and that from the dirty-coal shakers is treated by another. As might be expected, the fine material coming from the clean coal does not require the same treatment as that coming from the dirty sizes. As a result, fine coal from shaker 21 passes to shaker 34, which is a four-deck machine where pea, No. 1 buckwheat, rice, barley and No. 4 buckwheat are made.

Table Removes Two-Thirds of the Ash

Pea coal from this shaker does not receive any further treatment, but goes to its pocket (54); neither does the No. 1 buckwheat, rice nor barley, but each passes to its respective pocket and is ready for shipment. No. 4 buckwheat, however, goes to a mud shaker (35), where the coarse particles are separated from the extremely fine ones. At this point the coal passes through a most interesting process, at present in an experimental stage. Instead of sending this material

FIG. 6. TOP OF THE BREAKER WITH THE TRACKS ENTERING IT
Cars are moved by a "go-devil" to the block shown in the illustration. Here the man operating the dump releases them, sending them to the point of discharge at his pleasure.

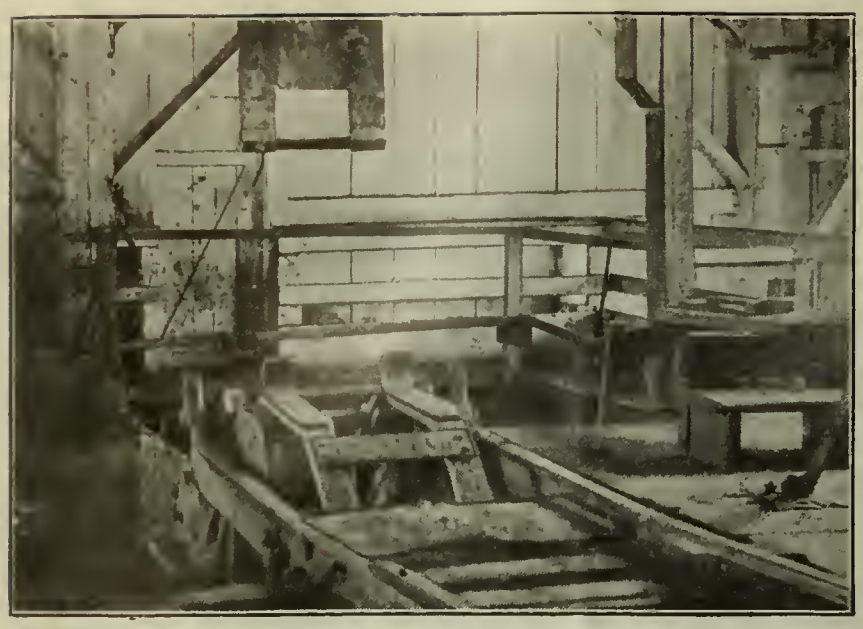


FIG. 7. COMPRESSED-AIR DUMP FOR MINE CARS

This dump has a capacity of 150 five-ton mine cars per hour. Only one man is needed to handle this dumpage, though two men are employed, the second man being available should a car leave the track or the wheels stick.

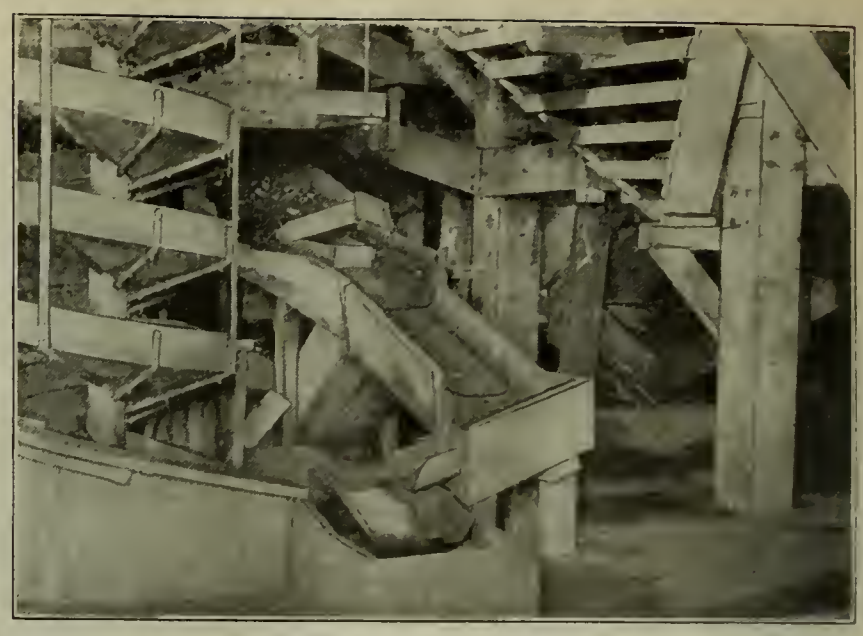


FIG. 8. BOARDS MARKED *X* SUPPORT RESHAKER

These boards act as a spring support, adequately replacing suspension boards for which, unfortunately, no room could be found To the left is the discharge from the chestnut jig and further over are the spiral chutes for the cleaned nut coal.

directly to the pocket for shipment, or to the bank, this coal is sent to a James table (Fig. 10). Before treatment on this machine it contains about 30 per cent of refuse, but after it has been tabled it contains only a maximum of 10½ per cent of ash, while in many instances the ash does not exceed 8½ per cent. It is quite true that an appreciable loss of good coal takes place in the tailings from this machine, but in a short time these will be passed over a second table, and the good material largely reclaimed.

The fine coal from the mud shaker (35) goes to a settling tank (36), thence to an elevator (47), and thence to a reshaker which separates the culm from the No. 4 buckwheat. The buckwheat goes to the James table for treatment, while the culm is sent to the bank.

From the dirty-coal shaker (15) the fine material or that under chestnut sizes passes to another shaker (38) on which five sizes are made: Pea, No. 1 buckwheat, rice, barley and No. 4 buckwheat. The pea from this shaker is too dirty to send to its pocket, and it is accordingly put through a jig, the cleaned coal going to the pea pocket (54) and the slate from this jig going to the slate shaker (31).

No. 1 buckwheat from this shaker likewise goes to a jig (41), where the slate is separated from the coal, the former going to a slate shaker, while the latter passes to a reshaker shown in Fig. 13. This reshaker is of considerable interest, for instead of being swung from above, as is ordinarily the case, it is supported on springboards from below. There was not sufficient room to place any rods above. The supporting springboards may be readily distinguished in Fig. 8, as they have been marked with the letter X. In this same figure may be seen the discharge chute from the chestnut jig and also the smaller chutes conducting the nut coal to its pocket. From the reshaker the properly sized material goes to the pocket (55), and the undersized, or fine stuff, goes to the main elevator and is taken back for retreatment.

Special Jig for Small Sizes of Coal

Again we come to an entirely new device in the preparation of small sizes of anthracite. Some coal companies jig these small grades, while others treat them on concentrating tables. The Locust Mountain Coal Co., however, uses a new type of jig which has been modified to meet the requirements for this work. No description of this machine will be given, as *Coal Age* in the issue of Nov. 25 printed an article describing it in detail. This breaker and one belonging to

FIG. 9. STEAMBOAT ROCK IN PICKING HEAD

Coal of value often adheres to material that is classed as "rock" at the main picking table. The steamboat size of rock is separated from the fine and lump rock and goes to the picking head shown. Here the coal is removed by picks and sledges.

FIG. 10. NO. 4 BUCKWHEAT GOES OVER JAMES TABLE

Coal which contains, as most small-size fresh-mined anthracite frequently does, 30 per cent of ash has that impurity reduced to 10.5 per cent on this table and even in some instances to as little as 8.5 per cent.

FIG. 11.

Coal Hopper

A gable or ridge in the hopper separates the coal roughly into two parts where automatic feeders, not in evidence in this illustration, deliver the coal to the bull shakers, which give an equal feed to the screens.

C. M. Dodson & Co., both of which are under Weston Dodson & Co. management, are the only two that are using this type of jig at the present time, as the machine has only recently been invented and the record of its performance has not become generally known.

Rice and barley coal from shaker 38 unite and pass through what is called a twin shaker (44). Here they are resized, the new products going to James jigs for treatment, after which the cleaned material passes to its proper pocket. The slate from the two jigs goes to the slate shaker (31).

The slate that has been treated on the slate shaker (31) is sized into coarse and fine material. The fine goes to the main elevator (53), by which it is discharged to the fine dirty-coal shaker (15). The coarse material goes to a conveyor (63) which takes it to the rock pocket (60).

The condemned-coal conveyor (64) discharges into a reshaker (65), which separates the coal into coarse and fine material. The coarse goes to the main conveyor or elevator, while the fine goes to the mud shaker (35) and receives the same treatment as was accorded the No. 4 buckwheat.

The drive employed in this breaker is the Dodge system, control being centered at one point. Electric energy is used exclusively. The motor room is on

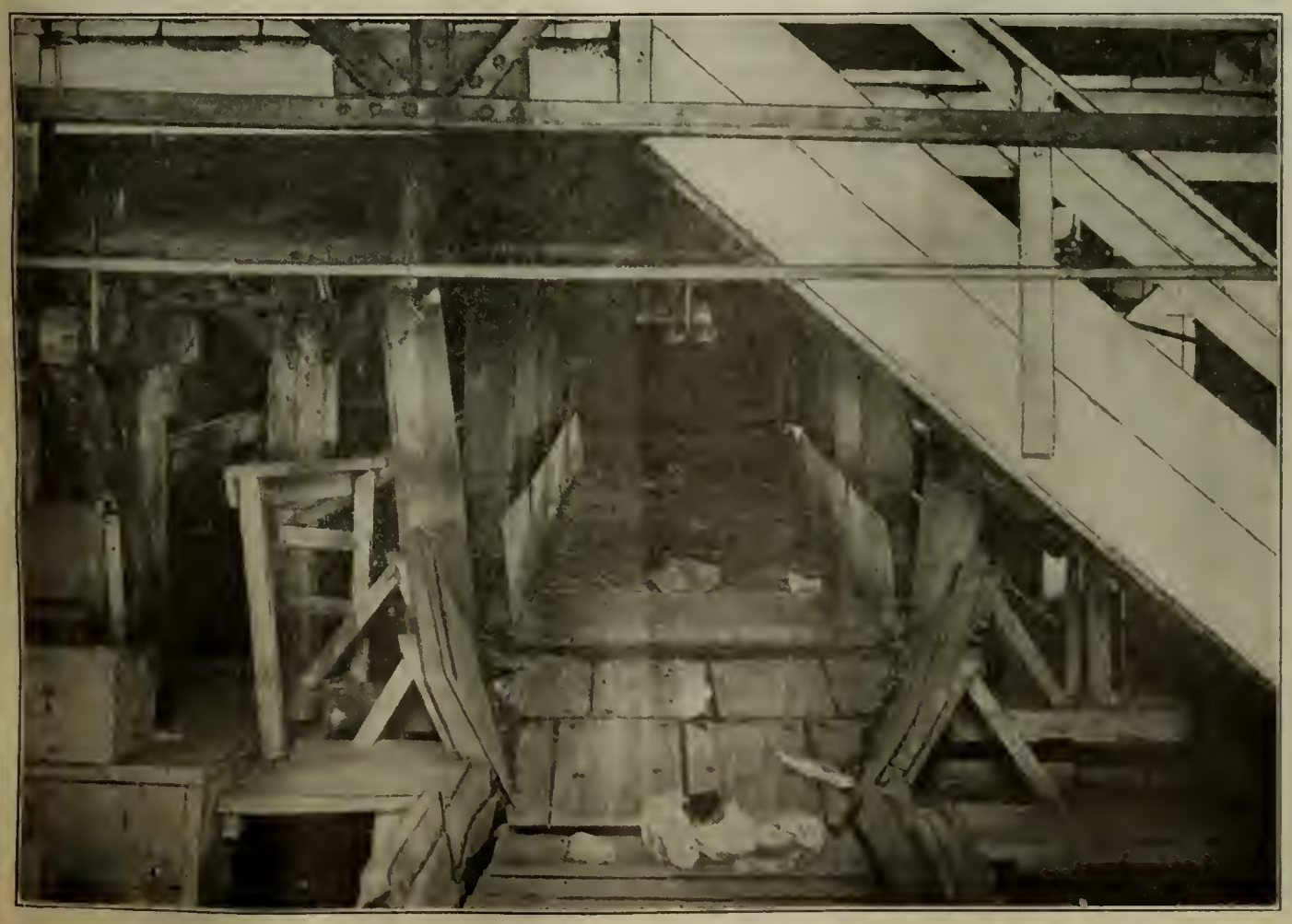


FIG. 12.

Bull Shakers

All the coal goes over one of two bull shakers, of which this is one. Three separations are made—lump, broken and finer coal. Only the lump is seen in the illustration. It is passing on to the picking table, where rock is separated from the coal and the bone also is removed for special treatment.

the ground and toward the rear of the building. It contains four motors.

Loading Chutes Lowered Into Car Bottoms

The method employed for loading railroad cars is not different from that followed in other breakers, as may be seen in Fig. 16. For the larger sizes of coal arrangements are such that the loading chute may be lowered into the bottom of the car in order to decrease breakage or degradation. In case open railroad cars are not available, a box-car loader may be employed.

This firm, like some other coal companies, has found that tare weights of railroad cars cannot be accepted as correct and that it pays to weigh empty railroad cars. Provision has been made therefore for this weighing. This sometimes makes as much as a ton difference in the final or net weight of the carload.

Ash Determined by Specific Gravity

Before leaving this subject of preparation mention should be made of the method employed in testing the ash content in the smaller sizes of coal, which is based on its specific gravity. The method followed does away with the chemical analysis that was formerly necessary and it makes it possible to test every carload before it is shipped. The procedure is rapid and it gives results accurate to within one per cent, which is, of course, close enough for all practical purposes.

The extensive machinery for the treatment of steam sizes at the Weston colliery was provided to insure a product that would be uniformly low in ash content. By an ingenious and simple method developed by the fuel engineers of the industrial-service department of Weston Dodson & Co., Inc., the coal inspector at the colliery is able to determine the ash content of the coal in any car within fifteen minutes after loading; he is thus able to control the quality of the coal that is shipped. A study of the records of these coal inspectors shows that the results obtained justify the methods used in the preparation of these coals.

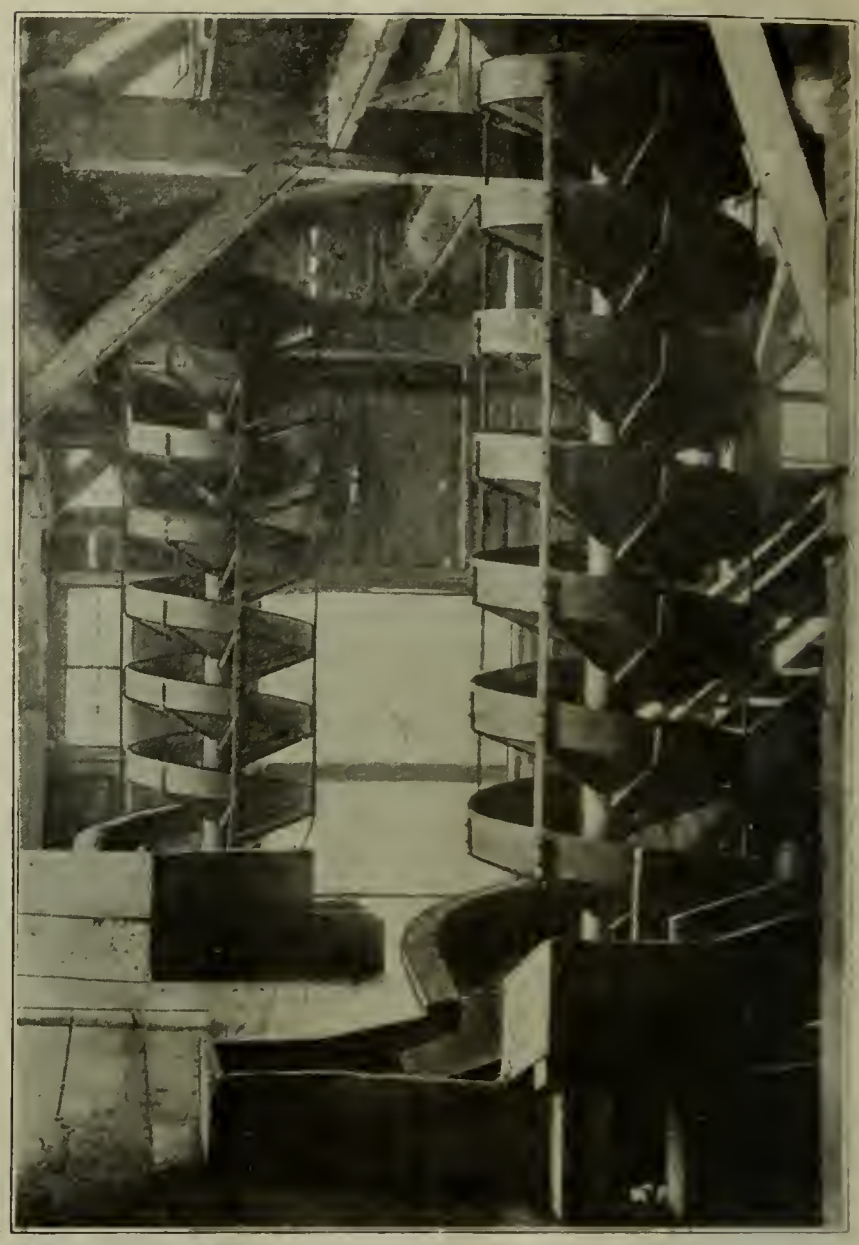


FIG. 14. EGG AND NUT DESCEND BY SPIRAL CHUTES

After passing down the anthracite spirals which separate the clean coal from the tailings, the egg coal passes by these spiral chutes, which serve to break the fall to the egg pocket.

FIG. 13. NO. 1 BUCKWHEAT PASSING OVER RESHAKER

The wet coal from the jig goes over the reshaker, which in this case is not suspended in the ordinary manner but is supported from the bottom, as there is insufficient room to make the suspension from above.

The method for determining the ash content of the smaller sizes of coal depends on a series of laboratory tests of sufficient duration to enable the company to ascertain the relation between the specific gravity of the coal and the laboratory ash content. This relation is not constant but varies with the hardness of the coal and also in some cases with the vein from which the coal is mined.

The object sought is to determine the volume of a known weight of coal, so that by dividing the weight of the coal by the weight of an equal volume of water, the specific gravity of the coal may be obtained. The method of determination is as follows: The inspector procures a measured quantity of buckwheat coal (Nos. 1, 2 or 3), dries the sample thoroughly and places it in a liter flask which has been previously calibrated—that is, weighed full of water. To this sample a certain amount of water is added. The flask is then exhausted of air by suction and by heating for eight minutes.

FIG. 15.

Spiral Pickers

Stove coal from the shakers goes to a bank of spiral pickers for removal of slate. The agile coal takes the outer course, while the slower slate travels close to the shaft of the spiral. Passing from this picker it goes to a picking head for further cleansing, and thence it descends to the stove-coal pocket.

Water is then added to fill the flask. The flask is then weighed, and this weight will be that of the flask calibrated when full of water, less the weight of the water displaced by the coal, plus the weight of the coal. In the formula A = the weight of the flask calibrated, B = the weight of the coal in air, and C = the weight of the flask after the coal and water have been added to it.

$$\text{The weight of water displaced} = A + B - C$$

$$\text{Specific gravity} = \frac{\text{weight of coal used}}{A + B - C} = \frac{B}{A + B - C}$$

This method of determining specific gravity, being entirely gravimetric, eliminates the use of fragile liquid measuring apparatus, such as burettes and pipettes, and places the manipulation within the reach of men usually inspecting coal.

As to accuracy—the entire operation depends on the relation between the ash and the care with which the relation is determined. For the work at this colliery it was found that on the average the ash can be determined by this method within one per cent of actual ash content. It is being used by the inspectors for condemning coal at Weston colliery, the ash being determined before the car leaves the siding.

GREAT BRITAIN IS PROPOSING to save three to four million tons of coal per year for export and other purposes by using the tidal power of the Severn Estuary, which enters the Irish Sea just south of Wales. The Civil Engineering Department of the Ministry of Transport has worked out the scheme, which is expected to provide over half a million horsepower during a 10-hr. day with a peak load of over a million horsepower. The improvement will provide also for the saving of a detour between Newport and Bristol of about fifty miles and for the quadrupling of the Great Western Ry. line when required. A locking basin for shipping purposes on the Upper Severn also will be provided.

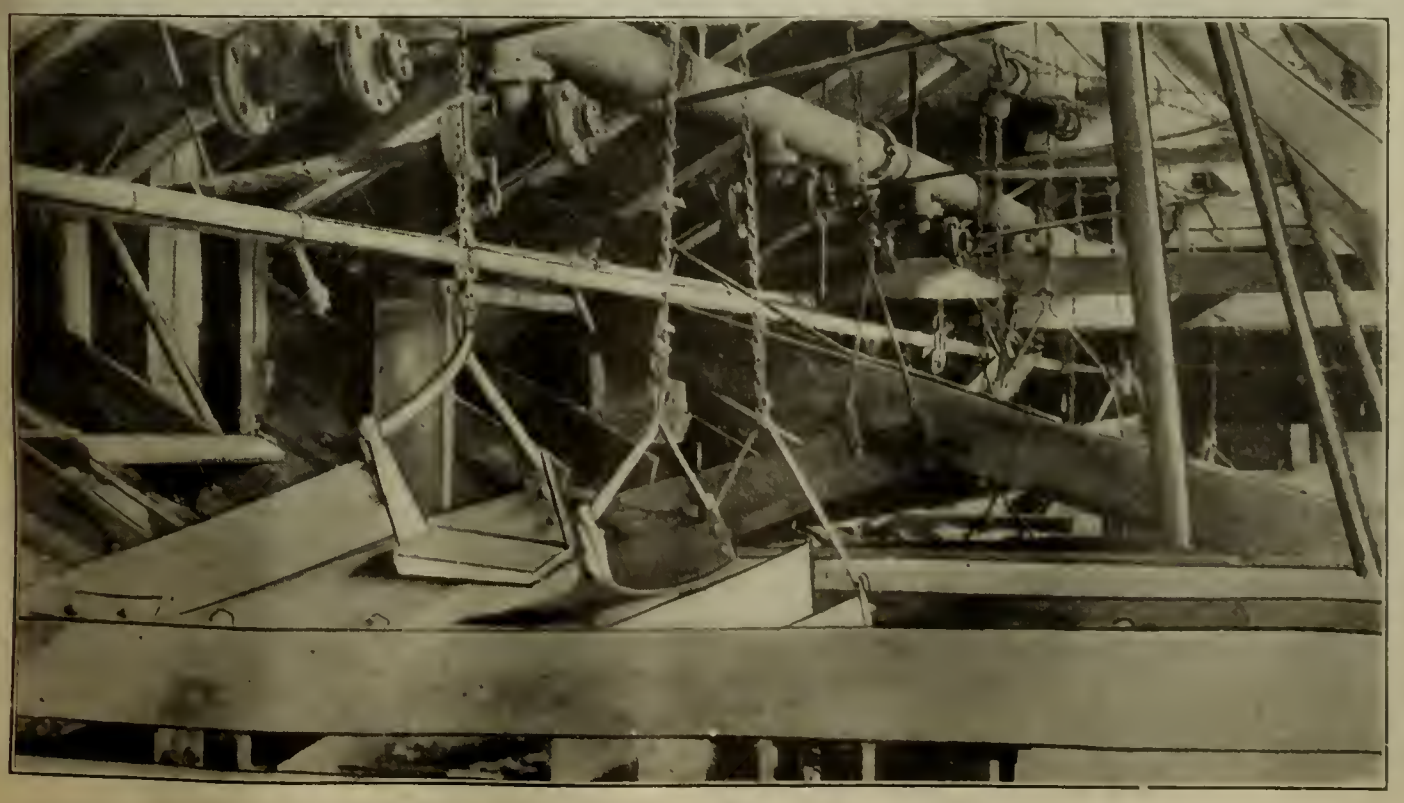


FIG. 16.

Loading Chutes

What is the advantage in careful sizing in the breaker if care is not taken when loading the coal into railroad cars? This plant has chutes to carry the coal with all due care from the pockets down into the car that is to receive it.

Breaking Down Coal Without Use of Powder

A Process Has Been Introduced by Which the Coal Face Is Slotted Near the Roof—Nests of Hydraulic Pistons Are Placed in the Slots and a Water Pressure of 10,000 to 15,000 Lb. Per Square Inch Forces Down the Already Undermined Coal

By D. Vance Sickman
Denver, Col.

COAL extraction consists of three operations, all of which in the future will be done by machinery: First, undercutting; second, breaking down of the coal, and third, loading. It is easy to see that the use of the pick and shovel will soon become a lost art, and the use of powder will doubtless follow. All three elements of a purely mechanical process of extraction are now in general use except breaking-down appliances. In these not a single advance which has stood the test of time has been made in a hundred years. We still use powder. However, after more than fourteen years of experimentation and development mechanical appliances have been created, which, it is believed, will satisfactorily break down the coal after it has been undercut.

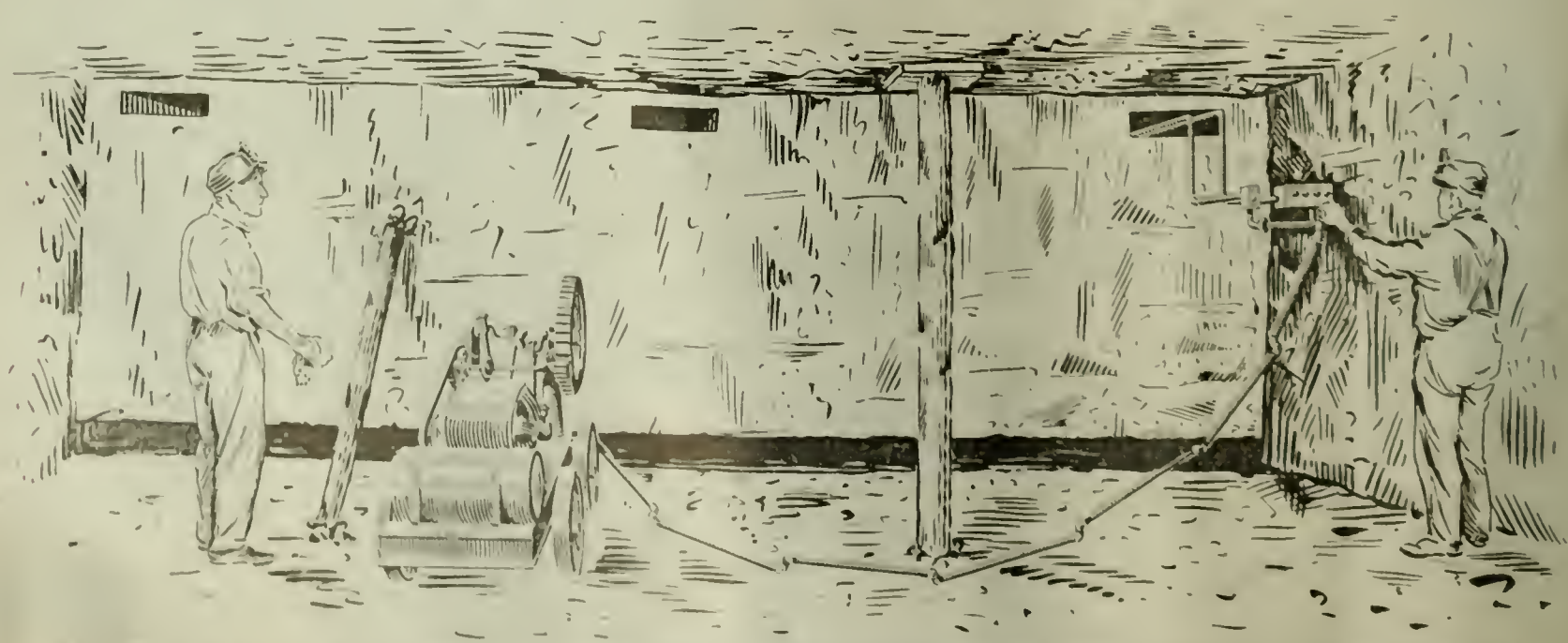
Briefly stated, the principle employed is a duplication of a natural process found in every mine, in that the coal is broken down by developing and applying what might be termed an "artificial squeeze." Everyone has witnessed the effect of roof pressure on a pillar or a stump and has observed that the enormous stress imposed by the slowly settling roof has completely broken and shattered the mass of coal along its natural cleavages or slips. This same effect is obtained by the use of the breaking-down appliances, with the added advantage that the coal is first undercut and the forces being applied in a scientific and practical manner, produce certain definite results.

Rectangular incisions are cut in the body of the coal, one near each rib, and sometimes one in the center of the room. These are made parallel with and as near the roof as possible, those near the rib being cut parallel to it and close to the corner of the room. Where the coal has the usual cleavage planes and slips, the center incision is not necessary, as the coal in that case will break down readily from rib to rib. The machine used for cutting these incisions, or slots, is self-contained and self-propelled.

It consists of a traveling bed plate provided with a caterpillar of the chain-track type, which can be driven from place to place in the mine in the same manner as a tractor is driven on a farm. When desired, it can be run on the rails. The slots are made by a cutter bar of standard design mounted on this traveling bed plate and arranged so that it can be easily raised or lowered, adjusted in position for cutting the slots, and then locked in place.

Sumping is the only work required of this bar—that is, it is simply inserted and withdrawn, cutting the incision in less than 3 min. after the machine is locked in position. The slots are cut to approximately the same depth as the undercut. The standard height of kerf is $4\frac{3}{4}$ in., and by simply changing the width of the cutter bar its width is varied to suit conditions. On the standard machine, cutter bars 18, 24 or 32 in. wide can be used.

This slotting machine is simply the combination of two old and highly perfected devices—the chain-track type of tractor, and the undercutting machine, simplified and modified, for cutting an incision near the roof instead of underneath the coal. Under normal conditions of operation in a 6-ft. bed three men will cut in eight hours on the average the required number of slots for breaking down 250 to 300 tons of coal.



COAL IS UNDERCUT, SLOTS ARE CUT NEAR ROOF BY MACHINE, AFTER WHICH COAL IS FORCED DOWN BY WATER PRESSURE

By this method the coal is not shattered but broken off in large pieces such as will produce sizes well suited for the domestic-fuel market. The water is taken through a pipe line made up of several short joints. This gives a flexible pipe and one fully capable of sustaining the 10,000 to 15,000 lb. pressure per sq.in. under which the pressure bars operate.

CROSS SECTION OF COAL AT FACE WITH SIDE VIEW OF HYDRAULIC PUMP

The cross section is taken through one of the slots and shows the expanding bars in place. Ten gallons will mine 1,000 to 5,000 tons of coal. At the rear of the wagon is a tank which carries that quantity of water. The pressure can be arranged so as to bear more on the front or rear of the coal and so as to afford pressure at the front or back first, as may be desired. One bar is used for shearing the coal off the back wall of support and the other shears the coal off the rib wall.

Into these rectangular incisions is inserted, in succession, a rectangular hydraulic expanding bar made in two sections, each section containing pistons which may be forced outward by water pressure. The bar is rectangular in cross-section, being 4½ in. in depth by 5½ in. wide, the length depending on the number of pistons used. The shorter section of the bar, containing from three to six pistons, depending on the size employed, is inserted first.

This section is pushed to the extreme inner end of the incision and placed parallel to the back wall of support, immediately above the termination of the undercut. The long section of the bar, containing from five to eight pistons, is then inserted and placed at right angles to the first section and parallel to the rib, directly above the extreme side of the undercut, at the side of the room.

Water for ejecting the pistons is conveyed to the bar from a high-pressure hydraulic pump through folding steel tubing, each section of which is 22 in. long. The sections are joined together by means of a specially designed flexible universal joint. This tubing may be folded up like a clothes rack. Connection from the high-pressure pump to the bar can be made of any length, from a few inches up to 24 ft.

Withstands Fifteen Tons to Square Inch

This folding steel tubing is practically indestructible and solves one of the big problems in this process of mining, as it permits of water being conveyed at extreme pressure from the pump to the bar. A 24-ft. length of this tubing weighs approximately 42 lb. and will withstand a water pressure of 30,000 lb. per square inch. The normal pressure employed is 10,000 lb. per square inch.

The entire equipment, however, is designed for using water at 15,000 lb. per square inch, if such a pressure is required. All parts have an ample factor of safety. The pump is of standard design, suitable for delivering a constant volume of water, and the bars are of proper size for developing the necessary expansive forces.

The expanding bars are furnished in four sizes. The smallest develops a total expansive force of 1,000,000 lb. and the largest a force of 2,500,000. The pistons have large flat bearing surface to prevent indentation. The thickness of bed, character of coal and other local conditions determine the size of bar to be used. Under normal conditions the bar developing 1,500,000 lb. of expansive force unfailingly will break down coal 9 to 10 ft. in thickness.

Can Control Pressure on Coal at Will

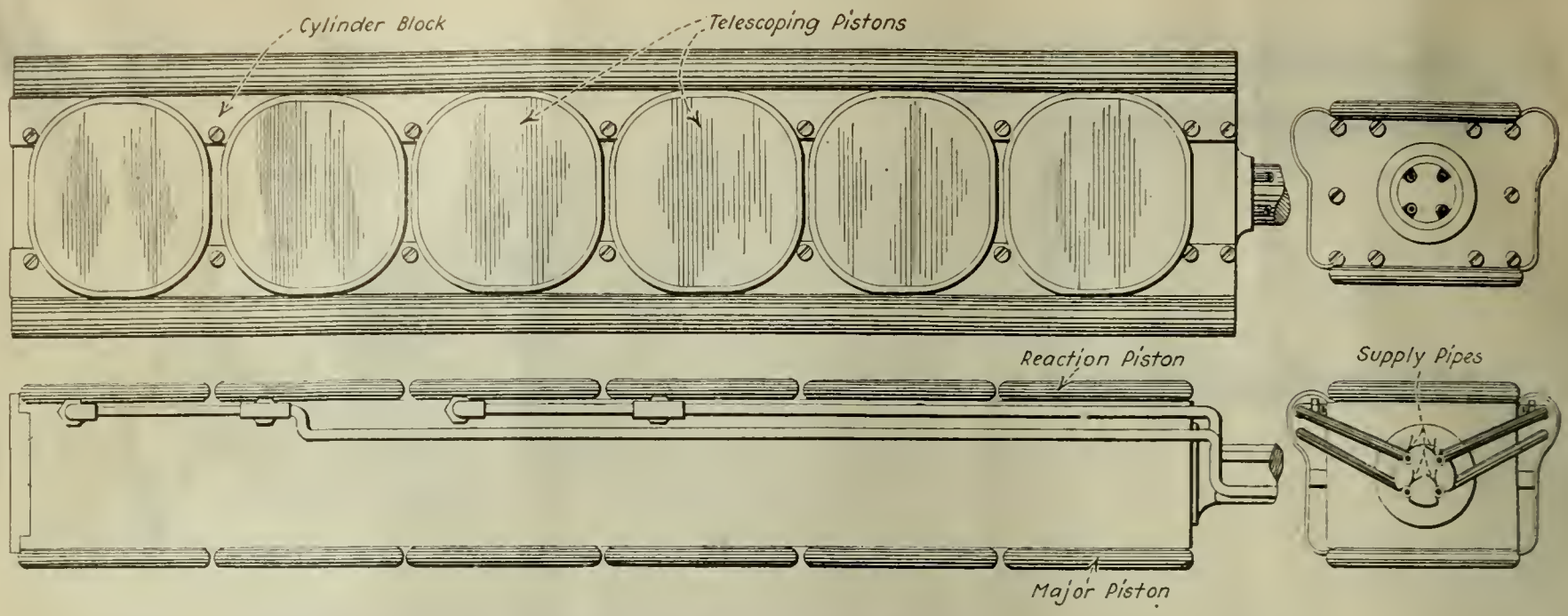
The ejection of each piston, or set of pistons, in the two sections of the bar is controlled by means of external valves, so that certain pistons or sets can be retarded relative to the others, or ejected progressively, thus at will producing a combination of fracturing forces suited to local conditions. These can be made to break and shatter the mass of coal to the extent desired. The expanding bars are comparatively light in weight, the longest section of the smallest bar weighing only 145 lb., while the longest section of the largest bar weighs 192 lb. As each section is placed in the slot separately these weights are easily handled.

To develop such enormous forces in bars of these weights necessitates special construction of the pistons and piston chambers. Each piston chamber contains, in reality, two telescoping pistons traveling in opposite directions, one being ejected upward against the roof and the other downward against the coal. The effect of this construction is to neutralize internal reactions tending to distort the bar—in fact, the bar itself is subjected to a maximum internal reaction equal to only 18 per cent of the total expanding force exerted. The bar, all parts of which are made of chrome vanadium steel, has sufficient rigidity to withstand easily this reaction without distortion. The total expansion of the bar is more than twice as great as is necessary to insure the coal being broken down and toppled over.

Piston Travels Only Required Distance

Each piston chamber in the bar is provided with an internal automatic cut-off valve actuated by the movement of the piston at the instant it has made its proper normal outward travel. The cutting off of the water supply to any particular piston chamber does not affect in any way the pressure exerted by any other piston.

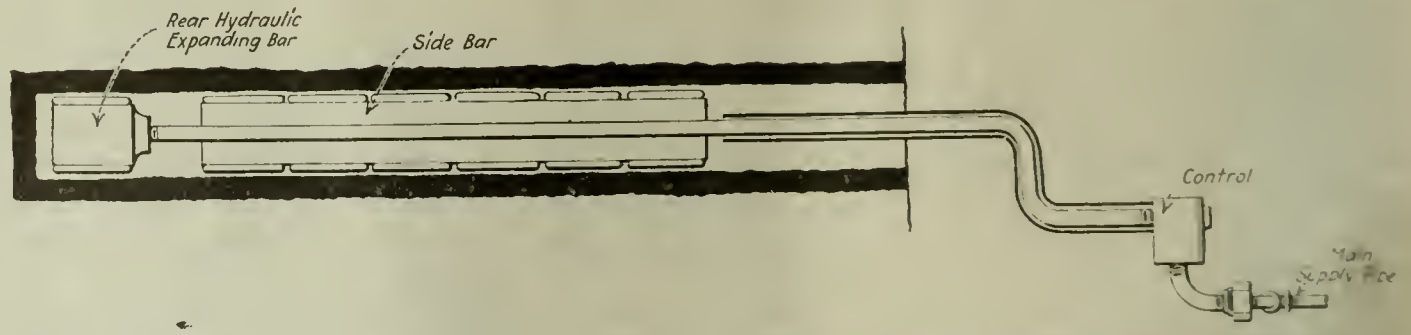
Powerful springs also are provided, which as soon as the water pressure is removed, quickly force the pistons



SIDE BAR WITH SIX MAJOR AND SIX REACTION PISTONS
Note the pipes which distribute the pressure to the pistons. A bar of this size exerts a pressure of 750 tons.

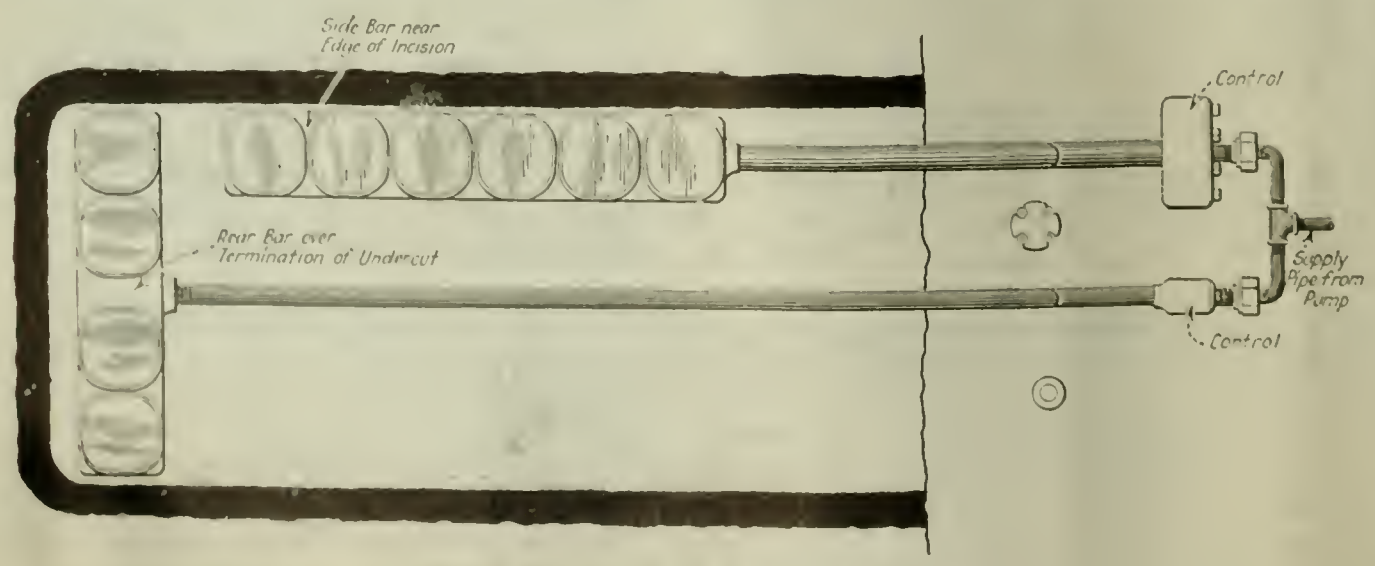
back into their chambers, so that the bar automatically collapses, and can be readily withdrawn from the fallen coal. These springs also hold the pistons firmly within their chambers with a force of approximately 104 lb. when in their collapsed position.

Numerous other details of construction and operating characteristics make this bar foolproof yet simple and powerful. This bar utilizes water pressures for larger than those created in any former appliance designed for this purpose. All the breaking-down equipment, consisting of the high-pressure hydraulic pump, the folding steel tubing, the hydraulic bar and all accessories, is mounted on a truck to facilitate rapid conveyance about the mine. This permits the breaking-down process to follow up and co-ordinate with the work of the slotting machine.



VERTICAL CROSS-SECTION OF SLOT, SHOWING EXPANDING BARS WITH CONTROL BOX
The projections at the top and bottom of the side bar are the pistons which, traveling in opposite directions, bring pressure on the roof and on the coal below.

Water for expanding the bar is carried in a 10-gal. tank and after each expansion is forced back and used over again. The only loss is the drippings. Ten gallons of water will mine 1,000 to 5,000 tons of coal. As the enormous forces utilized are slowly applied, those exerted by the short section of the bar, lying parallel to the rear wall of support, shear the body of coal off squarely at the termination of the undercut, while those exerted by the long section of the bar shear it squarely at the rib. At the same time these forces follow the general law of forces applied to a non-homogeneous mass, as they are shunted off along the paths of least resistance throughout the coal, and along the natural cleavage planes and slips—dissipating themselves throughout the entire body of coal, so that when it finally falls it is broken into large lumps which are readily handled. By the external valves which control the pistons, the workman can produce definite shearing stresses along and parallel to the walls of support and also cause the body of coal to be broken up and shattered to almost any degree desired. The result is analogous to that of the squeeze, but with the advantages that the application of force may be scientifically controlled. The most important require-



HORIZONTAL CROSS SECTION OF SLOT
Shows how the rear and side bars are disposed. Cross sections of the water-supply pipes are shown below the pipes they represent. Note that the upper pipes are four in number and clustered around a central core. The rear bar is fitted with a single pipe.

ment of a successful mechanical appliance for breaking down coal is that it shears the material off squarely at the back of the undercut and also along the ribs, thus maintaining a uniform width of rooms and entries. Heretofore no form or type of mechanical appliance has ever developed adequate force to perform this function.

Advantages of Eliminating Powder Are Many

The advantages resulting from the elimination of the use of explosives in coal mining is a subject on which volumes could be written. It effects economies in production and operation that are astounding. The possibility of its ever being accomplished has, in the past, been so remote that few engineers have seriously considered the changes it would effect in the coal industry.

The saving in life and property, the prevention of accidents in general and other humane and altruistic features are apparent. The roof fall is the greatest danger encountered in coal mining. Its toll is greater than that of all other accidents combined. Eliminate the shattering effect of explosives upon the roof strata and the accidents will be greatly reduced. Also remove the powder smoke and fumes and the working conditions become more healthful and pleasant.

Economically, the use of powder affects every item of production cost. Less timbering is required. What timber is placed is never blown out. Thus losses in output are avoided and the cost of cleaning up the resulting roof fall is eliminated. A saving in costs is effected through the elimination of shotfirers and other highly paid labor. No expense is incurred for installing and maintaining shotfiring apparatus and equipment. Many other items of cost are reduced and operating advantages obtained.

Smoke Makes Steady Work Impossible

Great as these savings are, however, the chief operating advantage is that resulting from continuous, uninterrupted extraction. It requires a careful study and analysis of underground operations to grasp even partly what this really means, for it effects economies in the whole art of coal mining.

A brief résumé of its significance is as follows: (1) The output may be maintained constant and uniform for every hour the mine is operated. This will result at some mines in an increase in tonnage of at least 25 to 30 per cent without any advance in overhead costs. (2) Where shooting has to be done when men are out of the mine or as they are about to leave it, it is impossible to produce coal more than eight hours per day. With the hydraulic method of displacing coal it is possible, if found desirable, to work the full twenty-four hours continuously and so decrease the investment in development, the interest and the maintenance charges. In some places where the percentage of recovery is low, the amount of coal extracted from a given developed territory may increase 50 per cent. Rooms can be driven up in less than half the time now required and the concentration of operations for a given output into a comparatively small area will prevent the development of squeezes on both room and chain pillars. A concentrated, continuous process of extraction will save annually more than one-half the coal now lost from this cause.

(4) Concentration of operations also permits of better supervision, prevents accidents, results in greater output per dollar invested, and by increasing efficiency effects other savings, all of which result in a material lessening of production costs. (5) New territory can be developed with great rapidity. If the new development work is well concentrated and three 8-hr. shifts are employed, entries and narrow places can be driven four times as quickly as under present methods. Many coal companies would be in existence today and paying dividends had this been possible in the past.

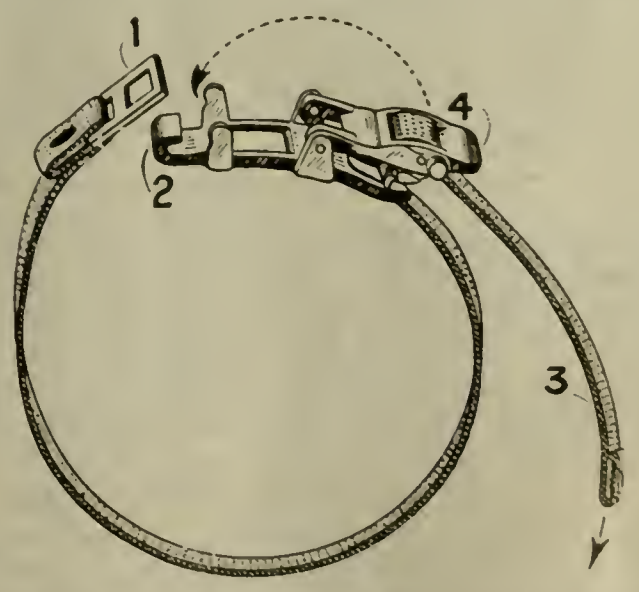
(6) A reduction equaling at least 50 per cent is made in the amount of slack coal produced. In the West and Middle West slack is more or less of a byproduct, often sold for much less than the cost of production, and at certain seasons of the year "dumped." As the average proportion of slack coal, using powder, amounts to 40 per cent of the total output, the lump, nut and other prepared sizes must carry the burden of costs and pay profits, if any. A reduction in the amount of slack, therefore, materially increases the mine-run value. This mechanical process of extraction reduces the amount of slack to less than 20 per cent of the output, thus effecting an increase of a dollar a ton in the total value of the coal, at current prices, in all those Western States which produce coal primarily for domestic consumption.

A Tourniquet Made Like a Trouser Belt

A SIMPLE device for bringing pressure upon a severed artery and stopping bleeding is illustrated in this article. It can be used in cases of crushing or bleeding of the extremities and can be applied over the bare skin without any damage to the tissues. It also can be placed over the heaviest clothing and it will still do its work with efficiency.

The ordinary tourniquet made from a triangular bandage with the aid of a piece of coal or a bolt is apt to be quite painful and it cannot be put on by the man who is injured but must be placed in position by someone else. The tourniquet shown is comparatively painless even after lengthy application, can be put on by the patient, who also may slacken or release it, if necessary. By the distributed pressure around the limb the part gradually becomes numb and relieves the pain of the patient rather than increases it.

It is not well to keep the pressure of any tourniquet on a limb longer than necessary, as gangrene may set in. As this tourniquet is so readily released and



TOURNIQUET WHICH CAN BE USED AS A BELT

This instrument gives a pressure that can be regulated at will and can be used to stop the blood in a finger, or a limb or to bind in place a double splint.

replaced, there is no disposition to keep it in place for an excessively long time and there is no danger that the patient will lose an excessive amount of blood before the tourniquet, when once released, can be replaced.

The device also can be used in case of fractures to maintain the position of emergency splints. Placed around the injured limb over the splints and above and below the seat of fracture it is possible to obtain the exact amount of pressure to hold the tisues firmly and yet not press the splints sufficiently to injure the limb.

As the tourniquet is in the shape of a trouser strap it can be used as a belt by the first-aid man, so that it will always be at hand ready for application. This device can be used around a finger or around the waist, as it has the widest of latitude. It is known as the Robinson tourniquet, and under that name two of these first-aid instruments are required by the Massachusetts law to be placed in the first-aid kit on each railroad train. The device is manufactured by the American Standard Tourniquet Co., of 59 Fourth Ave., New York.

Will Germany Nationalize Coal Mines or Merely Establish New Trusts?

Trend Away from Promised State on Socialism—State Mines and Industrial Plants Unprofitable—Private Mines Make Unheard-of Profits—Rathenau Urges Thirty Years of Cost Plus—Lederer Would Exchange Bonds for Stock with Government Operation—Stinnes Advocates Vertical Trust from Mine to Market

By H. O. Herzog
Berlin, Germany

OF THE various economic problems which occupy the public mind in Germany the nationalization of coal resources is the most prominent. It has been one of the chief demands of the working classes since the establishment of the republic, and although strong forces have been and are still at work to keep the matter quiet and to prevent governmental action being taken on it and although it is commonly believed that even the socialistic leaders are acting half-heartedly and against their better judgment, the radical workers will not let the demand die.

The government as a condition in the settlement of the various disputes arising out of the monarchist coup last March pledged its word to take the nationalization of coal resources in hand and has instituted a committee to study the subject in all its aspects. This committee has been at work for considerable time without arriving at a feasible basis for legislation. The evidence is not favorable to nationalization. Opponents of government ownership are able to bring forward strong arguments against it. It is maintained, for instance, that the coal mines are safer in private hands than in those of the government as long as political conditions make it possible for them to be seized by former enemy countries as security for war debts.

State Mines Cannot Compete with Private

More tangible arguments are supplied by the unfortunate experience in the conduct of nationalized coal mines and in the operation of industrial works in general. It is a fact that the collieries owned by the Prussian State have never been conspicuously successful from a financial point of view, and they now need a heavy state subsidy to keep them going, although neighboring mines in private hands, working under exactly the same conditions, are prospering. The same may be said of other industrial establishments owned by the state, formerly devoted to the manufacture of war material and now turned into peaceful channels. The "Reichswerke," or State Works, at Spandau, which comprise plants of a magnitude surpassing even that of the Krupp plants, also are in a bad way. It has often been proposed to sell them to private owners, a procedure which has recently been adopted by the Austrian government with regard to its state plants. Business men of the country take it for granted that the superiority of privately owned works with regard to efficiency and economy has been proved beyond doubt.

If, on the other hand, the claim of the workmen for nationalization can find support among responsible politicians and business men, it is due to the fact that it is believed to be necessary to make a concession to the socialistic doctrines prevalent among the working classes and especially to the fact that the coal resources are now controlled by a few men only, who have accumulated enormous wealth and assumed an overwhelming influence in the business life of Germany.

Unheard-of Profit in German Coal Industry

The reports of the coal-mining companies, although full of complaints with regard to expenses and working conditions, show profits hitherto unheard of in the history of German industry. It has not been a rare occurrence for plants to make a larger net profit during the last business year than their whole capital amounted to, a state of affairs which the companies have for the most part made less conspicuous during the year by watering their stock.

It was, perhaps, the legitimate right of the coal magnates to accumulate huge profits, but it was undoubtedly unwise to demonstrate this accumulation of wealth and to exhibit the power behind it so openly as has been done. It added fuel to the political strife and created ill-will among the people, most of whom are not blessed by good fortune.

It was, therefore, not a matter for surprise that the clamor for nationalization commenced anew and that the government was urged with all vigor to proceed

in the matter. The government, bound by the promise given last March and warned by the growing unrest of the workers, had to make a step to show that it meant business.

The committee which is commissioned to deliberate in the matter has been urged to proceed and to make its deliberations public. This committee is composed of members of the Reichswirtschaftsrat, or National Economic Council, and the Reichskohlenrat, or National Coal Council. It consists of members of the employers and of the employed.

Wants Private Operation at Cost Plus

The nationalization of the coal mines has taken concrete shape in several proposals which may be classified in two groups. In the first group stands the official proposal as compiled by Professor Lederer, national economist of the University of Heidelberg, and as an alternative that of Dr. Rathenau, general manager of the Actien Electricitäts Gesellschaft. These two proposals, although different in details, conform in the main issue, that is, that the total coal production shall at once be taken over by the state.

They provide for the establishment of a government board for the distribution of the coal, whereas, according to the official proposal, the mines should be taken over by the state and the owners divested of all proprietorship in return for bonds corresponding to the value of the mines. Dr. Rathenau proposes to leave the mines in the hands of the present owners for thirty years. The mine owners would, however, be compelled to give up the total production of their mines at cost price plus an adequate profit, providing for a premium on increased production as a stimulus in this direction. According to the government proposal the state would have to operate the mines, whereas Dr. Rathenau gives perference to private management.

Most prominent in the second group is the proposal of Stinnes, the German coal king and probably the wealthiest and most astute business man of present-day Germany, which group stands in entire opposition to the other two proposals. It develops quite new ideas. Stinnes is of the opinion that the operation of the mines by the state would mean the gradual decline and ultimate ruin of German coal production.

Large Sums Must Be Spent to Develop Mines

The equipment of the mines is run down and in many cases not up to modern requirements. The time is not far, he maintains, when new shafts will have to be sunk, enormous investments being needed for their upkeep, not to speak of the large capital needed to increase their capacity. Experience has shown, he says, that operation by the state, with its apparently unavoidable red-tape administration, is inevitably unprogressive. He proclaims that a state administration will be unable to cope with the task and at best will be less competent than private capital.

Stinnes recognizes the necessity of giving the workmen a share of the profit. He wants to open to capable men a wider career than they now have. They should be singled out, he asserts, and be allowed to climb the ladder of advancement. This opportunity would create that spirit of ambition among workmen which is so completely lacking where plants are nationalized. In place of this proposal he would suggest that private enterprise be retained, and he asserts that the remedy for present conditions lies not in nationalization but in co-operation. His conclusions in this matter are, he says, based upon the requirements of practical business life.

A Chain from Mine to Finished Product

Stinnes starts with the idea that co-operative combines should be formed embracing large coal consumers like gas works, electric plants, waterworks, with a corresponding number of coal mines sufficient for their supply. Each of these groups should have a board which would regulate prices and distribution and in these the consumers should have the majority. He further suggests that the consumers should gradually assume control of the coal mines by exchanging the coal-mine stock for their own.

Such co-operative combines properly grouped by geographic districts should further include small individual consumers, industrial plants and the like. He suggests that larger manufacturing plants should form similar combines among themselves with a number of coal mines sufficient for their requirements, whereas the large plants should merge with coal mines independently of the rest.

Alliance to Avert Wastage of Effort

No mention is made of an intention to develop even further this process of welding together producers and consumers but no doubt it has been kept in mind. The idea prevails that the enormous energy now wasted by all manufacturers to procure fuel and raw material can be saved by linking together the chain of production from the producer of coal to the manufacturer of the finished product. The combines which Stinnes seems to have in his mind would, therefore, comprise coal mines, iron and steel works, with a corresponding number of manufacturers of finished articles. It is said that such combines would have all the financial and technical power to cope with the requirements of the present time and the future and that every member would benefit by the activity of the others.

Will Consumer Be Swallower or Swallowed?

There is no doubt that the idea of Stinnes has many winning features, but on the other hand it is idle to deny that there are great dangers lurking behind. While apparently Stinnes' proposal would give the consumers control of the coal production, it is feared in many quarters that events would march in the opposite direction—that is, that the coal producers, being in the stronger position, would assume control of the finishing stages. It can readily be believed that astute business men like Stinnes, whose strength is largely based on his coal-mine possessions, would not be averse to assisting such a development.

Meanwhile his ideas are strongly advocated among the large industrial leaders, and moreover quite a number of them are acting upon them already without awaiting the conclusion of the nationalization problem. What Stinnes is evidently striving at is the formation of trusts between coal producers and manufacturers of finished articles. During the last month quite a number of such trusts have been formed.

The largest of them, called the Rhein-Elbe Union, is Stinnes' own work. It comprises firms of such magitude as the Gelsenkirchener Bergwerksgesellschaft, the Deutsch-Luxemburgische Bergwerksgesellschaft and the well-known steel works of Gebrüder Bohler, to which has lately been added the Mühlheimer Berg-

Problems of Operating Men

Edited by James T. Beard

Breathing of a Sealed Abandoned Section of a Mine

Observed Change of Breathing in an Abandoned Section of a Mine That Had Been Sealed Off for a Long Period, Caused Probably by a Fall of Roof Within the Section That Released a Large Quantity of Gas Contained in the Overlying Strata

FOLLOWING the suggestion made by the editor when replying to the inquiry I sent to *Coal Age* a short time since and which appeared in the issue, Dec. 30, p. 1336, I am now sending the additional information asked.

In the first place, I did not mean that one end of the sealed panel was still open. As shown in the accompanying figure, the sealed section to which I referred consists of about twenty rooms driven off from a pair of headings known as the third and fourth north off the main west entries.

The conditions prevailing in this section were very bad. The roof was falling continually and the coal became so low that it was finally decided to abandon the headings, which were closed and sealed some two years ago. As indicated in the figure, there were two seals, a solid 4-ft., concrete stopping being constructed in the mouth of each heading.

Two-Inch Pipe and Valve Built in Stopping To Test the Air

Built into one of these seals is a 2-in. pipe having a 2-in. valve, which the fireboss is supposed to open each morning when making his examination of the mine, and observe whether the air is drawing in or blowing out of the section. The mine is ventilated on the blowing system, and an air current of 75,000 cu.ft. per min. is passing the seals on the main intake of the mine.

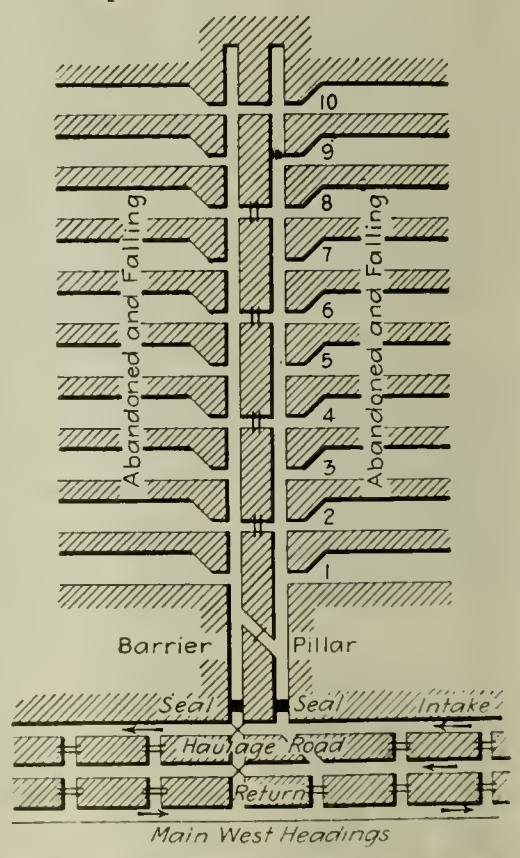
Recently, I have been much interested in observing the change that took place suddenly in the breathing of this section. The tests showed that, for nine consecutive days, air was being drawn into the section. Then, for five consecutive days following this, the tests showed air or gas was being blown out from the place.

My previous letter failed to state that this change in breathing could not be ascribed to any change in the circulation in the mine, which remained constant throughout the period of the tests. Also, there are no breaks extending to the surface that would give vent to the atmosphere within the sealed portion. In this mine, the floor and top are good and there is 400 ft. of cover overlying the seam.

What may be of importance, however, is the fact that the coal is overlaid with about 5 ft. of black slate above which is a layer, about 20 in. thick, of what we call in this field a "steel band." There is practically no gas in the floor or the coal; but gas comes from the roof when the slate breaks up to this steel band. It is only then that we are at all troubled with gas. The coal will average 7 ft. in height throughout the most of the mine. I am still hoping for some further explanation of the cause of the change observed in the breathing of the sealed section.

FIREBOSS.

Bruceville, Ind.



PLAN OF SEALED SECTION SHOWING POSITION OF THE SEALS

[The statement of this correspondent that gas is set free when the slate breaks to the so-called "steel band" points to the probable cause for the change observed in the breathing of the section from "drawing in" to "blowing out," the last five days of the test.

The mine being ventilated on the blowing system, the natural breathing of a sealed section would be inward, owing to the mine pressure being above that of the atmosphere. Even under a 400-ft. cover there is a continuous drainage of gas from the overlying strata to the surface.

It is quite possible, indeed probable, that a heavy fall of roof occurred in the abandoned section of this mine, about at the end of the first nine days of the test. Such a fall of roof would release a large volume of gas within the area and cause the outflow of gas and air from the sealed section into the mine, owing to the pressure of the gas in the strata being somewhat above the mine pressure.

This is the most plausible reason we can give for the observed change in the breathing of the section. On conditions again approaching normal, it is probable that the breathing of the section will again become inward, which is the natural condition in the blowing system of ventilation.—EDITOR.]

ANOTHER LETTER

The sealing of abandoned workings is here described as forming a "gas magazine" that would endanger the mine and the men employed therein. Ventilating such abandoned workings by a separate air split is strongly advocated as a measure of safety.

REFERRING to the interesting inquiry and reply, regarding the breathing of a sealed portion of a mine, *Coal Age*, Dec. 30, p. 1336, permit me to offer a few comments that may be helpful.

The suggestion of the editor that the system of ventilation employed, whether exhausting or blowing, is of importance is true and agrees with my own observation and experience in such cases. I have found, also, that the movement of trips of cars in the entries and of cages in the shaft affect the flow of gas from a sealed section of a mine and are worthy of consideration.

However, there is no need for this fireboss to worry over the conditions he has described. No real danger can result from the outward breathing of such a section, provided a fair current of air is kept in circulation passing the seals and conducted at once into the main return airway.

In my own practice I never care to close up or seal off an abandoned area. I believe it provides a gas magazine that must always be a menace to the

safety of the mine. A far better plan is to ventilate such abandoned workings by a separate air split, which should not be permitted to pass through any live workings on its way out.

Observation proves that gas continues to drain from the strata in a mine in constantly decreasing quantity, as time passes. I know of many old workings where no gas can be found at present, and yet five years ago the same places generated so much gas that the mine would fill in less than 24 hours if it became necessary to shut down the fan for repairs. The great feeders that formerly supplied the gas have since become exhausted.

Gas Accumulates Rapidly

In one case, during the development of a mine, a circulation of 500,000 cu.ft. per min. was required to keep the workings safe. It was found that, during a temporary stoppage of the ventilating fan, gas accumulated so rapidly that a man with a safety lamp could not keep ahead of the gas at an ordinary walk.

An experience of 24 years in such mines confirms my belief that the safest plan to adopt is to ventilate all abandoned areas in such a maner as to prevent the accumulation of any dangerous quantity of gas within them. If sealed off, such areas are liable to develop a heavy roof fall that would drive the gas out into the live workings.

Let it not be understood that I am opposing the sealing off of any section of a mine where such action is necessary by reason of fire or other cause. I am only speaking against confining a dangerous enemy, such as gas, in a prison from which there is every opportunity for it to escape and do serious damage.

In closing, let me say that an excellent plan is to sink boreholes from the surface, by which to drain the gas from such areas and prevent its accumulation in the mine. However, where boreholes for that purpose pass through overlying seams it is necessary that their location be carefully designated on the mine map, and the coal around each hole reserved so as to prevent the escape of gas into the upper workings from the mine below. Many serious accidents and explosions have occurred from this cause.

Plains, Pa. · Richard Bowen.

Working Contorted Coal in the State of Washington

Roadways driven in the strata underlying the coal and rock chutes driven up to reach the seam often prove an advantage when the measures are badly folded.

My attention was drawn recently to the inquiry of P. C. Craven, *Coal Age*, Nov. 4, p. 954, in which he presents a sketch showing the contorted condition of a coal bed within his district, and asks for suggestions to economically mine a bed of that nature.

In western Washington the coal beds are greatly distorted and dip at angles varying from three to ninety degrees and, in some cases, the beds are overturned. As a result, various systems of mining have been put into effect in this state and, while some of them have been successful, others have not.

Mr. Craven speaks of a heavy roof pressure, making the top hard to handle. Judging from this, it would be rather difficult to maintain haulage roads within the seam itself and it might be necessary to drive these roadways in the strata underlying the coal. This may seem an expensive method of developing a mine, but about a year ago I was called on to suggest ways and means of working a bed that had excessive roof and floor pressures, so that the slopes and gangways were heaving and squeezing badly and had to be retimbered frequently.

A room-and-pillar system had been in use in the mine but, owing to the poor results, this was changed to a longwall system of working which has been running now for about four months with excellent results. Any new gangways required will be driven in the rock at a distance of about ten feet below the coal. Rock chutes will be used to bring the coal from the longwall face to the rock gangway. This bed dips at angles varying from twenty-five to forty degrees.

Steeply-Pitching Contorted Coal in Washington

In this state, in the areas where the beds are dipping from seventy-five to ninety degrees, a chute-and-pillar system has been used to advantage. Chutes 5 x 5 ft. in size are driven up on the full pitch from the gangway, a distance of thirty or forty feet, to the first crosscut. These chutes are driven on forty or fifty-foot centers. Each chute is continued on the full pitch for thirty or forty feet above the first crosscut. In some instances, it is then driven diagonally across the pitch, so that the angle of the chute is approximately forty-five degrees.

At intervals of fifty feet, horizontal crosscuts are driven connecting the chutes. After a series of chutes have been driven to the boundary, which might be a barrier pillar or a surface pillar, the top block of the first chute is withdrawn, sometimes beginning at the top of the block and placing a series of cogs below the chain pillar. At other times, the block is attacked from one of its lower corners.

It is impossible to suggest a hard-and-fast rule for the conditions confronting Mr. Craven. It is more than likely that he will have to subdivide his mine into panels, depending on the condition of the coal and the degree of pitch, and use a system for each subdivision that will meet the requirements. He may find it an advantage in some instances to even drive chutes in the rock to attack a large pocket of coal, provided he finds that a chute driven in the coal squeezes badly and requires too much timber.

George W. Evans,
Seattle, Wash. Mining Engineer.

Competency in Shotfiring

The competency of shotfirers is a greater factor in reducing mine accidents than the use of numberless safeguards, in the way of foolproof appliances.

Attention was called not long since, by a mine foreman writing from Leckrone, Pa. (*Coal Age*, Nov. 4, p. 953), who mentioned several points of danger and urged the use of safety appliances in connection with the work of shotfiring in mines. It is my belief, however, that the greatest need in this direction is to secure more competency in the performance of the work. Too often it happens that the shotfirers employed have little or no experience in that line, having been chosen without due regard to the importance of the work.

What is true of shotfirers in this respect is likewise true of a large number of mine foremen and assistant foremen. They are men whose experience is not adequate to the responsibilities they assume. In other words, they are young on the job.

What Is Needed

An inexperienced mine foreman is very apt to regard the work of shotfiring as of even less importance than that of an assistant foreman. As the work is done after the men have left the mine, he gives the job to some hunky with a few instructions how to proceed, and if anything happens it is easy to conclude that the hunky did not follow the foreman's orders.

What is needed all along the line is a greater competency of mine officials, from the superintendent down. What can be expected of a foreman placed in charge of a mine when he has not had the nerve to go before an examining board and get his papers? Can it be thought strange that such a one would choose as his assistants, men who know less than himself? It is not uncommon to find an assistant foreman, fireboss or shotfirer, a man who can neither read nor write, to say nothing of his not having gotten his papers certifying to his competency.

Night School Started by a State Mine Inspector

Realizing the growing need of more competency among mine officials, Richard Maize, district mine inspector, Uniontown, Pa., has started a night school for any in his district who are desirous of improving themselves in the knowledge and practice of coal mining. It would be well if all our mine superintendents would follow his example and get their men together in regular meetings for the discussion of different branches of the work. The result would be a great improvement, and help to systematize the work and reduce the number of accidents.

Speaking of superintendents, I have in mind at present, one such official who, according to his own statement, would rather employ a hunky than an American miner for the work of fire-

bossing or shotfiring in the mine. It is such instances as this that cause friction among the workers and increase the accident list. Many American miners would rather quit any day than work under a hunky.

In closing, I have a word to say to this mine foreman from Leckrone, who cites an instance of a miner coming from the powder magazine, holding ten or twelve caps loose in his hand and striking his head against a low trolley wire, with the result that the caps were exploded and the man injured, perhaps killed.

The incident shows that the mine foreman in charge at the place failed in two respects. First, he should not have permitted a miner to receive caps at a magazine, without they were placed in a box for carrying. Second, the trolley wire on the surface should have been at least six feet above the rail and such an accident would not have happened.

Oliphant Furnace, Pa. FOREMAN.

Natural Advantages Favor American Mining

Natural advantages favoring the mining of coal in America are too obviously responsible for the greater production per man per day, in this country than in Great Britain, to permit of doubt.

WITH the kind permission of *Coal Age* and its readers I want to reply briefly to the letter of V. Frodsham, which appeared in the issue Nov. 4, p. 952. Mr. Frodsham tries to show that superior systems employed in the mining and hauling of coal in this country are the main factors that contribute to the greater output of the American miner.

In doing this, he practically repeats the arguments of G. S. Rice, Apr. 15, p. 766, which started this discussion. In my opinion, the argument of the later writer is no more logically sound than those Mr. Rice first advanced. It appears to me that the natural advantages surrounding American coal operations and favoring a larger output of coal, per capita, are too evident to require any extended explanation.

Depth of Hoist, Length of Haul and Thin Coal in British Mines

Is it not true that the average depth from which British coal must be hoisted is 50 per cent greater than that in this country? Is it not equally true that the distances of underground haulage in British mines exceed American haulage by 30 or 40 per cent? Again, is it not a fact that the average thickness of British coal seams is but one-half of that in this country?

No one will say that these are not potent factors in the production of coal at a low cost and in large quantity. The scarcity of mine timber in England, is another item demanding consideration, when seeking to explain the greater output of American miners. My claim is that these natural disadvantages limit the producing power of British miners.

Again, it is foolish to suggest that coal operators in Great Britain are less willing to take risks that would increase their production; or to say that their systems of haulage are inferior to those in this country; or their equipment in the mine is in any respect, inferior to American practice.

In respect to haulage, British practice adopts that form or type that is best adapted to the varying conditions. The systems in use in Great Britian include endless-rope, main-and-tail-rope, engine-plane and combinations of these, as seems best suited to the conditions.

In this connection, allow me to quote from a writer in the March (1917) issue of *Mine and Quarry*, which reads as follows:

> The United Kingdom had about the same number of coal mining machines at work in 1914, as were at work in the United States in 1899, when there were 3,093 machines in Britain, as against 3,125 in the United States. Our seams are thicker and the natural conditions more favorable than in British mining. It is quite possible that the seams we mined in 1899 averaged twice the thickness of those mined in Great Britain in 1914. The figures do not in any way reflect on British colliery management.

Other references, in Mr. Frodsham's letter, to the miners' opposition to the introduction of machines in British mining; the employment of "putters" for pushing the coal from the face to the gangway; and the alleged willingness of American operators to incur greater risk to human life, need no refutation. The first two of these allusions refer solely to early-day mining, and are only to be found in exceptional cases at the present time. Finally, the example set in respect to the safety of mine workers might well be followed in American mining.

T. J. SHENTON.

Prince Rupert, B. C., Can.

Inquiries Of General Interest

Personnel of Anthracite Examining Boards

Does the Anthracite Mine Law Bar Mine Foremen and Assistant Foremen from Service on the Three Examining Boards for the Certification of Mine Inspectors, Mine Foremen, Assistant Foremen and Miners

ALLOW me to bring to the attention of *Coal Age* and its readers a matter that has, for sometime past, been widely discussed, but without arriving at any definite conclusion. Though varying opinions have been expressed, the fact remains that neither mine foremen nor assistant mine foreman have ever been appointed on any of the three examining boards provided for in the Anthracite Mine Law.

Regarding the board for examining candidates for the position of mine inspector, the anthracite law reads:

> The said board of examiners shall be composed of three reputable coal miners in actual practice, and two reputable mining engineers, all of whom shall be appointed at the first term of court in each year, to hold their places during the year. (Art. 2, Sec. 4)

Regarding the board to be appointed to examine and pass upon the competency and fitness of candidates for the position of mine foremen and assistant mine foremen, the same law reads:

> The said board shall consist of the district inspector of mines, two practical miners and one owner, operator or superintendent of a mine. The said inspector shall act *ex-officio;* and the said engineer and owner, operator or superintendent, shall be appointed in like manner and at the same time as the board of examiners for candidates for mine inspectorship under this act are now appointed. (Art. 8, Sec. 3)

Again, regarding the Miner's Examining Board to be appointed to examine and determine the qualifications of persons desiring employment as miners in any anthracite mine in the state, the law reads:

> There shall be established in each of the eight inspection districts, in the anthracite coal regions, a board . . . to consist of nine miners, who shall be appointed in the same manner as the board to examine mine inspectors are now appointed, from among the most skilfull miners actually engaged in said business in their respective districts, and who must have had five years' practical experience in the same. The said persons so appointed shall each serve for a term of two years from the date on which their appointment takes effect. (Act. approved July 15, 1897; Sec. 2)

The law last named gives the miners absolute control over the necessary qualifications of miners, the personnel of the board consisting of "nine miners," only. It is a fundamental principle of law that *a man shall be tried by a jury of his own peers*, which would seem to be a just provision.

Why then, let me ask, are not mine foremen and assistant mine foremen eligible under the law for appointment on examining boards to determine the competency and fitness of candidates for positions in their own class.

There might be some difference of opinion as to the practicability of mine foremen and assistant foremen being eligible for appointment as members of a board to examine candidates for the position of mine inspector, although

the law provides for the appointment of "three reputable coal miners in actual practice" on that board.

May I ask that this question be answered in *Coal Age* and further discussed by its readers, in the hope that mine foremen and assistant mine foreman may be no longer discarded as not being eligible for appointment on anthracite examining boards.

JAMES A. HENNINGAN.

Pittston, Pa.

This is a live question and one that should call for the expression of opinion by all classes of mine workers, from operators and officials to miners. It is true that, for one reason or another, mine foremen and assistant mine foremen have not received appointments on any of the anthracite examining boards, while holding either of these positions.

In the opinion of the editor, however, there is nothing in the Anthracite Mine Law that can be correctly construed as barring a mine foreman or assistant foreman from appointment and service on any of the three boards mentioned in this inquiry.

This opinion is based on the fact that a mine foreman or an assistant mine foreman is a "miner," in the meaning of the law, the same as though he was engaged in digging coal at the time when seeking appointment on an examining board.

In defining the meaning of the several terms used in the anthracite law, Article 18 of the law thus defines the intended meaning of the term "miner," as used in the law:

> The term "miner" means the person who cuts or blasts coal or rock at the face of a gangway, airway, breast, pillar or other working place; also any person engaged at general work in a mine and qualified to do the work of a miner. (Art. 18)

There can be no question but that a foreman or assistant foreman is "engaged at general work in a mine" when acting in his official capacity. Also, one of the qualifications required of candidates for either of these positions is, (Art. 8, Sec. 2) that he shall have had "at least five years' practical experience as a miner."

It will be interesting to watch the opinions expressed in *Coal Age*, by every class of its readers, who will doubtless agree that the failure to appoint foremen and assistant foremen on examining boards is an unwarrantable slight, though not intended as such, but attributable to a varying interpretation of the meaning of the term "miner" in the law.

Examination Questions Answered

Examination for Mine Foremen Miscellaneous Questions

(Answered by Request)

QUESTION—*If the rubbing surface of an airway is 150,000 sq.ft. and a velocity of 500 cu.ft. of air per minute is maintained by a water gage of 2 in., what is the quantity of air passing per minute?*

ANSWER—The question should read a velocity of 500 ft. per min., instead of "500 cu.ft. of air per minute." A water gage of 2 in. corresponds to a pressure of $2 \times 5.2 = 10.4$ lb. per sq.ft. The quantity of air in circulation is then calculated as follows:

$$Q = \frac{ksv^3}{p} = \frac{0.00000002 \times 150{,}000 \times 500^3}{10.4}$$

$$= 36{,}057 \text{ cu.ft. per min.}$$

The expression ksv^3 represents the work performed on the air, which divided by the unit pressure gives the quantity of air in circulation.

QUESTION—*What does the Anthracite Mine Law require in reference to tamping bars and needles?*

ANSWER—The law (Art. 12, Rule 30) forbids the use of an iron- or steel-pointed needle in blasting, or the use of an iron or steel tamping bar, unless the end of the bar is tipped with at least 6 in. of copper or other soft metal.

QUESTION—*The elevation of a point in the roof of the Red Ash Seam, is −27 ft., and the elevation on the bottom of the Ross Seam, at a point directly above, is +180 ft.; what is the thickness of the rock between the seams?*

ANSWER—Assuming that these seams are level or nearly so at this point, the thickness of rock separating them is $27 + 180 = 207$ ft.

QUESTION—*In what part of the workings of a mine is the greatest pressure required for the removal of firedamp or marsh gas?*

ANSWER—In general a firedamp mixture, like pure marsh gas undiluted with air, is lighter than the mine air, at the same temperature and pressure. For this reason, the tendency is for either of these gases to accumulate at the face of a steep pitch and in rise workings. The removal of these gases requires a higher pressure than where the gas is generated in dip workings, since, in the latter case, the tendency of the gas to rise assists in its removal.

QUESTION — *(a) Where would you apply the water gage in taking a reading? (b) Will the reading of the water gage increase or decrease as the workings extend, other conditions remaining unchanged?*

ANSWER — (a) The proper place to take a reading of the water gage is on the fan drift, at such a distance from the fan as to obtain a steady reading. If this is not practicable, the reading should be taken on a brattice or door at the shaft bottom or as near as possible to the mine entrance. A reading taken on the fan drift shows the difference between the atmospheric pressure and that within the drift.

This difference of pressure is the unit of pressure producing the circulation and is expressed in pounds per square foot. Multiplying this unit pressure by the sectional area of the fan drift gives the total resistance of the mine and the two shafts expressed in pounds. When the reading is taken at the shaft bottom or close to the mine entrance and the unit pressure multiplied by the sectional area of the airway, the result is the mine resistance only.

(b) As the workings in a mine are extended and the rubbing surface increased, both the mine resistance and the water-gage reading corresponding thereto are increased, provided other conditions remain the same.

QUESTION — *Specify the conditions that must be fulfilled in order to secure good ventilation in a mine employing a large number of men.*

ANSWER — The Anthracite Mine Law (Art. 10, Sec. 3) requires a circulation of not less than 200 cu.ft. per min. for each person employed underground, and as much more as circumstances may require. Not only must this requirement be met in the total amount of air circulated, but the mine must be divided into districts, to comply with the requirement (Sec. 6) that not more than 75 persons shall work at the same time on the same current or split of air. The law further requires (Sec. 7) that all air passages shall be of sufficient size to permit the necessary amount of air to pass at a velocity that shall not exceed 450 ft. per min. if safety lamps are in use, except in the main intake or return airway.

QUESTION—*Explain fully the precautions necessary in the charging of storage-battery locomotives in a mine.*

ANSWER—At all drift or slope mines, the work of recharging storage-battery locomotives should be done outside of the mine. At shaft mines or where recharging stations must be located underground, every precaution must be taken to have the place well ventilated and exclude open lights. It is of the utmost importance to see that the current is shut off promptly when the batteries are fully charged. If this is not done and the batteries are permitted to become overcharged, hydrogen gas is set free and there is danger of an explosive mixture forming, which may cause an accident when least expected.

QUESTION — *Assuming five feet per second to be the proper velocity for air to travel, what must be the size of a road when the quantity of air amounts to 24,000 cu.ft. per min.?*

ANSWER—A velocity of five feet per second is equal to $5 \times 60 = 300$ ft. per min. Taking this as the average velocity of the air current, the sectional area of the airway must be $24{,}000 \div 300 = 80$ sq.ft., which corresponds to an airway 8 ft. high and 10 ft. wide.

Scientific Classification to Rehabilitate Good Name of American Coal Abroad*

Limits Must be Sufficiently Narrow to Give Satisfactory Index of Quality and Inspire Confidence in Our Coal—Accurate Classification Declared To Be to the Advantage of Buyer and Producer.

By O. P. Hood†

THE foreign buyer of American coals is confronted by a great variety and is furnished no ready means of judging their quality. We have no classification held within narrow limits on which he may depend. He must buy from certain pools whose general quality is represented to be shown by certain analyses, but the tolerance and range of quality which may be expected are not available to him. The result has not been particularly happy in building up a high opinion of American coal quality. Domestic users of coal also would appreciate a closer grading of coal, so that good coal classification is needed both at home and abroad if we are to build up a satisfied domestic and export trade.

The great advantages to transportation that result from pooling similar coals are so real that the practice probably has come to stay. The interests of the pooling method are best met by the smallest number of classes of coal that will suffice, while the buyer desires coal of uniform quality within rather narrow limits as to volatile matter, ash, heating value, size and stocking ability, requiring greater subdivision of classes. The buyer probably was best served when he received his coal from a single mine through well-tried producing and selling channels, but this has proved to be extravagant in transportation and handling facilities.

Scope of Scheme of Classification

In any scheme of classification there must be as wide a variation as the purchaser can allow and as narrow a range as practicability will permit. At present there is no better basis of classification than chemical analyses and heating value coupled with a knowledge of the district from which the coal comes. While this leaves much unsaid and much to be desired, it is, nevertheless, much better than simple trade names, fashion, opinion or prejudice.

Such classifications as we have had use such analyses as a basis of grouping mines. I wish to show in this paper just what quality of coal has been included in previous classifications, to show the inadequacy of the practice and to outline a method whereby a more satisfactory condition may be brought about.

The Bureau of Mines has sampled and analyzed for our own and foreign governments a great deal of export coal. These records extend back ten years and the number of analyses and the quantities involved are such as to fairly represent the actual facts. In the accompanying figures three essential characteristics are shown for each of three classifications or grades of coal.

Class A refers to an old and well-known classification with most of the analyses referring to pre-war conditions. It has received a name that carries weight and a favorable differential in price. Classifications B and C refer to a classification in use at present, which is being judged as American coal by the foreign buyer.

Mines in class A were selected as a result of the analyses of mine samples together with a large amount of sampling and analysis of the coal as delivered. In classes B and C the contributing mines have supposedly been grouped according to analyses of the product and a system of visual inspection has been maintained. In the accompanying figures each plotted point indicates the quality of from one to five thousand tons of coal and is itself often an average of several samples. In class A about half of the samples were taken by the Bureau of Mines and the sampling of the other half was done under standards set up by the bureau. In classes B and C the sampling was all done by the Bureau of Mines. All analyses were made by the bureau.

In Fig. 1, 2 and 3 the heating value of the coal from mines in each of the three classes is shown. The vertical ordinates represent the number of analyses which came within a range of 100 B.t.u.'s—that is to say, of all the analyses obtained, twenty-four fell within the range between 14,600 and 14,700 and two fell within the range 13,900 to 14,000. In class A it will be seen that while by far the greater number of analyses showed

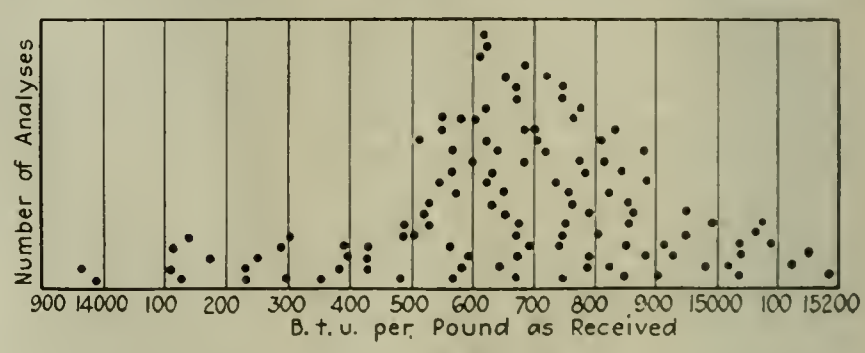


FIG. 1. CLASS A

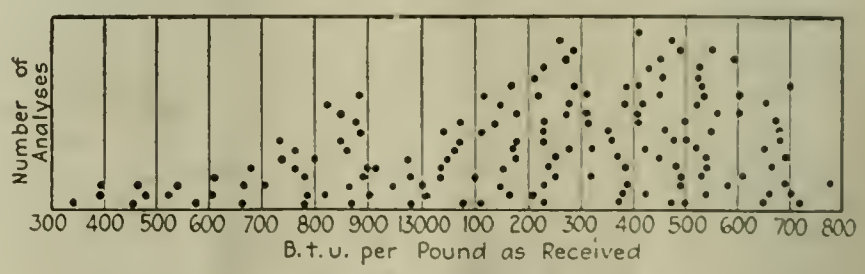


FIG. 2. CLASS B

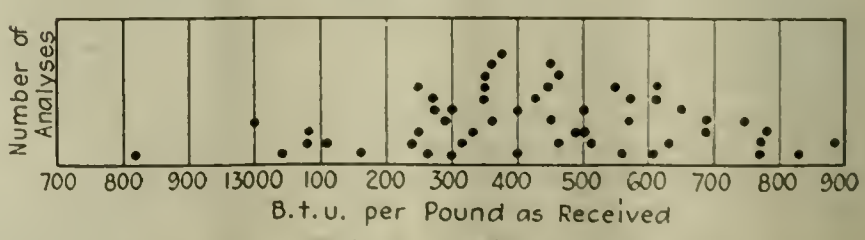


FIG. 3. CLASS C

In these figures the heating value of coal in the three classifications, A, B, and C, described in this article, is plotted with relation to the number of samples falling within a range of 100 B.t.u.

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†Chief mechanical engineer, Bureau of Mines.

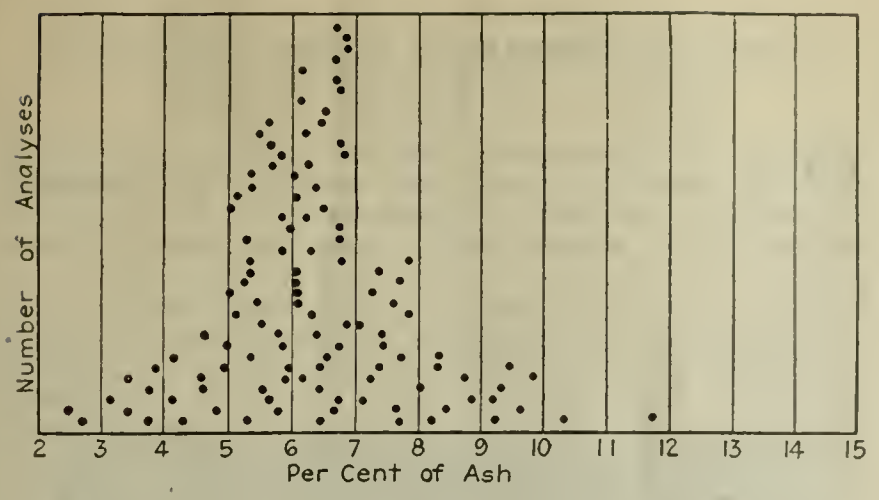


FIG. 4. CLASS A

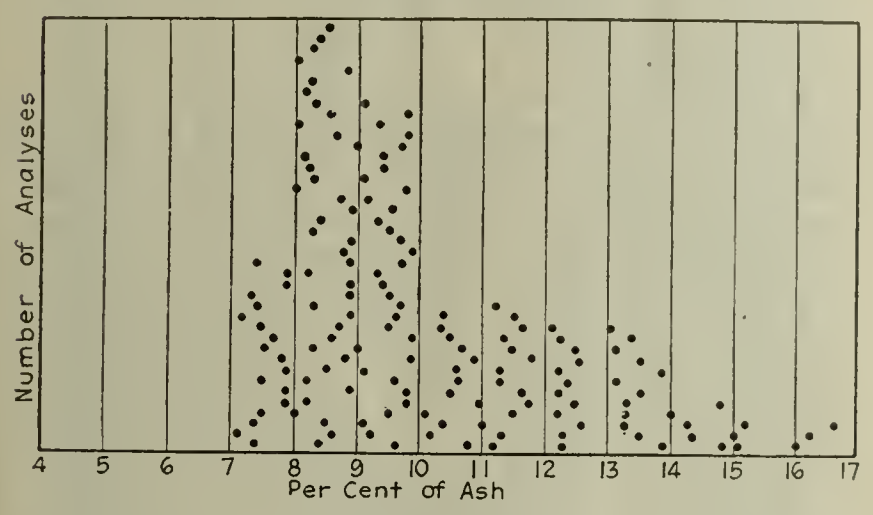


FIG. 5. CLASS B

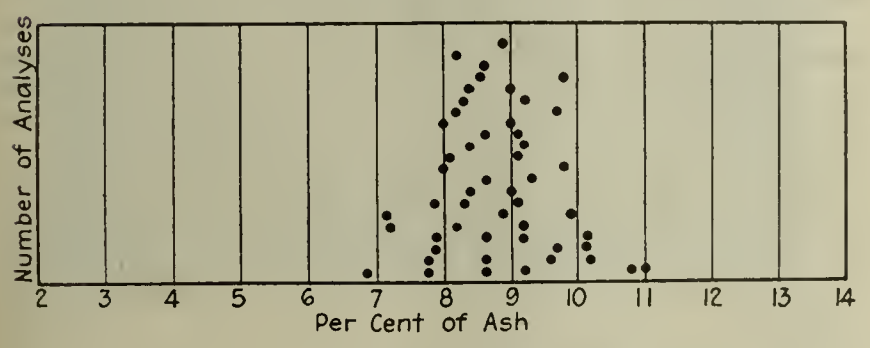


FIG. 6. CLASS C

In these figures the percentage of ash in the same samples as shown in the three classifications, A, B and C, in Figs. 1, 2 and 3 is shown.

a heating value above 14,500, there was a considerable number of scattering values below that figure, so that the total range is 1,000 B.t.u.'s or about 7 per cent. A buyer of this coal stood one chance in five of getting coal of the lower value. In class B the values are seen to range between 12,400 and 13,700, a variation of 10 per cent in the heating value. Class C is of the same coal, but with better preparation. If this coal were classified on a basis of heating value, this plotting would show where practicable limits might be drawn and what coal should receive special attention from the inspector.

In Figs. 4, 5 and 6 the percentage of ash in the same samples is shown. While in class A there is an evident attempt to keep below 7 per cent in ash, there are a number of analyses up to 10 per cent. In class B the ash varies from 7 to 17 per cent. It would appear that in general this coal might be expected to maintain a quality having not to exceed 10 per cent ash, but as a matter of fact, 40 per cent of the shipments contained more than 10 per cent ash and 23 per cent more than 12 per cent in ash. The ash content in class C seems to fall within the reasonably narrow range of from 7 to 10 per cent and a tolerance of 1 per cent in ash would have been taken advantage of in only five cases.

In Figs. 7, 8 and 9 the volatile matter of the coal is shown. From any single mine and seam this figure usually varies within narrow limits. In order that the moisture and ash in these samples shall not influence the figure representing volatile matter the plotted figure represents the volatile matter divided by the total combustible. Class A, which is generally considered to be smokeless coal, shows a range of variation in this figure from 16 per cent to 27 per cent. Class B ranges from 37 per cent to 47 per cent, showing the inclusion of quite dissimilar coals. A large amount of this classification of coal is now being exported.

Foreign buyers are forming their opinions of American coals from classifications such as that of class B. It would seem that the quality of coal in these "pools" is not kept within sufficiently narrow limits to form a satisfactory classification or to inspire confidence in American coals.

There is nothing new in this exposition except that we have here a body of figures to substantiate the general opinion of our present pooling system held by operators producing clean coal. It would seem that it would be to the advantage of buyers, both American and foreign, and also to the advantage of coal producers, to have a classification which will come nearer doing justice to the good qualities of American coal than the showing here made.

To maintain a classification within more satisfactory limits there must be some means of determining coal quality that is better than classification by mines or

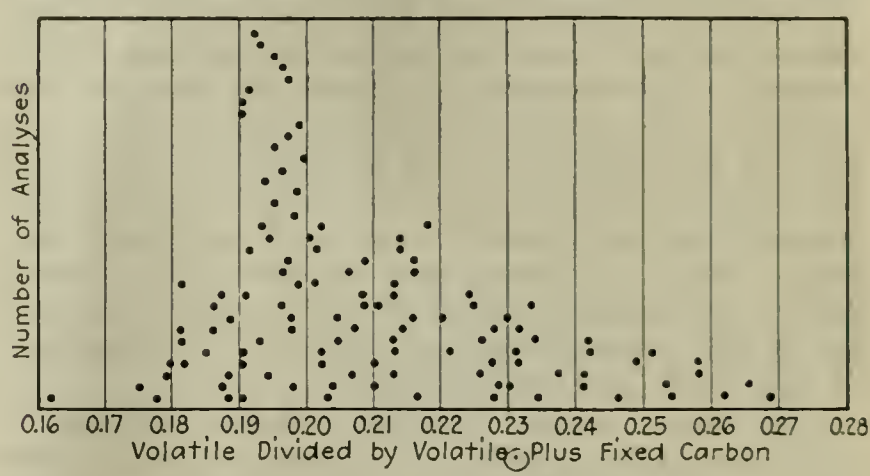


FIG. 7. CLASS A

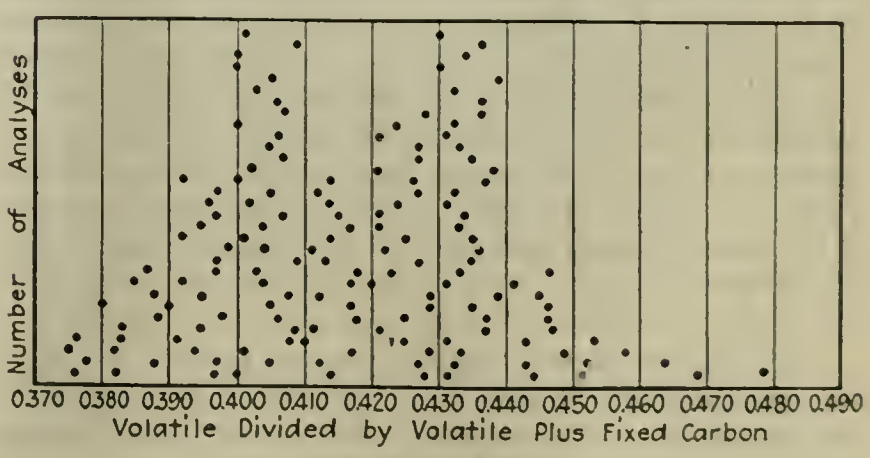


FIG. 8. CLASS B

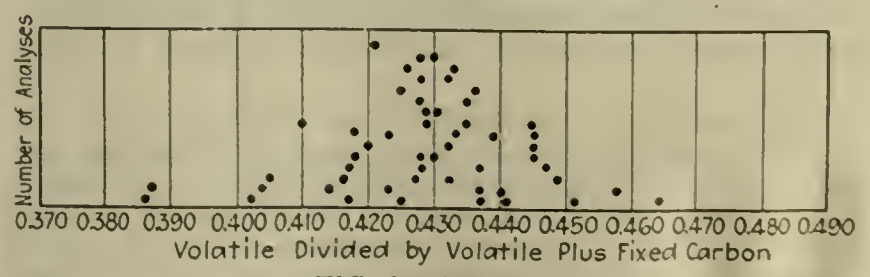


FIG. 9. CLASS C

Herein is shown graphically the relation of volatile matter to total combustible. In the three classifications, A, B and C, the moisture and ash in the samples do not influence the figures shown in this diagram because the points plotted are the ratio between the volatile matter and the total combustible.

by visual inspection. Visual inspection is entirely too uncertain in its results and contains too large a personal factor to be depended upon for satisfactory results. It appears that some operators are as much in the dark as to the quality of the coal actually shipped as are the buyers. There must be devised some system where the facts can be obtained both as a guide to the operator and to the purchaser. With the immense tonnage of coal to be handled it seems impracticable to determine the quality of individual shipments, although if one wants to speculate on possibilities it is interesting to note the practice in the sale of iron ore, which for many years has rested upon careful sampling and analysis. Recently coal has commanded a higher price at the mine than did iron ore when analysis as a basis for sale was adopted.

It is believed, however, that a system can be devised which is at once practicable and effective. If there were established at transportation gateways means of mechanically sampling coal with accuracy and expedition under the direction of an independent agency, as the Bureau of Mines, a service could be offered the mine operator which would be entirely optional but which would give him accurate information as to the quality of his coal. A coal operator well informed as to the quality of coal that he could obtain from a particular bed with constant preparation could declare a reasonable standard. He would be privileged to advertise that his standard was certified by the government. As coal was shipped from this operation a sufficient number of cars would be selected at random by the bureau and at irregular intervals for sampling and analysis. The results would be furnished to the operator for his information and would later be published for public information. In case the results were substandard the output would be watched more closely and when certain tolerances were exceeded the operator would be required to withdraw his published standard and submit a lower standard that could be maintained, or withdraw from the service.

With such a system installed, accurate information would be obtained, which in the long run must form the basis of satisfactory dealing. Operators preparing their coal in a reasonable manner would be protected from charges which should be laid at other doors. Accurate information would take the place of indefinite accusation. In time of stress, as in the late war, abuses could be quickly determined and located and our transportation system relieved of an unnecessary burden. With such a system and body of information, coals could be classified and kept within narrow limits as to quality. Government inspection would give the buyer confidence.

The failure of our pooling system along this line is well recognized, and it is interesting to note that one group of mine operators with whom the Bureau of Mines is co-operating have arranged to obtain the information herein suggested to form a basis of more satisfactory classification and control of their output.

THE SECRETARY OF COMMERCE has submitted to Congress draft of a bill to consolidate the work of collecting, compiling and publishing foreign trade statistics in the Department of Commerce by transferring the Bureau of Customs Statistics of the Treasury Department at the New York Custom House to the Commerce Department. The bill has the approval of the Treasury Department. It provides that the office shall be located either in Washington or New York, or partly in either, at the discretion of the Commerce Department.

Growing Importance of the Analysis of Coal by the Bureau of Mines

ONE of the functions of the U. S. Bureau of Mines is the analyzing of the coals used by the government. In explaining the nature of this work Dr. F. G. Cottrell, director of the bureau, recently made the following statement:

"A large service laboratory is maintained which analyzes all government coal purchases, and, in addition, thousands of samples each year which are collected by bureau field engineers. Thus gradually there is being accumulated exact information as to the nature and character of every kind of coal from every district in the country. In the actual testing work special attention has been given to the economic combustion of coal by the smaller user, represented mainly by the small hand-fired boiler plant and by the domestic consumer.

"It has been easier and cheaper, also, to study the small furnace, and much fundamental data has been obtained and disseminated as to what actually takes place in the furnace during combustion of the fuel. Utilization of lower-grade and cheaper fuels as substitutes for more costly fuels has been demonstrated and put into effect in many lines. Startling wastes of energy in ordinary plants have been proved and brought to the attention of the public. Today the situation is more alive and more worthy of attention than ever before. In pre-war days, with coal in many regions available at about a dollar a ton, care, refinements and possible saving of energy were often a matter of technical interest only, where today, with coal at several times the above price, even small percentage savings of fuel are a dividend-paying necessity.

"To the fuel engineer the possibilities for the future are almost without limit. To the man who doubts the wisdom of research with public money here is a field where the initial expenses of establishing and conducting real research are too great to justify private individuals or corporations in undertaking them from the standpoint of money returns to themselves alone; yet, because the results of the research affect thousands of furnaces each in a small way, the aggregate nation-wide benefit is immeasurably more than the initial expenditure. The successful researches of the Bureau of Mines with natural gas heating and cooking appliances are a case in view.

"For the future the public must realize that the serious city smoke troubles are remediable nuisances, dependent for remedy equally on the public, the fuel engineer, the consumer of coal and the fireman. Either the fireman and the man for whom he works must be taught to burn the coal without smoke or else artificially prepared fuels from which the smoke-forming tars and volatiles have been taken must be used. In both lines the interest of the bureau is paramount. The program should be: (1) Investigating, teaching and educating the great fuel-burning public to the money and health value of the right fuel, and the right furnace in the right place, fired in the right way; (2) aiding in the development of preparing new fuels, especially from waste and low-grade fuels, such as lignites. If we add to these problems the host of fuel problems that are acute in the petroleum product using or internal combustion field, and the necessity for getting more energy from the national and rapidly wasting asset—petroleum—we must see that the right use of fuel has become a national concern."

THE WORK OF THE FEDERAL TRADE COMMISSION in requiring cost reports in the coal industry was referred to in testimony before the House Appropriations Committee on the sundry civil bill. Chairman Thompson said if the commission had been able to continue its coal work and thereby place before the public the cost of producing coal and the extent of its production, the information "would have tended to lessen the present reaction." He believed the Supreme Court would hold that the commission had jurisdiction in this respect. Chairman Good of the committee said the "question with me is whether Congress delegated all the power in that respect in the language which it employed in creating the commission."

C. E. Maurer 25 Years a Mine Operator ; Eastern Ohio Friends Celebrate

ABOUT seventy-five eastern Ohio coal operators of the Pittsburgh Vein Operators Association gave a luncheon on Tuesday, Dec. 21, at the Hotel Cleveland, Cleveland, Ohio, to commemorate the completion of twenty-five years of activity in eastern Ohio mining operations by Charles E. Maurer, formerly president of the Glens Run Coal Co.

The affair was in the nature of a surprise and at the beginning of the luncheon the chairman announced that the associates of Mr. Maurer had simply gathered together

CHARLES E. MAURER
Formerly president of the Glens Run Coal Co.

as a tribute to him. However, after the luncheon Thomas K. Maher, president of the Maher Collieries Co. and the Pittsburgh Vein Operators Association of Ohio, presented to Mr. Maurer on behalf of the association members a handsome chest of engraved silver.

Mr. Maurer up to a short time ago was president of the Glens Run Coal Co., of Cleveland, operating mines in Jefferson County, Ohio, which property was disposed of to the Youghiogheny & Ohio Coal Co. For many years he was prominent in the wage scale negotiations with the miners and on many occasions was the chosen representative or spokesman for the operators because of his intimate knowledge of this deeply-involved subject.

The Committee on Arrangements for the luncheon consisted of W. R. Woodford, president of the Rail & River Coal Co.; Attorney W. C. Saeger, of Bulkley, Hauxhurst, Saeger & Jamison, and B. C. Tucker, president of the Brilliant and Jean Coal Mining Companies.

Advocates Liberal Leasing Law to Encourage Development of Alaska Coal Resources

IN HIS annual report to the Secretary of Interior, the Governor of Alaska says that while the coal leasing law is not entirely satisfactory, it is a step in the right direction. He recommends a broader policy for development, under laws, instead of regulations. Strikes seem to be spreading, as the Governor records that the few miners employed by the Alaskan Engineering Commission in mining coal went on strike for increased wages, followed by a strike of miners in the Bering River field, which strikes, however, have been settled.

The Governor says that the greatest progress in coal development in Alaska has been in the Bering River field by the Bering River Coal Co., although a miners' strike last winter delayed development. The company has developed 40,000 tons and expects to achieve an output of 50 tons a day, which will be sent by mine trucks over a plank road to Bering Lake and then will be moved by barges to Controller Bay or Cordova.

He recommends amendment of the coal-leasing law to relieve lessees of payment of rentals on lands under lease for the first five years of the lease, and that no royalties be imposed until after the development period. He bases this recommendation on the ground that rents and royalties during the development period are discouraging.

He says a high grade of lignite coal is reported from Nenana, but it is not considered an export coal, but can be used in the towns and mining districts. This coal is being used in homes and on the northern division of the government railroad. Lignite also is mined in Cook Inlet and is used by canneries and towns. Coal is reported also in the Kuskokwim mines.

He says that, because of oil shortage, steamships contemplate converting from oil to coal burners, which, he adds, will mean an immediate demand for Alaska coal. He says the establishment of a coaling station in the Aleutian Islands for naval and commercial purposes is being considered.

Stone Incoming Workmen and Fire on Troops in Mingo County, West Virginia

SEVERAL workmen coming into the strike field to work at Merrimac, W. Va., Jan. 2 were stoned, apparently by union men. The soldiers who were guarding them from attack were fired on from the mountains of Kentucky, which tower up above the Tug River which forms the boundary line between West Virginia and Kentucky. They returned the fire. The superintendent of the White Star mine at Merrimac declares that he knows who were the persons who fired on the troops and will swear out warrants for their arrest.

The Williamson Coal Operators' Association announced that the Burnwell Coal and Coke Co.'s mine at Sprigg, W. Va., and that of the Alburn Coal Corporation at McCar, which have been idle since the beginning of the strike in July, have started to produce coal.

COAL PRODUCED IN Madison County, Illinois, for the year ended June 30, 1920, amounted to 3,895,127 net tons, a gain of 34,525 over the previous fiscal year. There were 210 men injured and required to be away from work for a month or longer and each non-fatal accident represents the production of 18,548 tons of coal. The total number of men employed during the year was 4,142 or 507 less than the previous year. Twenty-six mines were in operation during the twelve months. Seventeen of the mines ship to other places, principally St. Louis. Shipments by rail were 3,631,612 tons. Local sales were 133,615 tons and the mines consumed 121,567 tons as fuel.

OPERATORS IN CLEARFIELD COUNTY, PENNSYLVANIA, who were paying bonuses to employees for work in excess of normal production have with the new year decided to cease that practice and pay the straight union wage. Present prices and the demand of today, the operators believe, do not justify payments of extra compensation for large coal outputs.

BY WAY OF JUSTIFICATION for the increase asked in the appropriation covering the mineral resources of the United States, Dr. George Otis Smith, director of the Geological Survey, points out that the public's dependence upon the Survey's weekly and monthly reports of fuel production was never more evident. He states that additional facts on consumption and distribution are needed to forecast shortages or to warn against over-productions.

Plan Central Agency to Purchase All Government Coal; Head of Bureau of Mines Supports Project

A CENTRAL coal-purchasing agency which would procure all of the government's supplies, except that intended for the use of naval craft, is being considered as an outcome of the recommendation of the Calder committee for the establishment of such an agency. The draft of a bill which would enlarge the Government Fuel Yard, being operated by the Bureau of Mines, is under consideration. H. Foster Bain, acting director of the Bureau of Mines, makes the following statement in support of such legislation:

"Dr. Foster, former chairman of the House Committee on Mines and Mining, became interested in 1915 in this matter of a central coal-purchasing agency for the Federal Government and his bill, introduced in December, 1915, to provide for the selection and purchase of fuel for the Federal Government by one central agency, named the Bureau of Mines as this agency.

"This bill provided for the centralized purchasing of coal for all branches of the Federal service in Washington and out of Washington. Legislation was accordingly enacted, effective July 1, 1919, providing for the establishment of the Government Fuel Yards under the Bureau of Mines, Dr. Foster deciding to await the results to be obtained in the operation of the Government Fuel Yards for a year or two before pressing for the enactment of further legislation extending the coal-purchasing authority to cover coal for use by the Federal Government outside of the District of Columbia.

"I think it has been satisfactorily demonstrated during the last two and one-half years that the establishment of the Government Fuel Yards inaugurated a wise government policy, both from the view of insuring an uninterrupted supply of coal and from the viewpoint of securing this coal economically. During this period of two and one-half years since the establishment of the Government Fuel Yards no Federal or district govrenment heating or power plant has been obliged to let its fire go out or curtail its coal consumption at any time because of the failure of its coal supply. I believe you will agree with me that, in view of the coal situation and different strike conditions during that period, this is a particularly good record. Your committee has, moreover, evidence showing that *the Government Fuel Yards secured this coal at a lower price than that paid by certain other branches of the Government service* for coal inside the District of Columbia.

Would Extend Purchasing Authority

"The time is here, I think, for extending this coal-purchasing authority of the Bureau of Mines to cover the coal required by the Federal Government outside as well as inside the District of Columbia.

"There are other reasons for the belief that the Bureau of Mines can purchase coal required by the Federal Government more cheaply and satisfactorily than can a number of agencies or any other single agency. A large part of the mines safety work of the Bureau of Mines relates to safety in coal mines and the Bureau has a force of more than fifty engineers and other mine safety men working out from twenty headquarters points in the different mining districts of the country. Engineers engaged in this work in the different coal fields are in a position to secure information with respect to kinds and grades of coal available for shipment and to assist in the placing of advantageous contracts for coal supply. This safety work has been built up, without police powers or compulsory legislation of any kind, through co-operation with the mine operators and the miners and the Bureau has had reason for feeling that because of this and other work it enjoyed in large measure the co-operative regard of the coal mining industry.

"In addition to the proposal to extend the work of the Bureau of Mines to cover the purchase of coal required by the government outside of the District of Columbia, I wish to bring to your attention the proposal presented to Congress by Secretary Lane in his annual report of 1919 for a fuel inspection service in this country for the purpose of protecting the coal consumer in securing the kind and quality of coal for which he paid. I am enclosing copy of the proposed legislation as approved by the Secretary of the Interior in the estimates for 1921 and in the estimates for 1922. This is a matter of applying engineering knowledge and technical skill to the reduction of the country's coal bill. At the present time there is no machinery available to the general public for determining the quality of coal shipped or sold to it. Likewise, no machinery is available to protect the coal operator producing good and clean coal. The Federal Government inspects on behalf of the general public such necessities as grain and meat; it is believed that this inspection protection should also be available to the public in the case of the necessity called coal."

The bill necessary to accomplish the purpose, which is now before the Calder committee, reads as follows:

"That the Bureau of Mines is authorized and directed to select and contract for all coal required by any branch of the Federal service at the seat of government or elsewhere within the United States: Provided, that the selection and purchase of coal may be made direct by any branch of the Federal service upon the approval by the Bureau of Mines.

"Sec. 2. That it shall be the duty of the Bureau of Mines to investigate the coal burning equipment of the different branches of the federal service and their methods of handling, storing and using coal, and to recommend such changes in equipment and in use of equipment as will result in the greatest fuel economy.

"Sec. 3. That each branch of the Federal service shall furnish to the Bureau of Mines such information relating to its fuel-burning equipment, fuel consumption and fuel use as may be requested by said Bureau.

"Sec. 4. That the director of the Bureau of Mines is authorized to contract for the purchase of coal for the different branches of the Federal service in advance of the availability of appropriations for the payment thereof, but such contract shall not exceed the necessities of the current year.

"Sec. 5. That the different branches of the Federal service are authorized to purchase, under the contracts made by the director of the Bureau of Mines, during April, May and June of each year, such quantities of coal for their use during the following fiscal year as it may be practicable to store at the points of consumption, payment therefor to be made by the branches of the Federal service from their applicable appropriations for such fiscal year.

"Sec. 6. That each branch of the Federal service shall pay to the Bureau of Mines an amount to be fixed by said Bureau, but in no case to exceed 2c. per ton, for each ton of coal purchased for said branch of the Federal service; such payments shall be deposited in the Treasury of the United States to the credit of the Bureau of Mines and may be expended for the employment of personal service in the District of Columbia and elsewhere and for all other expenses requisite for and incident to carrying out the provisions of this act; provided, that not more than $100,000 may be expended in the enforcement of this Act in any one year."

Seward Button, chief of the State Department of Mines of Pennsylvania, has been asked to rule whether sixty men of Spanish birth who cannot speak English shall be allowed to continue at work in the gassy mines of the Lehigh Coal & Navigation Co. The conference at which the request was made was attended by Thomas Kennedy, president of the Hazleton miners, and Thomas Hartneady and Thomas Gallagher. The mine workers asserted that the employment of these men was a violation of the law. The decision will have far-reaching effect.

Salient Features of the Calder Coal Act

TO PROMOTE the "general welfare" and to recognize and declare coal and its production charged with public interest and use, and for other purposes, Senator Calder introduced on Jan. 10, 1921, his bill to regulate the coal industry. The "Federal Coal Act," for it is so officially designated and therefore travels under no alias, charges that coal and its sufficient and economical production and proper distribution, and information respecting "ownership, production, distribution, costs, sales, and profits in the coal industry are necessary to the general welfare of the people of the United States" and to Congress for the purpose of legislating respecting interstate and foreign commerce, public health, taxation and other matters, and that the coal industry in all its phases is "hereby declared to be charged with public interest and use."

The Federal Trade Commission is given sweeping powers and directions as to requiring and obtaining current reports from all engaged in the production and sale of coal with no limit as to its inquisitorial power. Even consumers may be required to furnish information as to coal consumption and stocks. The commission is directed to collect certain minimum data currently and to make reports to Congress and to promptly publish its findings. The commission "shall" name any who are judged guilty of having charged a price deemed unreasonable.

All reports to the commission are nevertheless declared to be confidential and are to be rendered under oath. The commission may, however, by a majority vote of its members publish any individual report if deemed in the public interest and any court of competent jurisdiction may require and shall be furnished reports of individuals or of separate companies.

Associations having to do with the coal industry are designated for special investigation, for which the full powers conferred by the bill are declared available, again when deemed necessary in the public interest.

Railroads are required to submit detailed information to the Interstate Commerce Commission, and that commission is directed to collect from the roads data regarding mine rating, loading, movement, reconsignment and other matters. To settle any doubts that may arise as between the reports submitted, as, for instance, regarding car shortages, by the operators to the Trade Commission and by the railroads to the Commerce Commission, these two bodies are adjured to "get together" on the facts.

Survey to Continue to Publish Reports

It also is provided that the Geological Survey shall continue its present series of reports in all details and shall publish them and any additional data that may be required in the public interest. One important feature for the Survey is the provision that the Federal Trade Commission and the Interstate Commerce Commission are authorized and directed to use their legal powers to obtain any reports the Geological Survey may not be able to obtain on its present purely voluntary basis. In other words, the Survey will be given power indirectly to require reports, whereas now it has no such power and has not asked for it. The act gives no powers to the Survey, but confines them to the two other agencies named. Access to books of coal companies and right to subpœna papers, records and witnesses is conferred on the Federal Trade Commission.

Neglect or refusal to meet the demands of the commission may be penalized by fines of not less than $1,000 or more than $5,000 or by imprisonment of not more than one year. A penalty of $100 per day is provided for neglect to make reports, and heavy fine or imprisonment for making incorrect reports. Any employee of the Federal Trade Commission who shall divulge without authority any confidential information is liable to $5,000 fine, jail sentence, or both.

To furnish a check on what is going on the bill says that the President shall issue a license to any and all who fall under the jurisdiction of the Federal Trade Commission, and any who shall wilfully engage in the coal business without such a license in good standing and shall be liable to a $5,000 fine or jail. Each applicant for a license must agree in writing to rigidly abide by the requirements of the act.

No license may be required from any operator or dealer whose gross sales during *this preceding fiscal year were less than $50,000.* Section 12 is one of the most striking in the act in that it states that when the Federal Trade Commission shall determine that an emergency exists or threatens in the coal industry, which seems likely to produce a shortage or bring about unusual or unwarranted or unreasonable prices in coal and to be *detrimental to the public health* in any part of the United States and the President shall have concurred in such determination by the commission, the President is authorized to declare the existence of an emergency which threatens the *public health,* and he is empowered to fix a maximum price, commissions and margins during that emergency. He is further empowered to revoke the license of any operator or dealer who shall exceed the maxima established by him, in addition to which, of course, the producer or dealer so exceeding the legal limits is liable to fine and imprisonment. The President is authorized to deal in coal and to control production, movement and distribution to the extent that it may be necessary, again for the protection of the public health.

Except that industrial concerns may own and operate coal mines for their own use and consumption, Section 13 forbids any owner, operator or dealer to sell coal to any concern in which he or any agent of his shall have an interest, except the sale be made under open competitive bidding.

Coal procured directly from an operator by a dealer and sold to another dealer is subject to a brokerage tax equivalent to one-half of the commission or margin in excess of 15c. a ton and not more than 30c. a ton. Where the commission or margin exceeds 30c. a ton the brokerage tax that shall be levied under Section 14 of this act is equivalent to three-quarters of the total.

Heavy Tax on Trade Between Dealers

Trading in coal between dealers in coal, not obtained directly from operators, is practically prohibited by the levying of a tax of 90 per cent on all commissions or margins in excess of 5c. a ton. No tax shall be assessed against any dealer whose gross annual sales during "his preceding fiscal year" aggregate less than $500,000 on sales of coal procured directly from operators.

The Department of Labor and the Bureau of Mines are thrown in for good measure. The Secretary of Labor is directed to investigate wages, working conditions and other matters pertaining to the workman, in order to supply information for use at any time of general readjustment of wage contracts in the coal industry. The Bureau of Mines is directed to investigate mining methods, storage of coal and other technical matters, none of which apparently represent new duties or powers for that bureau. It is, however, provided that the Bureau of Mines shall investigate and report on statutory standards and inspection for the various kinds and grades of coal.

The Federal Trade Commission, the Interstate Commerce Commmission and the Geological Survey are given blanket authority, through the President, to call for any and all information in the possession of any other government office or for the detail of personnel. The President also is authorized to transfer personnel, equipment, records and funds from one bureau to another, as may be deemed necessary in fully carrying out this act.

The aforesaid triumvirate also are directed to keep their records thoroughly revised and available for immediate reference, and subject to the call of any private or public board, state or federal, for use in settling any labor dispute.

The Federal Trade Commission and the Interstate Commerce Commission are given power to make and enforce rules and regulations and to prescribe the method of procedure, it being specifically provided that this act does not limit or repeal any of the powers of either of these agencies under existing law. To permit the carrying out of the detail work called for by the act, $10,000 a year is to be appropriated to the Geological Survey, the same amount to the Interstate Commerce Commission and $25,000 to the Federal Trade Commission.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

ALTHOUGH the general business situation has changed but little during the past months, there are pronounced indications that the first shock of the present depression is over, according to an announcement Jan. 22 by the U. S. Chamber of Commerce.

"The most cheering and hopeful feature of the situation," the report says, "is the fast spreading realization that what we are going through is the only possible way to teach us the indispensable need of hard, conscientious work, some thought of obligation to our tasks, and getting back once more to those temporarily lost arts of salesmanship, of common sense merchandising, of economical, efficient production and distribution. Only thus can we give service in every phase of national life. The railroads have set the example of retrenchment, by company, by team work, and by the best service they have given in years. And that is what every other business will have to do if it is to save its soul alive.

"Automatically everywhere production is adjusting itself to demand. This phase has finally reached the iron and steel industry, and is general throughout industrial life. Textile mills got theirs first, and consequently, because of lower costs of production, seem farthest advanced on the road to readjustment. At this writing more of them are resuming than shutting down. Automatically the situation is tending to a more normal relation between supply and demand, which means the solution of many of our problems.

"Dealers who on a falling market are endeavoring to sell only on high prices they paid, rather than on replacement costs, are fooling only themselves as to their ability to get away with it; as are also those manufacturers who have elaborate reasons why they should maintain war prices indefinitely.

"The remedies so far proposed to Congress are mere temporary expedients, of which it is doubtful whether they will even accomplish their passing purpose. The fundamental soundness of the situation is widely felt. The general mental attitude, while recognizing the completeness of the collapse of inflation, perceives that it was not only inevitable but necessary before a more enduring basis could be reached. This is the basis for that widespread undertone of confidence in the not far distant future. Always provided, of course, that we work out our salvation with common sense and judgment, rather than with fear and trembling."

Textile Plants Speed Up

An extension of time schedules announced as reflecting improvement in business was reported in several textile mills in Pawtucket, R. I., Jan. 17. The Jenks Spinning Co., employing 2,500 operatives, after being shut down resumed operation with several departments on a four and five-day schedule. The Lorraine Manufacturing Co., employing 2,000 changed from three days a week to a five-day schedule. The Waypoyset Co., employing 1,000, began a five and a half day schedule after operating some departments three and others four days a week. The Smith Webbing Co., employing 150, went on practically full time.

Twenty Tin Plate Mills Open

Twenty mills, one-half of the productive capacity of the McKeesport Tin Plate Co., resumed operations Jan. 17 after being idle since Dec. 23. Sixteen hundred men were affected by the resumption which was at the old rate of wages. Mill officials said they were unable to say when the remainder of the plant would be placed in operation.

N. & W. to Build 1,000 Coal Cars

The Norfolk & Western R.R. was planning to build 1,000 120-ton steel coal cars in its Roanoke shops. Tests of this new and larger type of car have been completed and the result is reported satisfactory. It is understood that there are five hundred 100-ton cars now under construction at Roanoke, Va. The Virginian Ry. is said to be the only other carrier to have adopted the heavier type of coal car.

$3,000,000 Shoe Orders Placed

Orders approximating $3,000,000 were placed during the four-day convention of the National Shoe Retailers' Association at Milwaukee during the week ending Jan. 15, James P. Orr, president, said. The organization comprises nearly 6,000 active members and as many more associate members, he said. "Retailers will now anticipate their requirements and shoe factories will open. Steady employment for workers will result."

Durant to Erect Michigan Plant

It was reported Jan. 17 that Durant Motors, Inc., formed recently by W. C. Durant, former head of the General Motors Corporation, has practically decided on the erection of a plant at Flint, Mich. Another plant probably will be built in the East.

Willys-Overland Co. Resuming

Gradual resumption of manufacture of automobiles at the Toledo plant of the Willys-Overland Co. was announced Jan. 14 by Charles B. Wilson, in charge of operation. The plant has increased its working force between 400 and 500 men, bringing the total from practically zero up to approximately 1,200, Mr. Wilson said.

Railroads Continue to Retrench

A new general order for another 10 per cent reduction in expenses of the Pennsylvania R.R. system, making a 20 per cent cut since November, is the explanation given for the widespread movement to lay off employees or decrease the hours of employment. All classes of railroad employees are affected. In many cases the reduction will be made by lessening the number of hours of employment each week, rather than by discharge of employees.

About 2,000 employees of the Norfolk & Western R.R. were laid off Saturday, Jan. 22. The cut is effective over the entire system and affects practically all shop departments. This reduction makes the total number of men laid off recently about 3,500.

Will Attempt to Jam Calder Bill Through Congress; Expect Favorable Report by Manufactures Committee

A DETERMINED effort will be made at this session of Congress to jam through the Calder bill, providing a drastic form of control for the coal industry. It is believed that the Committee on Manufactures will report the bill favorably to the Senate in the near future. It is understood that an effort is being made to pass a special rule in the House to insure consideration of the measure by that body, in case it should pass the Senate. Such a rule probably would limit debate on the measure to two hours. The rules of the Senate permit of no such cloture. Practically the only hope of stopping the measure is that Senators opposed to this type of government control either will talk the measure to death on the floor of the Senate or vote it down. This proposed legislation is generally considered as important as the Sherman law.

If the unexpected should happen and the bill be passed, the consensus of legal opinion is that it will require a constitutional amendment to put the provisions of the measure into operation. This, however, is not deterring the advocates of the bill, who are displaying the greatest energy in an effort to advance the measure before the public forgets the high prices some consumers had to pay for coal.

Ample opportunity has been given by the Committee on Manufactures for representatives of the operators to present their views. Incidentally, representatives of the coal producers availed themselves of the chance to correct some of the erroneous impressions which might have been formed because of the failure of the Calder committee to allow the operators to complete their case. Ralph Crews, in the course of his testimony, declared that there is more misinformation afloat in regard to the coal industry than there is about all other industries combined. J. D. A. Morrow, vice-president of the National Coal Association, testified at length and made the principal presentation for the operators.

George Otis Smith Advocates Control

One of the sensations of the hearing was a declaration by Dr. George Otis Smith, director of the U. S. Geological Survey, that traffic in coal is no longer a private business and that it is a proper subject for as effective control as is exercised over the public utilities. Coming from a man of Dr. Smith's standing, great weight is given his view. Dr. Smith is known as a conservative.

Extracts from Dr. Smith's remarks in this connection are as follows:

"Inasmuch as coal can be considered the one word that best expresses industrial power on the one hand and domestic comfort on the other, I feel that the time has come when we can regard the coal industry as a subject for effective governmental control. This, speaking in plain language, would be putting the coal trade in the same category with public utilities, and I think that we must come to regard it as a proper subject for as effective control as is exercised over the public utilities.

"As to the degree of control warranted, I will say that this bill provides for two types of control. One might be called emergency control, and the other is in regard to control in normal times. I think the desire for emergency control is based upon the fact that coal is essential for the operation of railroads and public utilities and that certain priorities of use must be determined in time of emergency. We did that during the war emergency.

"We have discovered that there are emergencies in days of peace as well as in times of war. The agency of control in normal times, as I read the bill, is publicity. I do not see how a mine owner, a coal-land owner, a mine operator or a mine worker can raise any objections to the facts being made known to the public with respect to that operation—a clear analysis of the disposition of each dollar spent for coal. I think that this publicity is the keynote of the legislation that you are considering. I do not see how those who are connected with the industry, those to whom it means daily bread and butter, can object to such facts being made public.

"Public information can do much in the way of regulating an industry like the coal industry without a great amount of legislation, but it cannot do much without having the facts. This bill proposes to bring out the facts not in time of emergency on a rush order, facts that are not necessarily the normal facts of the industry, but to make these facts available every day in every week. If we know what is happening, we can prepare for the emergency as the emergency begins to appear. The public nature of the coal industry warrants a large amount of attention on the part of the Federal Government.

Industry Entitled to Continuous Living

"When I speak about the regulation of prices I think that we must recognize that allowance must be made for a fair return to the coal operator—not simply for the year, but a fair return must be made for a series of years. The coal operators of this country have had a good many bad years over which to distribute their recent profits. Those who reap the largest harvest are the newcomers in the business. Every industry deserves a living through its whole period rather than during occasional years. If not, the consumer will be the profiteer in the lean years as much as the operator is the profiteer in the fat years. The margin, which we term 'fair return,' should be large enough to set aside a surplus to take care of the lean years. This the public owes to any industrial or transportation company. Otherwise, we must pay an excessive amount for capital on account of the excessive risk.

"I have prejudices against price fixing, but I think we have to face a condition. If a government agency, supposedly impartial and supposedly fairly well informed, does not direct and influence the law of supply and demand, some more selfish interest will direct and influence it.

"If we regulate the coal industry, I hope that we can begin with the idea of regulating upward as well as downward, with the idea of being constructive as well as repressive. When price fixing is necessary I think that the price fixed will have to be such as to keep in production the higher-cost mine. The price must be enough to allow the operation of every mine you need at that particular time."

That Senator Reed, of Missouri, does not agree with Dr. Smith's conclusion in the matter may be judged from the following:

"We must choose between allowing citizens to conduct their businesses themselves, buying and selling as free men in a free market, letting them use their own judgment as to the amount they can sell and consequently the amount they will produce, or to have some gentleman down here at Washington undertake to regulate the whole business. If the gentleman at Washington were infallible and could state, looking ahead like God Almighty, just how much coal we are going to need and just how we could produce it, that would be the thing to do."

Senator Reed argued that any emergency which would

interfere with the delivery of flour or milk or shoes would come in exactly the same category as an emergency in coal and that if price fixing and regulation are to be resorted to, it would have to apply to all the necessities. "It is about time," said Senator Reed, "to find out that the war is over and let the men who built the business of the United States go back and run that business. If they violate any laws, if they combine to rob anybody, put the good old laws of the United States in effect against them."

Senator Gronna said that price fixing would mean the ruination of some industries, including that of producing wheat. The point had been made in the hearings that wheat is as necessary as is coal and should be subject to the same type of regulation.

Both the Calder special committee and the Manufactures Committee held forth on coal last week, the former hearing witnesses as to high anthracite prices in Washington, D. C., and the latter taking testimony on the Calder bill.

Before the Committee on Manufactures of the Senate on Jan. 18 Interstate Commerce Commissioner Clark and Chairman Thompson of the Federal Trade Commission also testified in favor of the provisions of the bill, generally endorsing the purpose of the bill and suggesting modifications of a minor character.

The only opposition that early developed was that by the National Coal Association, and the burden of objecting to the measure was ably borne by J. D. A. Morrow, vice president of the association, who said it would change the present system of government and industry.

Calder and Counsel in Attendance

Senator Calder, of the special committee, although not a member of the Manufactures Committee, was a frequent attendant, as were also Counsel Miller and Chantland of the Calder committee. Although active in questioning witnesses before the Calder committee, Senator Kenyon, who is a member of both the Calder and Manufactures Committee, did not ask many questions of witnesses before the Manufactures Committee, the main questioning being by Senators Reed, of Missouri; Jones, of New Mexico, and Walsh, of Massachusetts. The Senators by their questions seemed to feel that the coal industry should be regulated in the interest of an equitable distribution of coal and in the interest of reasonable prices.

In opening the hearing Chairman Clark of the Interstate Commerce Commission favored an even monthly production of coal, which he said could be handled by present car facilities. He referred to the storage of coal at the Lake docks as an argument for storage but said that many manufacturers, particularly in Detroit, had no storage facilities, and bought through brokers.

Senator Kenyon questioned as to the control of the anthracite trade and the effect of freight rates on that coal, seeking to learn why anthracite rates had not been given the 15 per cent freight advance in 1910. Mr. Clark said that before 1910 anthracite rates had been adjusted and he was not sure whether the 40 per cent increase on anthracite freight last summer would be taken off the price of coal if the increased rate were removed. Senator Kenyon thought the freight rate had something to do with present coal prices.

Director Smith said his division could carry out the provisions of the bill with respect to statistics, and said that in the last five years statistics on coal have largely increased in interest and value. He said little argument was necessary to show the relation of coal to the well being of the country, domestic and manufacturing. He did not think high prices represented a large amount of the coal tonnage sold.

Mr. Tryon, coal statistician, who accompanied Director Smith, was asked as to coal resources. He said exports last year amounted to 21,750,000 tons and Senator Walsh insisted it was the placing of an embargo on British coal for export that caused British buyers to come to America to purchase coal for their trade, thereby forcing up prices here. Mr. Tryon thought there were other causes, including adjustment of wages in various fields and the coal strike.

Director Smith said the United States had half of the coal resources of the world and that Alaskan coal would be available on the Pacific and estimated that 50 per cent of Illinois coal was not mined, but left underground, whereas a 95 per cent recovery was obtained in West Virginia.

In response to a question by Senator Reed Dr. Smith said efficiency of mine operation in the United States is in advance of mining operations in other countries and is being constantly improved upon. The percentage of recovery had increased in the last twenty years. The per man product of mine workers is two to four times that of foreign mines. The product of mine workers was steadily increasing while that in Great Britain was decreasing, due to larger use of machinery in this country.

Dr. Smith said coal could not be stored at the mines but must be loaded as mined. The ideal storage place was near the point of consumption.

Vice President Morrow of the Coal Association said contracts covered four-fifths of the coal sold last year and that the I. C. C. priority orders reduced instead of increased prices.

Senator Walsh got into a controversy with Mr. Morrow over the export of coal and its effect on prices and Senator Reed intervened, insisting that the witness be allowed to answer in his own way and not be choked off by the Massachusetts Senator. Senator Walsh said the witness need not be defended by Mr. Reed and offered to quit questioning, but Senator Reed smoothed it over and Mr. Walsh continued.

Senator Walsh insisted that high prices were caused by operators selling for export trade at higher prices and said he objected to the indifference of government officials in seeing that the business was not regulated in the interest of the consumer, contending that the government should have embargoed coal when New England needed coal, instead of permitting its exportation to British buyers who were not able to export from England because of an embargo on exports from that country. Mr. Morrow insisted that as long as manufacturers had the right to use coal and ship their products an embargo should not be applied to coal, but if applied should be applied to all industries.

Effect of Exports in Boosting Prices

Senator Walsh insisted that exports doubled in April and May, when the production here was at its lowest figure, which increased the price. He insisted that the export market diverted coal from West Virginia to foreign buyers, who offered any price for the coal. Senator Walsh remarked that although Mr. Morrow had no figures on West Virginia coal, the National Coal Association had sought to protect the industry against legislation. Senator Walsh said the cost doubled and trebled to consumers in these months. Mr. Morrow replied that it was not due to the foreign demand.

"How can you know there were other factors when you have no information?" demanded Senator Walsh. Mr. Morrow said the New Haven Railroad had four or five agents in West Virginia competing against each other for coal, but he did not know their names, and the Boston & Maine had contracted for only two-thirds of its coal, playing the market, and guessing wrong. Mr. Morrow said reckless bidding for coal by manufacturing interests, and not foreign buyers, caused the high prices. He also said there was no other market for West Virginia coal except the export and an embargo would have closed the mines, as it could not go west because the equipment was too heavy for the rails. Mr. Morrow also insisted that New England had not contracted for its coal, and Senator Walsh said the government had a right to relieve those who did not make contracts dictated by the operators.

Senator Jones questioned as to whether a contract was advantageous as prices may be obtained later at better figures. Senator Jones did not think the government ought to sit by and see prices increase when there was no corresponding increase in production cost. Mr. Morrow insisted that transportation would solve the price situation. The trouble would not be cured by price regulation. If the condition was permanent, price regulation might be all right, but he said the past conditions would never happen again.

Senator Jones thought some government agency should control shipments so as to insure reasonable prices. Mr.

Morrow said this would embark the government on price fixing without deliberation and with haste. He declared the bill proposed fundamental changes in the conduct of government and business. Senator Jones said the legislation was not hastily proposed, referring to hearings two years ago by the committee and also to the Calder hearings. Mr. Morrow pointed out that at present the states regulate the coal industry and referred to the Pennsylvania law. Senator Jones said the committee had as much information as it could get from anybody interested in the coal business.

Attorney Ralph Crews of the Consolidation Coal Co. referred to the decision of the 1920 Bituminous Coal Commission as argument against government coal regulation. He said the commission had stated that transportation facilities and seasonal production were remedies, along with storage at Tide against shortages. He said the coal industry was overdeveloped as far as mines and workmen were concerned and declared that at present many coal cars were on the tracks awaiting shipping instructions, indicating "no market."

Discussion also developed as to lost time in the coal-mining industry, and Mr. Crews said it had averaged ninety-three working days a year in the last thirty years, and Senator La Follette brought out that 10 per cent of the lost time was due to strikes. Mr. Crews declared the bituminous mines were able to turn out 700,000,000 tons of coal, or 200,000,000 more than the present production, and he insisted there was an ample supply of labor to produce the maximum of the mines, which would take care of domestic needs and give a large surplus for export.

Importance of Extending Export Trade

Mr. Crews stressed the importance of maintaining and expanding the export coal trade, declaring it would be unwise to abandon exports. He declared export trade could not be carried on under the pending bill as it would not permit American exports to make firm and obligatory contracts which foreign buyers desired, although the British operators could make unqualified contracts. He cited the Egyptian railroad and South America as fields for foreign exports. The bill would force spot coal on the market. He asserted that the United States was entitled to its world trade in coal, having the advantage over Great Britain in lower mine cost although Great Britain had the advantage of lower freight cost, her mines being close to tidewater.

Emphasizing the necessity of America not hampering her coal trade by legislative or administrative restrictions, Mr. Crews pointed out that Great Britain had not only removed war restrictions but had encouraged the export business to regain her coal trade. He urged that Congress be not influenced by conditions which are now disappearing, to pass legislation which it would not consider a year from now, as it might entail serious consequences. He deplored the fact that although we had the facilities America had never developed its export coal trade. America could compete with Great Britain in the trade and had been displacing British coal in South America.

Mr. Crews said there must be better relations between the coal, banking and shipping interests to develop foreign trade. Senator Walsh assured the witness that the committee was unanimously in favor of doing anything to increase the export coal trade, and had no purpose to restrict it.

The witness questioned the wisdom of giving authority to the Federal Trade Commission or any other body to determine what was an "emergency" to justify government control and referred to the criticism which had arisen from regulation by the Fuel Administration. "The time for government regulation has passed," said Mr. Crews. He said Congress, if it intended to take emergency control, should specifically declare in its legislation what constituted an emergency on which to base federal control and not leave it to an administrative body. "At any time of threatened coal shortage an attempt would be made to control prices," he declared. He said commissions had gone beyond what they were created for, naming particularly the Federal Trade Commission, and criticised that commission for being destructive instead of constructive.

"Do not judge the coal industry by the aftermath of the war," said Mr. Crews in conclusion. "Give it a chance to recover itself so that it can progress on the broadest and sanest lines. There is no reason to single out the coal industry for regulation. If let alone it will go forward and develop the export trade."

Mr. Crews emphasized the necessity of keeping hands off in view of the development in the bituminous coal industry of byproducts for use in the chemical industry.

Representative James W. Meade, of the Buffalo [N. Y.] district, complained to the committee of the deplorable situation with respect to coal supply and prices in Buffalo.

O. B. Hood, chief mechanical engineer of the Bureau of Mines, and George W. Elliott, of the District of Columbia, representing gas and electric public utilities, also testified.

George H. Cushing, general manager of the Wholesale Coal Association, made a general attack on the bill, urging its postponement for three weeks in order that it might be thoroughly considered by the trade. Senators Kenyon and La Follette did not desire to postpone it that long, saying it would defeat the bill, as the session closes March 4.

In the course of his testimony, Mr. Morrow made the following statements:

"Whenever an emergency arises which prevents consumers from securing sufficient supplies, it is fitting and right that some agency of the government ought to take action to see that coal is secured. If the movement of coal is not interfered with, there is no need to bother about price. It will take care of itself. When the switchmen's strike occurred, there was no law that enabled such action to be taken, but when the Transportation Act was passed you put on the statute books a law to meet such an emergency. The Interstate Commerce Commission did not see fit to exercise its authority under this act until the latter part of June. Even then the order was not effectively enforced and its proper effect was delayed. We can product more coal than we need. The real difficulty was the exceptional combination of circumstances that grew out of the war. Such a situation never took place before. It has happened once in a hundred years. Nobody has reason to believe that it will happen again."

Collection of Coal Data Compared to Census

Mr. Morrow said the coal trade would not object to giving figures as to the cost of production and sales, but objected to going further on the ground that it would revolutionize the conduct of government and industry. Senator Jones said the bill would require investigation by the government as to whether prices quoted by the operators were accurate. Senator Reed thought the government had as much right to get coal information as to take a census and it might apply to every industry to the public benefit. Mr. Morrow said there was no great objection to giving the information, although some regarded it as their private business and objected to government regulation.

Federal Trade Commissioner Thompson said he "presumed" the commission had power under section 6 to require cost data, which indicated a doubt in his mind as to its power. He said two courts had decided that the commission had not power to require the cost reports, but Senator Reed said the situation was different from a demand by Congress, adding "you were trying to get under a power."

A. W. Riley, of New York, special assistant to the Department of Justice, referred to his investigation of unreasonable prices for anthracite coal. He said anthracite high prices were not due exclusively, as the operators say, to the speculator, as coal had been sold in New York and New England from $20 to $25 a ton through selling agents of the operators, who knew the prices at which sold and to whom sold. He said he had found in most instances that the retailer was not getting such profits as would explain these high prices. Retailers were paying $18 for coal and the investigation uncovered the method of disposing of the coal by the operator.

E. C. Hultman, Massachusetts Fuel Administrator, declared that New England had been robbed by high coal prices, and that the industry should be regulated by the government in the interest of reasonable prices and equitable distribution to the people.

PUBLIC HEARINGS WILL BE HELD by the Coal and Coke Committee of the railroads for Trunk Line Territory to consider the readjustment of rates on bituminous coal from origin points in Pennsylvania, West Virginia, Maryland and Ohio to New England consuming points and also from the anthracite fields of Pennsylvania to New England consuming points. These hearings, which are to be held at the request of carriers, will be in Room 401, 143 Liberty St., New York City, on Feb. 3, 1921, at 10:15 a.m.

Lloyd and Dodson Condemn Calder Bill

JOHN E. LLOYD, president of the National Retail Coal Merchants Association, has sent the following letter, dated Jan. 20, to Senator La Follette, chairman of the Senate Committee on Manufactures, to which the Calder Coal Control bill has been referred:

"As president of this association I wish to enter an earnest protest against Senate Bill 4828.

"The outcome of this class of legislation and the extreme powers permitted under this bill are the paramount issues. It brings out the entire question of government control so decisively that this should be frankly conceded.

"It is possible under this bill for the government to have to assume responsibility for the proper protection of the termendous investments in the coal industry and for the conduct of the business in a way which will satisfy the consuming public.

"The coal industry, like most others, has been through an abnormal period and owing to strikes and transportation conditions was slow in reaching the point where the supply was equal to the demand.

"This point has now been reached and it seems eminently fair to ask that the industry be given an opportunity to adjust itself *before any legislation is undertaken.*"

The following letter, from Alan C. Dodson, president of Weston Dodson & Co., Inc., dated Jan. 21, is addressed to consumers of coal:

"There is at present pending in Congress a bill of Senator Calder's for federal control of coal (S. 4828). We believe that federal control is destructive to business. The results of the Railroad Administration, and in fact of every business to which the government has put its hand, have been stagnation, failure and an increased cost to the public. A similar experiment is now to be tried on coal.

"Do you approve? If you do not, will you wire the Senators from your State and the Representatives from your district, and any other Congressman upon whom your opinion will have some influence, and urge the defeat of the Calder Coal Bill.

"The evidence against the coal industry presented in our daily press is, in most cases, unfounded and prenicious and when true, covers a few isolated cases.

"If federal control is assumed over the coal business initiative will be destroyed, incentive removed, and high cost and short supply will result. Your coal will cost you more than it ever has, just as your freight and passenger fares are costing you more today. The history of federal control makes this prediction certain of fulfillment.

"If the danger exists at all, as we believe it does. the necessity for your action is immediate."

Market Exchange for Coal Proposed for New York Trade

IN HIS report to the members of the Wholesale Coal Trade Association of New York, Inc., at the annual meeting held Jan. 18, Charles S. Allen, secretary, announced that a meeting of those interested would be called soon at which steps will be taken toward the formation of a coal exchange on the floor of which coal may be bought and sold by its members. Mr. Allen said that a feeling that such an institution should be formed has developed among many members of the coal trade and that it was desired to establish the exchange as an experiment for a few months and if it proves successful to continue it as a permanent institution, eventually locating it in a building occupied largely if not exclusively by coal concerns.

Mr. Allen's report reviewed the activities of the association as well as the activities of the coal trade in general, during the year 1920, not forgetting the work of the Department of Justice and the Calder committee. He reported the year as a very active one upon the part of those who have sought governmental intereference with or control of the coal industry. Senator Calder, the author of a bill to control the coal industry, has undergone a decided change in his attitude in this respect from his first pronouncements on the subject calling for nationalization of the mines of the country.

In discussing the activities of the Department of Justice Mr. Allen lauds the work of William M. Speer, the local representative of the Department of Justice, charged with investigating transactions in bituminous coal.

"As an inevitable result of the participation of your representatives in the course followed by Mr. Spear in prosecuting certain members of the trade," continues Mr. Allen's report, "there has been a flareback and your secretary and general counsel, as well as others more intimately connected with the co-operation afforded to Mr. Spear, have been recipients of a not altogether unexpected attack accompanied by vilification and charges of almost every nature, but in this connection the conduct of your representatives is open to the fullest investigation by any interested member, with a complete confidence of ability to satisfy anyone as to the propriety of every move undertaken."

Mr. Allen refers to the report of the Committee on Complaints of the Tidewater Coal Exchange, Inc., printed in *Coal Age* (Vol. 18, No. 27, Page 1344). He said the committee has been informed by the Executive Committee of the Exchange that steps have been taken to put into effect some of the suggestions made, particularly with respect to classification; that the matter of inspection was receiving the attention of the Executive Committee, and that the matter of accounting systems was in the hands of an efficiency committee, but that the Executive Committee did not feel that the major recommendations of the Committee on Complaints should be followed.

One of the matters on the way to being rectified, Mr. Allen says, is that of the requirement by the Pennsylvania R.R. of prepayment of freight charges in coal shipments. which it is felt is an unjust discrimination against the coal trade. It is believed there is a fair chance to have the Interstate Commerce Commission require a change in the company's rules in that respect.

The election of directors resulted in the following being chosen: W. A. Marshall, of W. A. Marshall & Co.; LeBaron S. Willard, of Willard, Sutherland & Co.; E. D. Enney, of William Cory-George Mann Corporation; Carl B. Wynkoop, of Cosgrove & Wynkoop Coal Co.; Henry M. Payne, of Andrade-Eyre, Inc.; William H. Macurda, of Garfield & Proctor Coal Co.; William H. Lewis, of M. A. Hanna & Co.; George M. Dexter, of Dexter & Carpenter; Charles A. Owen, of Imperial Coal Co.; Benjamin H. Warford, Knickerbocker Coal Co. and Nat C. Ashcom, of B. Nicoll & Co.

The meeting, which was largely attended and was preceded by a luncheon at the Whitehall Club, was addressed by Gibbs L. Baker, general counsel of the association, who spoke of various matters including the Calder bill, and by C. Andrade, Jr., president of the association, who spoke on the exporting of coal.

Bids Submitted for Shipping Board Fuel Requirements; Reopened January 14, 1921

BALTIMORE

Total required, 240,000 gross tons

Company	Quantity, Tons	Price Bid 1	2	3	4
Burtner Coal Co	100,000	$7.70	$8.78	$7.65	$7.88
Geo. D. Harris & Co	48,000	....	....	6.35	....
Ainesworth Coal & Iron Co	.....	8.03	8.98	7.88	8.08
Interstate Coal & Dock Co	240,000	....	....	6.993	....
Penn. Fuel Co	240,000	7.39	9.93	9.93	....
W. H. Radford & Co	240,000	....	....	6.595	....
Imperial Coal Corp	60,000	7.55	8.35	7.25	7.60
Dexter Carpenter, Inc	100,000	6.49	7.44	....	....
Maryland Coal & Coke Co.	120,000	....	....	6.81	....
Quemahoning Coal Co	60,000	7.30	8.10	7.00	7.30
Somerset Coal Co	100,000	6.90	7.70	6.60	6.90
J. J. Dougherty	100,000	6.53	7.45	6.38	6.68
Hall Bros. & Co	240,000	....	8.50	7.40	7.70
Hazy Creek Collieries, Inc.	240,000	6.99	8.13	6.79	6.99
Equitable Fuel Co	120,000	....	....	8.25	....
Stern Coal & Coke	240,000	....	7.63	....	....
R. E. Boyer	240,000	....	....	7.25	....
P. & S. Coal Co., Inc	240,000	....	....	7.20	....
Pa.-Va. Coal Corp	240,000	....	....	6.88	....

BERMUDA

Willard Sutherland & Co.	12,000	....	18.25	....	....

BOSTON

Total required 30,000 gross tons

Maritime Coaling Co	30,000	....	13.25	....	....
Penn. Fuel Co	30,000	....	.....	....	12.95
Stern Coal & Coke Co	30,000	....	11.15	....	....

CHARLESTON

Total required, 50,000 gross tons

Industries Fuel Co	50,000	....	....	7.75	8.25
Jewett Biglow & Brooks	50,000	....	....	7.90	....
Taggart Coal Co	50,000	7.97	9.97	7.97	8.50
Ship-Rode Coal, Timber & Mfg. Co	50,000	7.70	8.65	7.25	8.20
Chas. R. Allen	50,000	9.05	....	8.75	....
Stern Coal & Coke Co	50,000	7.98	....	....	....

HAMPTON ROADS

Ft. Dearborn Coal & Export Co	72,000	....	....	9.00	....
C. & O. Coal & Coke Co	180,000	....	....	9.00	....
Dexter Carpenter, Inc	100,000	7.94	....	....	....
Dexter Carpenter, Inc	50,000	7.67	....	....	....
Maryland Coal & Coke Co	180,000	....	....	7.90	....
Lake & Export Coal Corp.	240,000	....	....	8.25	....

JACKSONVILLE

Total required, 40,000 gross tons

Industries Fuel Co	40,000	....	....	7.85	8.45
Logan Coal & Supply Co	40,000	9.25	10.10	8.30	9.74
Southern Coal Co	40,000	10.73	10.40	8.55	10.05
Jewett Biglow & Brooks	40,000	....	....	8.25	....
Ship-Rode Coal, Timber & Mfg. Co	40,000	8.05	9.00	7.60	8.55
Chas. R. Allen	40,000	9.15	....	8.85	....
Stern Coal & Coke Co	40,000	....	....	7.95	....

SAVANNAH

Total required 40,000 gross tons

Industries Fuel Co	40,000	....	....	7.75	8.25
Jewett Biglow & Brooks	40,000	....	....	7.90	....
Taggart Coal Co	40,000	7.97	8.47	7.97	8.07
Ship-Rode Coal, Timber & Mfg. Co	40,000	7.86	8.80	7.40	8.35
Chas. R. Allen	40,000	8.87	....	8.57	....
Stern Coal & Coke Co	40,000	....	....	7.85	....
Godley & Griffin	40,000	....	9.50	....	....

NEW YORK

Total required, 900,000 gross tons

Company	Quantity, Tons	Price Bid 1	2	3	4
Riverside Coal Co	50,000	....	....	$7.65	$8.15
Seiler Coal Co., Inc	90,000	....	....	....	7.50
Geo. D. Harris & Co	48,000	....	....	6.95	....
Majestic Coal Co	25,000	....	....	....	8.79
Majestic Coal Co	50,000	....	....	....	8.21
Majestic Coal Co	50,000	....	....	....	6.81
Ainesworth Coal & Iron Co	900,000	$8.36	$9.41	8.21	8.41
Willard Sutherland & Co	10,000	....	....	....	7.75
E. Russell Norton	200,000	....	....	....	8.90
M. C. Mason & Co	180,000	....	....	....	8.35
Commercial Coal Co	100,000	....	8.35	....	7.15
H. B. W. Haff	75,000	....	....	....	8.75
Steamship Fuel Corp'n	200,000	....	....	....	9.31
Penn Fuel Co	450,000	....	9.93	9.93	7.69
Penn Fuel Co	450,000	7.39	9.93	9.93	7.93
W. H. Radford & Co	360,000	....	....	7.40	....
Imperial Coal Co	60,000	....	9.85	....	8.30
Shawnee Fuel Co	45,000	....	....	8.19	....
Dexter Carpenter, Inc	100,000	....	....	....	7.39
Maryland Coal & Coke Co.	120,000	....	....	7.40	....
Hazy Creek Collieries, Inc	900,000	7.63	8.88	7.43	7.73
Nonpareil Fuel Corp	240,000	....	8.65	....	7.51
Stern Coal & Coke Co	900,000	....	8.68	....	....
Pa.-Va. Coal Corp	240,000	....	....	7.25	....
W. M. Bollenback	180,000	....	....	7.47	....

NEWPORT NEWS

Hassler & Co	420,000	....	....	8.00	....

NORFOLK

Total required, 480,000 gross tons

Central Pocahontas Coal Co	180,000	....	....	7.80	....
Interstate Coal & Dock Co	480,000	....	....	7.345	....
Penn Fuel Co	240,000	8.23	9.93	9.93	....
Penn Fuel Co	240,000	8.95	9.93	9.93	....
W. C. Atwater & Co	240,000	....	....	8.00	....
Hassler & Co	420,000	....	....	8.25	....
Hazy Creek Collieries, Inc	480,000	8.28	9.78	7.98	8.48
R. E. Boyer	200,000	....	....	7.75	....
P. & S. Coal Co., Inc	200,000	....	....	7.70	....
Pa.-Va. Coal Corp	250,000	....	....	7.75	....

PHILADELPHIA

Total required 180,000 gross tons

Burtner Coal Co	80,000	7.70	8.78	7.65	7.88
Geo. D. Harris & Co	48,000	....	....	6.43	....
Ainsworth Coal & Iron Co.	180,000	8.03	8.98	7.88	8.08
H. B. W. Haff	25,000	....	9.25	....	....
Interstate Coal & Dock Co	150,000	....	....	7.243	....
Penn Fuel Co	180,000	7.39	9.93	9.93	....
W. M. Bollenback	100,000	(Port Richmond		7.29	....
W. M. Bollenback	80,000	(Greenwich Pier)		7.29	....
Imperial Coal Corp	60,000	7.65	8.45	7.30	7.60
Shawne Fuel Co	45,000	....	....	7.67	....
M. B. Courtright Co	180,000	7.65	8.43	7.35	7.60
Dexter Carpenter, Inc	100,000	6.57	7.52	....	....
Maryland Coal & Coke Co	120,000	....	....	6.88	....
Geo. Patchell & Co	180,000	7.50	8.58	7.50	7.75
Hall Bros. & Co	180,000	....	8.55	7.45	7.65
Hazy Creek Collieries	180,000	7.09	8.24	6.99	7.29
Stern Coal & Coke	180,000	....	7.73	....	....
Pa.-Va. Coal Corp	240,000	....	....	6.95	....

Production and the Market

Weekly Review

WINTER weather is one thing that can usually be counted on to put life in the coal trade, and unless there is some winter weather, particularly in the Middle West where bituminous is largly used for domestic use, the coal business can join the woolen business and some other lines of trade in hibernating the rest of the winter. From a peak of nearly 18,000,000 tons a week in November the production of bituminous coal has been slipping down-grade continuously until in the second week of January it registers less than 10,000,000 tons. The cause of the decline is entirely lack of market. Car shortage has practically ceased to be a factor. Mines are operating about four days a week on the average over the country, some fields as in the far West reporting as low as two and a half to three days, and others as Pocahontas and in some parts of the Pittsburgh district reporting around 90 per cent full time operations. Consumers are taking less than they are burning. In other words, the country is gradually eating into its stockpile. This is probably as it should be in view of the mildness of the winter but industries that have any use for coal at all will do well to consider the advisability of leaving the high-priced stockpile alone and filling in current consumption with spot purchases at bargain counter prices. Spot prices today on nearly every coal are well below what the same coal can be secured for on contract for future delivery, either for a few months hence or for the ensuing year.

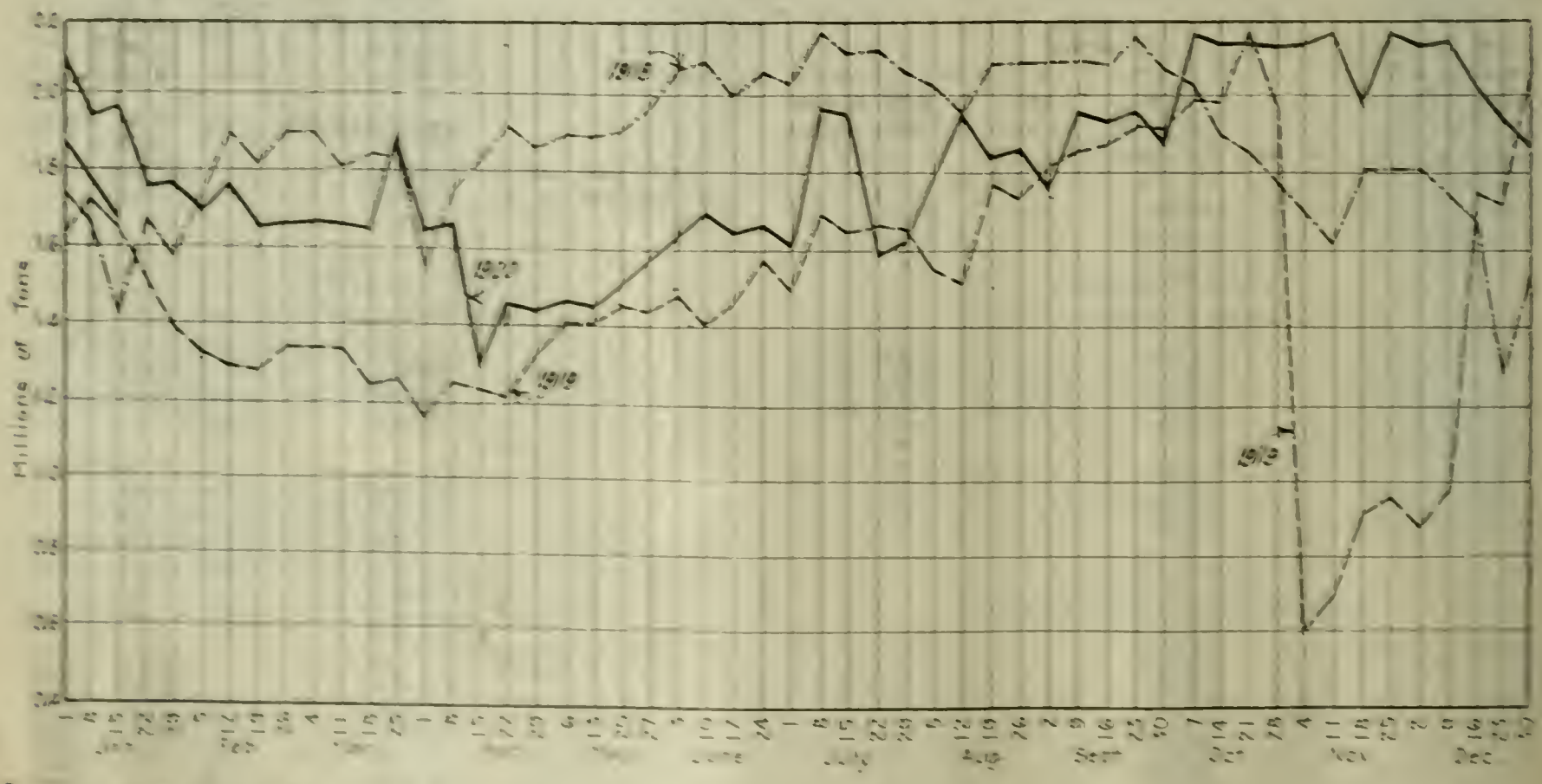
The seller of coal is carefully watching the industrial situation and he sees unmistakable signs of the gradual quickening of business. The coal man is not committing himself on future business except at a figure that he knows will net him a profit.

Anthracite production continues to gain and there is no reason whatsoever for anyone to have difficulty in securing whatever is necessary. Independents generally are not cutting their price below $10 and the companies are holding firm their circular around $8 for the larger prepared sizes. The only possibility of a decrease in the price of anthracite as delivered to the householder can come through a reduction by the retail dealer, as mine costs and his freight rate are fixed for the rest of the winter. Some retailers may do well to forego the 12 per cent margin found in the difference between purchasing gross tons and selling net tons in order to entice business this spring.

BITUMINOUS

Production continued to decline during the week ended Jan. 15. According to the Geological Survey, the total output is estimated at 9,987,000 net tons, a decrease of 806,000 tons when compared with the preceding week. The

Daily Average Production of Bituminous Coal*

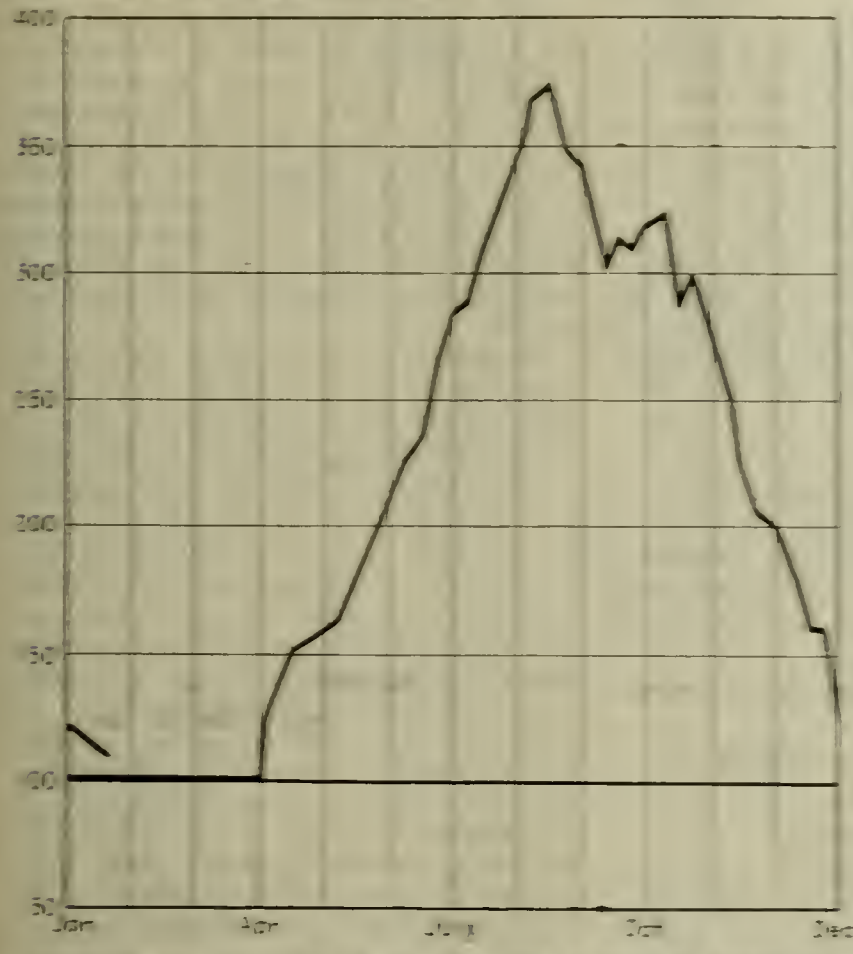


*Week ended, source: U.S. Geological Survey

daily rate of production, at present 1,660,000 tons, has been steadily lowered since mid-December. Loadings on Monday and Tuesday of the next period (Jan. 24-25) amounted to 40,100 cars, indicating a further decrease in production.

Coal Age Spot Price Index Declines 19 Per Cent

The *Coal Age* index figure for spot prices of soft coal, which stood at 128 at the end of 1920, has declined to 109 the third week in January. In other words, spot prices of bituminous coal are now but 9 per cent above the average government price established during the war, although costs of production are now at least 40 per cent greater than when the government prices were established. The trend is shown in the appended chart:



Relative spot prices of bituminous coal in United States 1916-1921. Weekly spot prices in bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.

The far-seeing consumer is gradually availing himself of the extremely attractive bargains now offered. Good coal is easily purchased well under the $3 mark, f.o.b. mines, and distress coal is readily located at considerably less. Contract inquiries from the buyer are now appearing but the producer is wary of taking on future obligations and the few sales that have been closed show a differential of $1@$1.50 above the recognized spot market of today. The following table shows the trend of the spot market (mine-run basis, net tons, f.o.b. mines). Quotations are mainly sellers' figures and represent prices below which the producer has refused to go. Following the period of high prices, operators are in good position to weather the present low-price storm and actual sales at these figures are not heavy:

	Nov. 1920	May 1920	Aug. 1, 1920	Jan. 18 1921	Jan. 20 1921	Jan. 27 1921
Pittsburgh steam	$2 35	$4 10	$4 10	$2 50	$2 50	$2 50
Pittsburgh screened gas	2 35	4 50	4 10	3 [illegible]	3 50	[illegible]
Hocking	2 50	4 75	4 10	3 50	3 25	[illegible]
Franklin, Ill.	2 35	3 75	4 50	3 10	2 [illegible]	[illegible]
Indiana, 4th vein	2 35	3 40	4 50	3 75	3 50	[illegible]
Eastern Ohio No. 8	2 35	4 50	4 50	3 75	3 75	[illegible]
Fairmont	2 50	4 75	5 50	3 [illegible]	[illegible]	[illegible]
Kanawha	2 00	4 75	4 10	3 [illegible]	3 [illegible]	[illegible]
E. Kentucky	3 10	4 10	4 50	3 10	3 10	[illegible]
Western Kentucky	2 35	3 50	3 25	2 10	2 25	2 35
Cleveland	2 15	4 25	3 10	3 10	2 15	2 10
Cumberland-Somerset	2 15	4 75	4 50	3 10	3 10	3 10
New River	2 70	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Pocahontas	2 35	4 50	4 10	4 [illegible]	4 10	[illegible]

*Government prices.
†Advance over the previous week shown in heavy type. Decline in italics.

Shipments to New England via the five rail railways declined sharply during the week ended Jan. 15, being estimated by the Geological Survey at 4,000 cars.

Estimates of Production

From the Weekly Report of the Geological Survey
(NET TONS)

BITUMINOUS COAL

Total bituminous mining [illegible]

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date
Jan. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Daily average	[illegible]	[illegible]	[illegible]	[illegible]
Jan. 16	[illegible]	[illegible]	[illegible]	[illegible]
Daily average	[illegible]	[illegible]	[illegible]	[illegible]
Jan. 9	[illegible]	432,259,000	[illegible]	[illegible]
Daily average	[illegible]	[illegible]	[illegible]	[illegible]

(r) Revised from last report. (p) Coming New Year's day [illegible] as 1.3 of a working day in 1921 as 0.7 of a working day [illegible] remains.

ANTHRACITE

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date
Jan. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Jan. 16	[illegible]	[illegible]	[illegible]	[illegible]
Jan. 9	[illegible]	[illegible]	[illegible]	[illegible]

(r) Less 2 days' production during first week of April, an equivalent number of working days covered for the two years. (p) Five-day week.

BEEHIVE COKE

United States Total.

Week Ended Jan. 15a 1921	Week Ended Jan. 8b 1921	Week Ended Jan. 17 1920	1921 to Date	1920 to Date
[illegible],000	[illegible],000	445,000	[illegible],000	872,000

a Subject to revision. b Revised from last report. c Less two days' production during New Year's week to equalize number of days covered for the two years.

TIDEWATER SHIPMENTS

Movement to Tide fell off heavily during the week ended Jan. 15, and was even less than during New Year's week. The Geological Survey shows that 541,000 net tons were the week's dumpings, shipments to both New England and overseas declining considerably. The export trade is extremely sluggish, scarcely any new business being closed. Tonnage shipped to Tide was destined as follows:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England	[illegible],000	[illegible],000	[illegible],000	[illegible],000		[illegible],000
Bunkers	[illegible],000	[illegible],000	[illegible],000	[illegible],000	[illegible],000	[illegible],000
Europe	[illegible],000	[illegible],000	[illegible],000	[illegible],000	2,000	[illegible],000
Inland mines	[illegible],000	[illegible],000	[illegible],000	[illegible],000		[illegible],000
Other tonnage	[illegible],000			[illegible],000	[illegible],000	[illegible],000
Total	[illegible],000	[illegible],000	[illegible],000	[illegible],000	[illegible],000	[illegible],000

ANTHRACITE

Production continued to recover from the holiday depression and is again approaching the two million ton mark. The Geological Survey reports the output for the week ended Jan. 15 at 1,896,000 net tons, an increase of 102,000 tons or 5.7 per cent as compared with the preceding week.

The mild winter has gradually lessened the demand and while all domestic sizes are still easily moved the independents are having increasing difficulty in obtaining premium prices. Their quotations reflect this condition, $3@$3.50 being quoted in the New York market, while offerings to New England are being made at $2.25.

COKE

Beehive production declined still further during the week ended Jan. 15, when 260,000 net tons were reported by the Geological Survey. Compared with the preceding week this is a decrease of 10,000 tons. The general policy of coke operators to keep production within the limits of the extremely weak demand has virtually kept "the bins" at a minimum. Connellsville quotations are unchanged, foundry $6.50@$7 and furnace $5@$5.50. Contracting so far represents but a fraction of the quantity usually closed at this time of the year.

Reports From the Market Centers

New England

BOSTON

Drifting Market — No Spot Demand Worth Mention—No Sign of Change Industrially—Forced Sales Frequent at Tidewater—Anthracite Demand Relaxing.

Bituminous—The market continues its aimless trend and there are no significant developments. Quotations are in most cases on as low a level as operators feel they can afford to sell and about the only encouraging reports from the mining regions are of operations shut down. In time this should check the downward tendency of prices which in the long run can accomplish no good for anybody.

What is greatly needed is more production of all kinds of goods, but to start up the mills the retail tradesmen must be in position to buy. In a few special lines orders are just beginning to come in, but only in slight volume. It will take quite a period of coal burning before consumers will again enter the market, for all over this territory the reserves are greater than they have been since the fall of 1918. It is not uncommon to see large plants where there is now coal in storage enough to last an even 6 months. The average reserve pile is from 120 to 150 days.

Spot inquiry is therefore extremely light. Retail dealers and a few small plants where it is not customary to store more than a few weeks' supply are the only buyers in evidence. Water power was never so plentiful as the past few months in New England, and large hydro-electric stations that use coal only for auxiliary power have large storage piles that remain almost untouched.

At New York, Philadelphia, and Baltimore distress coal is being sold from day to day at extremely low prices. Several shippers have been embargoed because of inability to move coal standing at the piers, and more than one contract customer who finds it inconvenient now to accept delivery is resting his case on the poor showing the shipper made during last spring and summer. The result is congestion at the piers so far as the carriers will permit, followed by forced sales, in some cases very little above the freight.

The smokeless shippers are facing almost the dullest market they have known. At Newport News one day recently there was but one boat waiting for a coastwise cargo, and at the terminals the situation was almost as discouraging. Several groups of mines in the Pocahontas district are to work only three days per week beginning Jan. 24 and this practice will doubtless spread through other fields.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, per net ton	$2.25@$3.50	$3.00@$4.25
F.o.b. Philadelphia, per gross ton	5.18@ 6.60	6.00@ 7.40
F.o.b. New York, per gross ton	5.65@ 7.10	6.50@ 7.85

Pocahontas and New River are quoted at $6.50@$7.25 per gross ton f.o.b. vessel at Hampton Roads.

Anthracite—A few days of seasonable weather revived anxiety over the very light stocks of domestic sizes in most communities, but moderate weather has again allayed apprehension. Retail demand generally is relaxing, and while shipments have not yet improved in any marked degree they are now more closely confined to the old-line shippers. Less and less "independent" coal is being purchased, and prices for that product have eased off very materially.

Tidewater—East

PHILADELPHIA

Cold Weather Causes Anthracite Rush—New Anthracite Tax Law Proposed—Steam Sizes Hard to Move—Bituminous Trade Light—Bottom Prices Reached—High-Grades Tend to Increase—Consumers Seek Contract Information.

Anthracite—A brief taste of winter during the past week caused the first real rush of the season. Dealers continue to look for a break in the market, yet with February almost here and coal still scarce they are beginning to conjecture just where all the coal can be going. Surely, distribution was never better carried out, not even during the war. While the large sizes are far from being easy to get, it is a fact that more independent shippers than ever have recently been offering their premium coal in this market. Quotations of $10.50@$11 have been frequent for egg, stove and nut, but very few sales made.

Dealers are also interested in the new tax suggestion as made by the Governor, proposing a levy of 8c. a ton on anthracite. Many of the dealers are still without the refund of the tax as charged by the companies on the former tax act which was declared unconstitutional. There is a feeling prevalent that the new act will go through without any opposition from the coal people.

Shipments recently have been moderate, about on an average with arrivals for the entire season from Dec. 1. There can be no denial that conditions are changing and with the mild weather prevailing heavier shipments can soon be expected. Some independents are becoming so burdened with buckwheat that they are asking the retail trade to take a car of this size with the promise of a car of egg, stove or nut, and sales have been made on this basis.

Steam sizes are becoming heavier each day and it will soon be difficult for the companies to place production on the market. As yet it is not believed that any of the operators have been compelled to store buckwheat, but some rice and barley has been going into the storage yards recently.

Bituminous—There is a growing feeling that bottom prices have been reached. This is shown by the rather varying quotations by different shippers on the same grades of coal. Pool 1 has been offered $3.75@$4.25 while Pool 9

Operating Conditions at Indiana Coal Mines During Year Ending Dec. 31, 1920

PREPARED BY JONAS WAFFLE, SECRETARY INDIANA COAL TRADE BUREAU

Railroads on Which Mines Are Located	District	No. of Mines	Tons Produced	Full Time Capacity (Tons)	Tons Lost and Causes Therefor — Total all Causes	Car Shortage	Labor Trouble	Mine Disability	No Market
Big Four	Terre Haute	6	900,294	1,473,947	573,653	459,442	85,264	28,947	....
B. & O. S. W.	Vincennes	2	354,328	544,380	190,052	108,237	67,267	14,546	
C. & E. I.	Clinton	31	4,032,971	6,013,970	1,980,999	1,238,554	597,158	130,143	15,144
	[1] Sullivan [2]	18	2,097,353	3,430,709	1,333,356	973,231	197,775	133,777	28,573
	Total	49	6,130,324	9,444,679	3,314,355	2,211,785	794,933	263,920	43,717
C. I. & W.	Dana	1	99,917	112,501	12,584	1,987	9,743	854	
Cent. Ind.	Brazil	1	57,343	61,950	4,607	658	3,039	910	
C. T. H. & S. E.	Clinton	15	2,469,778	3,818,423	1,348,945	995,720	277,926	54,566	20,733
	Linton	27	2,748,079	4,724,166	1,976,087	1,401,810	338,936	170,206	65,135
	Total	42	5,217,557	8,542,589	3,325,032	2,397,530	616,862	224,772	85,868
E. I. & T. H.	Clay City Petersburg	15	1,164,931	2,384,452	1,219,521	933,747	157,653	118,942	9,179
E. & E.	Evansville	2	115,479	140,944	25,465	13,503	4,168	4,870	2,924
E. S. & N.	Evansville	4	267,125	388,916	121,791	79,550	24,860	12,914	4,467
Ill. Cent.	Linton	6	750,112	1,245,701	495,589	353,763	78,332	52,188	11,306
Monon	Linton [3]	21	2,329,689	3,873,073	1,543,384	809,007	411,446	306,398	16,533
P. C. C. & St. L.	Main Line [4]	22	2,245,963	4,099,979	1,854,016	1,286,612	249,509	283,640	34,255
	Vincennes [5]	21	4,296,049	8,497,053	4,201,004	2,698,983	785,984	670,457	45,580
	Total	43	6,542,012	12,597,032	6,055,020	3,985,595	1,035,493	954,097	79,835
Southern	Ayrshire	10	676,796	1,369,899	693,103	460,816	72,153	142,091	18,043
	Boonville [6]	10	713,661	1,286,431	572,770	428,039	77,931	60,732	6,068
	Total	20	1,390,457	2,656,330	1,265,873	888,855	150,084	202,823	24,111
Totals		212	25,319,568	43,466,494	18,146,926	12,243,661	3,439,144	2,186,181	277,940

[1] Includes all mines South of Terre Haute. [2] Two mines served by two railroads. [3] Four mines served by two railroads. [4] Includes all mines on St. Louis and Michigan divisions. [5] Includes all mines on Vincennes division and Dugger Branch. [6] One mine served by two railroads.

has been quoted $3.25@$3.75. Probably Pool 11 has shown the greatest variation of all, quotations being $2.90@$3.50. On Pool 11 the ruling prices have been $2.50@$2.75.

If anything, sales this week have been lighter and as a result 50 per cent of the mines are idle. Shippers are taking the stand that they cannot sell at lower prices. In the higher grade coals there is a feeling that the consumer is making a mistake in not buying, for some shippers report that they already have more orders for the good coals than they can fill promptly. There is no doubt that with the slackening of production beyond a certain point prices are bound to rise.

There is much inquiry as to contract prices. A certain portion of the consuming trade is restive at the contract prices quoted on the highest grade fuels and is feeling around with the idea of economizing by using a cheaper fuel. Under these conditions it is not so hard for a buyer who has been using a coal of Pool 9 grade to be convinced that he can do very well by substituting a Pool 10 coal if he can get a contract, and that is just what many of them are trying to do.

NEW YORK

Independent Coals Show Further Settling—Buyers not Stocking—Steam Sizes Easy with Quotations Low—Bituminous Market Quiet—Coal Accumulates—Quotations Low—Increasing Contract Inquiries.

Anthracite—With buyers hesitating to take independent coal unless the prices quoted are within reason, the supply of domestic sizes is considerably easier than a week back. Company coal is also in better supply and the entire situation is gradually getting back to normal.

Dealers are not having much difficulty in meeting demands made upon them although a couple of days last week when the mercury hit a low mark some of them were made to hustle to fill their orders. However, most dealers have some coal in their bins, while others located in Brooklyn have been advertising that they have coal to sell.

Quotations for the various sizes of independent coals have been as low as $9 for egg up to $10 for the other sizes. An occasional higher quotation is heard. Pea coal is being shipped promptly and has become so plentiful that quotations range $7@$7.50.

Steam sizes are plentiful and large tonnages are being stocked by the companies. Some shippers are trying to reduce their supplies by selling these coals in conjunction with the domestic sizes. Some of the poorer grades of buckwheat were quoted at $3.25 with better grades 25c@50c higher. Rice was quoted $2.50@$3, depending on quality, while barley was quoted at $1 up.

Bituminous—Although the market at present is almost at a standstill some dealers believe they see a ray of sunshine and claim that the worst is over. Many operators, unwilling to sell their coal at present prices, have closed their mines. The miners do not take kindly to their idleness and are willing in most cases to work with the elimination of the bonus given them by many operators.

There have been many inquiries regarding contracts but as one dealer put it—"That's about as far as they have gone." The local docks are filled with coal. There has been no demand and some shippers have taken to loading boats in order to save railroad demurrage charges.

Many and varied have been the quotations during the past week. An occasional one has been below the cost of mining but the following is a fair range for the various pools at the mines: Pool 9, $3.15@$3.35; Pool 10, $2.60@$3; Pool 11, $2.25@$2.60; Pool 71, $3.25@$3.75 and Pool 34, $2@$2.50. In this harbor f.o.b. quotations ranged about as follows: Pools 1 and 71, $6@$6.75; Pool 9, $5.75@$6.25; Pool 10, $5.25@$5.75 and Pool 11, $5@$5.25.

BALTIMORE

More Mines Refusing to Operate at Loss—Prices Seem at Bedrock—Export Situation at Low Ebb—Hard Coal Receipts Fall.

Bituminous—The past week has seen the closing down of more mining operations. Producers are apparently determined to close in each case when the return on sales gets below the production costs. There is not likely to be seen here in the present period of depression the old line of selling of coal at cost under the hope that organization can be maintained and the money made again with a rising market. The cost of overhead has increased to such an extent that it prohibits such a course.

With the low prices and end of the speculative market too are passing practically all of those temporary agencies created by the opportunity of getting a cut of the melon. Demand for both gas and steam coal is very light just now both on home and export accounts. The export movement slowed off even more the past week.

The movement for the first three weeks of the month will not run much more than 130,000 tons, if it reaches that figure. The number of vessels awaiting coal has again been reduced, and reports from foreign sources do not give much encouragement of heavy business, pending some move to reestablish a better basis of credits.

Because of the light trading car supply has now run at 100 per cent ever since the Christmas holidays. Daily loadings on the B. & O. are now, however, only between 2,000 and 2,500 cars, or fully 1,000 below the level of shipment daily from the mines just before the holidays. The pier dumpings are around 200 cars a day.

Anthracite—Hard coal receipts have fallen off heavily. The shipments for January now promise to be only a little in excess of half of the December movement. Despite this there is a pretty good supply in yards here, as shown by a recent review of the situation. The few days of really cold weather was succeeded by a new spring-like spell.

BUFFALO

Bituminous not Improving—Too Much Coal Everywhere—Canadian Market Worse Than Ours—Anthracite Supply Gaining.

Bituminous—Shippers find no increase in the demand. So far no factory resumption of account has been reported and when that does take place it will be sometime before buying will need to be brisk. Consumers may accept what they call bargains, but they will hardly do that now, which is an indication that they have no further storage capacity.

Salesmen back from Canada report that the industrial suspension there is rather more general than here. Collections are decidedly poor. It all goes to show that whatever has gone wrong with our industries is a sort of matter of course. The local trade has given up looking for a spring revival of activity. Business will drag along for awhile yet, for people will wait and watch the European situation, which is by no means promising.

Mines are all running as slowly as possible and a good many are shut down. Wages are pretty generally back to the union scale and even with that much of the coal produced is sold at a loss.

Prices do not run above $4 for Youghiogheny gas, $3.50 for Pittsburgh and No. 8 three-quarter, $3 for all mine run and $2.50 for slack, and often go below these figures. For Buffalo delivery add $2.36 from Allegheny Valley and $2.51 from other districts.

Anthracite—Coal is being distributed at a good rate, though there will be complaint of shortage till everybody is supplied for the winter. The margin of coal over actual needs has been small, allowing for the fact that many large consumers, such as churches, were fully supplied last summer. There is where the mistake was made, though retailers say it was done at a time when the demand was slack.

The situation is also shown by a report of a city jobber that he had lately refused to pay a premium of about $2 on some independent anthracite that was offered. If he had not been doubtful about being able to sell the coal he would have taken it.

At the same time the mining situation is not as good as it was. Quite a good many men are out, mostly on account of disputes over employment of non-union men, and but for the fact that business generally is poor and many men are idle the situation might develop into something serious. As it is, the output has been affected materally. Operators complain that the law forbidding the putting on of green men keeps them short of miners more than is good for the business.

Coke—Demand is light, for the furnaces are down or running at a slow rate. Jobbers say that there would be no coke market locally but for the fact that so many ovens are idle. They think the shutting down of the ovens was a trifle overdone, so that contracts are not always quite filled. Prices rule at $7.25 for 72-hour Connellsville foundry, $5.25 for 48-hour furnace and $5 for stock. Domestic sizes are $7 for furnace, with next to no market for smaller sizes.

Northwest

MINNEAPOLIS

Mild Weather Continues—Market Extremely Inactive—Dock Prices Dropping—All-Rail Sales Curtailed.

The coal trade is entitled to a suspicion that some enemy has worked a Voodoo "conjer" upon it for the present season. There has been nothing but trouble, work without accomplishment, and finally failure and disappointment for the end. During the past week, there was a touch of wintry weather. Even a few days of this would have made a marked difference in coal consumption and buying. But it was not to be. After a day, the thermometer picked up to a fairly mild position which did not call for heavy consumption.

And buying of coal this winter is the one thing above others which all concerned simply will not do—until they have to. There has been hardly a time since navigation closed when there was any really urgent need of rushing orders for coal. Every contingency which may usually be counted upon to augment coal buying failed. There is usually some traffic interruption due to severe snow storms. Train service was probably never better during an entire winter. It is almost unknown for a winter to pass without a few days of sub-zero weather, a week and sometimes several weeks together. But this winter has hardly had two mornings in succession when the thermometer was below zero.

As a result of this series of exceptions, the trade with even moderate stock on hand, is wondering if it will be able to get through the season and clean up close. Country retailers are holding back from ordering any more coal. They are seeking to sell what they have, even though it be a different grade from that which the demand seeks, before they will stock further.

The wholesaler would do likewise if he could. But the dock trade has to stock during mild weather and take the chance that the winter will clean his stocks. In the language of the day the winter is more likely to "clean" him than his stocks. Those buying all-rail are playing exceedingly safe. There may be business ahead calling for considerable coal, but they are holding their fire until the theoretical whites of the eyes on the other side are available.

Dock managers are growing cross-eyed as they keep one eye on the tonnage remaining on the docks and the other upon the small amount moving out. The stocks are holding out like the widow's meal and the oil of Bible time. It begins to look as though there was a surplus in sight on the docks already, although there still remain three months of coal consumption at the least. They are still hoping that they will clean up close, and have a chance to start the new season on the basis of new values. But some of them are quite fearful that this will be denied them, in view of the reluctant way that coal has moved all winter. With spring approaching they can see no chance for any improvement.

Eastern soft coal has succumbed in price, in the quotations of a number of companies. The high figures of $13@$14 for Hocking have dropped to around $11@$11.50 and some of the lower figures have taken a drop of 40c.@65c.

MILWAUKEE

Weather Conditions Rule the Market—All Coal in Good Supply—Prices Unchanged

The coal market is quiet at present, with a demand which fluctuates with weather conditions. All concern as to the sufficiency of the fuel supply has subsided.

Anthracite and Pocahontas are readily obtainable and there is more soft coal on the docks than the owners care to see. Coke piles at the byproduct plants are also increasing rather than decreasing in size. Prices on both coal and coke remain firm, however. Illinois coal is coming in daily, but the market for it is slow. The City is buying in the open market because of inability to secure bids on a future supply.

Inland West

CLEVELAND

Extreme Dullness Continues—Steam Slack Sold As Low As $2—Pocahontas Also Lower—Early Lake Movement Seen

Bituminous—An almost total lack of interest in contract negotiations usually taken up at this time of the year characterizes the trade in northern Ohio. In addition, continued inactivity in the spot market makes for a condition of extreme dullness.

Closing of mines and extension of part-time operations is reported in the Hocking Valley district. Some No. 8 mines are also curtailing operations because of the light demand.

Another brief period of cold weather temporarily increased the retail domestic demands but dealers were able to fill all orders without difficulty. A much better gas supply in Cleveland than last year is also cutting down present domestic requirements.

Three-quarter inch steam was sold at eastern Ohio mines this week at $3, while some slack went as low as $2. Mine run is quoted $2.50@$3 and steam lump $2.75@$3.50. West Virginia splint is obtainable $4.25@$4.75.

Plenty of cars are now available at the mines. Operators are anxious to ship to Lake ports, fearing that increased business activity in the coming summer may divert supplies which could now be piled up. However, only one contract of 50,000 tons has thus far been reported closed. A few boats have started loading for the coming season.

Anthracite and Pocohontas—The demand, while not as heavy as some weeks ago, nevertheless continues greater than the supply. Retailers, in most cases take orders only for indefinite delivery. Reports are heard of spot Pocahontas having been bought recently as low as $3.50 at the mines Retail prices continue unchanged, however.

Bituminous coal receipts for the week ended Jan. 15 were: industrial 1,925 cars, retail 500 cars, which is an increase of some 600 cars over the previous week.

Following are retail prices per net ton delivered in Cleveland:

Anthracite—Egg, grate, chestnut and stove, $15.45
Pocahontas—Shoveled lump, $11.90; mine run, $11
Domestic Pituminous—West Virginia splint, $11.75
No. 8 Pittsburgh, $9.30; Cannel lump, $15.75.
Steam Coal—No. 6 and No. 8 slack $7.50; No. 6 and No. 8 mine run, $9; No. 8 ¾-in. lump, $8.90

MIDWEST REVIEW

Industrial Situation More Encouraging—Production Limited to Actual Orders—Some Contract Negotiations.

There is no question over the fact that this winter has proved, so far, a very unfortunate one for all branches of the coal industry. After a very brief spell of seasonable weather a few days ago, the mercury mounted to spring heights and what little demand there was for domestic died a hasty death.

A first hand inquiry in the industrial situation makes one feel a little better. Factories that have been down for the last two months, or weeks, are now resuming operations on a limited scale. This resumption is especially marked among the industries producing foodstuffs, for instance, milk condensaries, flour mills, etc. It is also true that a number of the larger cement plants have had the hardihood to open and start in at the rate of one or two days a week.

While the general situation is very far from normal, nevertheless, there has been considerable improvement during the last ten days. The buying public, or perhaps it would be better to say the purchasing agents of the big industries have at last come to the conclusion that it is an advantageous time to make an endeavor toward getting contract figures on their requirements. Some

operators are willing to make contracts, but as a general rule, most operators have tried to avoid the issue until a little later on in the hope that conditions will improve rapidly once they are on the mend. We have heard of a great many inquiries for contract prices but we have heard of very few contracts that have been closed, as it has been proved that if an operator is willing to make a contract at this time, his price is anywhere from one dollar to a dollar and a half over the current market.

Slowly but surely the coal trade in the Middle West is adapting itself to the changed conditions, and within the course of another month or so it is expected the coal market will be in a fairly healthy and settled state. Operators have ceased taking chances and are no longer loading coal unless they have an order on file for it. This is a very wise procedure and could well be followed by operators in Kentucky and West Virginia, who are flooding the western markets with coal on consignment.

The market cannot go any lower than it is today and in our opinion, the wise purchasing agent who has an immediate use for coal, or can conveniently store some, will doubtless purchase heavily. Current prices are as follows:

Southern Illinois (Franklin, Saline and Williamson Counties):	
Prepared sizes	$3.50@$4.15
Mine run	2.25@ 3.25
Screenings	1.85@ 2.50
Springfield District (Central Illinois):	
Prepared sizes	2.75@ 3.75
Mine run	2.00@ 2.50
Screenings	1.00@ 2.15
Northern Illinois:	
Prepared sizes	4.00@ 4.25
Mine run	3.00@ 3.50
Screenings (washed)	2.50@ 3.00
Indiana (Clinton and Linton, Fourth Vein):	
Prepared sizes	3.15@ 4.00
Mine run	2.25@ 2.75
Screenings	1.75@ 2.50
Indiana (Knox County, Fifth Vein):	
Prepared sizes	3.10@ 4.00
Mine run	2.00@ 2.75
Screenings	1.00@ 2.25
Pocahontas and New River:	
Prepared sizes	$4.00@$5.00
Mine run	2.00@ 3.50
Hazard and Harlan (Southeastern Kentucky):	
Block	$4.25@$6.00
Egg	3.75@ 4.25
Hocking lump	4.00@ 4.50
Smithing	3.00@ 4.50

ST. LOUIS

Continued Mild Weather Completely Upsets the Market—Retailers Cutting Prices—Mines Idle and Conditions Are Extremely Bad.

The St. Louis situation, if anything, is worse. It is being further aggravated by a price-cutting war between the retailers. The prevailing retail prices now are: Standard $6.25; Mt. Olive $7; Carterville $8.50, with everything to indicate that there will be a further decline if the weather stays warm.

The industrial situation has not as yet improved, and steam is impossible to move at any price. Standard screenings are down to 80c., lump or egg at $2.25, steam nut or mine run $2. Some mines work one day a week and those producing railroad coal get as much as four days. Miners are finding fault because they have not enough working time.

The real Mt. Olive and Staunton mines have not as yet cut the price. They are getting $4 on all domestic sizes, with most of their other coal going on contract. Railroad tonnage still continues good, with no labor troubles. The commercial working time per week is about two days. Other mines in this district, however, have cut the price, especially from Montgomery County, where $3.25@$3.50 prevails on domestic sizes and below $2 on screenings.

In the Duquoin district some coal is being given away as low as $2.25 on screened sizes. Mines are having a hard time, one or two of them doing fairly well and getting circular prices of $4 or better, but the others have lost their contracts and are crowding the market, with no buyers.

In the Carterville field conditions are better. Most of those operators who maintained circular prices last summer and fall still get about $4 on domestic and much of their steam coal is on contract. Working time is fair, everything considered, from two to four days a week. Railroad tonnage is fairly good. The independents, however, are selling screened coal as low as $3.50, with screenings at $1.75 and mine run at $2.50.

In St. Louis proper anthracite is not selling and practically none is moving in. The same with regard to smokeless and also Arkansas, which condition generally has caused the Arkansas mines to shut down. The coke situation is somewhat better, but not what it should be.

COLUMBUS

Demand for All Grades at Low Ebb and Production Is Still Further Reduced—Prices Are Weak All Along the Line.

Continued warm weather, coupled with reduced steam requisitions has still further weakened the coal trade. Retailers are now selling only small lots. Many operators do not believe there will be much improvement before the spring season opens. Requests for hold shipments are coming in from dealers with the result that movement is at a low point. Retail stocks, while not extremely large are still sufficient for the present. Householders are stilll following the policy of buying only in small lots. Prices are rather weak although declines are not yet as marked as at the mines. Hocking lump retails $7.50@$8.25 while West Virginia lump sells around $9. Pocahontas is coming in better and retails $10@$11. Mine run is weak all along the line with prices ranging $5.50@$6.

Production has suffered considerably under the influence of no market. This is more apparent in the Hocking Valley, Cambridge and Crooksville fields. The Southern Ohio Coal Exchange for the week ended Jan. 8 reports an output of 262,993 tons out of a capacity of 615,034 tons from 380 mines reporting. Of the shortage 214,726 tons was caused from no market.

Steam business is slow in every respect. Plants are not resuming operations rapidly and as a result the demand is low. Those concerns that are operating are using their reserve stocks. Railroad consumption is also reduced to a large extent. As a result mine run and screenings are a drug on the market and prices have reached extreme low levels.

Prices at the mines of the principal coals used in central Ohio are:

Hocking lump	$3 75@$4 25
Hocking mine run	2.25@ 2 75
Hocking screenings	1 50@ 2 00
Pomeroy lump	4 00@ 4 75
Pomeroy mine-run	2 25@ 2 75
Pomeroy screenings	1 75@ 2 00
West Virginia splints lump	4.75@ 5 00
West Virginia mine run	2 50@ 3.25
West Virginia screenings	1.75@ 2.75
Pocahontas lump	5.75@ 6 00
Pocahontas mine run	3.50@ 4 50
Kentucky lump	4 50@ 5 25

CINCINNATI

Some Industrial Resumption—Market Has Better Tone—Production Still Greatly Curtailed.

Save for the somewhat stronger demand for steam coal coincident with the reopening of several large steel rolling mills and manufacturing plants, the market during the past week remained unchanged. Very few sales were reported during the week.

While the reopening of several plants, after a period of idleness, has tended to strengthen the demand, the amount being moved is not large enough to warrant reopening of a number of mines supplying this territory. Prices at the mines are still below operating costs, with prospects of improvement still distant. Operators say they will allow their mines to remain closed until conditions better warrant the production of coal.

The somewhat better demand has tended to increase the price at the mines. Bituminous lump is quoted $3 @$3.50, while smokeless lump ranges $6@$6.50. Smokeless $5.

The domestic market remained unchanged, continued mild weather being responsible for the lack of trade in this grade of fuel. Retail prices were as follow; bituminous lump, $9.25@ $10.50; mine run, $8.50@$9.25; smokeless lump and egg, $11.25; mine run, $10@$10.50; anthracite egg, $15@$16.-50; domestic egg coke, $14.50@$15.

DETROIT

Lack of Buying Interest Continues—Reductions Fail to Stimulate Demand—Domestic Also Sluggish.

Bituminous—Under the handicap of the general business depression, the bituminous coal trade continues in a waiting attitude with buyers manifesting little or no interest in either steam or domestic sizes. Some of the large factories are using only enough coal to heat portions of their buildings.

While a number of users are now receiving only small shipments under contracts, others are providing for present needs by using coal from reserves. The few concerns that are still buying, in most instances have cut down orders to amounts sufficient for only a few days and show a desire to avoid stocking until they are able to form more definite conclusions concerning the probable trend of business in the coming months.

Domestic buyers have shown a disposition to economize which has been encouraged by a considerable lack of employment and has been facilitated by moderate weather conditions. Dealers are displaying little inclination to increase their stock piles, with the selling outlook so uncertain and the end of the coal year rapidly approaching.

Some consignment coal is reported and jobbers have experienced difficulty in getting it off the tracks before demurrage accrued. West Virginia nut and slack is quoted at the mines at $2.25; mine run is $3 and lump, $4.75. Ohio lump is offered at $4.50, mine run at $2.75 and nut and slack at $2. Smokeless mine run is quoted at $4.75, but is not plentiful.

Anthracite—Owing to the lessened demand from household consumers, the market is easier though shipments are still light.

CHICAGO

Heavy Consignments of Eastern Coal Flood the Market—Prices Cut to Bone—Hard Coal Demand Slumps.

It would be very difficult indeed to pick out a worse spot to sell coal than Chicago. The weather has been very mild, in fact, very much more suitable for golfing and tennis than skating. In addition, Indiana and Illinois mines have been producing quantities of coal but this is not the main reason why Chicago is a poor place to market fuel at the present time.

Operators in Kentucky and especially West Virginia, have an idea that the Middle West is in great need of coal, consequently they have been consigning to Chicago numerous trainloads of smokeless, as well as splint. These solid trainloads of Eastern coal began to arrive a few weeks ago and the local demand was soon filled. Today there is a very substantial tonnage of Eastern coal drawing demurrage in our yards.

Prices have been cut to the marrow and the buying public is but little interested. Very little coal is moving, as a matter of fact, what little coal is coming into Chicago, comes mostly from Franklin County. The operators in Franklin County have been able to keep their prices reasonable and as a general rule, handled their trade during the summer so that they were able to fall back on them now when they are in need of places to put their tonnage.

Prices on hard coal are remaining fairly firm, but there is but little demand and it is expected that the sales agents for anthracite will be forced to shade their figures a little before long.

Southwest

KANSAS CITY

Demand Slightly Improved with Colder Weather—Prices Fairly Steady—Production Curtailed.

A few days of cold weather temporarily stimulated buying. A great many orders were sent in by wire for rush shipments, proving that stocks in the country were very low. A great deal of unbilled coal is being carried at the mines, especially in the Kansas field, and some mines have been closed down for over a week on account of unbilled coal. Other mines are closing down rather than produce coal for which there is no market.

Some of the operators are having a hard time to explain why prices in the West do not come down in the same proportion that they are reduced in the East. They seem to forget that prices did not advance here as they did in the East, and therefore, cannot be reduced. The law of gravitation, which governs that which goes up must come down, applies equally as well to that which does not go up does not come down. However, there has been a little softening in the prices on one or two grades, but no material change.

Illinois operators, especially those producing the lower grades, have been dumping their surplus in territory west of the Mississippi River at prices just about half, or less, the cost of production, in order to keep running.

South

LOUISVILLE

Prices Showing Slight Improvement—Demand Also Better—Retail Trade Dull.

Prices at the mines have improved slightly during the past ten days, as a result of many industries resuming on a part-time basis at least, and also due to the fact that there is now considerably less distress coal on the market, and not many cancellations. Present tonnage movement is in much stronger hands, and the situation is considered as materially improved over what it was in the last half of December and early January.

Public utilities which have old contracts are taking more coal than they were. Railroads are not taking much fuel, as traffic is light. Gas and by-product plants are buying fairly well.

Retailers say that business has been slightly better due to cold weather, but that whereas half ton orders generally start coming in February and March, there are any number of half ton orders now. Some retailers refused them at first, but dropped the bars upon considering the fact that many workingmen are out of employment, and refusing half ton orders where the price is fifty cents higher would work a hardship on the consumer.

Quotations show Harlan and Straight Creek coals being offered more freely than Hazard, Elkhorn, or Jellico. One jobber quotes the market on Straight Creek and Harlan at $6 for lump; $3.40 mine run; $2.10 screenings. Scattered quotations from various sources show Hazard lump offered $4@$5; Harlan and Jellico, $5.25@$5.75; Straight Creek, $6.25.

BIRMINGHAM

Steam Market Continues Quiet, with Little Demand—Domestic Trade Good—Production Still Climbing, Despite Inactive Market.

Dullness which has characterized the steam coal market since the Christmas holidays still holds sway, and there is little or no demand for spot coal or efforts at making contracts on the part of consumers. While railroads, in a number of instances, have cut down contract deliveries to the minimum tonnage to be taken under fuel agreements, furnace interests and some other classes of consumers are absorbing the output of coal pretty well and there is not any serious accumulation, car reports showing that practically the entire tonnage mined during the last week was moved promptly. Contracts for bunker coal, which have been in hand for some time, require a considerable tonnage, which is moving both by rail and water to the ports of Mobile, Pensacola and New Orleans.

There is demand for more of the domestic sizes than the mines are now producing, and there is little or no accumulation on retail yards, the coal being passed on to the consumer about as fast as received.

The output in the Alabama field for the week ended Jan. 15 actually reported, aggregated 330,000 tons, which exceeds the record of any week since Jan. 24, 1920, the tonnage not reported being estimated from 5,000 to 10,000 tons, and representing a good increase over the week of Jan. 8.

West

DENVER

Bituminous Holding but Lignite Weakens—Demand Is Lower—No Market Losses Grow

Still greater reductions in the price of second grade lignite is marking a drive to force down the better grade. The market is weak, and orders are slow. Bituminous is holding up, but competition threatens to precipitate cut-throat conditions similar to those existing before the war.

The so-called legitimate dealers are maintaining a price of $8.40, based on a mine price of $4.25. First grade

lignite is $5.75 at the mine and $9.90 retail. Sidetracks in the neighborhood of mines on the Colorado and Southern and Union Pacific are cluttered with loads of coal awaiting billing.

Routt County bituminous is $6@$6.50 at the mine and $12@$12.50 retail, while southern bituminous is $5.50@$6 at the mine and $11.50@$12 retail. Steam is steady at $6.50@$6.75 and lignite steam is uncertain, ranging $4.75@$5.25 in Denver markets.

Production in all fields, except the second-grade lignite, shows a little better for the week ended Jan. 8, although this probably will be discounted in the week closing with the 15th, figures for which are not yet available. The total production in Colorado for the week ended Jan. 8 was 220,334 tons of a possible full time output of 273,296 tons. Car distribution conditions caused a loss representing 12.7 per cent of the total output.

Canada

TORONTO

Domestic Trade Active—Good Supplies On Hand — Bituminous not Much in Demand.

The domestic trade has lately shown increased activity due to a short spell of zero weather. Coal is being received in about normal quantities, and the yards have good supplies on hand. There is no improvement in the call for bituminous as the leading coal-consuming industries continue quiet.

Quotations are as follows:

Retail:	
Anthracite egg, stove, nut and grate	$16 90
Pea	15 40
Bituminous steam	12.75
Domestic lump	13.25
Cannel	17 00
Wholesale f.o.b. cars at destination:	
Three-quarter lump	9.50
Slack	8 25

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Stagnant Market—Consumption Very Light—Surplus Sold as Heating Coke.

The coke market has become completely stagnant, there being such light operation of blast furnaces and foundries that there is very little consumption. Contracting for furnace coke represents but a fraction of the usual quantity, and yet the total shipments of merchant coke are considerably less than the volume under contract. The contracts, in the main, are on the general basis of a five to one ratio against basic pig iron at valley furnaces. Coke shipped against such contracts will be billed at $6 as long as pig iron is unchanged. Coke could be bought on contract now at a five to one ratio or at a flat price of $6 for the half year, the former being probably more advantageous to the buyer, but there is no interest at any price since furnaces are out of blast and see no prospect of their being able to resume in the near future.

The spot furnace coke market is made by occasional odd lots that are practically forced for sale, and prices would be lower than they are were it not that coke can usually be disposed of for heating purposes at about $5.

Foundry coke in spot lots is selling in a moderate way and more brands can be had at the price range hitherto quoted. A little contract business has been done at $6.75, while some well-known brands are held at much higher figures, in which buyers are not interested. The market is quotable as follows: spot furnace, $5@$5.50; contract, $6; spot foundry, $6.50@$7; contract, $6.75@$10.

The *Courier* reports coke production in the Connellsville and Lower Connellsville region in the week ended Jan. 15 at 170,180 tons, a decrease of 5,170 tons, furnace oven production decreasing 4,390 tons and merchant oven production 780 tons.

PITTSBURGH

Production Decreases Slowly—Small Spot Demand—Possibility of Lower Wage Cost—Prices Generally Firm, with Occasional Forced Sales.

Production continues to taper off, but only slightly. The majority of operators are disposed to limit their output to supplying contract requirements, since coal cannot be sold at a profit in the spot market, but there is still some surplus, produced by mines that are less careful, and this makes the market on account of the limited spot demand. Some forced sales, made to save demurrage, are reported at prices close to $2.

Demand for railroad fuel is still fair, while demand from manufacturers against contracts, continues to decrease. Gas coal shipments are quite fair. For the highest grade gas coals good prices are still obtained, though ordinary grades bring scarcely more than steam, except for the extra for screening.

Practically no interest is manifested in contracts for the new coal year, though ordinarily at this time there are negotiations. Consumers seem to feel that there will be no difficulty in obtaining full supplies and think that any future change in values will be in their favor. A decrease in the wage cost of producing coal is regarded as not entirely improbable, on the basis that while the scale agreement runs for a year from next April 1 the men may favor a slight reduction to secure steadier employment.

The spot market is quotable about $2.50 for steam mine run, with by-product mine run and ¾-in. gas at $3@$3.50.

UNIONTOWN

General Curtailment Policy Reduces Distress Sales — Little Spot Tonnage Offered—No Interest in Coke Contracts.

General policy of both coal and coke operators to keep production within the limits of demand has virtually kept all unconsigned cars of both fuels from the Connellsville regions. While the execution of that policy has resulted in the closing down of all but the larger operations which ship on contracts, operators declare that in the end it will be to their advantage not to have an over-supply on hand when business activity again resumes.

Suspension of operations at a time when the market is below cost, taking into consideration the value of unmined coal, is entirely without precedent in this region. In former periods of business depression, operators had been forced to keep going and accepted whatever the market would pay in order to get working capital. "Ready money" is not now one of the problems of operators and they seem determined to wait until the market reaches a figure at which they can profitably operate.

There continues to be no active demand but the fact must be recognized that it could not be obtained if wanted until the coal is mined or the coke burned. Some sales were made in byproduct coal this week at an average price of $2.50, with some operators asking $3. Steam coal may be bought at $2, reports being received of sales varying each day.

Coke producers and consumers are still far apart on price views and further reduction has been made in merchant operations, the suspension now being so general that the output is at a negligible figure. Producers have set $6 as their price limit while consumers are willing to pay $5 for furnace coke. No contracts are being made and no spot tonnage is on the market.

EASTERN OHIO

Production Slumps With Light Demand—Prices Stabilize—Non-Percentage Basis for Car Distribution

A considerable slump occurred in production during the week ended Jan. 15, the estimated output being 346,000 tons which is 55,000 tons below production of the previous week and about 52 per cent of the potential weekly capacity of 660,000 tons. The situation is not showing any improvement, and it is expected that there will be further curtailment in production because of the light demand. The B&O has advised operators that in view of the present

good car supply and the prospects of its continuance, cars will be distributed on a non-percentage basis.

While at the present rate of production, railroads have been taking around 50 per cent for fuel, it is a well known fact that their requirements have fallen off considerably along with other lines of industrial activity, and there will be a temporary reduction in output for railroad fuel account.

The arrival of severe weather has slightly stimulated domestic demand, but dealers are having no trouble in meeting it. Dealers state that they are now able to purchase Pocahontas mine run at $3.25 and West Virginia Splint lump at $4.25 f.o.b. mines. The market continues quite dull, but mine prices remain about the same as quoted for last week, and it seems to be the consensus of opinion that prices have hit bottom. The range on spot coal is as follows: slack $2@$2.75, mine run $2.50@$3, ¾-in. lump $3@$3.25, 1¼-in. lump $3.50@$4, domestic lump $3.75@$4.50.

CENTRAL PENNSYLVANIA

High Cost Mines Down—Aggregate Production not Materially Affected—Prices Still on the Toboggan.

Production loss during the second week of January was 275,000 tons. The rule in the field is that the mines producing the higher grades are the ones being operated, as is shown by the fact that while the tonnage has decreased about 25 per cent, fully 45 per cent of all mines in the field have been closed. A large majority of these were small, high-cost producers.

Coal prices in the central Pennsylvania field continue on the toboggan and market conditions continue about the same in the district as for the first and second weeks of January. We quote Pool 10 at $2.65 with Pool 11 reaching the low mark of $2.10, with the market literally "on the bumps." Spot market prices in the Punxsutawney district were thought to have reached low water mark last week at $3.25, but there has been a steady slump until spot sales were made this week at $2.25 and some as low as $2.

FAIRMONT AND PANHANDLE

Mine Idleness Grows — Low Prices No Inducement and Spot Sales Are Few—Empties Clog Sidings.

Fairmont

Idleness was general throughout northern West Virginia during the second week of January, about 300 mines being in idleness by the last day of the week. Production in the Fairmont region alone was fully 50,000 tons under that for the preceding week. Even contract orders were cut down. Little or no coal was changing hands in the open market. Despite general conditions, a very considerable tonnage was being shipped to Eastern markets.

As so many mines were not in operation the large number of open tops available only served to clog sidings. Tidewater shipments during the early part of the week were rather large. Considering the general lack of demand, Tidewater dumpings were rather encouraging.

It was out of the question to arrive at prices, as there was no way of gaging them in view of the fact that no coal was being sold on a spot basis. Fully 50 per cent of the coal produced on the Monongah Division of the Baltimore & Ohio was being taken by the railroads.

Northern Panhandle

Commercial mines were not operating more than on a half-time basis, which sufficed to take care of all orders. Few sales were made in the open market and no new contract business was developing. Operations were being materially curtailed. The price range on mine run of $2.75@$3.25 represented merely nominal prices, because few if any sales were being consummated at such figures. Had mines been able to operate more of the time, they would have had plenty of equipment, for with idleness so general, cars were thick in the Northern Pan Handle region.

Middle West

INDIANA

All Grades in Weak Demand—Minor Labor Troubles—Domestic Prices Are Firm.

Demand continues on the downgrade. The industrial depression has cut seriously into the demand for steam coal. Demand for domestic is not as heavy as it should be at this period of the year, because of the extremely moderate winter. In spite of the lack of demand, coal for domestic use is still bringing the price first set by the special coal commission.

During the past week operators have been troubled with a series of minor disputes that have tied up many mines. The epidemic of labor troubles does not appear to be segregated in any one section, but is common all through the district. Operators are inclined to attribute this to a natural reaction from the steady pre-Christmas run.

There is considerable free coal on the market. The price of mine run sold out of the state has dropped about fifty cents during the past two weeks and unless the demand picks up, a further slight decline is expected.

WESTERN KENTUCKY

Demand Showing Slight Improvement—Less Distress Coal on Market—L. & N. Suspends Contract Orders.

The situation in the western Kentucky district is showing a little improvement as a result of the wagon and small mines having dropped out of competition, this taking a lot of poor grade and distress coal from the market. The larger mines are operating about three days a week with a plentiful car supply at command. Cold weather of the past few days has cleaned up rejected shipments and coal loaded without orders, and prices are just a slight bit better than they have been. Retailers are buying better as a result of the cold spell.

Western Kentucky field prices as reported for the week ended Jan. 15, showed lump, average, $4; range, $3.50 @$4.25; mine run, $2.85; range, $2.50 @$3.25; nut and slack, $2.60; range, $2.40@$3. Some lump coal has been sold as low as $3, and screenings, $2, while pea and slack is quoted $1.75@$2, with some offers as low as $1.40.

There is not much demand from any special industries. However, prospects are considered brighter for steam coal in Michigan and Illinois. The Louisville & Nashville R.R. has ordered the suspension, effective until further notice, of all shipments of contract coal from the western Kentucky field. Several mines are idle.

DUQUOIN

Market Is Unimproved — Production Further Curtailed by Dull Demand.

The market in southern Illinois has continued to show its dullness the past week and the effect of the slump is now being felt keenly in Franklin County, where up to the last few days coal had moved almost as freely as in better times. Some of the larger railroads are now unhesitatingly refusing to accept certain coals on the grounds of "poor quality"

The average production throughout the district did not pass the 75 per cent mark, a few mines still holding out in some manner to operate every day, but the majority being idle at least from two to three days. The men seem to be eager to get in all the work they can and no labor trouble of any consequence was noted during the week.

Middle Appalachian

LOW-VOLATILE FIELDS

Good Production of Contract Coal—Spot Demand Unimproved — Prices Steady—New Contracts Being Closed.

Pocahontas and Tug River

Production in the Tug River field during the week ended Jan. 15 reached a total of 94,000 net tons, a decrease as compared with the previous week, but still regarded as excellent, in view of general conditions in other fields. The drop in production was due entirely to some of the largest companies practically shutting down for one or two days in order to avoid set-out loads. The attitude of the railways in shutting off delivery of empties to a mine as soon as it fails to furnish adequate consignment has had an excellent stabilizing influence.

Prices on Tug River coal remained the same as during the opening week of the year, with mine run averaging about $5.

Production in the Pocahontas field was not far short of 400,000 tons. That was because the market was readily absorbing the product of the district, with the price holding firm on mine run

at about $5. Such a price was maintained in the face of the fact that there was little or no spot demand. The only factor which tended to cut down production at all was a few cancellations of contract orders.

Slack continued to command about $4, more spot orders being placed for that grade than for mine run. There continued to be a somewhat greater demand for prepared sizes in the Western markets. Every mine which was operating had a full quota of cars.

New River and the Gulf

At no time during the second week of the month were New River mines short of cars. This wealth of empties caused some inconvenience, for there was no place to store all the empties available. Even such mines as were loading to capacity had cars left over every day. With production thus stimulated more coal was being shipped than during the high productive periods of 1920, even though there was not much of a market, so far as spot sales were concerned. Contract orders were tiding over the dull period and not less than 25,000 tons a day were being loaded out. Even in the face of the fact that there was so little spot steam demand, prices were not depressed. A fairly large demand in the open market for egg and lump tended to increase Western shipments.

Activity in the making of new contracts was somewhat marked. Prices were invariably well above $5. Contracts were placed for delivery of coal alongside at $9, such coal to be shipped to foreign markets. This means a basis of about $6 at the mines.

The second week of the year found the mines in the Gulf producing only about half of potential capacity. The car supply was so large that it would have more than sufficed to take care of maximum production.

Production was largely confined to mines having contract orders to fill. Where mines were without contracts, operations were almost totally suspended, such mines finding it impossible to place their coal in the open market owing to the very general refusal of consumers to buy spot coal. Even with the demand so slack, prices still clung to the $5-mark. Prospects of contracts being closed encouraged producers in the field to believe that a number of companies would be able to resume operations before long.

HIGH-VOLATILE FIELDS

"No Market" Losses Grow — More Operations Close—Cancellations Hit Contract Orders—Troops Leave Thacker Field.

Kanawha

The Kanawha field was accorded a car supply far in excess of the ability of mines to load during the week ended Jan. 15. The supply grew in volume throughout the week instead of diminishing. Even under normal conditions it would have been unable to load anything approaching the number of empties on hand. Mines, however, were unable to operate more than two days out of the six. Contract orders were so seriously curtailed that little business was left of any kind. No coal, so far as reported, was being disposed of on a spot basis, the question of prices not entering into the selling equation, as buyers did not want coal on any terms for the time being. A little gas coal was being sold—certainly a larger volume than of steam, but even gas coal sales were infrequent.

Logan and Thacker

If anything, more empties were placed during the second week of January than during the previous week. The output was greatly curtailed by market conditions. Where mines were without contracts, as a general rule operations were suspended, for comparatively few spot sales were recorded, nor was it possible even to force any coal on the market, no matter how great a sacrifice there might have been in price. Hence producers abandoned any attempt to secure orders while awaiting a revival of demand. For neither slack nor mine run was there any market whatsoever. The demand was also far under normal for prepared sizes, $4.25 representing the average price.

In view of the general absence of demand, production was holding up remarkably well in the Williamson field. The output continued to be far above that of the latter part of 1920 when operations were so seriously curtailed by a strike. In the second week of January, even with the general demand so poor, production was not far from 100,000 tons. Inability to market coal constituted the chief source of loss.

Considering the fact that only high volatile coal is produced in the Williamson region, conditions were regarded as generally satisfactory from a market and an operating standpoint. A large car supply was also conducive to a large production. The big event of the week was the withdrawal of Federal troops, state police taking their place. By Jan. 17 two companies of Federal troops had been withdrawn.

Northeastern Kentucky

The biggest slump in a year or more was seen in the second week of January, production dropping from 101,000 tons for the week ended Jan. 8 to 69,000 tons. As losses from "no market" amounted to 171,000 tons, it will be observed that lack of orders was principally responsible for the general shutdown. On Saturday, Jan. 15, only eight mines in the entire field were in operation.

The bottom had dropped completely out of the market, producers finding it utterly impossible to dispose of their product at all. Rather than attempt to force coal on the market, mining was generally suspended. As reflected in the small production, only a few contract orders were left intact. With so few standing orders to be filled, even mines with contracts were only operated during a small portion of the week.

Steam coal could not be marketed even at a price under the cost of production, so poor was the demand. The call for gas coal was little better. The nominal price on mine run was about $3 or under, but no mine run to speak of was being sold at that or any other price, and the same statement applies to slack at $1.75 a ton.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Prices Remain Firm—Trade Sluggish on Steam—Many Operations Closed—General Operating Conditions Good.

There was but little if any further reduction in prevailing prices during the week ended Jan. 20, with quotations around $5@$5.50 for best blocks, $3@$3.50 for mine run, and $1.75@$2 for steam. These prices cannot well fall any lower, for they are too near the cost of production to stand any further reduction, and in fact only the better mines can now operate at a profit.

It is estimated that not more than one third of the mines are making any attempt to operate. The few operating are able to get all the cars they want. Labor is also quite plentiful. The weather is such that traffic movement is speedy, and loads are handled quite promptly.

Contract talk is beginning to filter through, with some of the wise ones even speculating as to the probable prices that will be offered for Lake coal. However, price-makers at the mines are a little bit cautious about naming a price for any considerable quantity for future deliveries.

Considerable export coal is being shipped from the field, just now, in fact this is about the only market for mine run. However, prices are very low, and it is not very attractive business, except as something to keep the mines running.

West

UTAH

Cold Weather Improves the Demand—Labor Conditions Satisfactory.

Several very cold days during the past week have improved the retail coal situation somewhat from the dealer's standpoint. There is also some improvement in the Coast trade. Labor conditions continue satisfactory.

The increasing importance of Utah as a coal producing center for the Intermountain and Pacific states is seen in the report of the annual production for the past year. Mines broke all previous records by mining 5,895,105 tons. This is 758,280 tons more than were mined in 1918, the best previous year. January was the biggest single month with 589,668 tons, and November second with 558,982 tons.

Milwaukee Wholesalers Face Loss Because of Tardy Lake Movement in 1920

Late Arrival of Coal Necessitated Laying in Stocks at Prices That Allowed Little Profit—Exporters and Speculators Add to Panicky Conditions—Dealers Absolved of Profiteering Charge—Depression Expected to Be Short-Lived

By H. Bleyer

TO REVIEW the coal business at Milwaukee during the year 1920 means to recall an array of trying situations which combined to make the season memorable as the worst ever experienced by those engaged in the trade. To wholesalers the year was nerve wrecking from start to finish. They fairly had to beg for coal in the spring, and later on, when coal did begin to move in a reasonable way, prices at the mines soared to such lofty heights that they were forced to put in stocks at figures which promised little profit in the end; in fact, if they escape without loss they will be fortunate.

The opening of navigation in the spring found the docks absolutely bare as the result of an exceedingly severe winter, during which the yards were besieged daily by endless lines of vehicles of all kinds, and coal had to be rationed out in small lots. It was only natural, after an experience like this, that the dock companies should seek by every means within their power to rush coal up the Lakes as fast as ships could carry it. But in this timely service they were sorely balked by labor troubles at the mines, by a strike of switchmen and by a scarcity of railway cars.

The movement up the Lakes was so slow that by Aug. 1 less than a million tons of hard and soft coal had been received, when receipts for years back during the same period averaged in excess of two million tons. As a result, an order was finally issued giving priority to coal shipments for upper Lake ports. But the output of the mines became so small and uncertain that buyers developed a panicky feeling, and exporters and speculators bid coal up to such high figures that dock men of the Northwest could not afford to compete with them. However, it was imperative that they provide stocks sufficient to tide over the winter and prevent suffering, and to that end they bought coal at the risk of heavy financial loss. August, September and October witnessed the heaviest cargo receipts of the season. Arrivals fell away during November and December, contrary to general expectation, and the year closed with cargo receipts close to a million tons short of the record of 1919.

To meet increasing costs Milwaukee dealers advanced prices of all kinds of coal as the season progressed. Complaints of alleged profiteering were lodged with the State Marketing Commission, which immediately instituted an investigation to determine whether there was any ground for the charges. The heads and representatives of six Milwaukee distributing companies were called to testify as to their methods of marketing, their price increases and their margins of profit. All denied having direct knowledge of quotations made by their competitors, and laid the blame for the prevailing high prices on the generally chaotic conditions which confronted the trade. The investigation was pursued at other Wisconsin receiving points, with the same result. It is evident that no crooked work was found, as the report of the investigators was never made public.

Milwaukee dealers are not advancing predictions as to the future. It is admitted that soft coal is bound to go to much lower levels next spring, on a basis of cost of production plus freight rates. Coke will have to follow soft coal. Anthracite is expected to take the usual drop of 50c. per ton in the spring. The outlook for business is not very bright at present, owing to a falling off in coal consumption by the industries. It is believed by many, however, that this condition will be short-lived and that there will be a change for the better before the new coal season begins.

Following are the retail prices on coal and coke at Milwaukee, compared with the prices which prevailed at this time last year:

ANTHRACITE*

	Jan., 1920	Jan., 1921
Egg	$12.10	$15.95
Stove	12.35	16.20
Nut	12.50	16.20
Pea	11.95	14 35
Buckwheat	9.50	12 65

BITUMINOUS*

	Jan., 1920	Jan., 1921
Pittsburgh, Hocking and Youghiogheny	$7.75	$10 75
Pile run	6.75	10.25
Screenings	5.75	9 00
West Virginia screened	8.00	11 00
Pile run	6.75	10 50
Screenings	6.25	9 00
Pocahontas screened	11.00	16 25
Mine run	8.75	12 50
Screenings	6.75	11 00
Smithing	7.75	13 00
Kanawha Gas mine run	7.00	10 00
Illinois and Indiana screened	7.75	10 00
Pile run	6.75	9 50
Screenings	5.50	9 00
Coke	12.00*	17 25*

* Carrying charge, 1920, 75c.; 1921, $1, except for coke, on which there is no carrying charge.

RECEIPTS OF COAL AT MILWAUKEE FROM ALL SOURCES DURING THE YEAR 1920 WERE AS FOLLOWS:

Month	By Cargo — Hard, Tons	By Cargo — Soft, Tons	By Car-Ferry — Hard, Tons	By Car-Ferry — Soft, Tons	Total By Lake Hard and Soft, Tons	By Rail — Hard, Tons	By Rail — Soft, Tons	Grand Total Hard and Soft, Tons
January	...	.....	17,285	16,428	33,713	1,007	20,121	54,841
February	..	..	11,704	48,791	60,495	.....	40,632	101,127
March	...	.....	3,928	24,531	28,459	89	68,988	97,436
April	17,500	26,000	12,184	47,887	103,571	.....	64,967	168,538
May	109,600	136,462	19,204	21,531	286,797	.....	214,246	501,043
June	138,771	191,573	3,546	22,015	355,905	.....	106,186	462,091
July	104,690	259,459	5,082	18,028	387,259	390	112,237	500,886
August	126,206	401,554	4,02	13,408	545,194	2,800	73,240	621,234
September	76,940	487,757	4,547	15,556	584,800	224	100,434	685,458
October	127,656	425,612	2,732	15,371	571,371	379	91,057	662,807
November	103,823	335,955	1,213	10,368	451,359	74	73,229	524,662
December	67,817	110,806	4,723	49,244	232,590	95	84,569	317,254
Total	873,003	2,375,178	90,174	303,158	3,641,513	5,058	1,049,906	4,696,477
Total, 1919	985,692	3,174,078	91,264	218,086	4,469,120	2,228	530,708	5,002,056
Increase	.....	.....	.....	85,072	.....	2,830	519,198	.....
Decrease	112,689	798,900	1,090	.....	827,607	.....	.....	305,579

Logan Field Rapidly Developing

PRODUCTION of coal in the Logan field of West Virginia in 1920 was about 9,500,000 net tons, from a potential mine capacity of 22,000,000 tons. The number of producing mines in the Logan district increased during 1920 from 115 to 126, and it is probable there would have been even greater development had railroad facilities made it possible.

The Chesapeake & Ohio R.R. is at present constructing a double track on the Guyan Valley division, so that practically one-half of the division from Logan to Barboursville will be double tracked when the work is completed. The railroad company also intends to build twenty miles of additional sidetrack in the Peach Creek yards. These improvements will prove beneficial, and because of them Logan operators believe that it will be possible to increase production greatly if sufficient motive power and equipment is made available to handle the tonnage.

At a time when the export demand was heaviest Logan shippers were frequently cut off from Tidewater by Chesapeake & Ohio embargoes. A large proportion of the output was shipped to Western markets where automobile, by-product and other industrial concerns were heavy buyers.

The city of Huntington developed into an important market center during the year, especially for Logan coals, and many sales companies, as well as a large number of producers, established offices there for the purchase and sale of Logan coal. Although prices were high in 1920, many of the companies in the field obtained only a moderate return on the sales because so large a proportion of the output was under contract.

MINE And COMPANY NEWS

ALABAMA

A reorganization of the **Empire Coal Co.**, of Birmingham, has been perfected by local and Eastern capitalists and the coal properties of this company and the Panama Coal Co., and a large acreage of virgin coal lands in Walker County, controlled by Walter Moore, a local operator, have been merged in the new organization, which is capitalized at $2,500,000. While headquarters of the company will be located in Baltimore, operations will be directed from Birmingham by Walter Moore, president of the new corporation. The Empire Coal Co. and the Panama Co. now have active operations with a normal capacity of 52,000 tons per month, and extensive improvements and developments are planned for the near future. Much of the virgin land included in the merger is on or adjacent to the Warrior River, and water transportation will be available.

The Crescent Coal Co. is opening up a new mine at Armstead Switch, near Oneonta, Blount County. The Crescent company purchased the holdings of **C. R. Middleton** and associates and is now constructing tipple and building siding and tramways preparing to commence operation at an early date.

INDIANA

The suit filed several weeks ago in Federal Court by the Farmers' Loan and Trust Co., trustees, against the Evansville & Indianapolis R.R. for thirteen carloads of coal alleged to have been taken illegally from the **Pike County Coal Co.** was dismissed Jan. 11. With the dismissal was filed a letter from the coal company saying that the Big Four R.R. had requested that the suit be dropped and that it would make direct settlement with the coal company. The original complaint charged that while the E. & I. was in the hands of a receiver certain employees of the Big Four system helped to operate it and that the coal in question was seized by the Big Four for its own use.

Abandonment of some of the larger mines around Brazil in District 8, United Mine Workers of America, known as the Indiana block coal field, is predicted by several mine operators who assert the cost of production of the harder coal is so great now that it can not be mined profitably. Some operators state that the cost of production and other expenses amount to $5.80 a ton, and that they are unable to get this price in competition with the larger bituminous mines, where coal is more easily produced.

The Gladstone Coal and Mining Co., operating three miles north of Petersburg, is staking off a town on the Washington road and will build a number of houses early in the spring. A store building, a bakery and a company store will be erected.

The Bicknell coal mine, the oldest in point of service in the Knox County field, has been abandoned and its owners have ordered the mine "stripped." The shaft was sunk in 1890 and the mine has since been in constant operation. Vester Farris, who helped sink the shaft, was an employee when operations ceased.

Announcement has been made of the formation of the **National Development Co.**, of Indianapolis, with a capital stock of $80,000, the purpose being to mine coal. The directors are James R. Swartz, Timothy P. Sexton and Edward F. O'Donnell.

KENTUCKY

In spite of the dullness in the present demand for coal there are several new incorporations recently along with several increases in capital to take care of enlargement of business. Among new incorporations are: **The Hord Coal Co.**, Manchester, J. C. Cloyd, D. Y. Lyttle and A. D. Hall. **Boone Fork Coal Co.**, Jackson. $12.000. J. E. Dean, Oliver Kash, and Walter Cox. **Big Four Coal Co.**, Williamsburg, $30.000, G. C. Cricillis, Margaret Cricillis, and E. F. White. **Jenkins Coal & Coke Co.**, Jenkins, $60,000, L. B. Abott, H. S. Carpenter, and C. C. Goertmiller. Increases in capital are: **Pinson-Elkhorn Colliery Co.**, Pikeville, from $50,000 to $100,000. **Darb Fork Coal Co.**, Catlettsburg, from $100,000 to $200,000.

Much interest has been manifested in a coal land suit between the **Marion Coal Co.** of Blackey, and **Ben McIntyre**, brought up before Judge Sampson, of the Court of Appeals, from the circuit court of Judge Vanover, the latter having decided in favor of the coal company. McIntyre claims right to the surface land, claiming that his father merely sold the coal under the land, while the coal company claims that the surface was included in the deal.

MINNESOTA

The St. Paul Coal Co. has just filed articles of incorporation in St. Paul, to do a wholesale and retail business with capital stock of $100,000. The incorporators are Watson P. Davidson, a St. Paul business man, ex-Governor J. A. A. Burnquist, just retired from office, and Fred O. Block, of Muscatine, Iowa. The last named is treasurer of the G. W. Block Co., which has yards at a number of towns in southeastern Iowa.

The Hennepin Atomized Fuel Co., of Minneapolis, is completing another pulverizing plant for producing peat in pulverized form. This plant is to be the first of several to be located at different points. The use of the powdered peat is claimed to have been very satisfactory in the trials given in a Minneapolis office building.

NEW YORK

W. A. Harriman has been elected Chairman of the Board and **George E. Warren**, President, of the Warren Export Coal Co., just incorporated under the laws of Delaware. Harriman shipping interests and the George E. Warren Co. are equally interested in the new export corporation which has been formed for the purpose of doing a general export cargo and bunker business in coal. Other officers of the company elected are: Lester H. Monks, vice-president; George P. Oswald, vice-president and general manager; G. Walter Anderson, treasurer; and F. W. Anderson, secretary. Offices of the company will be temporarily in the Grand Central Terminal, New York City.

B. Nicoll & Co. has transferred the business of dealing in iron, coal and allied products conducted under that name, together with all the assets employed by or in connecion with it, to **B. Nicoll & Co. Inc.**, a corporation organized and formed to carry on the business of B. Nicoll & Co. The corporation will assume the outstanding contractual obligations of B. Nicoll & Co., and will continue the business on the same lines as it has heretofore been conducted. In addition to Benjamin Nicoll, who will continue in general charge of the business as president, the officers of the company are: George F. Eldridge and Henry K. Stauffer, vice-presidents, Courtlandt Nicoll, secretary and Edward Mullan, treasurer. Harold C. Pridham has been appointed assistant to the president, and Nathaniel C. Ashcom, manager of eastern sales.

OHIO

The A. J. Morgan Coal Co., formerly operating Johnson, Franklin and Taplin mines, has been dissolved and the **Cleveland & Western Coal Co.** will operate Johnson mine at Pipe Creek and Franklin mine at Stewartsville. A. J. Morgan of Bellaire, has taken over the Taplin mine at Bannock, which he will operate independently. The Cleveland & Western Coal Co. has headquarters in Cleveland, and the officers are: F. E. Taplin, president, C. F. Taplin, vice president in charge of finances, A. P. King, vice president in charge of operations, Wm. Taylor, vice president in charge of sales, and W. J. Semple, secretary-treasurer. This company recently acquired 11,000 acres of coal land near Powhatan, Monroe County, along the Ohio River, and engineers are now surveying the property.

The Sunday Creek Coal Co. has started to load coal at its new mine, which will be known as No. 8. This mine is re-equipped after being idle for a number of years. New equipment, electrically operated, has been installed.

The mine of the **Hisylvania Coal Co.**, at Gloucester, which was flooded Oct. 19, 1920, has been pumped out and is ready for operation. It required just about three months for the pumping operation, and two large pumps were installed. All of the machinery was found intact and practically uninjured.

The Buena Vista Coal Co., of Steubenville, has been chartered with a capital of $60,000 to mine and sell coal. Incorporators are F. S. King, W. R. Alban, S. Welday, M. Croner and S. H. Anderson.

Papers have been filed with the Secretary of State increasing the authorized capital of the **Alma-Thacker Fuel Co.** from $150,000 to $500,000. The company operates a property in the Mingo field of West Virginia.

Papers have been filed at Cincinnati increasing the capital of the **Tildesley Coal Co.** from $150,000 to $250,000.

PENNSYLVANIA

The **American Coal Co.** of Allegheny County, has declared a dividend of $1 a share, payable Feb. 1. The last payment made on this issue was of $2 a share on March 17 last.

The Youghiogheny & Ohio Coal Co., Cleveland, has disposed of Manifold Mines Nos. 1 and 2, and its Enterprise properties, near Washington, Pa., to the McClane Mining Co. of that city. The properties consist of nearly 4,000 acres of unmined coal with three completely equipped operating plants and is contiguous to other holdings of the purchasing company, and is traversed by the Pennsylvania and B. & O. roads. The acreage is entirely made up of high grade gas coal and it is reported the deal involved over $3,000,000.

The Katherine Mine of the **Union Connellsville Coal Co.**, at Simpson, Fayette County, which had been sealed up for several weeks on account of a fire, was opened recently and the air turned through it and the fire found to be entirely out. The damage to the mine is estimated to be about $150,000. Men have been started relining the shaft preparatory to getting the mine in shape to resume operations.

Boland Brothers, of Dunmore, have been incorporated with $60,000 authorized capital stock. John W. Boland, of Dunmore, is treasurer, the other incorporators being Leonard P. Boland and Eugene G. Boland. The corporation will buy, lease and deal in coal lands, and will mine coal.

Banks of the old Scott mine between Lytle and Forestville, in the Minersville district, are being washed by **O'Malley Brothers**, of Scranton, a considerable force being already at work there. The capacity of the operation will shortly be increased to shipments of 1,000 tons a day.

The South Fork Coal Mining Co., of South Fork, has contracted for the installation at their mine at El Mora of a wood tipple and retarding conveyor with all dumping facilities at the head house. Work will be started immediately by Roberts & Schaefer Co.

One of the largest coal land deals recorded in central Pennsylvania for some time was closed recently in Somerset County, when a tract of 533 acres in Quemahoning township, near the town of Kantner, was purchased by **W. G. Wilson** of Mineral Point, **Ira F. Link** of Conemaugh township and **Dr. J. D. Keiper** of Johnstown. The land was purchased from **Daniel Ott** and **George A. Ellenberger** of Johnstown, doing business under the firm name of **Daniel Ott & Co.** The consideration was $80,000. **The Midway Coal Corporation** of Johnstown conveyed several smaller tracts of land in Somerset County to the same three men for a consideration of $15.000.

WEST VIRGINIA

Raleigh people have launched a new company—**The Beckley Fire Creek Smokless Coal Co.** which will operate on a large scale in the Raleigh County field as indicated by the company's capitalization of $500,000. Conspicuous in the organization of this company were Prince E. Lilly, Thomas H. Wickham, W. W. Goldsmith and Ashton File of Beckley, W. Va.

Development of the Monongalia County field continues as indicated by the organization of the **Barbara Mining Co.** of Cassville which will have its principal operation in Cass district. This company has a capital stock of $250,000. New York and Pennsylvania people are largely interested as follows: W. W. Woodruff, F. F. Woodruff, A. W. Davis, all of Pittsburgh, Pa.; George J. Meehan of Buffalo, N. Y., Charles E. Craig, of Morgantown, W. Va.

Clay County coal land will be developed by the **Freer Coal Co.** with its main office at Charleston. It is capitalized at $50,000. Ohio people for the most part are interested in the new concern as follows: George G. Bauer and Henry W. Bauer of Buchtel, Ohio; Frederick A. Freer, George F. Freer and Frank C. Freer of Nelsonville, Ohio.

Marshall County coal land will be developed by the **McMillan Coal Co.**, the general office of which will be at Wheeling. Among those most largely interested in the new concern are W. W. McMillan, George A. Blackford, both of Wheeling; William Rennie, J. E. Barth, of Shadyside, Ohio; A. Legarden, Martins Ferry, Ohio.

New entries are to be driven and more houses for miners are to be provided by the **E. E. White Coal Co.**, all with a view to increasing the output. As the first step in improvement officials of the Virginia Ry. visited the Glen White plant early in January and made an inspection of the trackage at the plant.

J. J. Ross, of the Logan Mining Co. and also president of the Logan Operators Association is one of a number of Logan coal people who have formed the **Ross Smokeless Coal Co.** That company is preparing to operate in Meadow Bluff district of Greenbrier County. Others interested beside Mr. Ross in the new concern are: H. A. McAllister, J. R. Slack, W. C. DeVault and D. B. Bailey of Logan.

The Whiteley Coal Co. has secured 2,000 acres of Pittsburgh in Whiteley Township near Waynesburg, Pa., this coal having cost approximately $300 per acre, the aggregate sum involved being $600,000. The propery was purchased through E. D. Patterson.

Sheriff L. L. Young, of Harrison County has launched the **Young Coal Co.**, capitalized at $25,000, which will open a mine or mines in Harrison County near Nutter Fort. Those most largely interested in the new company are: Clayton G. Young, W. G. Kester, U. O. Wright, all of Miller Fort.

Pond Creek is to be the scene of operations of the **R. G. Baden Coal Co.** This company has just been organized, the capital stock having been fixed at $100,000. The principal figures in the new company are W. J. Bailey, H. H. Randolph, R. G. Bailey, C. A. Hammond and L. B. Saunders, all of Williamson.

The New River Coal Co. has filed in the district court for the southern district of West Virginia a suit in assumpsit against the government of the United States for $40,000 damages representing coal confiscated by the Navy and not paid for. This suit is an outgrowth of the practice of the Navy in commandeering smokeless coal at an arbitrary price without regard to the market or contracts and without making any serious effort to reach an agreement with smokeless operators on prices. Much of the coal commandeered was being shipped on contract at a price in excess of that which the Navy was willing to pay. The New River company suit represents the difference between the contract price and the price at which the coal was commandeered.

Less coal was produced in the coal fields tapped by the Norfolk & Western Railroad during the year 1920 than during the year 1919, by at least 706,000 tons, that at least being the decrease for the first ten months of 1920. However, in 1920 the total volume of coal and coke combined amounted to 30,000,000 tons. A shortage of equipment and the strike in the Thacker field were chiefly responsible for the decrease in 1920 production. The Norfolk & Western during 1921 through the purchase of additional equipment will be in a position to make an increase in freight tonnage possible.

Little damage was done in a fire which broke out in the main entrace of the first street mine of the **Richland Coal Co.** at Moundsville on Jan. 14. Accumulated gas was ignited by powder. Miners in other parts of the mine escaped as soon as the fire broke out. Before it had gained any headway miners and members of the mine rescue station at Wheeling had the fire out, it being possible for the night shift to go into the mines the same evening.

Personals

John G. Kerr, secretary-treasurer of the Colorado and New Mexico Coal Operators' Association, with headquarters in Denver, has resigned and will leave the association Feb. 1 to engage in the coal brokerage business. He will be succeeded by **George Williams**, formerly with the Colorado & Southern R.R., and at present traffic manager for the Amalgamated Sugar Company of Ogden. Mr. Kerr already has opened offices in the Boston Building in Denver. When the Colorado Coal Survey Committee was appointed as a war emergency division of the National Defense League, Mr. Kerr was made secretary. His quick adaptability led to his choice as secretary for the Colorado association. National association officials urged the formation of the association, it is understood, on the basis that Government business could more easily be conducted through an organization than through individuals. The association withdrew from the National Coal Association in the closing days of 1920, and a reorganization includes a program calling for greater attention to traffic problems in the Rocky Mountain territory.

JOHN G. KERR
Former Secretary-Treasurer, Colorado and New Mexico Coal Operators' Association, Denver, Colorado.

Obituary

Ferdinand Schlesinger died recently while en route to California. Mr. Schlesinger was 70 years of age. The Schlesinger interests control the coal mines of the Elkhorn Piney Coal Mining Co. at Stanaford, W. Va., Powellton mines at Powellton, Christian mines at Mahan, St. Clair Coal Mining Co.'s operations at Eagle, Rum Creek Collieries at Dehue, and the Elkhorn mines at Weeksbury, Ky.

N. J., Woods, of Huntington, president of the Central West Virginia Fuel Co., died at Philadelphia on Jan. 6 of spinal meningitis. His death was entirely unexpected. Prior to locating in Huntington about a year ago, he was an active figure in the Dickinson Fuel Co., with headquarters at Charleston, but severed his connection with that company to organize the Central West Virginia Fuel Co.

Industrial News

Washington, D. C.—The War Department recommended $25,000 for the construction of a coal trestle and bin at the Aberdeen, Md. ammunition arsenal, which would save a yearly labor cost of $7,000 by dumping the cars from an elevation instead of handling the 15,000 tons of coal a year by shovel. Recommendation was also made for a coal trestle at Frankford, Pa. arsenal, at a cost of $100,000 to store coal adjacent to the new power plant. About 500 cars of coal a year are handled at a cost of 91c. a ton. The trestle would enable an annual saving of $12,285 on 15,000 tons of coal handled. Recommendation was also made for improvements to the heating plants at the Frankford and the Springfield (Mass.) arsenals, which, it is estimated, would mean a saving of 10 per cent of coal consumed.

Traffic News

Just and reasonable rules, regulations and practices regarding car service at their mines is requested by the **Fairmont & Cleveland Coal Co.**, of Fairmont, W. Va., and the **New River Co.** of MacDonald, W. Va., in complaints filed with the I. C. C. The complaints allege that the present practices are unjust, unreasonable, unduly preferential and prejudicial.

The I. C. C. has suspended until May 1 tariffs of the **Minneapolis & St. Louis R.R.** and the **Chicago, St. Paul, Minneapolis & Omaha R.R.**, which increase switching charges on coal and coke $6 per car between industries at Minneapolis, Hopkins and St. Louis Park, Minn.

In a complaint to the I. C. C. the **Romanu & Bush Pig Iron & Coke Co.**, of St. Louis, attacks as unreasonable the rates on sacked coal from Douglas, W. V., to Wichita Falls, Texas.

In the complaint of the **Seaboard By-Product Coke Co.**, of New Jersey, the I. C. C. holds that the rates on coal from mines in the Connellsville, Pa., district to Seaboard, N. J., are unreasonable and awards the company reparation.

In the complaint of the **Hord Alakli Products Co.**, the commission decided that the rates on slack coal from the Sheridan, Wyo., group of mines to Antioch, Holland and Lakeside, Neb., are not unreasonable except during the period from June 25, 1918 to Feb. 19, 1919. The rates on the traffic are declared not unjustly discriminatory or unduly prejudicial.

The commission has suspended until May 6 proposed schedules of the **A. T. and S. F. R.R.**, which propose to cancel the rule for the construction of through rates on coal.

In a complaint to the commission the **Chicago Sewer Pipe Co.** attacks the rates of 70 and 60c. per ton on coal from points in the Brazil, Ind., district to Chicago as unjust.

In the case of the **Empire Steel and Iron Co.**, an I. C. C. examiner recommends that the maintenance by the Central R.R. of New Jersey of junction point rates on coal to points on the Morristown and Erie R.R., while contemporaneously refusing to maintain junction point rates on coal to points on the Mount Hope Mineral R.R. is not unduly prejudicial to complaining interests.

Coming Meetings

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

American Institute of Electrical Engineers' midwinter convention will be held on Feb. 16, 17 and 18 at the United Engineering Societies Building, 33 West 39th St., New York City. Secretary, F. L. Hutchinson, 33 West 39th St., New York City.

National Civic Federation at its 21st annual meeting, to be held at Hotel Astor, New York City, will discuss international, European and American labor problems. Chairman Executive Council, Metropolitan Tower, New York City.

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York, Feb. 14 to 17, 1921. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

Northwest Mining Congress will hold its annual convention Feb. 28 to March 5, 1921.

Northern West Virginia Coal Operators' Association will hold its annual meeting Feb. 8, 1921. Secretary, H. S. Rogers, Fairmont, W. Va.

Pittsburgh Vein Operators' Association of Ohio will hold its annual meeting, Feb. 14, 1921, at Cleveland, Ohio. Secretary, D. F. Hurd, 415 Marlon Building, Cleveland.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Ottawa, Ontario, Canada. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Canada.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

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Legislate Not in Anger

CHILL winds of opposition to the Calder bill for the regulation of the coal industry, meeting the hot moist air of enthusiasm surrounding its proponents, have precipitated a fog so dense that the uninformed who would steer a course of straight thinking finds his way in doubt. Stubborn and united resistance to regulation in any form and to that expressed in the pending bill in particular is voiced by the coal men. Of the witnesses who have appeared before the Committee on Manufactures, which has the bill under consideration, approval has come from Senator Calder, the proposer, and from the heads of three Federal agencies—the Federal Trade Commission, the Interstate Commerce Commission and the Geological Survey.

No one can say that public opinion demands the passage of the Calder bill, for the public does not know what the bill will accomplish. The coal-buying and consuming public has let itself be heard in its objections to high prices for coal such as ran riot last summer, and the deliberate attempts of the committee to inflame opinion against the coal industry have succeeded in a measure that must be quite gratifying to Franklin T. Miller, the guiding genius back of these illegitimate proceedings.

Getting down to brass tacks, what are the admitted facts? In the words of the director of the Geological Survey, "The maladjustment between supply and requirements [in 1920] was sufficiently great to bring about that very skyrocketing of price which is likely to occur when the rigid and unyielding demand for coal is concentrated on the narrow margin of free coal available in a time of scarcity." The maladjustment between supply and demand as far as soft coal is concerned was not the result of any acts or conspiracies of the coal men but came about from causes entirely beyond their control—the cumulative effect of the consumers' strike and miners' strike in 1919 and, to a lesser degree, the storms and outlaw switchmen's strike in the early part of 1920. Similarly for the shortage of anthracite the switchmen's strike and the outlaw miners' strike in the summer of 1920 were largely to blame.

Prices were out of reason last summer. No opponent of the bill has attempted to deny this or to defend these prices. It is asserted, and we believe must be granted, that although in number those among the operators and jobbers who benefited by those prices were many, the total tonnage they dealt in at such prices was, in percentage of the whole, small. It is contended by the proponents and must be granted by the opponents to the bill that there is no way by which the conservative element among the coal men can control the prices charged by others. To further quote Director Smith, "it is only by methods analogous to the proclamation of martial law that the rise in coal prices in times of scarcity can be prevented, for under our present notions of what is fair and reasonable in organization to control prices within the trade it is impossible for producers and distributors to effectively hold them in check."

Coal *is* charged with public interest. Coal is as essential to life and industry as transportation, not because it is a natural resource but because it is the source of heat and power. The dependence of coal on transportation is no greater than that of the railroads on coal. We will, as a country, make progress in the solution of the coal question directly as the essential character of coal is recognized. A long step forward will be taken when coal for transportation and transportation for coal are each given first place.

But because coal is charged with public use is not *ipso facto* reason or argument why it should be subjected to the indignities proposed by the Calder bill. Conceived in prejudice and born of indignation, this measure puts responsibility and power in the hands of the Federal Trade Commission not only to determine facts regarding the business of producing and selling coal but as well to determine when and how "martial law" is to be declared and administered. Designed and officered as an inquisitorial body, the Federal Trade Commission would be a misfit as an administrative agent of government. While we can well imagine that Dr. Garfield would argue that on purely abstract theory the functions of fact gathering and administration should be lodged in separate agents, American business, looking back on the record of the trade commission, will object to the extension of its power to regulate trade.

For a century prior to the autumn of 1916 the coal industry functioned satisfactorily to the American people. The only complaint in all that time was from the industry itself, because it could not make a living wage. Coal was not one whit less charged with public interest in the years preceding the world war than it is now, but in that time there was no upheaval comparable to the war, which made it so that "output was not available when needed and the consumer had no assurance that it would be forthcoming." Because disaster overtook the world and conditions arose over which the industry had no control, which permitted pillage and loot by some producers and jobbers of coal, is not sufficient warrant for the steps toward permanent regulation, control and even nationalization of coal proposed by the Calder bill. It has been well said that Congress should proceed with caution with legislation such as this, which seeks to establish between government and what has heretofore been considered private business relations not "sanctioned by prevailing conceptions of the government's relations to business."

There is a vast difference between legislation requiring reports and the submission of data and that making provision for the taking over of the functions of production and distribution of coal and the setting up of

prices to govern trade. The proposals of Senator Frelinghuysen in his Coal Commissioner bill of last year and as well the suggestion of Dr. Garfield contain no suggestions of actual control.

It has been clearly demonstrated that the provision of ample transportation will insure the country against shortage and high prices of soft coal. This is one way of solving the problem, but a way that cannot be adopted at once, except, as last year, by preference in the use of cars authorized under the Transportation Act. Definite and rigid control, more extensive even than is provided by the Calder bill, will throttle prices and prevent runaway markets, without, however, relieving any shortage of supply. Self-regulation by the industry, possible only by letting down the bars of the anti-trust laws, could in the very nature of the problem have no limiting effect on prices in times of severe shortage.

Regulation by the government is opposed by the industry and monopolies within the trade are repugnant to the people. The answer therefore lies in making the best use we can of the transportation the railroads can offer us, and in doing this education of the public to the responsibility of the coal consumer is a prime essential. But even before we can expect the public to have the right conception of the problem, the coal industry must revise its objection to giving the public the facts. In so far as any measure proposed makes provision for the collection of more facts about coal, its production, distribution, use, and the costs and profits in the coal business, the coal industry should lend its support. The finer points in the arguments as to why the National Coal Association enjoined the Federal Trade Commission from collecting cost reports are lost to the public, which sees only the apparent fact of trying to conceal knowledge from the government and from coal users.

We are opposed to the Calder bill, not because it is based on the theory that coal is changed with public use, not because it requires all manner of intimate data, but because it is restrictive, destructive class legislation.

Perhaps we should not too harshly criticize the Senators in whose eyes this type of legislation on coal finds favor, for the men of the coal industry have steadfastly refused to enter into partnership with the public and government in its and their coal affairs. The Garfield plan, fully and intelligently sympathetic, was vetoed; the Frelinghuysen plan is opposed. On its record the industry as a whole from mine face to fire grate was due to receive the drubbing it is getting, but have we not the right to expect from national legislators in the upper house fair consideration? May we not hope that there are many in the Senate who will take the reasonable, reasoning attitude of James A. Reed of Missouri?

Invest and Reinvigorate Business

DURING the war the public planned most diligently what it would do whenever business showed signs of lagging. The nation was no longer going to travel awhile "full speed ahead" only to come later to a dead stop. The government proposed to have a big program ready and promised to be ready to launch it whenever industry flagged.

It was a pretty piece of theory and overlooked the fact that whenever the public was chary to embark in expenditures, its representatives were equally careful, and that when business was bad, taxation would fail to supply revenue for the enterprise or for the interest on the capital borrowed to finance it. It overlooked the fact that trouble usually comes because capital is hard to obtain and that the government finds it as hard as anyone else to get money at such a time.

So the government can do little to help us, and what it could do it won't do because it has the psychology of caution and economy just when the people themselves have it. But we may be sure that money is most surely being earned and can be found, even now, for the speeding up of business. With possibly two million people idle there are thirty-eight million working and at least half that number earning enough to be able to make some sort of an investment.

Never was there a better time than today. The fortunes of the world have been made by those who bought when stocks, bonds and goods were low, and if goods are as yet still high in the retail market, stocks and bonds and goods in the wholesale market are phenomenally cheap. There is an exceptional opportunity for buying. Grain and cotton and securities are bound to rise heavily in the next six months and those who are earning and can buy should do so to the limit.

All of which has nothing directly to do with coal but has much to do with it indirectly. The coal operator and miner and all in the industry, high or low, want prosperity during the coming year to put a fillip into the coal industry. A revival of the security market is what is wanted to assure the continuance of a sane prosperity. Buying *old* stocks and bonds will raise their value and will make it possible for those who hold them to improve their credit or to sell their securities at a profit. In either case money will be released for industry. On the other hand, buying *new* securities will start new enterprises and new construction and so will increase work, which in turn will give renewed business. Buying goods, especially those which aid in increasing productive effort, will restore confidence more rapidly than perhaps anything else.

An opportunity is offered us to help ourselves and others, to make money, to give work to others, to increase the coal demand. All who can should avail themselves of the opportunity, buying, however, only securities of unquestionable value. Money enough and to spare was found for the purchase of worthless oil securities in the year just past. Surely, during the present year, those who do not usually invest will find funds for investment in safe and standard securities. By such means unemployment will be reduced with all the dangers and discouragements that follow in its train, and the coal industry will profit from the resultant stabilizing of demand.

Today, with all securities shrunken in the shriveling heat of several months of business depression, it is safe to invest and it is safe also for employers to recommend to their workmen the purchase of the stock of bona-fide corporations. The fruit in the security market will assuredly take on its former fullness and freshness as soon as better times arrive. When prices of securities are high everybory is ready to buy, yet that is the time of all others when investment is risky. Now is the time when investments are not being peddled from door to door, when only the firmer securities are being offered for sale, consequently it is now for once safe to recommend to employees that they buy, for it can be done without a mass of reservations such as will inevitably arouse antagonism and breed suspicion.

NO. 7 MINE OF THE NORWOOD-WHITE COAL CO., NEAR DES MOINES, IOWA

Iowa Shaft Sunk by a Clamshell Through Quicksand Uses Preheated Mine Air

Sinking Was Accomplished by Means of a Steam Crane and Sectional Concrete Curbing—In Winter Intake Air Will Be Heated in Order to Avoid Formation of Ice in Airshaft

By Donald J. Baker
Wilkinsburg, Pa.

EVEN though the No. 7 mine of the Norwood-White Coal Co., located about twenty-five miles northwest of Des Moines, Iowa, has an estimated life of only ten years, its equipment is such as will bear favorable comparison with that of many operations anticipating a much longer period of productivity. This mine, which lies near the town of Moran, in Dallas County, will soon rank as one of the biggest producers in the state. In this region the market value of fuel and the conditions under which it must be mined do not warrant the outlay of any large amount of capital in construction and installation.

This plant, however, is exceedingly well equipped, much better, in fact, than most of the other mines in Iowa. The Norwood-White company possesses operations in other portions of Iowa and is contemplating the opening of still others. The officials, therefore, plan to utilize much of the equipment here employed at another development when the present mine has outlived its economic usefulness. This fact, in a great measure, accounts for the relatively large amount of capital that has been invested in the equipment of No. 7 mine.

Not only had this mine a steel tipple of 2,000 tons capacity, which in this region is rare, but both air and hoisting shafts are lined with concrete. Of course other shafts are to found in Iowa with a similar lining, but few indeed were sunk under like conditions. These shafts, which are 275 ft. deep, were put down through 110 ft. of quicksand. Throughout Dallas County quicksand approximately 100 ft. thick appears to overlie the coal, the top of the sand being found only a few feet below the surface. Farms in this section almost without exception have artesian wells, so readily does the water permeating this formation seek relief from the pressure exerted upon it.

Clamshell Bucket Excavates Shaft

In sinking the main, or hoisting, shaft at this mine a steam crane equipped with a chamshell bucket was set up near the shaft site. As it was difficult to determine what might befall those engaged in making the excavation by ordinary methods, the management decided to build the cribbing in sections on the surface and to place each section in the shaft as rapidly as the sand removed by the crane permitted the concrete blocks to settle.

Under the Tipple

To the left is the domestic-coal chute with open bin. Cars under tipple are from the New York Central and the Chicago, Burlington & Quincy. Rarely are two cars owned by the same railroad loaded out on the same day, so great, in the West, has been the scrambling of open-top equipment.

Cribbing sections were accordingly built up on the ground, these being 24 x 8 ft. in inside dimensions, each section being 8 in. thick and 12 ft. in height. Each section was reinforced, the reinforcing rods protruding through the upper edge of the curbing. The lower edge of the wall section was provided with holes, so that the rods from the preceding block could be inserted in them.

After the bucket had excavated through the thin surface coating which covers the quicksand a section of the wall was placed in the opening, resting upon the sand itself. The illusive sand was then removed by the bucket, and the section, being quite heavy, settled into the sand. When its upper edge became flush with the ground another section was placed on top of it and joined by means of the protruding reinforcement. The crane was then put in operation again and the process repeated, until the solid cover overlying the coal was reached.

When the concrete curbing had been lowered to the rock it was found that the shaft was in excellent alignment. From the collar to the bottom of the lowest section the wall was not more than 8 in. out of plumb. This is not sufficient to interfere with the rapid movement of cages, although this deviation was, of course, carefully taken into account when the buntons and guides were put into place.

From the top of the rock to the bottom of the shaft the lining is of wood. When completed the entire inner surface of the curbing, both wood and concrete, was shot with gunite in order to exclude water. As it stands today the shaft is not absolutely watertight, although nearly so. It is considered one of the most substantial shaft linings in the state.

Airshaft Sections Settled Out of Line

The same general procedure was followed in sinking the airshaft. This time, however, the concrete sections did not sink in as perfect alignment, and as a result an appreciable quantity of water percolates through the curbing at the joints between sections. This is not altogether disadvantageous during the summer, but in the winter ice forms and obstructs the passage, preventing the free movement of air. Accordingly means must be taken to keep the opening free from this obstruction. Of this more will be said later.

Designed by Allen & Garcia, of Chicago, which firm also laid out and supervised the construction of the other surface units, the tipple at the Norwood operation is equipped to either crush or size and load out 2,000 tons of coal in eight hours. This building is constructed with a structural steel framework over which has been placed the usual covering of corrugated sheet iron.

The building itself has been constructed so as to come a trifle closer around the headframe than in common practice, although some of the large operations in Illinois prefer this design. By this means less steel is required, which is an important cost item and one to be considered where the corrosive action of the mine air is excessive. As may be seen in the illustration of the top of the shaft, the headframe is of unusually light construction, even to the backstay, which consists of a single leg. Steel stairways encompass this structure both inside and out, so that it is possible to reach and repair any portion of the entire equipment with more than the ordinary degree of safety. This feature also permits the easy handling of repair parts upon the headframe.

Lump Coal Is Crushed for Stoker Use

The cars in use at the mine are of one-ton capacity, but by high topping can be made to carry 3,500 lb. of coal. Self-dumping cages are installed. These as well as the entire equipment on the tipple were manufactured by the Eagle Iron Works Co., of Des Moines. This, however, does not include the crusher, which was made by the American Pulverizer Co.

Upon discharge from the car the coal enters one of two weigh baskets or pans. The mine product is picked at this point by the man in charge of dumping, who in addition to the weighman is the only person in the tipple structure. Only such extraneous material as is noticed on inspection of the coal in the weigh basket is removed and tossed into a nearby chute. From this it falls into a 25-ton bin, where the refuse is later loaded into rail-

Surface Landing

Self-dumping cages discharge the contents of the mine cars, each of which has a capacity of one ton. The tracks leading away from the shaft run to extensive timber yards, shown in another illustration. The shaft has two compartments and is 8 x 24 ft. in inside dimensions. It was sunk through 110 ft. of quicksand.

road cars to be transported and dumped a short distance from the building.

Only a small amount of refuse, however, finds its way to the surface. The miners are carefully instructed to gob all rock and slate in their rooms and to avoid sending out in their cars anything other than clean coal. One detail noticeable at this coal operation is the absence of a slate dump, for such a dump doubtless would be likely to ignite spontaneously.

Screens May Be Veiled by Drop Plates

After weighing the coal passes by gravity to the preparation floor proper. Here it is directed onto a balanced shaker screen. Slotted steel plates are employed in sizing, and 1¼-in. and 6-in. lump may be produced, in addition, of course, to screenings, or slack. The screens, if desired, may be veiled by hinged drop plates, which form a section of the screen bed when in place. The entire output may then be loaded as a straight run of mine.

One of the largest consumers of this firm's output is the Interurban Railways Co. of Des Moines. This firm absorbs the smaller sizes, for it has need of stoker-fired fuel for the boilers of its power house. When a large order for screenings is to be filled, only the larger slotted plate in the screen is veiled. This arrangement permits the screenings to be extracted from the run of mine and loaded at once. The remaining lump sizes pass over the shaker to drop into a crusher, which may be so set as to deliver almost any required size. This crusher, which is of the ring type, is driven by a 45-hp. motor.

The end of the shaker is forked and carries a pivoted plow. One of the chutes from the end of the shaker

Timber Yard

Owing to the roof conditions in the mine a large supply of timber must be kept on hand at all times and stored where it may be readily available. This is done in orderly fashion, as the illustration shows. Most of the props and posts come from Missouri.

leads to a direct-descent chute by which the lumps may be loaded into railroad cars. The other chute directs the product into a storage bin for domestic coal, situated outside the building. When the domestic bins are empty and there is a call for coal by teamsters from Moran, the plow is slipped across the lower terminus of the shaker, and the coal passes directly to the storage bin, where it is available for local distribution.

All loading of railroad cars is accomplished directly without the use of loading booms. Both shaker and crusher controls are located in the weigh room on the upper floor of the building and are operated by the weighmaster. A trimmer is stationed beneath the tipple to load the cars. When he wishes the shaker stopped for the changing of railroad cars or for other reasons he signals the weighman.

The cars are shipped from this tipple over the tracks of the Interurban Railways Co., reaching that road by a spur from its electric lines, which run from Des Moines through the town of Moran. All the loaded cars are hauled by electric locomotives for several miles and are switched ultimately onto the tracks of the Chicago, Rock Island & Pacific R.R. The only exception is when cars are consigned to the Interurban company itself.

The electric company seems to experience no difficulty in obtaining cars for this mine, and as a result its operators do not know what a car shortage means. Two deliveries of empties are made daily, one in the morning and another in the evening. The coal-company officials co-operate in every way with the railway-company management. Power for the operation of the mine is furnished from the electric company's plant. The electricity is generated, of course, by coal supplied by the Norwood firm.

Buildings of Frame with Gunite Coat

All the surface units other than the tipple, with the exception of the fan house and heater-coil shed, are of frame construction with a gunite surface. The hoist house contains an Ottumwa Iron Works hoisting engine equipped with a 6-ft. cylindrical drum winding a 1¼-in. cable. This is operated by a 500-hp. 440-volt motor which is direct-connected to it. At present only 440-volt alternating current is employed around the mine.

The mine has been running only a short time and is not operated at full capacity. The surface development is nearer completion than that underground. So far electric haulage has not been installed, and mules are still employed in transporting the loaded mine cars for the short distance now necessary to reach the shaft bottom. When the mine has become more fully developed, trolley-type electric locomotives will be employed.

The introduction of electric haulage will, of course, necessitate the installation of an electrical unit for the generation of direct current. It also may require some change in the present installation. For the lighting of the plant and shaft bottom a 10-k.v.a. transformer is utilized to step down the incoming voltage to 110-220, thereby making available a suitable current not only for lighting but for the operation of the tipple equipment.

Timber from Missouri Is Well Stacked

The timber yard at this mine is shown in one of the illustrations accompanying this article. By reason of the roof conditions encountered in many operations in the state it is imperative that an adequate supply of timber be kept on hand at all times. The roof disintegrates under the action of the air and changes in temperature and much posting, therefore, is necessary. The main passageways also must be retimbered frequently. As a consequence the timber yards here, as at many other Iowa mines, make quite an imposing appearance.

Most of the timber used at this operation is shipped from Missouri and consists of many varieties of oak. The lengths are ordered in accordance with definite specifications, and the props are unloaded from the railroad cars directly into the yard. As is well shown in the illustration, the pieces of any given length are piled together in orderly fashion in spaces prepared for them and are suitably marked. A hurried call from the mine for certain lengths of timber accordingly can be filled quickly.

Orderliness in Yard Promotes Efficiency

A track is laid parallel with the longer side of the yard, and a car may be loaded and dispatched to the shaft landing in a minimum length of time. The system adopted by the management unquestionably is good. It is quite as easy to maintain a yard in neat and orderly fashion as to keep one wherein the timbers are unsized and piled at random. Such orderliness usually means efficiency, and almost without exception it facilitates dispatch and rapidity of operation in an emergency.

As was previously mentioned, the airshaft was excavated through a large depth of quicksand and is far from watertight. Gunite was shot over the interior of the wall, but the joints between sections were so large that ice readily formed between the concrete slabs, reopening the cracks, so that other means had to be devised to assure freedom from ice. The fanhouse is built of brick and located over the airshaft. It houses an electrically-driven ventilator.

During the severe temperatures experienced last winter, ice choked the interior of the shaft and materially obstructed the passage of the air current; therefore, it was decided to heat the air this winter before allowing it to enter the fan. For this purpose, a corrugated sheet-iron shed was erected in the rear of the fanhouse and extended over and around the intake openings of the ventilator. In the rear of this, as may be seen in another illustration, a brick building has been erected to house a boiler.

Shed Where Entering Mine Air Is Heated

Within the heater shed, as it may be called, coils of piping are hung from the roof. Each coil contains 190 linear feet of one-inch pipe connected together in a panel, there being nineteen pipes 10 ft. long in each section. Sixteen of these panels are suspended a few inches apart and connection is made to each from a single feeder line coming from the boiler house immediately in the rear.

The return line of the boiler is on the opposite side of the wall of the heater shed and at the lower lever of the suspended pipe lengths. The condensed steam is thus led back to the boiler. At the time of my visit this heating apparatus had not been given a trial, and it is, of course, more or less of an experiment, but it should certainly aid materially in keeping the shaft free from ice.

Another consideration making advisable the installation of coils for heating the intake air, other than the maintenance of a larger area for the passage of the ventilating current, was the fact that the airshaft is utilized as a manway and contains a stairway leading

Fanhouse and Heater Shed

The brick building on the left has been erected over the airshaft and houses the fan. The corrugated-steel structure to the rear encloses steam coils which heat the air in winter months.

from bottom to top. Ice gathering on the steps of this stairway made it almost impossible for men to enter and leave the mine by this shaft. In the event of a breakdown of the hoisting apparatus or of an accident within the mine itself no reliance could be placed on this passage, blocked as it was by the winter's ice.

Arrangements for handling the empty and loaded cars at the shaft bottom are quite similar to those provided elsewhere, but differ from them somewhat in detail. Cars are caged from one side of the shaft only. Loaded tracks are on a grade that will permit the cars to gravitate to the cage. As the empties come off they drop by gravity over a 6-per cent grade for a short distance, where they encounter a car haul, by means of which they are elevated through a vertical distance of 12 ft. up a 36-per cent slope. From the top of this haul the cars gravitate over a 7½-per cent grade into a kickback and are then directed to either a right or left run-around.

Natural Grades Are Used for Car Haul

Ordinarily the installation of a car haul requires appreciable excavation, but this one follows the pitch of the coal bed and well illustrates the abruptness and extent of the rolls that may be encountered at any time in this locality. When prospecting the bed this particular roll in the bed was located with fair accuracy by diamond-drill holes, and its location is one of the important reasons why the shaft was sunk where it was. It was thought that what would normally prove to be an obstacle to transportation might be turned into good use. In this manner advantage was taken of what ordinarily would be considered an adverse condition, and the bottom was laid out in effective conformity to it.

Inequalities in the floor of the coal bed cannot always be located and measured as accurately as this one unless an abnormally large number of drillholes are put down. It is, of course, not feasible to drill a bed so completely that its every deformity will be accurately determined, but the Norwood-White Coal Co. naturally drilled the coal more thoroughly near the shaft site than elsewhere. A hole on each ten acres, as is common practice, will not determine all the smaller pecularities of the seam so that they can be plotted and taken advantage of in laying out the mine.

Coal under development at this operation is purchased on a royalty basis from the farmers. In this region fee or mineral rights to coal land are rarely purchased because the coal believed to underlie a certain piece of property may actually not be present, or if it is present it may lie in such shape as to well-nigh forbid extraction at present prices. The roof also frequently plays an important part, and pinches and faults are of common occurrence. The coal at this operation varies markedly in thickness. Some of the rooms are working in coal 9 ft. thick, and others located quite nearby are being driven in an area of the same bed where the coal will scarcely average 4 ft. in thickness.

DOWN THE CAR HAUL TOWARD THE SHAFT BOTTOM

The car haul elevates the empties about 12 ft. It follows the pitch of the coal and its steepness well illustrates the sharpness of the rolls encountered in this mine. Main-haulage entries are seldom driven at the level of the coal for their entire length as the grades would prove too steep for profitable locomotive haulage. As it is skids or sleds often are used to slide the cars over the heavier grades.

Costs of Scraper Loading and Conditions Under Which It Works Best*

No Mechanical Loader Is Successful Under All Conditions—Where Coal Is Clean, Faces Fairly Long, the Top Good and Above All Where Cars Can Be Supplied Regularly and in Adequate Number, the Scraper Loader Has Successfully Met Widely Varying Conditions

By A. B. Benedict†

OF SUCH comparatively recent date is the use of the scraper loader in coal mining that sufficient data have not yet been obtained on which to establish the conditions that limit its successful operation. While great interest has been manifested by operators in this comparatively new device, its adoption has been slow.

Whereas the mining machine and the mine locomotive grew from crude and simple beginnings to greater size and complication, the first loading machines were ponderous affairs of great weight and many parts, with resultant expense in construction and maintenance. The bulkiness of such machines had the further disadavantage that it limited their use to relatively thick coal beds, where hand loading, because of its low cost, made it a strong competitor.

Scraper Loader Meets Harder Conditions

The problem was to produce a device that would not require any sweeping change in mining methods, one that would be low in price, capable of being operated by almost any miner, composed of a few rugged parts, of such a nature as to insure low maintenance and operable under conditions where loading costs could not be reduced by any other means.

To meet these requirements the scraper loader was developed. It was designed to work thin beds, but has since been found suitable also for deposits of greater thickness. It was first introduced in the anthracite region but is now in successful operation in the bituminous fields of Pennsylvania and West Virginia.

In its esesntials a complete unit outfit consists of a bottomless scraper, a two-drum hoist or winding engine, a car-loading chute and the sheaves necessary to guide the lead and tail ropes. Such an outfit will serve one working place. An additional chute and additional guide sheaves are required for each additional working place to be served.

Several manufacturers are building this type of apparatus, and the different makes vary somewhat in details of construction. All parts mentioned, however, are invariably of heavy and rugged design and construction. The cost of maintenance, therefore, is low, except, of course, where repairs are necessary because of some extraordinary accident.

*Abstract of a paper entitled "The Scraper Loader," presented before the West Virginia Coal Mining Institute, Wheeling, W. Va., Dec. 7, 1920.

†Engineer, Goodman Manufacturing Co., Chicago, Ill.

SCRAPER PICKING UP ITS LOAD AT THE FACE

Low as the coal is, as can be seen by the crouching figure of the man, the scraper loader finds it has plenty of headroom. Shoveling in a place like this is "hard on the small of the back" and a little of it constitutes a good day's work. Furthermore it is hard to push cars—many and small cars they must be—in and out of rooms with coal so low as this

PULLING THE NOW-LOADED SCRAPER TO THE ENTRY
The chain in the rear is the tail chain, by which the scraper is pulled back into the room after it has been unloaded. The coal is just about to be discharged into the mine car.

The greatest item of expense is that of rope renewal. As a general rule four or five rooms or working places are served by one outfit. These should be immediately adjacent to each other, and, if possible, all turned in the same direction off one entry. Details of arrangement and operation of the scraper loader are well understood by most mining men and need no minute delineation here.

A small amount of coal lying in the corner formed between face and rib in each room must be shoveled into the path of the scoop. With this exception the scraper gathers up all the dislodged coal without manual assistance. Rooms are thus cleaned up one at a time; after which the scraper, ropes and jack pipes move to the next room that is ready for loading, and the entire operation is repeated.

Advantages of Mechanical Loading Device

The advantages obtained by the scraper are those applying to any mechanical loader. In addition it not only requires no special preparation of the working place but also eliminates much of the work that is now required when loading mine cars at the face. The general advantages achieved by any mechanical loading device are as follows:

(1) It will load any fall of coal much more quickly than the hand shovel. It thereby makes it possible to obtain a larger production from a given number of working places, permitting more frequent cutting of each place and reducing the territory to be served by each mining machine. It thus renders possible the realization of increased tonnage from a given area of development. (2) By a concentration of the area exploited the track work and other overhead expenses for a given tonnage are reduced. (3) As the men required for a given tonnage are concentrated in a relatively small area, less supervisory forces are needed or the work of supervision of the force employed is made more efficient. (4) The loader decreases the expense of maintaining the roof by speeding the rate of advance and shortening the working life of each place.

The scraper loader adds to these advantages the following merits: (1) It reduces or eliminates the expense that is incurred when sufficient bottom is lifted or sufficient roof is brushed to provide a practical loading clearance over the tops of the mine cars. (2) It reduces the cost and increases the efficiency of haulage by permitting the use of a larger car than could be taken to the face for loading. (3) It reduces the cost of car handling by eliminating entirely the necessity of distributing empties and gathering loads, because solid trips may be brought to the loader and hauled away without uncoupling. (4) It reduces the amount and simplifies the layout of mine trackage by avoiding the necessity of laying track in rooms. (5) It eliminates the chief of the hardships incident to work in low coal and makes it possible to hire men in mines where otherwise they would not work.

These advantages have been demonstrated in some twenty installations in Pennsylvania and West Virginia with which I am familiar. Not all of these installations have been successful, but the reason for failure, where this has occurred, has not lain in any of the principles that the loader was designed to cover. Failure has been due rather to the antagonism of labor or to improper application or installation under conditions distinctly unfavorable to this type of device.

Three Reasons for Using Scraper Loader

Cost data have been procured covering some of the installations mentioned. It must be stated, however, that the performance of one installation will vary from that of another on account of differing conditions to such an extent that the data obtained cannot be readily tabulated. Moreover, in the absence of accurate cost records at some places, it has been difficult to establish overhead charges and, therefore, to obtain exact figures as to the savings effected.

Roughly speaking, installations may be grouped into three classes, according to the purpose for which they were installed, namely: (1) To win coal not obtainable by other means. (2) To reduce the cost of

Filling a Mine Car

When the scraper reaches the end of the short chute the coal drops gently into the car, none of it falling more than a few inches in excess of the depth of the car body. Some of it falls a much shorter distance. None of it is thrown in with violence as in shoveling. Consequently the coal gets to the tipple in good condition.

coal by eliminating yardage and track in rooms. (3) To compete directly with hand labor by obtaining big production.

All installations may come under one or more of these classes, usually a combination of the first two. The method adopted for comparing hand with scraper loading is based upon the assumption that both start at the same point, that is, at the face which has been undercut and is ready to shoot. The factors in the problem are about as follows: Hand loading costs include: (1) Loading rate per ton, which usually includes drilling, shooting and powder; (2) yardage per ton of coal loaded; (3) cost of laying track where this is not included in the loading rate. Scraper loading costs embrace: (1) Total labor, (2) power, (3) rope renewals, (4) miscellaneous repairs and supplies, (5) depreciation, (6) interest, (7) cost of powder.

Items neglected in calculating the cost of scraper-loader operation are the cost of building chutes, wiring and preparing places. Items neglected in figuring hand-loading costs are rails, ties and spikes for track in rooms and the gathering services of mule and driver.

Costs In An Extremely Thin Coal Bed

The first illustration to be cited is that of a scraper-loader installed in a West Virginia mine. It is a good example of the first class of installation mentioned, namely, one made to get out coal that could not be obtained to advantage by any other means.

In this mine are two working places, 70 and 60 ft. wide. The height of the coal is 28 to 30 in. and the bed is overlaid by 11 in. of slate, which is held up by props. In loading by hand the slate has to be gobbed. It is next to impossible to get men to work under such conditions, and the cost of recovery is excessive. Cost of hand loading at this mine, including yardage, is 85c. per ton, and cost of track is 4c. per ton, making a total of 89c. per ton.

The cost of scraper loading is $6 per day for one man as boss and $5.15 per man for four men, making a labor cost of $26.60 per day. Rope renewal is figured at one rope, costing $168 and having a life of 200 working days, which gives a charge for rope maintenance of 84c. per day. A 10 per cent depreciation on a machine costing $3,200 is $320, which, divided among 200 days, equals $1.60 per day. Interest on $3,200 per year of 200 days equals 96c. per day. Miscellaneous repairs are figured at $1 per day. This gives a total of $31 per day. Now, $31 on an output of thirty tons per day, which was the average production at the time when observations were made in August, 1920, equals a cost of $1.03 per ton.

Advantage Here Lay in Greater Tonnage

On an output of forty tons per day, which will undoubtedly be reached, if it has not already been attained and passed, the cost would be 77c. per ton. Powder may be figured at 4c. and power at 8c. per ton. This gives a total cost for scraper loading of $1.15 per ton on a basis of 30 tons loaded per shift. As the total cost of hand loading is 89c. per ton, it is evident that scraper loading costs 26c. per ton more than hand loading if only thirty tons are handled per day, but will be 89c. if forty tons are loaded.

It should be repeated that the desire here was not to reduce the cost but to get out the coal, the prevailing price justifying the additional outlay. The expense of scraper loading at the rate of forty tons per shift is 89c., and on this basis the company would break even when employing this method as compared to hand loading.

An installation at another mine in the Chesapeake & Ohio R.R. field operating in the Sewell seam is a good illustration of the second class—that is, where the scraper loader has been adopted for the purpose of reducing the cost of coal by the elimination of yardage and room tracks. Here is a working place with a 200 ft. face. The height of coal is 2 ft. 10 in. to 3 ft. Last July at this mine 629 tons were loaded by hand at a loading rate of 75c. per ton. The total cost of yardage during that month was $411.95. With the cost of loading at 75c., yardage at 65c. and undercutting at 30c., a total cost of $1.70 per ton is attained.

The cost of drilling, shooting, powder, track development of working places for the next setting, including also two moves of hoist, was $860. In addition power was figured at 20 hp. for 65 hours at 3c. per kw.-hr., totalling $28.07. Maintenance and repairs were estimated at $10, depreciation at 10 per cent on $3,200 for one month, or $26.66, and interest on $3,200 at 6 per cent for one month, or $16. This gives a total for July of $940.73, or a cost per ton of $1.51. Figuring the cost of hand loading at $1.70 per ton, this shows a saving of 19c. per ton in loading with the scraper. This is equivalent to a return of 44.3 per cent per year on the investment.

A new place is being prepared with a slanting face which is expected to yield 100 tons per day. Considering that the cost of hand loading will remain unchanged, the saving per ton would be $1.12, or 700 per cent per year on the investment. At eighty tons the cost will be 99c. per ton, yielding a 495 per cent return on the investment. At sixty tons a return on the investment of 290 per cent per year would be earned. At the rate of forty tons per day the saving effected would be 32c. per ton, or an 80 per cent return on the cost of the apparatus. Yardage costs at this operation are unusually high.

Another report obtained from this company during January, 1920, shows a total net saving per ton of 0.245c., or 92 per cent on the investment at an average of sixty tons per day. It has been stated by the mine management that after careful investigation of available figures it was found that at one time 65c. per ton was being saved. The production was low at that time.

At a third mine in a thicker bed a still longer face is being worked. This forms an illustration of the third class of installation, where, by reason of the increased production, the scraper loader is enabled to compete with hand loading even where the latter is working under favorable conditions. Here what might be termed a longwall face, or one 300 ft. in length, is being worked. The coal is from 4 to 5 ft. thick. No saving on yardage is made. The men lay their own track, buy powder, drill, shoot and load the coal and set timbers at a rate of 92c. per ton.

In Thick Coal 65 Tons a Paying Output

Charges against the scraper loader are $48.20 per day for the labor of seven men, power costs $5.40 per day, rope depreciation 84c. per day, depreciation on machine at 10 per cent, $1.60 per day; interest on investment at 6 per cent, 96c. per day; miscellaneous repairs $1 per day, making a total of $58 per day. The cost per ton if 92 tons per day is secured, would be 63c., representing a saving of 29c. a ton. The management is aiming at the 100-ton mark, and if this production is attained, the loader will unquestionably be a paying investment.

The average for the first month of operation of twenty-one working days was sixty tons. On the day the observations here presented were made, the car supply was not good. In working four hours the machine loaded 91.5 tons. Assuming that the machine could work six hours, it would load 135 tons. The saving per ton over hand loading at this rate would equal 44c., which would represent a return on the investment of 370 per cent per year.

Assuming that the machine worked on an average four hours and loaded ninety tons per day, the saving per ton would amount to 23c., yielding a return on the investment equal to 129 per cent. Where the scraper loader can eliminate the cost of yardage it pays when handling from forty to fifty tons per shift. Where

WINDING ENGINE CAN BE SET WHEREVER CONVENIENT

The winding engine likewise needs no excavation, neither for a foundation nor for headroom. Though the scraper loader is adapted to thick as well as thin beds, and to the surface as well as to the underground, as has been repeatedly proved, it is so well suited to low beds and the underground that it seems a lineal descendant of the blind mole.

yardage costs are not an important consideration the scraper loader begins to pay at 65 tons handled per shift, or 13 tons per man.

Factors Determining Low-Cost Operation

The figures just given do not by any means represent all of the installations where scraper loaders are in satisfactory operation, but they are fairly typical of what may be accomplished by this device under different sets of working conditions. It must be borne in mind, however, that the scraper loader, or, for that matter, any other one type of machine cannot be used successfully under any and all conditions. Certain requirements are essential to the successful operation of this device. In the first place, the rooms must be fairly wide. A certain amount of dead work is entailed in the hand moving of the scraper and other parts, in the setting of jacks and in timbering. Then again when the loader is in actual operation some hand shoveling is necessary, especially in the corners of the rooms. It is obvious that for any given mine the amount of these quantities will be fairly constant regardless of the width of the place. For this reason if the place is narrow the percentage of dead work will be high, and vice versa.

What the minimum width may be varies with the thickness of the coal. In a working place of given width in extremely low coal the tonnage obtained from one undercut is, of course, much less than that from a place of the same width in thick coal, the amount of dead work remaining approximately the same. Experience has shown that rooms 40 ft. in width cannot be worked to advantage with the scraper unless the operation comes under the first class mentioned, which is that of coal not recoverable by any other means and where the chief difficulty is that of getting men.

Too Long a Scrape Is Not Profitable

The longer the face the more profitable is the operation of the scraper loader, although it is equally obvious that a point will be reached where the time involved in hauling the scraper from face to car and return will militate against its success. There is, therefore, some compromise between long faces and narrow places, where the point of greatest efficiency will be found.

So far, experience with the loader has not been sufficiently extensive to permit of a statement as to what should be the length of face or the width of the working place to obtain the lowest cost per ton. There are so many variables, depending upon local conditions, that the proper length of haul can be determined only by careful estimation and probably some experiment for each individual installation. The next requirement is that the coal be clean. A scraper cannot discriminate between coal and slate or other impurities, therefore such extraneous matter must be removed before loading. This, of course, adds to the total expense.

A third requirement is good top The consideration involved here is that of timbering. The top should be of such a character that it will not be necessary to set timbers closer to the face than will permit the passage of the scraper. It is desirable to have as much space available between the face and the first row of props as possible, not only for the efficient operation of the scraper itself but also to assure the safety of the operating crew. The character of the top has a bearing on the first requirement. If many close-set timbers are required it is probable that a suitable width of working face cannot be maintained.

Last and most important of the chief requisites for successful scraper operation is an adequate car supply. In order to attain the greatest efficiency from a device of this kind it must be kept operating throughout the shift. In order to accomplish this, provision must be made for taking away the coal as fast as it is loaded.

This is the greatest difficulty that has so far been met in achieving economical operation. It requires not only an adequate number of cars but also a track layout such that empties can be kept on hand at the chutes at all times, together with sufficient motive power to keep the cars moving. Provision should be made for trackage, cars and motive power before the loader is permitted to start operation, otherwise it will fail at the outset, and the enthusiasm for its success, which should be felt by the entire mine organization, will inevitably be lost.

In conclusion, it may be said that the scraper-loader when properly applied has met successfully many widely varying sets of conditions. Its simplicity and ready applicability have been demonstrated, as has also been its economic efficiency. This in the last analysis means the highest possible percentage of return upon the original investment. Thus, as a thoroughly practical means of accomplishing the purposes intended, its introduction to the coal mining industry has been well justified.

Navigation Commissioner's Report Shows Importance of Coal in Commerce

SOME interesting comments on foreign trade in coal are contained in the annual report of the Commissioner of Navigation of the Department of Commerce, who declares that the diminished production of coal in Europe has necessitated increased imports from North and South America and Australia. This has necessitated longer routes for ships, and the necessity for more ships in commerce.

The Commissioner says that as coal is the largest item of a ship's cargo, coal is the "master-key" to shipping. Before the war coal exports to Great Britain amounted annually to about 75,000,000 tons, not including 28,000,000 tons of bunker coal.

The destruction during the war of the Lens coal mines also is commented on by the Commissioner, who says:

"When the Germans destroyed the Lens coal mines in the region producing 20,000,000 tons, or one-third of the annual needs of France, a blow was dealt to the world's industrial life which still smarts, though the destroyed mines are just beginning again to produce. The world's need of coal was increased and the output diminished. Shipping is available but cargoes are not."

The Commissioner says that in the first eight months of this year Great Britain exported only 18,000,000 tons of coal compared with 48,000,000 tons during the same period of 1913. Of the 1920 exports 8,500,000 tons went to France. The Commissioner says the world's coal production and distribution this year bears more directly upon the present and immediate use of American merchant ships than any legislation, favorable or adverse, which may be devised, short of a measure to dislocate foreign trade.

In view of the disruptive tendencies in the anthracite region, a union of the three districts would seem impossible. One of them seems likely to split up already, so strong is the home-rule, or rather disruptive, tendency and so powerful are the grievance committees of the large companies. Nevertheless unification is proposed, and William Steele, international board member, is the man appointed by the international board to look the field over.

RESIDENCE STREET IN THE MINING TOWN OF LORRAINE, PA.
These dwellings, built by the Philadelphia and Reading Coal & Iron Co. for their employees, are being equipped with pipeless furnaces.

Companies Are Installing Furnaces In Homes of Mine Workers

Hot-Air and Pipeless Heaters Are Preferred—Tenant in Some Cases Supplies His Own Furnace with Right to Removal

FROM time to time various articles have appeared in *Coal Age* calling attention to improvements that have been and are being introduced into the homes of miners and mine officials of the various coal companies. Thus in the town of Kaska, Pa., all the houses are equipped with furnaces, while in the town of Lorraine, which is the property of the Philadelphia & Reading Coal & Iron Co., two houses have been thus supplied, this being somewhat of an experiment.

At Kaska, where all the houses have or soon will have furnaces, the type employed is commonly known as the hot-air furnace. This has one pipe running to every room, insuring a comparatively even heat. The houses at Kaska have already been described in *Coal Age*.

In the houses at Lorraine, as well as in company houses elsewhere, the owners are introducing the pipeless type of furnace—and it is giving excellent results. The land department of this company has received many letters from employees stating that this type of heater is meeting conditions satisfactorily.

At the present time the comapny has not installed many furnaces of this type but is experimenting with them. Thus far this model has given such results as to warrant its further introduction. The accompanying illustration shows the type of houses built in Lorraine where these furnaces are installed. These dwellings are highly compact in design. The furnace is placed in the cellar and the opening for the warm air lies between the two front rooms. Sufficient heat is supplied to warm the whole house even to the bedroom on the third floor.

Of course this room is not as warm as are those of the first or second stories, but the heat provided suffices for a bedroom. Even in the coldest weather encountered last winter, the land department of the Reading company received no complaints concerning the heating of these houses.

In case of sickness, where it is required that one room in the house be kept warmer than the others, it is possible to obtain the desired temperature by closing a sufficient number of doors and forcing the heat into the room where it is wanted. Likewise any room can be kept as cold as may be desired by simply closing the doors to the connecting rooms and the hall.

In order to heat the whole house comfortably, it is necessary to leave the doors open between rooms so that the heat may circulate throughout the building. Furnaces of this type are so constructed that the cold air is drawn out of the rooms and warm air forced into them.

Idaho's Coal Beds Are Now Being Developed

BY JULIAN M. DE COSTER
Driggs, Idaho

KNOWN in the early days of the West as the "Gem of the Mountains" on account of its wonderful natural beauty, Idaho soon became one of the great mining states of the Union. The few remaining old-timers still speak of the glorious days of the early 60's when placer gold was mined on the Boisé River, on the Salmon and the Snake. Later on, the Nicholia lead mines in southeastern Idaho furnished one-third of the lead produced in the United States. Later again the rugged peaks of the main Rockies in northern Idaho produced the lead and silver that made the Cœur d'Alène famous.

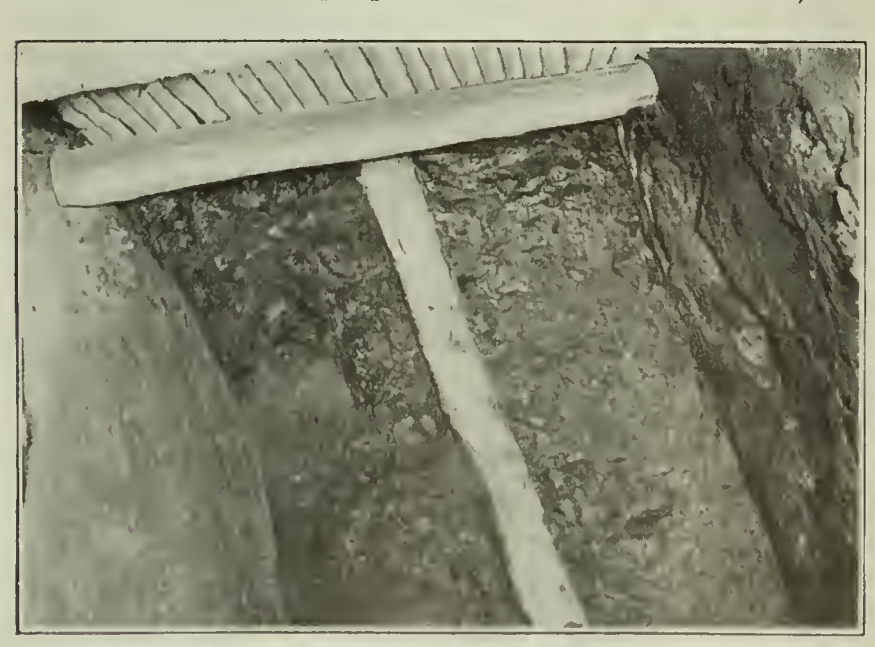
During those more ostentatious mining operations, some farmers in the Teton Basin, a country southwest of the Yellowstone National Park, were laboriously

Brown Bear Mine Camp in Idaho

A typical prospector's camp with its log houses but, nestling as it does among the tall trees, it seems more attractive than are many model villages which lack its wealth of foliage.

raising hay and grain and spending a few days between crops trying to develop the coal croppings that they had found in the mountains west of the valley. The development of the coal measures, however, was slow and uncertain—merely a secondary business matter.

About three years ago Mr. Talbot, a magnesite-mine operator of Spokane, Wash., got control of some of the best coal prospects on Horse Shoe Creek, Teton Basin, Idaho, and started developing them on a systematic scale. The Talbot properties include three mines, the



CLAY BAND HERE SEPARATES THE TWO BENCHES

Note the small "horseback" in the footwall which seems to have caused an uneven lie of the immediate coal layers but which has been wholly made up by increased or diminished thickness by the time the clay parting is reached.

Brown Bear, the Horse Shoe and the Old Hill, which is now locally known as the Mormon mine.

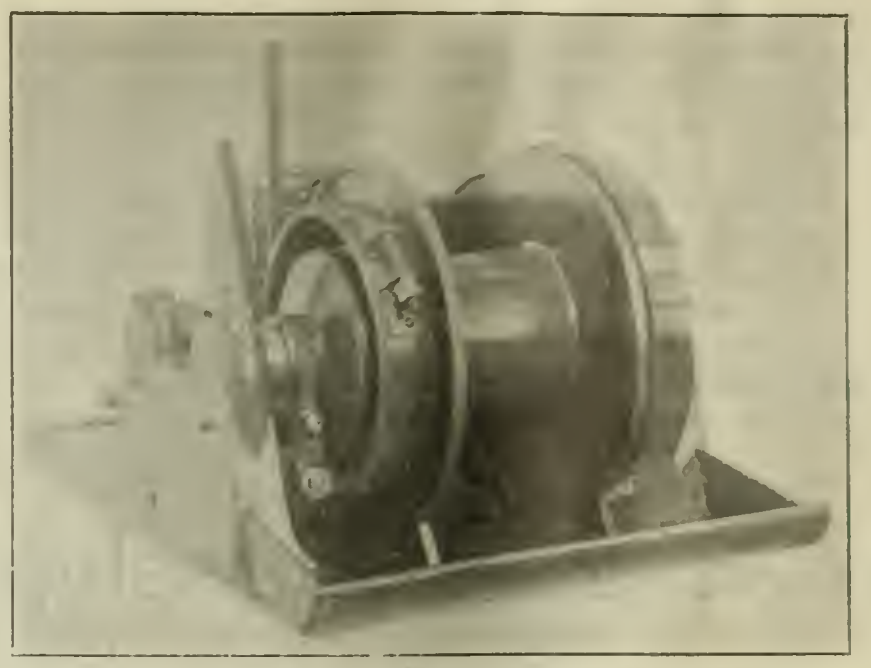
The Mormon mine is tapped by a tunnel several hundred feet long. The bed is about 10 ft. thick, stands almost perpendicular and contains a superior quality of coking coal. Near by are immense deposits of shale, marl, sand and limestone—all the raw material required to make a first-class cement. An aërial tramway would reduce to a minimum the cost of handling the raw material. The Horse Shoe mine is developed by a tunnel and furnishes from one bed several feet thick all the coal that is needed for local consumption.

BROWN BEAR COAL BED WITH MINER AT WORK

Note how obviously the bed consists of two separate benches which here show a hard splinty band at their line of juncture.

North of this development is the old Brown Bear mine. An incline extending to a depth of about 500 ft. and equipped with steam hoist, brings to the surface from the bottom the coal that is slid down from the lateral galleries. This bed is about six feet thick. A tunnel has been started about half a mile from the incline and is expected to tap this 6-ft. bed at a depth of several hundred feet. A tipple at the entrance of the tunnel will load the coal into cars on the Oregon Short Line, a branch of which has been built from Tetonia to the mines and is now in running order. Near the tipple is also installed a complete electric plant which will generate electricity for the operation of the cars and machinery in the tunnel and mine.

It should also be mentioned that a highly promising prospect has been opened three miles south of the Talbot mines on Mahogany Creek. An open cut has uncovered croppings that promise in the next few feet of development work a 10-ft. bed of marketable coal. This bed has been located by myself and an associate, and a permit for coal prospecting has been applied for.



QUARTERING REAR VIEW OF THE MACHINE

All control levers are within easy reach. Making the bed plate and pedestal bearings in one casting greatly increases the rigidity of the unit and renders it capable of withstanding extremely rough usage with safety.

Hoist Designed Specially for Use in Room Work

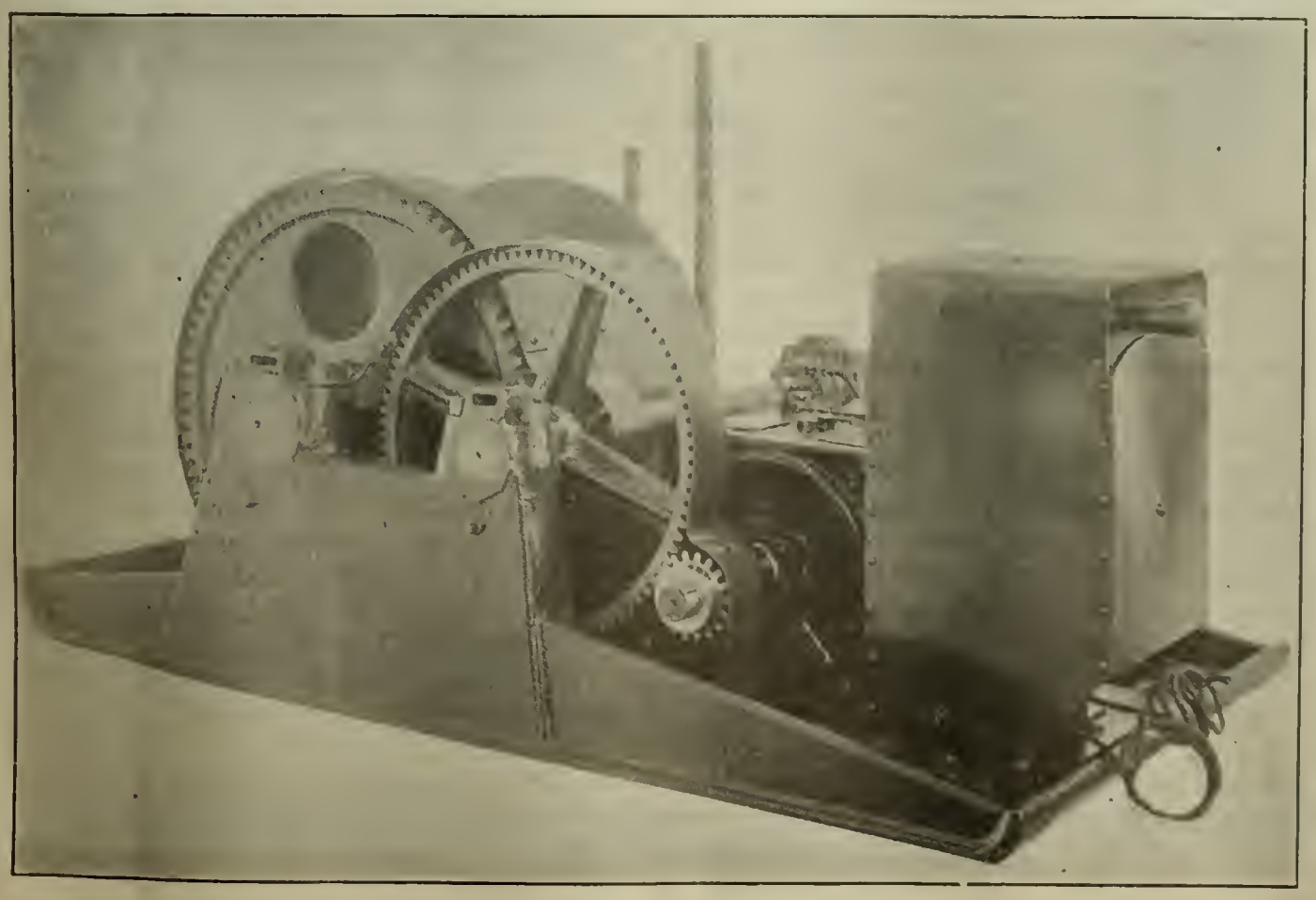
Six-Jaw Clutch Holds or Frees Drum from Shaft—Oil Supply Will Last Three Months—Special Provision for Jack Props

IN THE operation of mines in thin beds of coal, room hoists have become almost essential and their use accordingly has grown with rapidity. Miners have constantly urged that an end must be made of the practice of pushing cars by hand, and the room hoist furnishes one of the best answers to the difficult problems thus presented, for it can do its work satisfactorily with any thickness of coal bed, no matter how great or how small.

As the room hoist has often to withstand a considerable stress, has to be erected without any well-prepared foundation and has, moreover, to be moved from place to place as the rooms are worked out it is a great advantage to build the base with the side frames and the bottom plate in a single piece. This gives a strong, rigid mounting for the drum and shafts.

Much is gained also if the rope can be drawn from the drum without the rotation of shafts or gears, the drum alone being rotated as the rope is unwound. This can be effected by mounting a six-jaw clutch on the drum itself. Usually a clutch or sliding pinion is placed on the jack shaft, which, while it permits the unwinding of the rope without revolving the motor, makes it necessary to revolve the drum shaft and gears, which is not desirable. The principles of design just enunciated are built into the Motorope, a new type of room hoist manufactured by Alexander Palmros & Son, of Syracuse, N. Y.

The bearings are mounted in split housings which permit easy access to the shaft and its parts for repair or replacement. These bearings are of the wick-oiling type and no grease or oil cups are used. Each bearing



Room Hoist with Boat-Like Base

This shows the winding drum, the brake drum clutch and gear shield also the upturned edges and end of the bed plate.

has a reservoir containing three months' supply of oil and by special construction is protected from injury that might be caused by the entrance of material scaling from the roof or by the introduction of dirt of other kinds.

Ample space is provided in the corners of the base plate for holding down jack props, and the rope drum and gears are well protected by strap guards to prevent injury to either the operator or the machine. A special mine-service rheostat, with resistance and controller inclosed in a single steel housing, is a part of the standard equipment of the machine. With the arrangement used, it is readily possible to disconnect and remove either the motor or the rheostat independently one of the other.

The outstanding characteristic of this machine appears to be its accessibility, for any part can be removed for replacement or repair without interference with any other element. The standard machine for mine service is 48 in. long, 29¼ in. wide, by 21 in. high over the top of the drum. A 4-hp. motor supplies the actuating power. The capacity of the drum is 1,000 ft. of ⅜-in. rope, or 600 ft. of ½-in. rope. The total net weight of the machine is 1,025 lb.

Consumer Ownership Winning in Germany

Socialization Declared Valueless Unless It Reduces Cost to Consumer — Will Be Capitalistic, Not Communistic — Small Shares for Small Investor—New Mines Not Needed—Public Ownership of Coal Lands with Private Operation of Mines

By H. O. Herzog
Berlin, Germany

IT TRANSPIRES from the meeting of the committee appointed to investigate the method for nationalizing the coal industry of Germany that the Stinnes group among the mine owners are slowly gaining the upper hand. A sub-committee, consisting of three mine owners, among them Stinnes, and three representatives of the miners, was delegated to go to Essen, the heart of the Western mining district, to hold a conference in close consultation with groups of mine owners on one side and of coal miners on the other.

It appears that as a result of their deliberations the two opposing groups of which the committee is comprised have come to an understanding as to the principle to be followed. The most essential part of this understanding seems to be a clear definition of the type of socialization to be applied to the mining industry This definition is important as it clears up many confusing ideas of socialization prevailing among all classes of people.

Socialization, as is now proclaimed, can be nothing else than a process for obtaining the most complete and economical utilization of all industrial products in the interest of the whole nation, whereby all classes taking part in production should have a share in control and responsibility. Only new ways, it is said, which, by the co-operative working of all parts, guarantee the most profitable production and utilization will justify making extensive changes in the existing economic order.

The committee arrived, as the immediate consequence of such a principle, at a conclusion which will be of the greatest importance to Germany's industry in the future. It is that trusts formed mainly for financial purposes should be abolished in favor of co-operative combines between producers in all stages of the manufacturing process from the coal to the finished product. The promoter of this idea is Stinnes himself, who long ago anticipated the necessity of abandoning the trust policy and of replacing it by a new system of co-operative combines.

If Stinnes ultimately gains his point it will mean that German socialization will not be built up on the communistic but on the capitalistic order of things. As he is successful with his ideas in the main point it is no surprise that the other points on which a prime understanding has been reached also bear his mark. Most essential among them seems to be that of giving employed miners as well as officials the option of taking shares in the mine properties and issuing for this purpose securities of small denomination—that is 100 marks. Hitherto shares of the German joint-stock companies had a minimum face value of 1,000 marks.

The mine owners led by Stinnes are fighting with all their power and vast influence for maintenance of the present proprietorship, and to avert the danger of the expropriation they have been even willing to concede that share dividends be limited. By this concession, by the participation of the working classes in the proprietorship and by other betterments promised them, it is evidently hoped to defeat the expropriation advocates.

Mines Could Produce 43 Per Cent More

Another part of the deliberations of the committee has been devoted to the future organization of coal mining with a view to increased production. According to expert opinion submitted by Professor Heise of Bochum new shafts need not be sunk, as the existing pits are used to only 70 per cent of their capacity. The increase of production may be gained by other means such as better haulage equipment, more efficient labor and a greater number of miners.

Professor Heise estimates that a daily increase in output of 2,000 tons, if obtained from new shafts will require an investment of 450,000,000 marks and 3,000 workmen, while the same increase from existing mines can be obtained by an investment of 200,000,000 marks and 1,600 workmen. Even under such conditions it is said that numerous mines will be unable for financial reasons to increase their production, as they cannot find the necessary capital, so long as they are dependent on their own resources.

For this reason it is proposed to combine mines in such a way that highly productive ones will join in exploiting such mines as still need large investment. It

would also fall to the task of the manufacturing plants with affiliated mines or groups of mines to see that the production was increased as far as possible and that the necessary capital was secured. An organization which would control all the mining plants, it is said, would be entirely unequal to such a task. This important principle, which has lately gained the endorsement of the most prominent coal-mine labor leaders, will no doubt carry great weight in the further proceedings.

Satisfy Miners Whatever Others Think

The above conclusion, which the sub-committee appears to have arrived at during its trip to Essen, are still far from general adoption, but the impression prevails that Stinnes is slowly but steadily gaining ground. The trend that affairs are taking surely runs contrary to theoretical socialism, and will consequently not have the approval of the broad masses of workmen, who are still saturated with Marxism.

The mine owners are, however, not looking for the approval of workmen in general; they are endeavoring only to get the good will of the coal miners, and they seem on the road to success. This would mean that the first attempt to apply theoretical socialism to actual industry has completely failed.

Another proposal starting from an entirely new point of view has lately been submitted to the Parliament by the democratic member Erkelenz, secretary of the Democratic Workers' Union, on behalf of its author, Beckmann, a representative of the employees in the National Economic Council. This proposal, which bears all the marks of a compromise of the advocates of full socialization with those who adhere to privately managed mines, has been received favorably as a probable bridge between the opposing parties.

The essential part of the new plan is to socialize only the mining land, while the operation of the mines shall remain, as before, in private hands. It is proposed that the existing mines and all undeveloped mine land as far as it is in private hands shall be purchased by the state against payment of bonds bearing 4 to 5 per cent interest and that the mines shall be leased to the highest bidders, the present owners having the first refusal.

High Leases Would Make High Prices

This proposal is on the face of it open to a twofold danger, namely, that by awarding the lease to the highest bidder the prices for leases would go up, and the lessee would afterward be compelled to raise the price of his product, and secondly that bidders, on the other hand, would form a pool in order to keep down the prices of leases. In either way the intention of the proposal, which is to stimulate lessees to find compensation by increased production on the one hand and to cut down the profits of the mine owners on the other hand, would be defeated.

It is proposed to overcome the first difficulty by putting the price of the lease on a sliding basis, rising and falling with the coal price. This, it is hoped, will frustrate those who intend to raise coal prices. In order to prevent pooling, the proposal provides that the settlement of new investments at the expiration of the lease shall be dependent upon the price of the lease. Leases obtained at prices too low would, therefore, carry with them the disadvantage of an inadequate return at the end of the lease term on the capital invested.

It is further proposed to open a way so that workers and employees may acquire leases by forming co-operative societies, the government providing bank credit for working capital, in return for which it would retain control of the management.

The ultimate end of all the agitation, committee meeting and discussion is not to advance the socialization of industry but to cause the further formation of vertical trusts. The Rhein-Elbe Union, Hugo Stinnes' great handiwork, is the largest of these, but the newest and most astonishing addition is the Siemens-Schuckert combine. This block of works, with a joint capital of over a billion of marks, will no doubt be the largest trust of Germany and a leader in its industrial policy.

Of other trusts lately formed should be mentioned the merger between the Gute Hoffnungs Hutte and the Maschinenfabrik Augsburg-Nürnberg, further the enlargening of the Stumm combine by the Eisen-Industrie zu Mendan & Schwerte, Gusstahlwerke Annen Actien Gesellschaft and Essener Bergwerksverein. A similar enlargement has taken place with the well-known Klockner concern, comprising the Hasper Eisen Actien Gesellschaft, Königsborn Actien Gesellschaft, Georgs-Marienhutte and the Lothringer Huttenverein, the combine between the Phœnix Actien Gesellschaft and the Reiherstieg Werft. This is only the beginning of a movement which no doubt in the near future will take enormous dimensions.

The capital power and the influence behind these combines are so great that they are an important factor in public life and cannot be overlooked in legislation. An enormous propaganda is made among the working classes to win them over to Stinnes' ideas, assisted by promises of advancement and betterment of wages. The opposing forces in the nationalization council are at present pretty evenly matched, but it may be said that public opinion is not in favor of Stinnes and more inclined toward Rathenau's proposal.

It is impossible to foresee at present which party will ultimately win, but it is likely that a compromise will be struck. Even if such is the case Stinnes may be trusted to do all in his vast power to lead the coming development into his channels, although on the face of things he may have to make concessions to the working classes and to the public in general.

Gives the New Wrinkles in Coal Washing

Coal Washing. By Ernst Prochaska, consulting engineer; 5½ x 8¼, 382 pages; McGraw-Hill Book Co., 370 Seventh Ave., New York City.

The art of washing coal is now being so rapidly revolutionized that all old works on the subject are already antiquated. Constant revision is needed to keep such books up to date. Mr. Prochaska's volume arises out of several much-read and highly praised articles which appeared in *Coal Age*. The author was not satisfied, however, to leave these in their original state. Much has been added to make the book of more value to readers and to bring it more closely up to present practice. Mr. Prochaska does not waste his time in describing what was once in general use and at that time regarded as standard. He limits his inquiry to those forms of washing plant which will meet modern needs and produce such results as are now expected of washing machinery. Briefly, however, he reviews the progress of the art of washing coal from its early stages to its present degree of perfection. Attention is given to pyrite recovery and to the water and power needed for washing.

Problems of Operating Men

Edited by James T. Beard

Working the Redstone Coal, Pittsburgh District

Characteristics of the Redstone and Pittsburgh Coal Beds. The Redstone Coal Generally Shows High Ash Content—Fair Steam Coal But Not a Byproduct or Gas Coal. Formation Much Broken by Horsebacks That Often Cut Out This Coal

ANSWERING the inquiry of "Operator," which appeared in the issue of *Coal Age*, Jan. 13, p. 72, I am pleased to submit the following:

The Redstone coal bed belongs to the Monongahela formation of the Pennsylvania series. Where found the Redstone coal lies from 50 to 80 feet above the Pittsburgh bed and is the most promising of all the beds occurring above the latter. In thickness the coal is anywhere from a few inches to over 4 ft., according to the locality.

The Redstone bed is generally present throughout the Brownsville-Connellsville quadrangle. It occurs also in parts of the Amity quadrangle, and I believe is to be found at its best within the confines of this area, in Pennsylvania.

The intervening stratigraphy between the Pittsburgh and Redstone beds is comprised of the rocks immediately overlying the Pittsburgh bed. These are generally shale but, in places, a massive sandstone occurs, which has been called the "Pittsburgh sandstone."

This formation is particularly well developed in the southwest corner of the Brownsville quadrangle, where it is coarse and massive and attains a thickness of forty feet. Under the Redstone coal is generally found a bed of limestone that varies from 10 to 20 ft. in thickness. While this bed is fairly persistent it occasionally disappears altogether.

Comparative Characteristics of the Redstone and Pittsburgh Beds

The Redstone coal is generally good, but occasionally it is found to carry a high percentage of ash, which detracts from its market value. The most striking peculiarity of this bed is the frequency with which clay horsebacks predominate. In many places, these deformities are so pronounced as to cut out the coal entirely. Generally, however, they simply reduce the thickness of the seam to a fraction of its normal measure.

At this point it will be interesting to make a comparison of the peculiar, individual characteristics of the Redstone and Pittsburgh beds. The latter, especially in the lower division, is remarkably regular, even to the smallest partings, while the former, as just stated, is constantly beset by clay horsebacks and veins that cause great variations in its thickness.

In addition to these features, the close proximity of the Redstone to the Pittsburgh coal must be considered before the development of the former is undertaken. Where the Pittsburgh coal has been previously mined the chances are that the roof has caved in many places and the strata between the two beds will be so badly broken as to render any attempt to mine the Redstone seam useless. The sulphur and ash content of the Redstone coal are variable. At times the coal will contain little sulphur but generally has a high percentage of ash, nearly twice as much as is common to the Pittsburgh coal.

In a general way, the Redstone coal presents a favorable aspect; but the great irregularity of bed section, the high ash content and the close proximity of this bed to the Pittsburgh bed below render its prospective value slight, unless actual testing should prove otherwise.

Quality of Redstone Coal and Difficulties in Mining

This coal would not be classified as a byproduct or gas coal; but would be sold as a steam coal, market conditions governing its demand. Moreover, it must be borne in mind that, in normal times, the best grades of coal are given preference.

Regarding the difficulties likely to be encountered in this undertaking, while some of these have been mentioned in the foregoing, many others may be encountered depending on conditions of drainage, method of working, form of opening, etc. The coal may dip the wrong way for an economical and favorable point of development. Again, there may be objectionable natural features that necessitate the operation of an inclined plane; or the case may prove to be a stripping proposition on bottom land where alluvium formation must be a encountered.

In any case, it may be found that the coal is cut out suddenly and unexpectedly. Not knowing the details in connection with this proposition or the circumstances under which the development must be undertaken, I am unable to advise a satisfactory method of proceeding whereby it would be possible to overcome the difficulties mentioned.

However, allow me to say the property should be thoroughly and intelligently prospected, and the drillholes located by survey, and elevations taken on the surface to enable the corresponding elevations of the bottom of the coal to be computed and a map compiled showing these locations and the elevation and thickness of the coal at each point of the survey.

From this map a knowledge of the percentage dip of the coal will be gained, and the location of local sumps in the area under consideration obtained. In addition, some sections of coal properly sampled should be taken and sent for analysis to a reputable firm, for the proximate determinations, B.t.u.'s and fusion point of the ash. This will determine its value as a steam coal. In conclusion, let me add, be sure your proposition is right and then go ahead. MINING ENGINEER.

Pittsburgh, Pa.

Plan and System Essential to Uniform Production

Uniform production in coal mining is a many-sided subject and reverts back to the early planning and development of the mine in accordance with a well-defined system that has regard to the future as well as the present.

MANY excellent points have been brought out in the discussion of maintaining a uniform production of coal. None of the writers, however, have regarded the subject as antedating present operations.

Rightly considered, the subject of the uniform production of coal must have due regard for the future, and is closely related to the conservation of this important resource. It is not a subject for discussion by any one class of mining men alone, but must be judged from a standpoint of practicability and efficiency in reference to future world consumption.

Difficult to Modernize an Old Poorly Planned Mine

We realize that present-day mining engineers plan the development of a proposed operation with careful regard for future requirements. Conditions are anticipated for years to come, and the mine is planned for a maximum production with a view to reach that output and maintain it at a uniform standard throughout the life of the mine, barring market conditions.

While there are a few of the older mines that have been more recently acquired and modernized, the majority of these holdings are beyond redemption, by reason of the development having been made without regard to the future. An operator acquiring such a property is not likely to expect or strive for the up-to-the-minute efficiency possible in a new operation. That could only be accomplished at a prohibitive cost of operation.

Plan Mine With Regard to Future Requirements in Haulage, etc.

It is common to hear the remark, "If the mine had only been planned and developed with some little regard for the future it would be possible to make a better showing now." A single visit to a mine that has been a large producer for years will seldom fail to convince one of the difficulties presented in respect to uniform production. On the other hand, a mine that has been planned with respect to the future stands out as a monument of ever increasing efficiency.

One writer has mentioned the importance of a good haulage system and this, to my mind, is one of the first points to be considered. From start to finish, the general plan of haulage and the maintenance of the roads must receive close attention. Ample clearance, safe top, solid roadbeds, good tracks and properly located sidetracks or partings are essential factors in haulage.

Systematize all haulage schedules so as to minimize delay caused by one trip having to wait for another. Gathering stations must be located convenient to the working face, and at points that will afford an equal distribution of output. Much time is lost by arranging for too long a motor haul. It is here that system counts.

The size of motor and number of cars hauled must be carefully considered in respect to the length of haul and grades to be encountered. A block system is a good means of shortening the haul of a motor and will generally prove a great time and trouble saver. Good haulage involves rigid and frequent inspection of all tracks and rolling equipment.

Development Must Have Regard to Concentration of Work

The proper distribution of men suggested by another writer is a good idea. In my experience, however, concentration of work is of even greater importance. My plan always favors concentration in a single section, until that section is finished and the pillars drawn. I have found that plan most economical in all phases of production.

Finally, a most important element and one that must never be overlooked is keeping the men satisfied. That is not always an easy task; it requires constant supervision of their work. A frequent cause of dissatisfaction is a scarcity of cars.

An ideal haulage system is one that will keep a good supply of cars at the face. This depends not alone on the activities of the drivers and motormen, but is largely controlled by the style and condition of the equipment and the general system of haulage employed in the mine.

It is evident from this brief review that the problem of maintaining a uniform production of coal in a mine is a many-sided one, and requires the most careful study and attention in every phase of the development. The proposition is particularly dependent on the early planning of the undertaking; but this must be followed by capable management and the tactful treatment of men by the mine officials in charge. A definite but flexible policy must be adopted in the beginning and adhered to throughout the undertaking, making only such changes as time proves are necessary to insure success in mining.

Thomas, W. Va. Ben.

Skill Among Miners

Skill in the practice of present-day mining is not what it was forty years ago. The skillful miner is one who combines knowledge and experience with ability to perform.

MODERN mining has advanced to a stage, today, that requires the successful miner to keep himself informed on improved methods and equipment in mining. As suggested by one writer, "What constituted a skilled practical miner forty years ago would not make such a one today."

The dictionary defines a skillful worker as one who has a familiar acquaintance with his vocation and is able to reduce that knowledge to practice. It is not the possession of experience and knowledge alone that makes the skillful miner; it is the use he makes of these important elements.

Years of Work Do Not Always Develop Skill in Mining

An assistant foreman, writing from Johnstown, Pa., *Coal Age*, Nov. 11, p. 1003, rightly says, "It makes little difference how many years a miner has worked at his calling; he may have mined coal a lifetime and yet not be a practical miner, because he has never learned how to plan or perform his work with skill and in a safe and economical manner."

The truth could not have been stated more concisely or clearly. I regret to say that long experience in the mining of coal has a tendency to make men careless and indifferent to dangerous conditions. It would cause no surprise to me if an investigation of the hundreds of mine accidents, fatal and nonfatal, showed that the majority of them happened to miners who have spent years in the mine.

It has been stated that "the man who is willing to take a chance is not a practical or a skilled miner." This also is a true statement and proves what we said before that the experienced miner is prone to take many chances and often pays for it by the loss of life or limb. The miner who recognizes danger by experience, and takes precaution to safeguard himself, is the best type of a skillful miner.

In a few words, knowledge is gained through long experience, study and observation; but the degree of skill possessed by a miner is determined by the way he employs the knowledge he has. Speaking of skill and success in mining coal, there is little hope for the man who sets timbers and takes other precautions when expecting a visit from his foreman and omits to do this at other times. He may have been mining all his life, but has not yet gained the right to be called skillful.

Aside from the question of safety, there are men who have worked in mines a lifetime, and yet they show no evidence that they have profited by their length of service. They have no ideas of their own, but are good workers and succeed well enough when someone plans their work for them. A miner may know how to drill and shoot his coal but be a poor timberman and may have no skill in laying his track and loading his coal. He is generally a failure in detecting dangerous roof conditions and is far from being skillful.

Men Who Qualify But Have No Practical Experience

It is true, as we often hear said, that some men will gain as much mining knowledge in a few months' experience as others will in as many years. That is not to say, however, that such short experience can qualify a man and class him as a skillful miner.

In seeking to qualify themselves for positions of responsibility in mining, there are young men who have taken the examination and been granted a certificate of competency, and yet possess little or no experience in the actual work of mining.

On the other hand, there are older men whose experience and judgment can be relied on in any emergency, but who have not the education to enable them to pass a technical examination and who, for that reason, have not been able to gain the coveted certificate.

No one will deny the importance of study and the value of knowledge gained from books. At the same time, our mine officials should be men who have begun at the bottom and worked their way to the top. John Rose,

Former State Mine Inspector.

Dayton, Tenn.

Safe Practice in Mine Ventilation

Some practical points are here emphasized, bearing on the ventilation of mines but having particular reference to the sealing off of old gobs, mine bratticing, electric lamps, etc.

SELDOM have I read an article that seemed to have as much of practical suggestion in respect to the ventilation of coal mines and other matters pertaining to safe and efficient operation, as that of R. A. Walter, *Coal Age*, Nov. 4, p. 945.

In his remarks, Mr. Walter has presented some very pointed facts relating

to the prevention of gas explosions in mines. It is not my purpose to comment on all the various matters mentioned in the article, but merely to emphasize a few things that have been impressed on my mind by reading the letter.

Mr. Walter describes how the ventilating current should be conducted to make the ventilation of a mine efficient. He describes the fan arrangements, and advocates two separate drives operated by different sources of power. No mention is made of the distance through which a ventilating fan should control, or the area it should be required to ventilate, which I believe would have been an interesting item to have explained. Some practical suggestions along that line would have, no doubt, brought out a good discussion that would prove a benefit to a large number of readers.

Use of a Common Airshaft and Escapeway

Allow me to suggest, in this connection, that where two or more mines are operating in close proximity to each other, it may be possible to economize temporarily by consolidating interests. A common airshaft may furnish the necessary escapeway for all, until the development in each mine became extended and new shafts would be required. Perhaps conditions would call for other fans erected at a distance from the main openings. However, the requirements of the mining law may be such that arrangements of this kind would not be lawful and each mine would have to provide for its own independent circulation.

After speaking of its being desirable to ventilate old workings with return air, Mr. Walter advises that "abandoned and worked out sections should be sealed off with heavy fireproof airtight stoppings provided with 'bleeders' opening to return air." I very much favor this idea of sealing off old gobs, particularly if they intersect the main parallels, as they often do, at intervals of, say 1,000 ft.

When a Fireboss Finds Gas What Must He Do?

The author's remarks regarding the work and equipment of the fireboss are especially good, emphasizing as they do the need of employing a sufficient number of skilled men so that each fireboss can complete his work in two hours. When finding gas a fireboss should ascertain the cause. If the brattice is short he should extend this himself. The gas may come from the cutting of a clay vein and, if so, he should know it and provide for the same.

Before closing, I want to emphasize the advantage gained in the use of the electric cap lamp, which is not only gas-proof but fireproof as well and wholly eliminates the dangers common in the use of naked lights. The presence of the latter always causes a constant dread of fire.

Gans, Pa. R. W. Lightburn.

Inquiries Of General Interest

Uncertified Mine Foremen Escape Penalty of the Law

An Uncertified Mine Foreman Who Is Considered by His Employer To Be "Equally Competent" As a Man Holding a Certificate, Is Permitted To Serve in That Capacity Under the Anthracite Mine Law, But Is Exempt from the Penalty Imposed by Law on the Certified Man

ATTENTION has been drawn more than once, in the columns of *Coal Age*, to certain inconsistencies in that provision of the Bituminous Mine Law of Pennsylvania which legalizes the employment as mine foreman of any man whom the operator employing him considers is "equally competent" with the man who holds a certificate of competency granted by the State Examining Board.

However, there is one point that has not been made clear by those who have discussed the matter. For myself, I am free to admit being wholly in the dark as to whether the law, as it stands today, imposes any penalty whatever on the uncertified foreman who may fail in the performance of his duties, either through careless neglect or incompetency.

What is true of the mine foreman, in this respect, is likewise true of the uncertified assistant foreman and fireboss, either of whom can be employed in his respective capacity, provided his employer regards him as equally competent with the holder of a certificate. As far as I can discover the law provides no penalty for their failure to properly perform the duties required of them.

The Bituminous Mine Law (Art. 4, Sec. 1) reads as follows:

> If the mine is generating explosive gas in quantities sufficient to be detected by an approved safety lamp the mine foreman must posses a first-grade mine foreman's certificate, or be a person who, in the judgment of the operator, is a person equally competent with the holders of such certificates.

Again, with reference to the employment of an assistant mine foreman, the same section of the law reads:

> If the mine is generating explosive gas in quantities sufficient to be detected by an approved safety lamp, the mine foreman's assistants must possess first-grade assistant mine foreman's certificates, or be a person who, in the judgment of the operator, is equally competent with the holders of such certificates.

Regarding the employment of firebosses the law reads (Art. 5, Sec. 1):

> In such portions of a mine wherein explosive gas has been generated within one year before the passage of this act, or shall be generated after the passage of this act, in sufficient quantities to be detected by an approved safety lamp the mine foreman shall employ a fireboss or firebosses whose competency to act as such shall be evidenced by a certificate of qualification from the Department of Mines, on the recommendation of the examining board . . . or a person or persons who, in the judgment of the operator, is equally competent with the holders of such certificates.

In respect to failure in the performance of duties, the law reads (Art. 3, Sec. 7):

> If the mine foreman, the assistant mine foreman or the fireboss neglects his duties or incapacitates himself by drunkenness, or is incapacitated by any other cause for the proper performance of his duties . . . it shall be the duty of the superintendent to make a thorough investigation of the case; and if he finds evidence to sustain the charge he shall inform the inspector who shall inform the Court of Common Pleas of the County, or a judge thereof, by petition; and said court, or judge when the court is not in session, shall issue a citation, in the name of the Commonwealth, to the said mine foreman, assistant mine foreman or fireboss, to appear, at not less than five days notice, upon a day fixed before said court or a judge thereof, at which time the court shall proceed to inquire into and investigate the allegations. If the court finds the allegations to be true it shall notify the Department of Mines of such finding, and instruct said Department to withdraw the certificate of said delinquent.

It is clear from the reading of the law that a certified mine foreman, assistant mine foreman or fireboss who fails in the performance of his duty and is found, upon investigation by the superintendent, to be guilty, must be haled before a court or judge to stand trial and be deprived of his certificate if the charges are proved.

The question arises, however, What loss does the uncertified mine foreman, assistant mine foreman or fireboss sustain when he is likewise found to have failed in the performance of duty. The uncertified man has no certificate to lose and, as far as one can see, goes scott-free. It is even a question whether an uncertified official would be haled before the court on failure of duty. The worst that could befall him would be the loss of his position; but this would depend on the humor of his

employer and the prospects of readily filling his place at the time.

Kindly explain to what extent the failure in duty of uncertified mine officials can be punished under the law.

Brownsville, Pa. "IN THE DARK."

The points to which this correspondent has drawn attention are true. There is no penalty prescribed by the Bituminous Mine Law of Pennsylvania for failure in the performance of duty by uncertified men who, "in the judgment of their employers are equally competent with the holders of such certificates" as are obtainable under the law. The point of the correspondent is well taken, and we hope it will bring forth a free expression of opinion by readers.

Examination Questions Answered

Examination for Mine Foremen. Fourteenth Anthracite District

(Selected Questions)

QUESTION—*How much air will be required to dilute 500 cu.ft. of methane to a mixture containing 4 per cent of the gas?*

ANSWER—In this case, the 500 cu.ft. of methane being 4 per cent of the mixture, the volume of the mixture is $500 \div 0.04 = 12{,}500$ cu.ft. and the volume of air required is therefore $12{,}500 - 500 = 12{,}000$ cu.ft.

QUESTION—*What is the lowest oxygen content in which an oil-fed flame will burn?*

ANSWER—Assuming pure air unmixed with other gases, an oil-fed flame will be extinguished when the oxygen content of the air has fallen to 16.4 per cent.

QUESTION—*Five anemometer readings, each of one minute duration, are taken in an airway the height of which is 9 ft. and the width 6 ft. The readings are as follows: 108 ft., 111 ft., 114 ft., 102 ft. and 110 ft. What quantity of air is passing through the airway?*

ANSWER—Assuming the readings are taken at points in the airway such that they will represent an average velocity of the air current, the latter is $(108 + 111 + 114 + 102 + 110) \div 5 = 109$ ft. per min. The sectional area of the airway being $6 \times 9 = 54$ sq.ft., the estimated volume of air is $54 \times 109 = 5{,}886$ cu.ft. per min.

QUESTION—*If it requires 5 hp. to produce 30,000 cu.ft. of air per minute, what horsepower will be required to produce 90,000 cu.ft.?*

ANSWER—Assuming no change in the circulation of air in the mine the volume of air passing varies as the cube root of the horsepower on the air. In other words, the power ratio is equal to the cube of the quantity ratio, and for the requried horsepower we have,

$$\frac{x}{5} = \left(\frac{90{,}000}{30{,}000}\right)^3 = 3^3 = 27$$

$$x = 5 \times 27 = 135 \text{ hp.}$$

QUESTION—*(a) How much must the the ventilating pressure be increased to double the quantity of air? (b) How much must the power be increased to double the quantity?*

ANSWER—(a) In order to double the quantity of air in circulation in a mine or airway, the pressure must be increased four times; because the pressure varies as the square of the quantity and $2^2 = 4$.

(b) Again, since the power varies as the cube of the quantity of air in circulation and $2^3 = 8$, the power required to double the quantity of air must be increased eight times.

QUESTION—*What distance is required by the mine law in each of the following cases: (a) Between crosscuts. (b) Between cars when coupled together. (c) Miners' box from track. (d) Breaker from mine opening. (e) Fireroom from breaker. (f) Safety holes on gangway. (g) Between cars and rib where cars are run by spragging?*

ANSWER—(a) The Anthracite Mine Law requires a cross-heading shall not be driven at a distance greater than 60 ft. from the face of a chamber or breast, which practically limits the distance apart of crosscuts. (Art. 10, Sec. 15)

(b) The law requires that the bumpers on mine cars shall be of sufficient length to keep the cars 12 in. apart when standing on a straight and level road. (Art. 12, Rule 52)

(c) The law requires all explosives used in a mine to be kept in a box at least 10 ft. from the track, where such a distance is available. (Art. 12, Rule 27)

(d) The law specifies that no breaker shall be erected nearer than 200 ft. from any opening between the surface and the underground workings of a mine. (Art. 4, Sec. 5)

(e) The law forbids the placing of any boiler for the purpose of generating steam, nearer than 100 ft. from any coal breaker. (Art. 5, Sec. 2)

(f) The law requires that safety holes on mine passageways shall not be spaced more than 150 ft. apart. (Art. 12, Rule 43)

(g) The law requires that where cars are run on gravity roads, by sprags or brakes, there shall be a space not less than 2 ft. between the body of the car and the rib, on one or both sides of the track. (Rule 47)

QUESTION—*The quantity of air passing through a crosscut in a gaseous mine is 20,000 cu.ft. per min. and the area of the crosscut is 30 sq.ft.; does the law permit the use of safety lamps of the gauze type in this opening?*

ANSWER—The Anthracite Mine Law limits the velocity of the air passing through any opening where gauze safety lamps are used to 400 ft. per min., except on the main intake and return airways of the mine. (Art. 10, Sec. 7.) In this case, the velocity of the air passing through the crosscut having a sectional area of 30 sq.ft. is $20{,}000 \div 30 = 666\frac{2}{3}$ ft. per min. Therefore, the law would not permit the use of a gauze safety lamp in this opening.

QUESTION—*What are the advantages and disadvantages of electric safety* lamps?*

ANSWER—We assume this question refers to electric mine lamps, the term "electric safety lamps" being a misnomer. The chief advantages of the electric cap lamp are the following: The lamp gives brilliant illumination and is always in place on the head of the wearer, leaving his hands free for the work to be performed. The latest improved type of electric cap lamp affords a maximum degree of protection against the ignition of gas.

The principal disadvantage in the use of electric mine lamps, is the failure of this type of lamp to give any indication of an irrespirable or poisonous atmosphere to which the wearer may be exposed and of which he has no warning, except he is also provided with a gauze safety lamp.

QUESTION—*Name five duties imposed on mine foremen, by law.*

ANSWER—The Anthracite Mine Law (Art. 12, General Rules) specifies the following as the duties of the mine foreman or his assistant: 1. The mine foreman shall have charge of all matters pertaining to the ventilation of the mine. (Rule 3) 2. The foreman or his assistant must examine, at least once a week, all accessible parts of abandoned portions of the mine and remove whatever dangers may be found therein. (Rule 4) 3. The mine foreman or his assistant must examine, every morning, all working places, traveling roads and other places where danger may exist in mines generating explosive gases, the examination to be made within three hours, at the most, before the time for commencing work. (Rule 5) 4. The foreman or his assistant must visit and examine each working place in the mine, at least once every alternate day, while the men are or should be at work in such place, and see that the place is properly timbered and safe in other respects. (Rule 12) 5. The mine foreman or other competent person appointed by him, must examine, at least once every day, all slopes, shafts, main roads, travelingways, signal apparatus, pulleys and timbering, and see that they are safe. (Rule 13)

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*The term safety lamp applies only to a lamp the flame of which is isolated from the surrounding atmosphere by wire gauze. Its use in reference to any type of electric mine lamp causes confusion.

Gibbs L. Baker Defines Owners' Rights in Confiscation Cases

GIBBS L. BAKER, counsel for the Wholesale Coal Trade Association of New York, Inc., has just given an opinion with regard to claims for confiscated coal in which he says:

"Our opinion, briefly stated, is that where dealers enter into contracts for the delivery of coal at a definite fixed price and consign shipments of coal for delivery under the agreements previously entered into, the confiscation or diversion of such coal by the carriers constitutes a violation of property rights (indisputably protected by the Constitution of the United States) for which damages as evidenced by the contract price are properly recoverable.

With the termination of Federal control March 1, 1920, Mr. Baker says, all right of the railroads to exercise the broad powers conferred by the Lever Act ceased to exist. The Lever Act was designed to assist Government agencies and not private enterprises.

To Ask Federal Trade Commission to Reveal Government Coal Costs and Increases

A RESOLUTION calling for a report by the Federal Trade Commission as to coal costs paid by the government in 1920, as compared with those paid in 1919, has been introduced in the House by Representative Newton, of Minnesota. The report is to cover the following information: Tonnage of anthracite and bituminous, production cost, mine price, prices paid, arrangements under which it was purchased; compensation, if any, paid by the government to any broker or agent; compensation paid by the seller to any broker or agent or middleman, and whether such payment was made with the knowledge of a government representative; amount paid by the government for coal in 1920 in excess of the amount paid by it for the same tonnage in 1919, and any additional information tending to make known the excess in cost to the government for coal purchased in 1920 over that in 1919. The commission is authorized to report if any attempt or effort is made to interfere with its agents in procuring the information.

Proposed Legislation on Explosives Declared Unenforceable

REPRESENTATIVES of the Department of Mines, the Department of Labor and Industry and the State Police Department of Pennsylvania met in Philadelphia Jan. 14 to discuss the outlines of an explosives code which will be presented for enactment by the State Legislature this year. At the conference about fifty representatives of mining companies and powder manufacturers also were present.

The proposed bill, as prepared by Dr. F. D. Patterson, was read in full and discussed in part. The measure, which is a lengthy one, is designed to follow up the sale or gift of explosives by means of records, and to regulate the location of magazines, which term includes every building where explosives are stored. For the latter purpose the American table of distances is included in the bill. This means that no mine magazine could be nearer an inhabited building than 145 feet, and then only if less than fifty pounds were stored, while if between 9,000 and 10,000 pounds were stored the magazine would have to be 1,740 feet from the nearest inhabited building.

Mining men, both anthracite and bituminous, told Commissioner Connelley, who presided, that the bill as it stands could not be enforced in the coal regions, as it would be impossible to observe the distance regulations. The Lackawanna would have to move twenty-seven magazines and could find no places to comply with the new rules. They also objected to the creation of a Bureau of Explosives, to which reports would have to be made, saying that there are too many bureaus already in state and federal governments, receiving reports on identical matters. They said that if new explosives regulations were needed, the mine code should be amended.

This view was supported by Chief Button and Deputy Chief Hall, of the State Department of Mines. D. P. Reese, of Harrisburg, suggested that mining companies be exempted entirely from the provisions of the proposed code. No final action was taken, and it was agreed to meet again in the Bellevue-Stratford Hotel, Philadelphia, on Feb. 3, at 9:30 a.m.

Among the mining men present were: Messrs. Hadesty, Philadelphia & Reading; Quin, Susquehanna Collieries Co.; Whildin, Lehigh Coal & Navigation; Wilson, Temple Coal Co.; Connelly, Pennsylvania Coal Co.; Reese, Lackawanna; Cameron, Westmoreland Coal Co.; Osler, Carnegie Coal Co., and Creighton, Creighton Coal Co.

Gives Anthracite Profits As 89c. Per Ton On Freshly-Mined Coal

SENATOR CALDER'S committee on reconstruction took testimony on Jan. 17 in regard to mine costs of producing anthracite. Francis Walker, economist of the Federal Trade Commission; E. F. Colladay, who was attached to the District of Columbia Fuel Administration, and others familiar with coal in Washington were heard by the committee. Mr. Walker said the commission was unable to give producing costs at this time owing to the order issued by the court forbidding it to require cost reports of operators. He gave approximate figures showing a margin of profit by anthracite producers of $1.29 per ton on total output, including washery coal, or 89c. per ton on freshly-mined coal. He figured the present cost at $5.72 per gross ton, or an increase of $1.13 since December, 1918.

IN A RECENT DECISION the Circuit Court at Fort Smith, Ark., held that the United Mine Workers of America cannot be sued for damages because it is an unincorporated labor union. This decision was made in a case that was filed first in the Federal Court at Fort Smith a long time ago, in which a widow sued the union for damages, because her husband was killed in the Hartford Valley troubles in 1914. The case was dismissed in that court and refiled in the Circuit Court of the county. There is a law in Arkansas which says that an unincorporated labor union cannot be sued, and this law was brought to the attention of the Circuit Court, resulting in the decision mentioned. The Arkansas Supreme Court recently held, also, that a suit could not be maintained against an unincorporated association.

Retail Prices of Food Articles Drop 8 Per Cent in December

THE cost of the twenty-two articles making up the retail food index carried by the Bureau of Labor Statistics of the U. S. Department of Labor decreased 8 per cent in December as compared with November.

Since January, 1919, monthly retail prices of food have been obtained for forty-three food articles. In addition, prices on storage eggs have been procured for certain months of the year. During the month from Nov. 15 to Dec. 15, 1920, the prices of all of the forty-four articles decreased in price, with the exception of eggs and raisins. Strictly fresh eggs increased 7 per cent, storage eggs, 5 per cent, and raisins three-tenths of 1 per cent.

For the period December, 1919, to December, 1920, the percentage decrease in twenty-two food articles, combined, was 10 per cent. For the seven-year period, December, 1913, to December, 1920, the percentage increase in twenty-two food articles, combined, was 71 per cent. The index number for the twenty-two articles, combined, based on 1913 as 100, was 178 in December, 1920.

Anthracite Operators Deny Miners' Demands

A TWO-DAY session brought no result in the conference between the operators and mine workers of the anthracite region. The operators consent to meet the union officials again if the mine workers desire it. Otherwise the conference will be definitely concluded with the last day of the session which was held Jan. 25. The mine workers practically wanted a new agreement, but the operators held firm to their original declarations. There were small inequalities. They were ready to correct them, but the mine workers were looking for a larger catch and refused even to ask for these small concessions which had been used as a colorable excuse for a further discussion of the terms of the agreement.

Strike When Railroad Did Not Run Special; Other Men Demand Pay for Lost Coal

TWENTY-ONE mines in the Clinton, (Ind.) field were idle two days recently because of a walk-out of the men in protest against the action of the Chicago & Eastern Illinois R.R. in refusing to run a miners' train to Miami mine No. 8 on a previous day. The men did not work that day because of a mine fatality and they assert that the railroad company failed to send out a train to bring them back to Clinton. The company, it is said, asserts that the contract with the miners does not provide for running trains under these circumstances.

Several rooms in mine No. 20 of the Vandalia Coal Co., Terre Haute, Ind., recently caved in and the miners demanded pay for the coal which they lost by the fall. When the company refused to pay for their loss the whole force at the mine went on strike.

The Coal Bluff Mining Co. of Terre Haute, is closed down because a motorman refused to bring out a sick miner, and the company declined to discharge him for his refusal. The man became ill suddenly and wanted to leave the mine.

War on One Another and on Company

AT No. 14, or Port Blanchard, colliery of the Pennsylvania Coal Co. in the anthracite region there are two unions both united with the United Mine Workers of America but fighting one another bitterly. One group of fifty-four men had the charter and the other group, consisting of 1,550 men, had the seal. The larger body is that known as the insurgent union. Feeling its strength it invited the regulars to come to a meeting and lay down the charter, their books and money, promising to lay down the seal. But the regulars refuse to comply.

Complaint was also made at the Central Colliery about wage rates. A meeting was called for Monday, Jan. 10, and on Saturday, Jan. 8, the men in the local of No. 14 mine, about 1,500 men, went on strike. It was announced that if at the time of the meeting the charter was not surrendered and the wages adjusted, a strike would be called involving all the men in the Pittston area. When the meeting opened Rinaldo Capallini, who favored a strike, was strongly opposed by James A. Joyce, the merchant of Pittston who has been the mine workers' leader. Joyce thought it time to stop striking and advised the men to keep their contracts. He is backed by the English-speaking men. Capallini, who is supported by the foreign element, wanted Joyce ejected from the hall. After the regular session the general grievance committee decided to call a strike of all the miners in the Pittston district unless the charter was turned over by Jan. 15.

It was soon seen that a general strike would break up the insurgent union, as the men were weary of the constant idleness and their insurgent leaders could not control them. At one colliery, No. 9, the men refused to strike and the check weighman resigned. Some of the mine workers declare that Capallini has been bribed by the company. He is alleged to have received $10,000 but says that it was compensation for the loss of an arm by an accident which occurred in the mines about fifteen years ago.

Counter charges have been made that Joyce has been bought. On Jan. 10 his store with the residence above it was dynamited, three persons being blown out of their beds and the entire front of the store being wrecked. Several other houses were damaged.

The Pittston police refused to let John L. Lewis hold a meeting in that city on Jan. 10, fearing a disturbance. Lewis and all the union officials are strongly opposed to the strike and the police feared that violent measures would be taken by the insurgents from the union. In the last ten months ten houses have been dynamited, nearly all of them the property of people of Italian origin.

Since that time conditions have been mending a little. Rinaldo Capallini, finding that his followers were not so numerous as he thought, resigned on Jan. 16, shortly after 500 men from Mine No. 14 rejoined the United Mine Workers. However, the membership of the general grievance committee, being changed by this exodus, stiffened up and on Jan. 23 re-elected Capallini with the understanding that no one was to interfere with him.

Mine Workers Lobby at Indianapolis for Increased Accident Compensation

OFFICIALS of District No. 11, United Mine Workers of America, are making plans for activities at Indianapolis in connection with the present session of the Legislature. They expect to make a fight for several measures sought by the miners and will oppose other proposed laws objectionable to them.

Five representatives of District No. 11 have registered as lobbyists to work in the interest of the bituminous miners of the state. They are Edward Stewart and William Mitch, president and secretary respectively of the district organization; William H. Rainey, Princeton; Harold A. Henderson, Rockville, and John A. Riddle, Vincennes.

They registered as opposed to all laws and measures that may authorize employment of any militia or constabulary in industrial disputes, against all laws which tend to restrict collective bargaining of workers and against any measures which would restrict the right of workers to quit work for better working or living conditions. They will advocate laws for improved workmen's compensation, better living conditions for coal miners and laws which will reduce industrial accidents. They will advocate free labor, free speech and a free press.

A measure of unusual interest to the miners is that of a readjustment of the workmen's compensation law. The views of the miners on this matter are outlined in a statement by Secretary William Mitch as follows: "The rate of compensation as designated in the present compensation law is as originally enacted in 1915, when conditions were much different than at the present time. This rate is inadequate and effort will be made to raise the rate from 55 per cent of the average weekly earnings to 65 per cent, and to change the minimum computing basis from $24 to $30 per week.

Three Mine Workers Out of Four Unionized: One Out of Sixteen Idle

BECAUSE of strikes in Alabama and West Virginia and lack of employment and disability among miners elsewhere, more than 50,000 members of the United Mine Workers of America were unemployed in December, according to a report given out at international headquarters of the union, in Indianapolis. The total paid up membership last month was 553,295. As the total number of coal mine workers in the country is about 800,000, the industry is now about 75 per cent unionized, said Ellis Searles, editor of the *United Mine Workers' Journal*. Mr. Searles said that the December membership broke all records, the highest previous paid enrollment being 524,636, in October, 1919. Many strikers in Alabama and West Virginia, exonerated from paying dues, are omitted in the enumeration.

Southern Appalachian Operators Hold Annual Meeting; Railroad Advises Working Only on Certain Days

THE eleventh annual meeting of the members of the Southern Appalachian Coal Operators' Association was held in Knoxville, Tenn., Jan. 21. The meeting was largely attended by association members as well as by operators from the Virginia and Alabama districts. It had been planned to hold four group meetings in the morning to discuss problems related to operating, marketing, developing and transportation respectively, but by general agreement, only one general meeting was held, which was presided over by E. C. Mahan, Knoxville, Tenn., who briefly set forth some of the problems that may be expected during the coming year, stating that it seemed to him that it was a time for a return to conservative business.

J. A. Norman, representing the Alabama Coal Operators' Association, stated that labor conditions in Alabama were rapidly improving, and that practically all mines were running in a normal manner. Following Mr. Norman's remarks a general discussion was held, with expressions from R. E. Howe, Guy Darst, Alex. Bonneyman, C. D. Boyd, C. D. Kilgore, C. W. Hendrickson and others. The general opinion was that 1921 would be a year of rather hard sledding for the coal operators.

The general meeting was held at 2 p.m. in the assembly room of the Board of Trade Building. In his opening address, President Gunter dwelt upon the necessity for the coal operators to strongly support the efforts of the association in all matters, dwelling especially upon prompt payment of dues or assessments and the strict observance of labor agreements and traffic laws.

Railroad Official Pledges Co-operation

Following this address Secretary McCoy submitted his annual report, which showed the association to be in excellent condition. C. D. Boyd, traffic manager for the Hazard, Harlan and Southern Appalachian Coal Operators' Associations, submitted a brief review of his efforts during the year to relieve the car shortage which existed in a maximum degree in eastern Kentucky fields for practically the entire year. Following Mr. Boyd's report, J. H. Dulaney, coal and coke agent for the Louisville & Nashville R.R., made a short address, expressing the wish of the railroad to maintain friendly relations with the coal operators by giving maximum service at all times. Mr. Dulaney also briefly touched upon the contemplated expenditures of the railroad in order to increase traffic movement in eastern Kentucky.

President Gunter then read a telegram from J. D. A. Morrow, vice-president of the National Coal Association, expressing regret that he could not attend the meeting. President Gunter strongly endorsed the work of Colonel D. B. Wentz and Mr. Morrow before the Calder investigating committee, stating that he had just returned from Washington, and that it was clearly evident that this committee was out for blood and that the coal business had but one chance to escape drastic legislation, and that was to back the efforts of Colonel Wentz and Mr. Morrow to the utmost.

The question of operating the mines only upon certain days of the week was discussed as a measure to cut down operating expenses of the railroad, and a committee composed of C. W. Hendrickson, C. M. Moore and C. D. Boyd was appointed to discuss this measure with railroad officials. This question was brought up by request of Superintendent of Transportation Keister, of the Southern Ry., who has stated that the intermittent operation of the mines greatly increased his operating expenses. He said that if the members would agree to operate only on certain days during the present slack period it would effect a great saving.

The following officers were elected: L. G. Gunter, re-elected president; J. E. McCoy, re-elected vice-president, after which the meeting adjourned until 7:30 p.m.

The meeting came to a conclusion with the annual banquet, which began at 7:30 p.m. and continued to an early hour in the morning. Judge H. B. Lindsey, who acted as toastmaster, was in rare form. Nothing was lacking in the courses of viands served and music was furnished by the Whittle Springs Hotel orchestra.

During the course of the banquet a gold pocket knife and chain were presented to President Gunter. As climax the management of the local B. F. Keith Theater presented a portion of a very popular show, which was greeted with much applause by those present. At the close of this entertainment the banquet adjourned.

Among those present were C. D. Kilgore, secretary, Virginia Coal Operators' Association; R. E. Tagg, manager, Stonega Coal & Coke Co.; S. S. Pratt, Lafollette Coal & Iron Co.; J. A. Norman, Spears Webster; Tom Easterly, W. H. Nelson, and others of the Alabama Coal Operators' Association; Alex Bonneyman, of the Hazard Coal Operators' Association, and many others.

Sues Tidewater Exchange for Settlement for Coal Unaccounted For

A SUIT which has been begun in the U. S. District Court by the New River Collieries Co. will be followed with interest by all shippers of bituminous coal who are interested in the affairs of the Tidewater Coal Exchange, the organization which operated from the Summer of 1917 until April 30, 1920.

It will be recalled that all shippers of bituminous coal to tidewater were required, under the order of the Fuel Administrator of Nov. 6, 1917, to consign all shipments of coal for transshipment at Tidewater to the Tidewater Coal Exchange in certain designated consigning pools. When the operations of this Exchange were terminated in April, 1920, it appeared that there had been many excessive withdrawals of coal from different pools, with the result that although the pools were exhausted, many shippers had delivered large tonnages of coal to the various pools which had not been redelivered to them or for their account.

Since the early summer the representatives of the Exchange have been endeavoring, without success, to adjust these differences between the debtors and creditors in the various pools. It is understood that in some of the pools the debits have been substantially liquidated by payment, but that in others the accounts have not been adjusted, and, for various reasons, probably will not be adjusted by payments in full. The purpose of this suit, which is brought by a creditor of Pool No. 1, is to require the settlement of debits and credits in this pool without regard to the situation which may exist in any of the other pools. The complaint states that the suit is brought for the benefit not only of the plaintiff but of all other creditors in Pool No. 1 who shall come in and share the expense of the suit.

The complaint alleges that the members of the Executive Committee of the Exchange have refused to recognize the right of the plaintiff as a creditor in Pool No. 1 to a separate settlement of the accounts of that pool, and that the position of the Exchange is that all pools are to be regarded as in a single pot, and that the moneys which have been collected may be distributed proportionately to the various creditors in all of the pools. The fundamental question to be decided is whether settlement should be made in this way or for each pool separately, the plaintiff contending that moneys received for Pool 1 coal in equity belong to the creditors in Pool 1.

The Guaranty Trust Company is joined as a defendant in order to preserve the fund in which moneys collected have been deposited, and a temporary restraining order enjoining the withdrawal of this fund has been entered. The court will hear argument on Jan. 29 on the question whether or not this order should be continued pending the final determination of the suit.

Foreign Markets and Export News

Large Coal Stocks Bear Heavily on British Market

The South Wales coal situation is very weak, excessive stocks bearing heavily on the market. Twenty to thirty thousand miners are idle day by day. The best Admiralty steam coal is quoted £3 5s.@£3 15s. with best smalls, £1 15s.@£2 cargo, £1 7s. 6d.@£1 12s. 6d, and inferior, £1@ £1 5s. Coke is unsalable at £4. On Jan. 21 a quotation was made for Welsh large at 60s.

Australian coal is selling in Norway at £1 per ton under the English price.

More than sixty vessels are laid up on the Tyne. Durham screened has just been quoted at 50s.

Some Japanese Exports to Shanghai: Fushun and Kaiping Markets Inactive

According to Wheelock & Co.'s market letter, issued at Shanghai, Dec. 16, 1920, the Japanese coal market continues very inactive. Little new business is being done as most of the principal consumers have already made their arrangements for the new year. At the same time a certain amount is being imported into Shanghai for sale in the spot market, as demand for coal in Japan is dull at present

Conditions have undergone little change in the Fushun and Kaiping coal markets.

Coal prices are quoted as follow:

JAPAN COAL

		Taels per Ton
[illegible]	Contracted for	
[illegible]	Contracted for	
[illegible]	Contracted for	
[illegible] lump	ex wharf	17.50
[illegible] lump	ex wharf	15.00
[illegible]	ex wharf	14.00
[illegible]la Kirigomi	ex wharf	13.00
[illegible]o Kirigomi	ex wharf	13.00
[illegible] No. 1 lump	ex wharf	14.00
[illegible] No. 2 lump	ex wharf	12.00
[illegible]	ex wharf	14.50

KAIPING COAL

	Taels per Ton ex wharf
[illegible]	13.50
[illegible]ts	13.50
[illegible]ck	10.50
[illegible]	9.00
[illegible]	8.50

FUSHUN COAL

	Taels per Ton ex wharf
[illegible]	11.00
[illegible]	Contracted for
[illegible]	No stock

Dominion Coal Curtails Operations

Curtailment in operation of the Dominion Coal Co.'s mines, with laying off of many employees, has been announced. Loss of a contract with the Dutch Government left the company without a market for coal outside the maritime provinces and local demand has been reduced by idleness at the Dominion Steel plant at Sydney, N. S.

THE INDIAN GOVERNMENT has prohibited exports of coal to Shanghai and Singapore, and entire prohibition is likely after March. Westward bound steamers in Indian ports may be bunkered to Port Said only, with three days' margin. Eastward bound ships are allowed similar quantities.

SWISS RAILWAYS, it is announced, have just contracted for 175,000 tons of American coal and 25,000 tons British coal.

Exports of Coal and Coke from the United States by Countries, November, 1920

(In Gross Tons)

	Coal		Coke
	Anthracite Tons	Bituminous Tons	Tons
Azores and Madeira Islands	.....	9,422	.....
Belgium	.....	14,626	1,004
Denmark	3	20,335	2,534
Finland	.....	4,445	.....
France	10,278	741,437	1,203
Germany	.....	7,282	.....
Greece	.....	13,902	.....
Italy	1,089	214,778	.....
Netherlands	.....	195,391	500
Norway	.....	73,684	40
Portugal	47	36,138	179
Russia in Europe	.....	18,552	.....
Spain	.....	2,260	.....
Sweden	.....	39,126	550
Switzerland	.....	22,173	.....
Turkey in Europe	.....	12,989	.....
Bermuda	.....	3,631	.....
Canada	302,839	1,459,373	61,814
Costa Rica	.....	.....	9
Guatemala	15	6	5
Honduras	.....	907	.....
Nicaragua	.....	67	.....
Panama	.....	3,644	7
Mexico	4,080	21,543	7,207
Miquelon, Langley, Etc.	45	.....	.....
Newfoundland and Labrador	684	.....	.....
Barbados	373	13,588	.....
Jamaica	.....	4,669	.....
Trinidad and Tobago	.....	5,324	.....
Other British West Indies	1	2,624	.....
Cuba	3,117	117,976	833
Virgin Islands	.....	6,472	.....
Dutch West Indies	.....	1,841	.....
French West Indies	.....	10,105	.....
Dominican Republic	.....	92	21
Argentina	.....	107,048	942
Brazil	6,307	115,295	907
Chile	.....	84,150	5,447
British Guiana	.....	3,883	.....
Dutch Guiana	.....	1,434	.....
Peru	3,291	5,495	2,128
Uruguay	.....	34,087	63
Venezuela	.....	507	.....
Dutch East Indies	.....	1,103	.....
Turkey in Asia	1,096	.....	.....
New Zealand	.....	6,007	.....
Canary Islands	.....	9,886	.....
French Africa	.....	19,904	.....
Portuguese Africa	.....	20,319	.....
Egypt	.....	79,616	50
Totals	333,265	3,[illegible]7,136	85,443

EXPORTS OF COAL AND COKE, BY CUSTOMS DISTRICTS

	Coal		Coke
Districts	Anthracite Tons	Bituminous Tons	Tons
Maine and New Hampshire	79	46	.....
Vermont	2,594	3,056	337
Massachusetts	65	.....	.....
St. Lawrence	71,474	204,829	995
Rochester	45,163	84,208	275
Buffalo	177,600	219,796	31,677
New York	23,716	65,669	5,326
Philadelphia	4,213	357,025	1,004
Maryland	.....	562,118	8,742
Virginia	3,338	1,007,462	552
South Carolina	.....	53,311	.....
Georgia	.....	13,053	.....
Florida	1	14,638	620
Mobile	.....	8,958	213
New Orleans	.....	3,980	.....
Galveston	.....	119	.....
San Antonio	3,402	2,311	164
El Paso	177	15,740	3,590
San Diego	1	14	.....
Arizona	500	3,284	3,346
San Francisco	15	.....	67
Washington	122	1,251	156
Dakota	643	712	196
Duluth and Superior	27	2,473	29
Michigan	90	141,118	26,540
Ohio	45	801,884	1,609
Porto Rico	.....	81	5
Totals	333,265	3,567,136	85,443

BUNKER COAL

Districts	Tons
Maryland	63,538
New York	304,537
Philadelphia	47,410
Virginia	252 096

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THERE is a more confident feeling throughout the country, and developments since the first of the year support improved sentiment, according to a statement by the National Bank of Commerce in New York. "The gradual liquidation in many directions," the statement continues, "has materially lessened the strain on bank resources and the general credit position is improving. However, the importance of export demand in the marketing of many American products makes it inevitable that present unstable financial conditions throughout a large part of the world will be reflected in the United States for some time to come. In addition, the readjustment from war-time price levels to those of a more normal character has been progressive and has affected different commodities in turn. While it has been practically completed in some lines, a further series of readjustments must necessarily occur in others before business can be properly realigned to new conditions and each has its bearing on the entire situation. The effect of these successive readjustments should neither be an occasion of general pessimism nor should undue optimism be engendered by unrelated improvement in special localities or lines of business.

"Stocks of wool, cotton, hides, lumber and other raw materials, which are large as measured by demand, continue to dominate the markets, but a slightly better tone is noticeable, particularly in hides, cotton and wool. It is possible that there will be a considerable decrease in cotton acreage in the South, where a large portion of the 1920 crop is still in the hands of the growers.

"While railroad gross earnings set a new record for the year, higher operating costs and heavy maintenance outlays have absorbed an unprecedented proportion of revenue. The application of the higher rates granted by the Interstate Commerce Commission in September was followed by a falling off in tonnage, so that even gross revenues failed to meet expectations during the last quarter of the year. The dead-lock between the roads and the Government in respect to amounts due to final settlement under the terms of the Government guarantee, together with the sharp falling off in traffic, is causing the postponement of orders for rails and equipment. It is probable that operating ratios will be lowered somewhat as the effect of lower prices for commodities, especially fuel coal, becomes apparent."

Textile Mills Busy

Every textile mill was in operation Jan. 24 in Bennington, Vt., for the first time since Christmas. One of the six underwear mills of the H. E. Bradford Company had been shut down for two months. One of the two hosiery mills is running on a schedule of five days a week and the other three days.

The George E. Duffy Manufacturing Co., of Worcester, Mass., resumed operations in its Cherry Valley woolen mills Monday, Jan. 24, when 100 employees returned to work after a three weeks' shutdown.

Several departments of the Ware Woolen Co., which have been closed since November resumed operations Monday, Jan. 24. Officials at the plant said they hoped to have all departments running by Jan. 31.

One large silk factory at Middletown, N. Y., is largely increasing its machines and operatives over any previous time. Another has placed all employees back on full time.

Overtime work has been started at the Windsor Print Works, North Adams, Mass. An increase in the number and size of orders is given as the reason.

Steel Mills Reopening

After four weeks of restricted operation in the steel trade, amounting almost to complete shutdowns in some instances, various independent steel companies are starting up on orders that will keep their plants going on a 50 per cent scale for two weeks or more, according to the *Iron Age* of Jan. 27, which says:

"Thus the Chicago district shows better operations than in several weeks, the independent companies running this week at 30 to 40 per cent of steel works and 50 to 60 per cent of blast furnace capacity, while the Steel Corporation's finishing mills were at 80 to 85 per cent.

"Pittsburg and Ohio districts show a slightly lower average of plant operation, the independents increasing somewhat, while the Steel Corporation fell off slightly in sheets, tin plate and wire. However, the Carnegie Steel Co. has started up another blast furnace and now has forty-eight in blast, while steel ingot output is 95 per cent.

"At Johnstown, Pa., the Cambria plant will start next week on a 50-per cent basis, after being practically shut down since late December. Two weeks' orders are ahead. The Alan Wood works in the Philadelphia district will run about 50 per cent full next week. Other Eastern mills plan to run in part early in February."

Connecticut Plants Speed Up

Operation of the Remington Arms-Union Metallic Cartridge Co. at Bridgeport, Conn., employing 3,500 persons three days a week, with a cut in wages, was resumed Monday, Jan. 24. Warner Brothers, corset makers, with 3,000 employees, increased their time four hours weekly under a wage cut. The Locomobile Company cut wages 10 per cent, but continues on regular time schedules for 400 hands.

Shoe Factories Increase Output

Some increase in production in the shoe industry is noted in recent reports from factories in eastern Massachusetts. Virtually all the large shops in Haverhill have begun work on shoes for the Easter trade with 75 per cent of the full force of cutters and 60 per cent of other workers employed. Improvement in the women's shoe business in Lynn has advanced to the point where nearly every one of the factories is in operation wholly or in part. The number of workers employed, estimated at 75 per cent, is said to be greater than at any time since last May. In the Brockton district factories working on men's shoes are operating on full or part time, with total production about 50 per cent of normal.

C. S. Allen Brands Riley Charges Before Senate Committee as "Tissue of Misrepresentation"

CHARLES S. ALLEN, secretary of the Wholesale Coal Trade Association of New York, which was charged last week by Armin W. Riley of the Department of Justice, with hampering the work of the Department of Justice, replied Jan. 24 to the accusations, by asserting that Mr. Riley's discussion was "a tissue of misrepresentation, if not wilful falsehood." The denial of the allegations took the form of a letter to the members of the association.

Mr. Allen explained the delay in answering the charges as due to the necessity of discussing the matter with the Attorney General and receiving permission to refer to the records of the Department of Justice to disprove Mr. Riley's charges. The association secretary made known in the letter that we was in Washington Saturday, Jan. 22, and returned to his office Jan. 24.

Mr. Allen reiterated that his association has been and is still giving every co-operation to the Department of Justice, through William McMurtrie Speer, who, he says he has been advised by the Department of Justice, is the local representative in all matters which concern bituminous coal, in which the association members are almost exclusively interested. In his letters to the members he quotes from Department of Justice high officials who designated Mr. Speer as the proper medium through which to accomplish the co-operation.

That the attack by Mr. Riley was not unexpected, and that it was the result of the activities of a disgruntled group, prosecuted by Mr. Speer, through information supplied by the association, is the interpretation laid upon one portion of the letter, which quotes from the annual report of the secretary, before the Riley charges were made. Mr. Allen said: "As an inevitable result of the participation of your representatives in the course followed by Mr. Speer in prosecuting certain members of the trade, there has been a flareback, and your secretary and general counsel, as well as others more intimately connected with the co-operation afforded to Mr. Speer, have been the recipients of a not altogether unexpected attack accompanied by vilification and charges of almost every nature; but in this connection the conduct of your representatives is open to the fullest investigation by any interested member, with complete confidence of ability to satisfy anyone as to the propriety of every move undertaken."

Publicity Fund to Combat Unfair Charges

Mr. Allen says that the publicity fund of the organization referred to by Mr. Riley was used "to buy advertising space and to prepare news copy to tell the truth about the coal situation and to combat unfair charges made by notoriety-seeking public officials."

In answering the charge that he derived money from other sources than his association salary Mr. Allen said "It is a matter of record with the association that my arrangement with the association is not now and has never been an exclusive employment, there being with me at all times the privilege of accepting work from members and outsiders, provided it does not interfere with the discharge of my duties as secretary." The letter, which is addressed to members of the association, in full is as follows:

You have, of course, been apprised through the public press of the charges made against this association, your secretary and general counsel by Armin W. Riley, who is one of the investigators of the Department of Justice, in his testimony before the Senate Committee on Manufactures, in Washington last week, when that committee was considering the Calder coal bill.

It is due to you to say that the fact that this office has not previously refuted these charges is not because there was not a complete and proper reply which could be made; but has been entirely attributable to the fact that the relations which have existed between this office and the Department of Justice, as represented in New York by William McMurtrie Speer and in Washington by Judge Ames, Henry S. Mitchell and Attorney General Palmer in person, have been such that it was thought to be at least the part of courtesy to, if not the right of, the Attorney General to expect that we should first consult his office.

Riley's testimony was given last Thursday, and we gained knowledge of it through the newspapers of Friday morning. A meeting on the subject was held Friday afternoon. Your secretary and general counsel went to Washington Friday night. Saturday morning the latter consulted with a representative of the Attorney General, with a view to obtaining Mr. Palmer's consent to refer to the correspondence between his office and this association, to disprove the charges made by Riley before the Senate committee. It was not possible to see the Attorney General in person, but we expect to receive his consent to the use of those documents today, based upon the assurance of a favorable recommendation to that effect by the representative of the Attorney General who was seen in Washington Saturday.

We likewise obtained a copy of the official report of the testimony of Riley before the Senate committee, and so far as it relates to the subject here under discussion it is a tissue of misrepresentation, if not wilful falsehood.

That there has been the fullest co-operation with the Department of Justice, through the representatives here who we understood were authorized to receive such co-operation, will be clearly demonstrated by the records in the files of the department, including reports from Mr. Speer to the Attorney General to that effect.

It is probably hardly necessary for me to tell you that as to the moneys contributed to the publicity campaign fund, they were used to buy advertising space and to prepare news copy to tell the truth about the coal situation and to combat unfair charges by notoriety-seeking public officials, for all of which expenditures we have proper vouchers in the files of the association. The result in this respect has been most gratifying, illustrating as it does that fair policy of the American press to tell both sides of the story. The newspapers have given us opportunity to defend ourselves against slanderous charges, even if in some cases they disagree with us editorially.

Mr. Allen Explains His Activities

With respect to the charge made by Riley that certain moneys were paid to me by Mr. Baker, most of you are familiar with the fact, which is a matter of record in the association, that my arrangement with the association is not now and has never been an exclusive employment, there being with me at all times the privilege of accepting work from members and outsiders, provided it did not interfere with the discharge of my duties as secretary. Such work has consisted of the presentation of matters before the Interstate Commerce Commission and departments of the Federal and state governments.

Those of you who attended the annual meeting of the association, held on Tuesday of last week, will recall that portion of my annual report which reads as follows:

"As an inevitable result of the participation of your representatives in the course followed by Mr. Speer in prosecuting certain members of the trade, there has been a flareback and your secretary and general counsel, as well as others more intimately connected with the co-operation afforded to Mr. Speer, have been the recipients of a not altogether unexpected attack accompanied by vilification and charges of almost every nature; but in this connection the conduct of your representatives is open to the fullest investigation by any interested member with a complete confidence of ability to satisfy anyone as to the propriety of every move undertaken."

It is perhaps proper at this time to again relate to you what we understand to be the facts in the matter with respect to the attitude which should be maintained by the trade in relation to the various representatives of the Department of Justice, which are these:

William McMurtrie Speer is the Special Assistant to the Attorney General, in full charge of all matters concerning dealings in bituminous coal so far as the Department of Justice may be interested in such matters, and his authority is not only full but exclusive, the exclusion comprehending even the District Attorney in the Southern District of New York. In other words, as I am informed by the Department of Justice, Mr. Riley and his agents have absolutely nothing to do with investigating transactions in bituminous coal.

With respect to anthracite coal I quote Henry S. Mitchell, Special Assistant to the Attorney General, in a letter addressed to me under date of Dec. 3, 1920, which, in part, reads as follows:

"You will recall that the subject of bituminous coal received the active consideration of the Attorney General and his repre-

sentatives during the summer, and that their activities with reference to anthracite coal began more recently. IN DEALING WITH ANTHRACITE COAL the Attorney General designated E. Lowry Humes, with headquarters at Pittsburgh, to investigate and take action with reference to the producing companies, Mr. Speer to deal, so far as he could, with the problem of procuring an equitable distribution to consumers in New York City, and Mr. Riley to investigate sales by New York dealers at excessive prices, with a view to prosecution under the Lever Act."

I am advised by counsel that there is no authority in the Attorney General or any of his representatives to demand of you any facts concerning your business except by proper subpoena, and you are therefore entirely within your right to refuse to divulge any information called for in any other manner.

This statement, however, is modified to this extent: we understand Mr. Speer to be the authorized representative of the Department of Justice; we have co-operated with him fully and freely in the last seven or eight months, and it is the policy of your officers and directors to continue that co-operation and to furnish Mr. Speer with any facts which he may desire.

Senator Reed Voices Opposition to Regulation of Business by Government Commissions

SECRETARY W. J. THOMPSON of the Anthracite Coal Operators' Association, of Philadelphia, was sharply cross-examined Jan. 25 before the Senate Manufactures Committee by Chairman La Follette and Senator Walsh of Massachusetts as to the correctness of conclusions he reached in his formal brief. Senator Walsh asked the witness to produce the income tax returns of the coal companies during the period of control by the Fuel Administration, to determine if the companies had gained or lost money under prices fixed at that time. Senator La Follette denied a statement of the witness that the Federal Trade Commission had authorized the independent coal operators to charge 75c. a ton more than the railroad coal companies. He also denied a statement of the witness that the operators had a 20 per cent selling expense, contending that the sales agents of the operators paid the expenses.

Other features of the day's hearing was testimony of Senator Calder, who produced letters from various parts of the country commending the bill he had introduced and complaining against an actual shortage of coal and high prices. Senator Gronna said the coal situation in North Dakota was acute, prices ranging as high as $20 a ton for bituminous, which he declared was an outrage.

Senator Calder read extracts from about a dozen letters from various parts of the country complaining against high prices and urging legislation by Congress, some writers expressing themselves in poetry. The Union County Tuberculosis League of New Jersey declared that 3,000 families were without coal and a New Britain (Conn.) writer declared that families were actually suffering for want of coal and that prices were as high as $19.25 a ton.

Would Eliminate All but One Middleman

Senator Calder said that the committee, in tracing War Department purchases of coal, had found that some of it had passed through the hands of three middlemen and that section 14 of the bill was designed to eliminate all but one middleman between the operator and the consumer. He admitted that the section might have to be rewritten, but the purpose was to drive coal direct to the consumer without intervention of profits. Senator Reed engaged in a constitutional argument with Senator Calder as to whether Congress could tax a purely intrastate transaction, but Senator Kenyon thought that the court decisions in the oleomargarine and state bankers cases authorized such a tax as coal is a part of interstate commerce from the time it leaves the mine until it reaches the consumer. Senator Reed thought the bill was unconstitutional in that it used the taxing power of Congress to regulate the sale of commodities.

In reply to Senator Fernald, Senator Calder thought the bill could also be amended so as to apply the brokers' tax to all sales, instead of limiting it, as at present, to certain sales.

Senator Reed also criticised this section of the bill on the ground that it would break up the present system of coal distribution, even to sales in small quantities by retailers, and assailed coal regulation by the Fuel Administration. Senator Calder retorted that the people had been mulcted of a billion and a half dollars in excessive coal prices last year, whereupon Senator Reed remarked that the people had been mulcted in high prices on other commodities.

A letter from the Governor of Indiana said coal profiteering had been a scandal, and Senator Calder declared that 90 per cent of the people desired some legislation to prevent high coal prices and also better quality of coal.

Senator Reed favored punishing those who conspired to withhold coal for the purpose of enhancing the price, but Senator Calder said he knew of no such conspiracy. Senator Reed said he favored getting to the people all information as to the cost of the articles they purchased, but he objected to "monkeying with trade and business" and regulation of business by government commissions.

Senator Reed asked Mr. Thompson, of the anthracite operators, to supply information as to dividends paid by coal companies, and Senator La Follette asked the witness to supply the committee with information as to the tonnage, mine cost, sales, investment, net profits, stockholders, relation of companies between sales agents and jobbers, copies of sales and contracts with agents and contract and spot coal prices.

Suggests Perusal of Income Tax Returns

When the witness declared that the prices fixed by the Fuel Administration were not reasonable, Senator Walsh asked if the companies would submit to the committee their income tax returns, from which it could be determined whether the companies made or lost under these prices. The witness said the returns would show other considerations, and also that the operators should have at least a $1 per ton margin.

Senator La Follette thought the independent company prices had been $3 instead of 75c. a ton higher than the railroad coal company prices. Mr. La Follette also questioned as to whether it was not the sales agents rather than the operators who paid the selling expenses, and therefore that the operators were not entitled to a 20 cents per ton sales expenses.

Mr. Armstrong, of the Pittsburgh Coal Co., said the 50 mines in the Pittsburgh district of which he is mine manager produced about twenty-three million tons a year, and in answer to questions by Senator Reed he spoke of labor conditions. He said that prior to 1916 there were practically no labor difficulties but that lately the principal labor difficulty was to keep the men steadily employed, as they seemed not to care to work regularly, due to the fact that they were getting high wages and could afford to lay off now and then.

In the debate on the meat-packing bill in the Senate, Senator Edge, New Jersey, a member of the Calder coal committee, said he was not entirely satisfied that the Calder bill meets the situation and that he was prepared to consider whatever was necessary to bring about the relief contemplated by the Calder bill irrespective of the measure now under consideration. He said that while other commodities had declined in price, anthracite had gone up.

Senator McCumber opposed government interference in business, and said its interference in the operation of coal mines had raised the price of coal beyond the reach of the public. He said the only remedy was to declare by law a wrongful act and punish it. He opposed regulation of

business by a government commission on the ground that it was inefficient and uneconomical.

Arthur E. Hedstrom, of the E. L. Hedstrom Co., wholesale and retail coal dealers of Buffalo, N. Y., told the committee the coal shortage in that city, complained of previously by Representative Meade, was due to the failure of the natural-gas supply, which had to be replaced by coal. He denied profiteering by the wholesalers or dealers or the creating of an artificial market. He estimated the average profit of his company at 15c. a ton, with a profit of 70c. for the retailer. He admitted, however, that his profits last year were $190,000, or 100 per cent on his capital, representing the sale of 800,000 tons, mostly bituminous. The average profit was 23c. a ton, or a 4 to 5 per cent return on the turnover.

Charles O'Neill, Altoona, Pa., secretary, Pennsylvania Coal Producers Association, of 185 members, producing twenty-five million tons of bituminous, said there had been a wage advance of 130 per cent among miners since 1914. Of the workmen around mines 41 per cent were day laborers at $7.50 a day. He gave the mine cost in 1920 at $3.17 a ton, made up of $2.19 labor, 46c. for supplies and 52c. for overhead, as against 92c. for labor, 10c. for supplies and 12c. for overhead in 1916. He discussed the absence of miners from work for unimportant reasons, saying the mines figured on 10 to 15 per cent absence as a regular proposition. The witness said the miners took more time off than employees in other industries, presumably on the ground that, as they work on a tonnage basis at high wages, they feel they make enough in some days to lay off other days and also feel that they are their own bosses and not under the same obligation to work regularly as men on an hour, day or salary basis.

C. E. Maurer, of Cleveland, formerly operating the Glens Run Coal Co., said he sold coal last year on contract at $3.25 a ton at the mines. The price was in advance of that of 1914, due to increased wages of miners and cost of supplies. He attributed the advanced prices of last year to car shortage, which caused a scramble for coal. He made $53,000 on 500,000 tons of coal last year.

Throws Light on Costs and Labor Problems

Harry N. Taylor, of Kansas City, Mo., vice president of the Central Coal & Coke Co., who has been in the industry for thirty-eight years, discussed labor difficulties, and gave the most complete analytical statements of mine costs yet presented. He said the mine cost in Kansas had risen from $2.02 to $3.42 from 1917 to 1920 and in Missouri from $1.80 to $3.09. The labor cost in Kansas in these years rose from $1.68 to $2.79 and in Missouri from $1.46 to $2.50 per ton. He estimated there was a loss of 22.36 per cent in mine operation from labor and other causes. He said the failure of a "key" man to appear for work on a given day, although a substitute could act for him but was not permitted, would cause the idleness of 300 men for a day or such period as the mine was so closed, which rather startled the committee.

He declared the failure of the miners to work regularly was an abuse of the contract and of their union power. He submitted a "slacker" report showing absence of men for insufficient reasons, which for December resulted in a loss of 75,371 tons in production and of $75,000 in wages to the men. The cost of idleness to the company was $46,382, and many months it was $40,000, for even if the mines did not produce a ton of coal it was necessary to employ certain men to maintain the mines.

L. G. Crenshaw, of the Crenshaw Coal Co., wholesalers, of Richmond, Va., opposed the 15c. commission limitation as proposed, on the ground that it would wipe out the wholesalers, whose difficulties in collections, demurrage, refused sales, etc., he said many times caused losses which could not be regained under the proposed legislation. He argued that the bill limited profits but did not protect losses. Instead of getting rid of the middlemen in the coal trade he thought there should be more middlemen in order to obtain for the small consumer the benefit of the lower price which the large consumer is able to obtain.

Senator Reed, who said he wanted to "get at the virtue of government regulation," asked the witness if the "government can run your business better than you?" to which the witness emphatically replied "No."

Thomas H. Watkins, of New York, president of the Pennsylvania Coal & Coke Corporation, who said he had been in the coal business for fifty years, starting as a boy around the mines when ten years old, gave details of mine costs and sales. He said that prior to 1915 there was an overproduction of coal and oversupply of cars. The company's production last year was decreased a million tons because of car shortage. He gave the following figures as to the company's business:

Tonnage produced in 1916, 2,859,933; sales realization, $1.55; mine cost, $1.30; margin, 25c.

Tonnage in 1917, 3,241,653; realization, $2.71; mine cost, $1.80; margin, 91c.

Tonnage in 1918, 3,357,865; realization, $3.13; mine cost, $2.47; margin, 66c.

Tonnage in 1919, 2,579,163; realization, $2.93; mine cost, $2.62; margin, 31c.

Tonnage in 1920, 2,916,262; realization, $3.83; mine cost, $2.62; margin, 86c.

Conforms to Government Bookkeeping Method

There also was discussion as to other allowances and Mr. Watkins said the company was "trying to conform to the government bookkeeping theorists." He estimated the company made 9.7 per cent on its investment during the years mentioned.

The witness criticised Senator Calder for declaring that the public had been mulcted of a billion and a half dollars on its coal bill last year, saying such a statement was "beneath the dignity of a Senator" in view of the fact that a Congressional committee was seriously considering the situation. He analyzed alleged profiteering and declared that at the most it amounted to about $600,000,000, if the prices could be construed as too high under the circumstances. He said that unless assigned cars were abolished the same transportation shortage would be repeated in 1921. He estimated that a reduction of 50 per cent in mine production would result in a 40 per cent advance in the price.

George Reed, vice president of the Peabody Coal Co., said the companies owned or operated under leases by the organiation produced fourteen million tons last year. The lowest operating cost was $2.50 a ton for coal in Illinois mines, and the highest was $4, in an Oklahoma mine. He declared that the opening of 4,000 new mines, only 50 of which would continue regularly, had upset the regular trade. He estimated that the regular coal mines would in 250 days a year produce sufficient coal for domestic and export use, if labor and car conditions were good.

He favored minimum prices in emergencies and maximum prices in normal times, and opposed the 15c. commission limitation, as the mines suffered losses nine months in the year. For the first eleven months of 1920 he said the average price charged by his companies was $3.80 a ton, while the highest price was $4.05. He estimated 53.9 per cent lost mine time due to car shortage.

R. K. Brown Telegraphs for Data

The committee handled R. K. Brown, a wholesale and retail coal and coke dealer of Des Moines and Omaha, rather roughly, requiring him to obtain by telegraph from his office and produce by Tuesday following the Saturday on which the request was made, detailed statements as to mine cost and sales realization on coal handled by the firm from March to December last. The witness had stated that coal could not be sold on a 15c. margin, as proposed by the bill, he having lost money on such a margin during the Fuel Administration control, nor could retailers handle coal on such a small margin.

The committee is inquiring closely into the relation of freight rates to the price of coal and will ask the Interstate Commerce Commission for information as to coal rates. Mr. Brown said his realizations ranged from 22-30c. to 50-60c. a ton on coal last year and his highest prices (delivered to consumer) were $16.50 a ton on Arkansas coal and $13 and $14 on Illinois coal. It was at this point that Chairman La Follette demanded that the witness procure by telegraph the figures above mentioned and that he remain in Washington subject to further examination when they should be received.

Anthracite Costs, Realization and Margin

Prepared by W. J. Thompson, Secretary, Anthracite (Independent) Operators Association

AVERAGE COSTS AND SALES REALIZATIONS FOR FRESH-MINED ANTHRACITE DURING 1917–1918 OF THE INDIVIDUAL OPERATORS, EXCLUDING SUSQUEHANNA COLLIERIES CO.*

Period	Production (Gross Tons)	Costs per Gross Ton: Labor	Supplies	General Expense	Total f.o.b. Mine Cost	Sales Realization per Gross Ton: Steam	All Sizes	"Margin"†
Jan.-Apr., 1917	2,977,366	$1.85	$0.47	$0.84	$3.16	$1.99	$3.80	$0 64
May-Aug., 1917	3,365,961	2.00	.54	.80	3.34	2.54	4.24	90
Sept.-Nov., 1917	2,512,860	2.04	.61	.80	3.45	2.70	4.38	.93
Dec., 1917-Oct., 1918	8,587,953	2.58	.71	.91	4.20	3.19	4 71	51
Nov.-Dec., 1918	1,311,971	3.44	.91	1.06	5.41	3.39	5.70	29
Jan., 1917-Dec., 1918	18,756,111	$2.348	$0.642	$0.875	$3.865	.....	$4.506	$0 641

* Table 16, page 53, Cost Reports of the Federal Trade Commission, Coal No. 2, Anthracite.

AVERAGE COSTS AND SALES REALIZATIONS UPON FRESH-MINED ANTHRACITE JANUARY, 1919-OCTOBER, 1920, INCLUSIVE, OF THE "INDIVIDUAL" OPERATORS, INCLUDING SUSQUEHANNA COLLIERIES CO.

(Compiled by Anthracite Coal Operators Association)

Period	Collieries	Companies	Production (Gross Tons)	Costs per Gross Ton: Labor	Supplies	General Expense	Total f.o.b. Mine Cost	Sales Realization per Gross Ton: Steam	All Sizes	"Margin"†
Jan.-July, 1919	60	40	6,008,688	$3.534	$0.724	$1.058	$5.316	‡	$5.11	—$0 206
Aug.-Dec., 1919	55	36	4,643,444	3.512	.728	1.089	5 329	$2 80	5 813	— 484
Jan.-Mar., 1920	55	36	2,610,564	3.792	.769	1.152	5.713	2 86	6.009	— 296
Apr.-Oct., 1920	61	42	6,059,453	4.382	.912	1.269	6.563	3.46	7.044	— 481
Jan., 1919-Oct., 1920	..	..	19,322,149	3.83	$0.79	$1.144	$5.764	.....	$6.007	—$0 243

† "Margin" does not represent profit, for out of "margin" must be paid selling expenses, approximately 20c. per ton; interest on borrowed money, Federal taxes and improvements. After these items have been taken care of, if any balance remains, it becomes profit for the operator or stockholders.

‡ Not separately reported.

WEIGHTED AVERAGE COSTS AND SALES REALIZATIONS UPON FRESH-MINED ANTHRACITE, JANUARY, 1917, TO OCTOBER, 1920, INCLUSIVE*

(Periods as shown correspond with changes in wage agreements.)

Period	Production (Gross Tons)	Costs per Gross Ton: Labor	Supplies	General Expense	Total f.o.b. Mine Cost	Sales Realization per Gross Ton: Steam	All Sizes	"Margin"‡
Jan., 1917-Apr., 1917	2,977,366	$1.85	$0.47	$0.84	$3.16	$1 99	$3.80	$0 64
May, 1917-Nov., 1917	5,878,821	2.017	.57	.80	3.387	2.61	4 30	913
Dec., 1917-Oct., 1918	8,587,953	2.58	.71	.91	4.20	3.19	4.71	51
Nov., 1918-Mar., 1920	14,574,667	3.565	.75	1.085	5.40	†	5 548	.148
Apr., 1920-Oct., 1920	6,059,453	4.382	.912	1.269	6.563	3.46	7 044	481
Increase or decrease compared with Jan.-Apr., 1917.	.....	Inc. 136.9%	Inc. 94%	Inc. 51.1%	Inc. 107.7%	Inc. 73.8%	Inc. 85.6%	Dec. 24 8%

* Compiled by Anthracite Coal Operators Association, based on data of Federal Trade Commission for years 1917 and 1918, and on data of Anthracite Coal Operators Association for year 1919 and for first ten months of 1920.

† Not available; realization was not reported by sizes for period January-July, 1919.

‡ "Margin" does not represent profit, for out of "margin" must be paid selling expenses, approximately 20c. per ton; interest on borrowed money, Federal taxes and improvements. After these items have been taken care of, if any balance remains, it becomes profit for the operator or stockholders.

	Gross Tons Calendar Year, 1920	
Estimated gross tonnage shipped by railroad, affiliated and individual companies		68,600,000
Domestic and pea		48,500,000
Less:		
Broken and lump—Used for other than domestic purposes	3,773,000	
Egg used in crucible work, brass mfg. and for other industrial purposes	1,000,000	
Egg and other domestic sizes used by railroads	1,000,000	5,773,000
		42,727,000
Produced by railroad companies and sold at stabilized prices (75 per cent)	32,045,000	
Produced by larger individual operators and sold at stabilized prices	8,709,000	40,754,000
Balance of the total annual production of domestic coal produced by smaller individuals which might have been sold at high prices obtainable in August, October, November and December, 1920	.....	1,973,000
As high prices were obtainable for only four months, it is apparent that only 4/12 of above tonnage, or	.....	657,700

could have been sold at such prices, even if the producers availed themselves of the highest prices obtainable, and this figure includes some coal to Canada, to the West and for export.

THE WAR DEPARTMENT will soon send out proposals for fuel, both bituminous and anthracite, for the fiscal year from July 1, 1921, to June 30, 1922, covering all parts of the United States, Honolulu and Manila. Any who desire these proposals sent to them should communicate with the Quartermaster General of the Army, Munitions Building, Washington, D. C.

Ore & Coal Exchange To Be Continued

AT THE annual meeting of the Ore & Coal Exchange held at the Hollenden Hotel, Cleveland, Jan. 25, it was decided to continue the operation of the exchange for the purpose of providing a central point of contact between the Lake carrying roads and coal shippers and expediting movement and distribution of coal, to prevent congestion at ports and to afford a central bureau for the collection and distribution of information, etc.

However, it was decided that there was no further necessity for the pooling of Lake coal, and a resolution was adopted accordingly. H. M. Griggs was re-elected chairman of the general committee and the following were re-elected members of the operating committee: E. A. Peck, B & O.; A. S. Ingalls, N. Y. C.; M. W. Clement, P. R.R.; H. O. Dunkle, Erie; S. Ennis, W. & L. E.; M. S. Connors, H. V.; A. D. Chittenden, B. & L. E.; and A. G. Gutheim, American Railway Association.

NEGOTIATIONS WHICH HAVE BEEN in progress for some weeks between the U. S. Bureau of Mines and the Tidewater Coal Exchange have not been completed. It had been expected that before this date a contract would be signed, which would authorize the Bureau of Mines to co-operate with the exchange in the classification of coal. The delays have been due to comparatively minor matters. Officials of the bureau fully expect the contract to be signed in the near future.

La Follette Committee Finds Coal Problem Complex; Government Control Faces Bitter Struggle

By Paul Wooton
Washington Correspondent of *Coal Age*

AFTER having made a formal announcement that only three days would be devoted to hearings on the Calder bill, the Senate Committee on Manufactures made the discovery that the coal problem is a complex one. Every effort was made to expedite the hearings. The committee sat in lengthy sessions every day for nearly two weeks, but with each passing day the committee became impressed more and more with the magnitude of the problem. The members of the committee have learned a great deal about the situation that they did not know before the hearings started. Obviously they have come to think that the operators are much less to blame for the high prices of coal than they at first believed. They have awakened to a realization that the cost of coal to the ultimate consumer, like the final selling price of cabbage, oftentimes includes the profits of too many middlemen.

For thirty years Congress periodically has been considering plans for the elimination of unnecessary middlemen in the handling of cabbage and other food products. To date no scheme has been evolved which could command the number of votes necessary to put it on the statute books. While it is admitted that there is a better chance to regulate the handling of coal than there is to regulate the handling of an agricultural product, it is quite evident that there is a long fight ahead even in the case of a commodity so out of favor as is coal. The Calder bill will be reported favorably by the Committee on Manufactures, probably before this appears in print. It will be amended in some particulars, but it is doubtful if the bill will be allowed to come up for discussion at this session, much less for a final vote.

Obstacles to Collusion Among Coal Men

The fact that the bill controlling the packing business passed with a comfortable margin has been hailed as an indication of what the Senate might do with the Calder bill. But there is a difference—five men dominate the packing business proper and act as wholesalers as well. There are thousands of coal producers and thousands of coal wholesalers. Concerted action among them is practically impossible and never has been attempted. It can be seen that Senators who voted for control of the packing business might have quite different opinions with regard to the coal business. As a matter of fact a number of those who voted for the packers bill are opposed to the Calder bill.

Incidentally it may be stated that the pendulum is beginning to swing back in the matter of meat-packing control. Apparently the bill to exercise effective control over the packing business must extend a measure of control at least to the hide business, the wool business, the fertilizer trade, the glue industry and even to the pharmaceutical manufacturers who use pepsin and other byproducts of packing. This is bringing home to some legislators for the first time that control of one commodity frequently means control of many others.

The Manufactures Committee, it is generally admitted, has brought out much valuable information in regard to the coal situation. It particularly has developed those sides of the situation which the Calder committee apparently was not desirous of getting. It has brought out with great clearness the vital part that transportation plays in coal. The effect of labor conditions and of wages has received considerable attention. Testimony has been taken to confirm the assertion that a very small percentage of coal was sold at the mines for exorbitant prices.

C. E. Maurer, of Cleveland, Ohio, declared that "coal can be bought cheaper today than can any other commodity. The probabilities are that this will remain true for the next ten years."

The matter of collecting information by coal trade associations came in for discussion when Charles O'Neill, secretary of the Central Pennsylvania Coal Producers Association, was testifying. Mr. O'neill told of the discontinuance of this practice in the face of the attitude of the Attorney General following a decision in the Hardwood Lumber Association case.

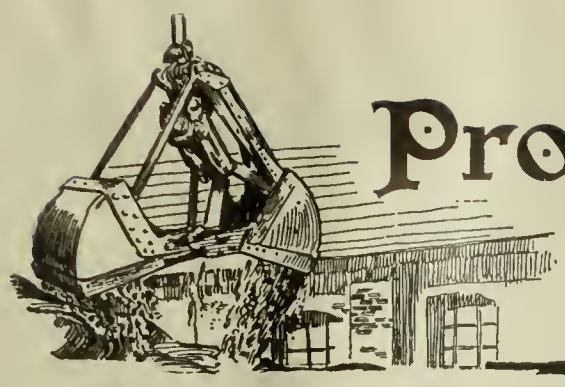
Senator Reed remarked that the information which the operators were collecting and making public themselves is the identical information which the Calder bill is calling for. "We are now presented with the situation" said Senator Reed, "of a bill which proposes to demand the collecting of the very information for which the Attorney General proposes to prosecute you for collecting voluntarily."

Senator Calder, who appeared as a witness before the Committee on Manufactures, was questioned in regard to that provision of his bill which exempts dealers whose gross annual sales are less than $500,000. "Since that provision of the bill was inserted," he replied, "I have made up my mind that it should be stricken out. There should be no limit at all in that connection."

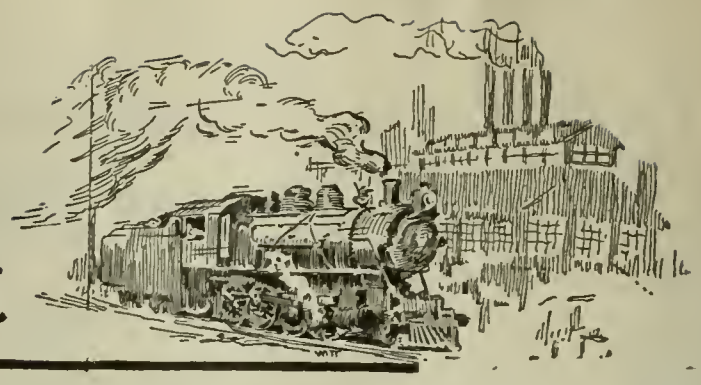
Senator Reed criticised the tendency of Congress to confuse the power granted in the Constitution to regulate commerce between the states with efforts to regulates intrastate transaction. In attempting to regulate the sales of coal, "we must put a subterfuge forward, a crooked pretense forward, and behind that false claim mask the doing of a thing."

Says Coal Act Violates Fundamental American Principles

The Housing Conference of the National Council of the Chamber of Commerce of the United States, in session at Washington, D. C., Jan. 28, declared itself in accord with the decision of the Chamber's Board of Directors that provisions of the so-called Federal Coal Bill and the Packers Bill "infringe upon fundamental American principles." It advised the Board of Directors that in the opinion of the National Council it is the duty of the board to press the amendment of these bills to conform with fundamental principles, and if maintained in their present form to oppose them.



Production and the Market



Weekly Review

FROM now on the seller of coal is seeking to re-establish with the buyer a new sense of value for his coal. In the first place coal is no longer just plain coal and no longer will anything black be accepted. There has been so little buying of spot coal that it is almost impossible to quote prices. That which is known as "distress" coal, for which the shipper will take most any figure to be relieved of freight charges, is fast being worked off and more care is being exercised in putting cars on the line without a buyer in sight. The result is that spot prices are hanging around previous government price levels, which, in view of the increases in cost since the Fuel Administration fixed these prices, means that some are taking losses in free coal or only the low-cost mines are putting coal on the market. Both are of course true.

Present Prices Not Up to Producers' Ideas

Large producers, handling their own sales, are not pushing sales except of small lots for immediate use. They are waiting for omens of better demand before trying to close contracts, for they all have higher opinions of the values of their coal than the buyer in his present mood.

Every one appreciates that production is now less each week than consumption. What is taking place is well illustrated by the stocks of coal held by public utilities in New York City. The combined utility stocks declined 12 per cent, from 814,131 tons in the week of Jan. 17 to 718,159 tons in the week of Jan. 24. The decrease was general in all grades of coal, both anthracite and bituminous, and steam and gas, although the largest drop was in bituminous gas coal, from 79,548 tons to 3,120 tons. As the winter progresses stocks held by consumers will continue to drop, which means that demand will be far less than is actually burned.

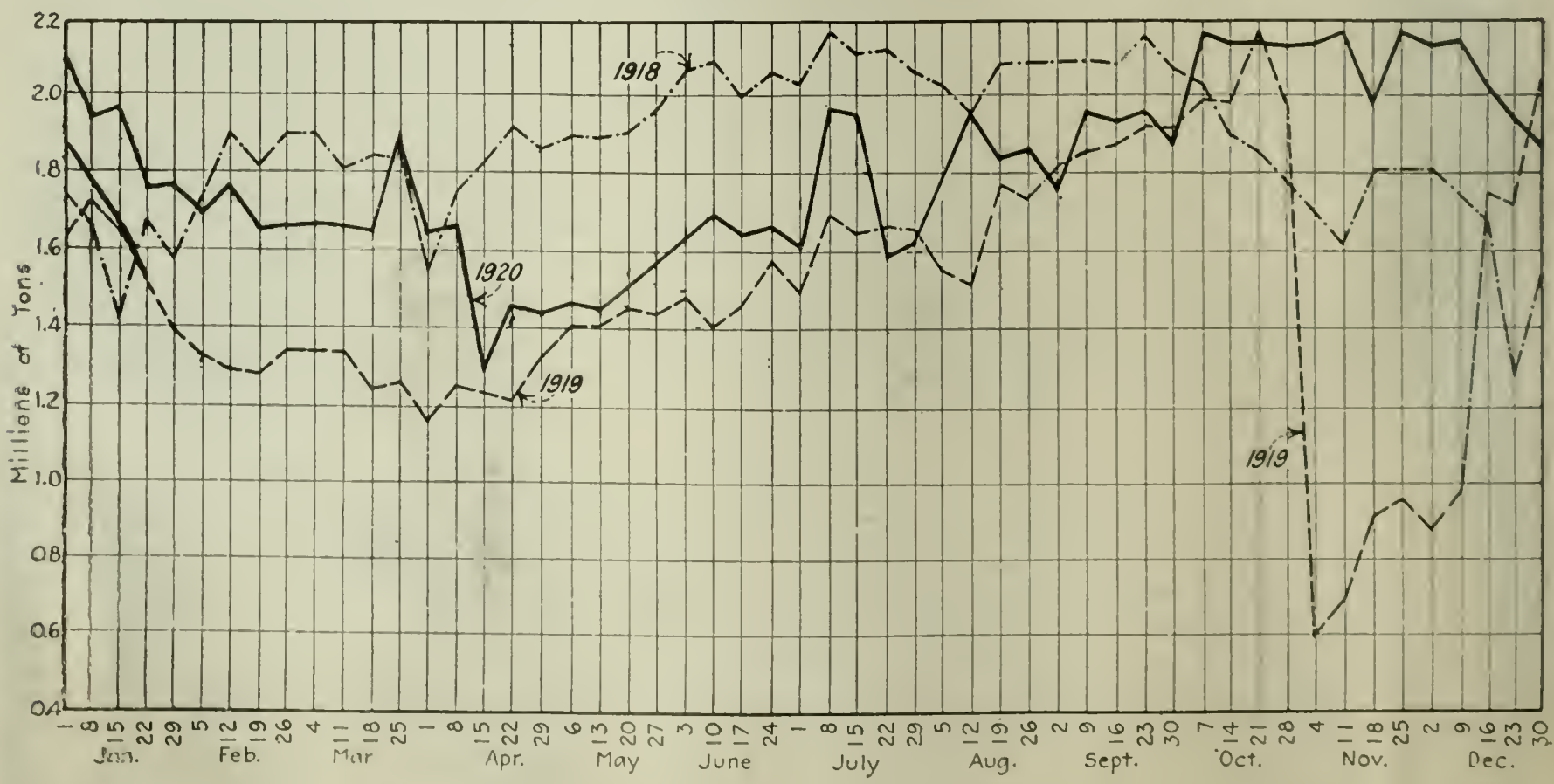
BITUMINOUS

Soft-coal production during the week ended Jan. 22 declined sharply. For the sixth consecutive week the Geological Survey reports a decrease, the output being estimated at 9,139,000 net tons. When compared with the preceding week, this represents a loss of 797,000 tons.

Production in the Northern and Middle Appalachians declined sharply in the second week of January, with an output of 5,109,000 net tons. Compared with the preceding week this was a decrease of 1,395,000 tons, or 21.4 per cent. For the United States, bituminous production during the same period declined but 827,000 net tons, or but 7.7 per cent. Production in this important Eastern territory was nearly 22 per cent below the 1920 average while that of the country as a whole represented a drop of but 16 per cent, therefore it is evident that this section is carrying more than its share of losses from "no market."

All markets were inactive during the past week. There

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

was no improvement in demand and what little spot coal was sold moved at buyers'. prices. Authoritative quotations are difficult to make, as much depends on the disposition of the individual producer.

Coal Age index of spot prices declined to 103 during the last week in January, a drop of 6 points. Prices now average but 3 per cent above the average government price established during the war, although production costs have advanced more than 40 per cent since those prices were established. The course of this index, based on quotation for all important coal, is shown for 1920 and January, 1921, in the accompanying diagram.

Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.

Coal is now moving to lower Lake ports for loading in storage boats and railroads are urging an early start to offset any possible losses from car shortage later in the season. Another contract has just been made involving 100,000 tons for Lake movement at $3.50. Despite the sluggish industrial situation the outlook for Northwestern business this season is considered fairly good.

All-rail movement to New England was maintained during the third week of January, when 4,062 cars were forwarded through the five rail gateways.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total bituminous, including coal coked

	1920–1921 Week	1920–1921 Coal Year to Date	1919–1920 Week	1919–1920 Coal Year to Date
Jan. 8*b*	10,763,000	432,003,000	11,323,000	364,904,000
Daily average	1,794,000	1,823,000	1,887,000	1,533,000
Jan. 15*b*	9,936,000	441,940,000	11,507,000	376,411,000
Daily average	1,656,000	1,819,000	1,918,000	1,550,000
Jan. 22*c*	9,139,000	451,079,000	10,464,000	386,875,000
Daily average	1,523,000	1,812,000	1,744,000	1,554,000

(*a*) Less two days' production during first week in April to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date
Jan. 8	1,793,000	69,919,000	1,846,000	72,066,000
Jan. 15	1,895,000	71,814,000	1,847,000	73,913,000
Jan. 22	1,819,000	73,633,000	1,757,000	75,670,000

(*a*) Less two days' production during first week of April, to equalize number of working days covered for the two years.

BEEHIVE COKE

United States Total

Week Ended Jan. 22 1921	Week Ended Jan. 15 1921	Week Ended Jan. 24 1920	1921 to Date	1920*c* to Date
257,000	260,000	436,000	788,000	1,309,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less two days' production during New Year's week to equalize number of days covered for the two years.

TIDEWATER

Piers are clogged with coal and spot buying for export has practically disappeared. Some bunker coal is moving, but not in normal quantities. While official figures are not yet available for the week ended Jan. 23, preliminary reports indicate a sharp decline in overseas movement. Hampton Roads dumpings dropped 30 per cent, or approximately 60,000 tons. Freight rates also are declining to new low levels.

ANTHRACITE

While in good volume, production declined slightly during the week ended Jan. 22. The output was estimated at 1,819,000 net tons, a loss of 76,000 tons when compared with the preceding week. The domestic call is steady, but steam sizes are hard to move and in many instances are being stored. Quotations for independent domestic remain unchanged.

In the issue of Jan. 20 the diagram on page 144 covered Western Kentucky spot prices instead of Springfield District, Central Illinois.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Coal	Market Quoted	Gov't Price	Dec. 27, 1920	Jan. 24, 1921	Feb. 1, 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$5.63	$4.00	*$3.75*
Pocahontas lump	Columbus	2.60	5.85	5.85	**6.25**
Pocahontas mine run	Chicago	2.35	4.75	2.75	2.75
Pocahontas lump	Chicago	2.60	6.65	4.50	*4.25*
Pocahontas mine run	Boston*	.....	8.00	6.85	*6.00*
Pool 1	New York	2.35	5.00	4.00	*3.75*
Pool 1	Philadelphia	2.35	5.25	4.00	*3.60*
Pool 1	Baltimore	2.35	5.15	4.00	*3.25*
Clearfields mine run	Boston	2.95	3.75	2.85	*2.75*
Somersets mine run	Boston	2.95	4.50	3.65	*3.55*
Pools 10, 11	New York	2.95	3.40	3.00	*2.75*
Pools 10, 11	Baltimore	2.95	.....	.....	2.80
Pools 10, 11	Philadelphia	2.95	3.90	3.60	*2.80*
Pool 18	New York	2.95	2.50	2.25	*2.10*
Pool 18	Philadelphia	2.95	2.45	2.25	*2.15*
Pool 18	Baltimore	2.95	3.40	2.25	*2.10*
High-Volatile, Eastern					
Pittsburgh mine run	Pittsburgh	2.35	2.75	2.50	2.50
Pittsburgh se'd. gas	Pittsburgh	2.35	3.15	3.25	3.25
Kanawha mine run	Columbus	2.70	2.90	2.90	*2.35*
Kanawha lump	Columbus	2.95	4.40	4.90	*4.80*
Hocking mine run	Columbus	2.50	2.50	2.50	*2.40*
Hocking lump	Columbus	2.75	4.50	4.00	*3.85*
Pittsburgh No. 8 mine run	Cleveland	2.35	3.00	2.60	*2.50*
Pittsburgh No. 8 lump	Cleveland	$2.60	$3.85	$3.75	$3.75
Pool 34 (54, 64)	Philadelphia	2.50	2.75	2.40	*2.25*
Pool 34 (54, 64)	New York	2.50	2.50	2.25	2.25
Pool 34 (54, 64)	Baltimore	2.50	2.60	2.25	2.25
Midwest					
Franklin, Ill. mine run	Chicago	2.35	3.40	2.75	2.75
Franklin, Ill. lump	Chicago	2.55	4.25	3.80	3.80
Central Ill. mine run	Chicago	2.35	2.50	2.25	*2.15*
Central Ill. lump	Chicago	2.55	3.75	3.25	*3.15*
Ind. 4th Vein, mine run	Chicago	2.35	3.25	2.50	*2.15*
Ind. 4th Vein, lump	Chicago	2.55	4.40	3.60	*3.35*
Ind. 5th Vein, mine run	Chicago	2.35	2.50	2.40	*2.15*
Ind. 5th Vein, lump	Chicago	2.55	4.25	3.55	*3.10*
Standard mine run	St. Louis	2.35	2.15	2.00	2.00
Standard lump	St. Louis	2.55	....	2.50	*2.35*
West Kentucky mine run	Louisville	2.35	2.75	2.35	**2.59**
West Kentucky lump	Louisville	2.60	....	4.00	*3.95*
South					
Big Seam mine run	Birmingham	2.45	3.25	3.25	*3.00*
Big Seam lump	Birmingham	2.75	....	....	3.50
S. E. Kentucky mine run	Louisville	3.00	3.40	2.70	2.70
S. E. Kentucky lump	Louisville	3.25	5.50	5.25	*5.00*

* Gross tons, f.o.b. vessel, Hampton Roads.

† Advance over previous week shown in **heavy type**, declines in *italics*.

Reports From the Market Centers

New England

BOSTON

New Soft Spots Disclosed — Current Quotations Have Bearing on Contract Inquiry — Distress Coal Still Heard from at Tide — Hampton Roads Prices Slump.

Bituminous—New low prices are the only developments this week. As buyers are canvassed it is all the more evident how very large are present stocks. Retail dealers as well as steam users who had coal due them on contract for the first three months of 1921 chose in many cases to take it before cold weather and the result is that the reserves now on hand will not permit spot purchases in any but light volume for several weeks to come. It is nothing unusual for a mill to have 5 months supply and until the general business situation improves and the rate of consumption is increased there can only be a sluggish market for steam grades.

With free offerings of fair coals from central Pennsylvania at $2.50 or even less it is only natural there should be very little interest in contracts on the part of the consumer. Another important factor is the extent to which, coastwise freights and prices at the loading piers are weakening, thereby causing buyers to inquire whether 1921 may not be a year for taking coal by the water route. It has already got to a point where Lowell, for instance, will be debatable ground. Last year the reliable rail shippers had very much the inside of Tidewater agencies, but for the coming season it looks to be an open question. There is a great surplus of water transportation and every indication that rates will be on a moderate basis.

About the only contracts understood to have been made thus far are those where the consumer has deliberately sought the producer. In such cases, on special coals, the range is quoted $4@ $4.50, depending upon the grade.

At all Tidewater piers there are frequent instances of forced sales, and it is hard to say just where the bottom is. The number of buyers in position to avail themselves of bargains is small and they have the price situation largely in their own hands. Considerable groups of mines in the Fairmont region are closed and others in Somerset and central Pennsylvania are adopting the same measures. Only by suspension of mining by those who have no orders can the market be protected from demoralization.

Smokeless operators are now rigidly curtailing in an effort to hold down the visible supply at the piers. At the three Hampton Roads terminals on Jan. 24 there was an aggregate surplus of 392,000 tons! This means the excess coal over boats waiting. It is no wonder, then, that sales have been rumored as low as $5.40 per gross ton f.o.b. Hampton Roads, a figure that nets less than $2.60 per gross ton at the mines for Pocahontas and New River.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, per net ton	$2.00@$3.25	$2.75@$4.00
F.o.b. Philadelphia, per gross ton	4.90@ 6.35	5.75@ 7.15
F.o.b. New York, per gross ton	5.40@ 6.85	6.25@ 7.65

On cars Boston, New River and Pocahontas have been quoted $8.75@ $10.50.

Anthracite—There is no question now that domestic sizes are coming forward in much better volume. The prices charged by "independent" shippers have receded to the vicinity of $10, and the old-line companies are in position to deal out more liberally egg and stove, the sizes most in demand.

Tidewater—East

PHILADELPHIA

Cold Weather Continues — Anthracite Consumption Heavy — Moderate but Adequate Receipts—Steam Sizes Quiet — Bituminous in Meager Demand — Many Mines Closed—Low Mark Seems Reached.

Anthracite—Another cold snap with almost zero temperatures, has again served to remind the trade that there is still much opportunity for real winter weather. For the last two weeks the temperature has actually been below the average for this time of the year, but the absence of snow has created the impression that conditions were but ordinary. As a result, there has been much burning of coal and retailers have received many requests for replenishment of stocks. Dealers generally report that they practically are up with their orders and that business is now centered on what comes in from day to day.

As to the sizes in active demand, stove and nut have lost none of their popularity. If there is any easing off it is in egg coal, but most dealers are glad to get, even this size, as consumption will be quite heavy, as is usual, from this time right into spring. Pea is the only size that shows much tendency to drag and there are fair stocks of this on hand.

Receipts during the past week have hardly been up to the average of the winter so far. There is a report in circulation that with good navigation conditions continuing to prevail heavy shipments are being made to Tide for Eastern points and this has affected the local trade.

The trade is now anxiously looking toward spring and the price conditions which may rule at that time. While some expect that the companies may make a spring reduction of 50c., there are others who look to see present prices remain. They base this prediction on the fact that the companies can hardly get out of making a reduction on steam sizes, for with bituminous at a low level they cannot hope to get $4.25 for buckwheat. They reason from this that the cut will be on the steam sizes and prepared coals will have to bear the burden.

Steam sizes are still very quiet and while there is an occasional report of some improvement, we believe on the whole the steam coals are giving producers some anxious moments. Buckwheat is being taken in heavy volume, but there is still plenty to be had and smaller shippers are glad to get $3.75 for some of this size. Rice is moving fairly well, but barley is hopeless, and

Average Cost Per Net Ton, Including Freight, of Coal Consumed by Locomotives in Road Service

(As reported by the Interstate Commerce Commission)

Month

Region	1919 July	Aug.	Sept.	Oct.	Nov.	1920 July	Aug.	Sept.	Oct.	Nov.
New England	$5.26	$5.01	$5.30	$5.59	$5 03	$9 49	$9 57	$8 84	$7 84	$9 52
Great Lakes	3.12	3.05	3.27	3.34	3.54	4 33	4 58	5 23	4 32	5 30
Ohio, Indiana—Allegheny	2.50	2.64	2.75	2.75	3 00	3 92	4 28	4 24	3 71	4 77
Pocahontas	2.45	2.65	2.59	2 62	2 90	4 06	4 48	4 38	3 62	4 74
Southern	3.06	3 02	2.91	3 14	3 23	3 97	4 42	4 15	3 78	4 61
Northwestern	3.75	3.72	3 43	3 70	3 79	4 38	4 79	4 43	4 22	4 96
Central Western	2.98	3.01	2 85	2 97	3 53	3 51	3 57	3 57	3 43	3 59
Southwestern	3 45	3 34	3 32	3 47	4 12	3 77	4 48	4 39	4 08	4 31
ALL REGIONS	3.12	3.11	3.10	3 24	3.48	4 25	4 56	4 54	4 05	4 82

Cumulative from Beginning of the Year

Region	1919 July	Aug.	Sept.	Oct.	Nov.	1920 July	Aug	Sept.	Oct.	Nov.
New England	$5 82	$5.76	$5.67	$4 99	$5.54	$7.38	$7.75	$7.72	$9 21	$8 00
Great Lakes	3.40	3.35	3.35	3 25	3 35	4.00	4 07	4 20	5 28	4 41
Ohio, Indiana—Allegheny	2.77	2.75	2.76	2.74	2.78	3.40	3 59	3 62	4 54	3.82
Pocahontas	2.60	2.60	2.60	2.81	2.65	3 26	3 42	3 52	4 46	3 74
Southern	3.24	3.20	3.15	3 00	3 15	3.51	3.58	3 69	4.52	3 25
Northwestern	3.86	3.83	3.49	3.63	3.71	4 07	4 18	4 04	4 86	4 09
Central Western	3.04	3.03	2.97	2.94	3 03	3.37	3.39	3.38	3 82	3.45
Southwestern	3.54	3.49	3.47	3.40	3 55	3.93	4 01	4 08	4 36	4 13
ALL REGIONS	3.32	3.28	3.21	3.16	3 26	3 80	3 91	3 95	4 77	4 10

a good deal of both sizes is going in storage.

Bituminous—To be quite frank, we can truthfully say that the market has disappeared. The consumer is not at all desirous of buying and it is only the very small user, who comes along with an order for a car or two just as he needs it, that makes any quotations necessary.

With the curtailment of railroad movement, another outlet for coal is diminished, with the result that mines are idle for a large portion of each week. The big interests are convinced that they must mark time and that the mere cutting of prices will not make business. There are some shippers who are offering coal at prices which appear to be less than cost of production. Under such circumstances it is difficult to offer a list of market prices, as much depends on the disposition of the individual producer.

Some of the very best coals have been offered at $4.25 per net ton mines and also as low as $3.50. Probably the most sales have been made of Pool 9 and figures on this grade run $3.10@$3.50. We have heard Pool 10 offered $2.75@$3 and Pool 11 $2.25@$2.50. There are also frequent instances of coal being offered as much as 75c. under any of the above prices. Usually these can be traced to cases of coal refused on account of preparation, as the consumer is becoming extremely particular as to the condition of the coal he buys these days.

Coke—The market for coke is inactive, with foundry grades offered at $6.75 and furnace $5.50.

NEW YORK

Strong Domestic Demand Continues—Steam Sizes Becoming More Burdensome — Bituminous Market Inactive — Quotations Low—Some Contract Negotiations.

Anthracite—With half of the winter gone the demand for domestic continues strong. There is no surplus and dealers expect to begin the new coal year bins practically empty. The demand for independent coals was strengthened considerably by the partial suspension of operations by two large producers due to labor troubles and this probably accounts for the steadiness of the market. Fresh mined independent domestic is strong at $10.50, while washery stove and chestnut sizes are quoted $7.60 by some of the producers.

Dealers do not look for any great rush of business and believe that ordinary production will take care of all requirements. Many prefer to keep their stocks within necessities by purchasing company coal rather than to load up with independent coals at their present quotations.

Steam coals are becoming harder to move. Some of the companies have undertaken to store these sizes. Lower quotations are being heard for independent steam coal. Buckwheat was quoted $3.25@$3.65; rice $2.50@$3 and barley as low as $1. In the harbor loaded boats of buckwheat were being held around $6.25 and rice at $4.50. Many boats loaded with barley were said to be afloat. At one of the docks an embargo was placed against further shipments of this size except on permit.

Bituminous—That the worst is over is the belief of many tradesman. Hopes are now entertained for business recovery and with it stronger prices. There is an abundance of coal at the local docks.

While plenty of coal is coming forward to meet all requirements, some operators are using a little more care in sending coal to Tidewater, not forwarding it unless there is an order already booked. The slight improvement noticeable is attributed in part to the closing of many mines.

Contract inquiries are becoming more numerous, many of them being regarded merely as "feelers." Inquiry as to what might be expected in the way of contract prices has brought many quotations ranging $3@$4.50, but the majority seemed to think the range would be $3.50@$4.

Reports indicate that buying among the Canadians is more brisk than in this market. Many manufacturers are still buying good-sized tonnages at present prices.

Embargo orders have been in force at several piers during the week but they were short-lived. Loaded boats were plentiful while small empty boats were at times hard to pick up.

Bunker trade is quiet while the export demand is not expected to pick up for some months. There were comparatively few changes in mine quotations. The following show about the range for spot shipments: Pool 1, $3.50@$4; Pool 9, $3.25@$3.75; Pool 71, $3.25@$3.50; Pool 10, $2.75@$3; Pool 11, $2.50@$2.75; Pool 18, $2@$2.35 and Pool 34 from $2.25 up. A quotation for Pittsburg Gas coal was heard at $3.75@$4.00.

Quotations f.o.b. this harbor ranged about as follows: Pools 1 and 71, $6.25@$6.75; Pool 9, $6@$6.25; Pool 10, $5.75@$6 and Pool 11, $5.25@$5.50.

BALTIMORE

Flat and Listless Market—Export and Home Trading Equally Light — Hard Coal Shipments Less.

Bituminous—All grades of soft coal are in poor demand, and the market is most listless and flat. At home the industrial situation is quite unsatisfactory and consumers are buying from hand to mouth, despite the low price of both steam and gas coals.

There has been no further recession in price of steam coals, the bottom of the range that allows continued production at any sort of a profit having been reached. Best grades are still offered freely at $3@$3.25 f.o.b. mines per net ton. Lower class fuels range all the way down to $2, with small production and but few takers. Gas coals are possibly a little stronger for the best grades. Specialized screened coals that have recently sold down to $2.50@$2.75 are now generally around $2.85@$2.95. Mine run is offering around $2.25@$2.50.

Export movement continues light, the month's shipments at this port of cargo coal to Jan. 27 having been 139,718 tons, with 15,397 tons taken in bunker. When the piers here dump over 300 cars a day now they are doing good business. The daily reserve at the pool is now around 2,000@2,500 cars on all roads. Car supply continues 100 per cent. Daily loadings on the B. & O. are averaging 2,000@2,500 cars.

Anthracite—Failure of real winter to linger when it blows into this section is holding down consumption of hard coal. Demand is but average now for this time of the year, indicating a practical catching up on deliveries by coal companies. Receipts for January will fall much below those of December, as up to Jan. 23 the decrease was 533 cars, only 819 cars having been received against 1,352 cars in the same number of days in December.

The fall in demand for hard coal and the more liberal supply here is not causing conditions for the retailer that would warrant his cutting prices. It has been figured out that the present average margin of gross profit on No. 1, or broken is $2.45; on No. 2, egg, $2.45; on No. 3, stove, $2.61; on No. 4, chestnut, $2.60 and on pea coal $2.62. As high as $3 a gross ton margin of profit was allowed by the government in regulation days.

BUFFALO

No Improvement in Bituminous—Shippers Much Disturbed Over Activities in Washington — Considerably More Coal Than Needed—Anthracite Becoming Plentiful.

Bituminous—Weakness in the trade continues in full force. Some shippers are still reporting lower prices. At the same time it is the indifference of consumers that is making the most trouble. Many of them are unable to store any more coal and can buy only as they use it.

Efforts of certain people in Congress to weed out the jobbers naturally excite this trade, as it is a jobbing center and no other city of this size would be as much injured as Buffalo. When the government concludes to let the coal trade take care of itself, as it does other necessities, it will be better for the country.

Car movement continues at its best. It has much to do with the slack prices of bituminous coal. There is every prospect of a continuation of the prompt service. So everything seems to be against the coal trade, from a blundering senator to the weather.

There are often many cars of unsold coal on track and they hurt the trade seriously. Shippers always declare that they will not get caught a second time, but it is often a matter of getting the cars off or shutting down.

Prices range about at $3.75 for You-

ghiogheny gas, $3.25 for Pittsburgh and No. 8 lump, $2.75 for all mine run and $2.25 for slack, mine quotations.

Anthracite—The supply increases and consumers gradually drop off. There has been no really insistent demand lately, so that the trade is feeling easy. Such conditions have changed much of late. An anthracite shipper is now always eager to cut down the demand in any way and is as sorry as anyone that the natural-gas supply is running down so fast.

As a rule nobody will now pay any premium on independent anthracite, though a dollar or two is sometimes obtained. The regular retail price to the curb is now as it was fixed last fall, $13 for furnace sizes and $13.25 for stove and chestnut.

Coke—Demand continues light. Furnaces have pretty large stocks on hand and as they are running at a slow rate, with no actual accumulation of orders, the purchases outside of contracts are not large. Jobbers quote best 72-hour Connellsville foundry at $7.25, with 48-hour furnace at $5.25, off-grades and stock at $5, and domestic sizes at $7.

Northwest

MINNEAPOLIS

Unseasonable Weather and Inactive Market Continue — All-Rail Coal Demoralized—Plans for New Season.

The coal business seems to have no friends anywhere. The weather man failed to give seasonable weather. Legislative committees are lying in wait to investigate it from the dawn of creation to date. Others are planning bills to harass everybody who has the slightest to do with the business. No one seems to believe that anyone in the business has any sentiments of ordinary humanity. Buyers won't buy. The market won't support anything, and the end is not yet.

There is nothing in view but a hope to get on a new level for the spring. Plans are already being laid for the new season. The present winter is hopeless but perhaps something can be done in the coming season to avert further troubles. In hoping for this, due allowance must be made for the extra costs which additional freight charges have made. People think of coal on a different level from almost any other commodity. They admit the additional cost due to heavier freight charges on everything else, but upon the bulkiest and heaviest purchases made, they think in the old terms of pre-war time.

But after all, if the transportation streams can be kept open there will be a marked difference in the coal situation and in the costs. The reaction which followed a return to reasonable car movements accounts for the depression in the market.

Soft coals, except prepared sizes, have suffered a general slump, and there is a scattered range of prices among the different companies which makes it almost impossible to name a going market. All-rail coal has been fairly demoralized, with demurrage coal from time to time leaving the spot market almost unquotable. Screenings have suffered worse than anything else. Hard coal has maintained itself well on all ordinary sizes, but the smaller sizes have softened, and all-rail buckwheat and pea have sold down from $1 to $3.

MILWAUKEE

Market Dull and Uninteresting—Prices of Soft Coal Being Cut—Suits Resulting from Recent Stringency.

Weather conditions still maintain a demoralizing influence on the coal market. Demand is slow and the drain on stocks correspondingly light. Stove size anthracite is sold out, but there is sufficient egg and nut to last. The soft coal market is gradually becoming honeycombed as to price.

Illinois and Indiana coal is a drug on the market and the buyer has the whip end in bargaining. There has been no change in the ruling price schedule, but it is evident that cuts are being made on both Eastern and Western grades. Pittsburgh and Hocking pile run is listed at $10.25, but a sale was made this week for delivery up-state at $9.98, which price also absorbs a freight rate of $1.35, leaving $8.63 as the f.o.b. yard price.

The City of Milwaukee invited bids on 200 000 tons of coal for city institutions. The lowest bidder asked $16.20 for anthracite. Eastern coal with 27,542 B.t.u. was put at $9.98, Pittsburgh, Harrisburg and Hocking lump at $8.45, and Eastern and Western screenings at $6.98 for coal with 35,675 B.t.u. and $6.73 for coal with 36,991 B.t.u. All bids may be rejected, as lower prices are in the air. Gas coke is advertised $13.50@$15, but other byproduct coke is held at $17.25.

Inland West

CLEVELAND

Steam Declines—Domestic Better with Cold Weather—Early Lakes Activity—Anthracite Price Drops.

Bituminous—Demand for domestic has increased somewhat because of the colder weather, but despite this fact dullness continues.

Prices of steam coal have declined still further because of the continued lack of demand. Steam slack at the mines is now being sold $2@$2.50 while ¾-in. lump is going at $2.75@$3 and 1½-in. steam lump $3.50@$4. Domestic lump is obtainable at $3.50@$4. Retail domestic prices remain practically unchanged, however.

The present rate of production in Ohio mines is scarcely half of normal potential capacity. More mines in eastern Ohio and the Ohio and the Hocking valley have closed and others are operating on part time. Operators are anxious to reduce production costs but see little hope of accomplishing this result with wages, freights and other charges at fixed levels. Present prices, it is therefore argued, are not likely to go much lower.

Bituminous coal receipts at Cleveland for the week ended Jan. 22 were the lowest in many weeks, amounting to 1,177 cars of industrial and 458 cars of retail coal.

Anthracite and Pocahontas—Retail prices of anthracite dropped from $15.45 to $14.90. The supply however, is still limited. The market for Pocahontas remains unchanged. Shoveled lump is still difficult to obtain but receipts of mine run are somewhat better.

Lake—Contracts were concluded this past week for 100,000 tons for shipment next season at $3.50 a ton. The contract calls for 50,000 tons of Fairmount mine run and 50,000 tons of Panhandle ¾-in. steam lump. Operators do not consider the market outlook in the Northwest particularly discouraging despite the present industrial inactivity. Loading of boats at Lake ports is now under way at Cleveland, Huron and Ashtabula and boats are wanted at Toledo and Conneaut. The New York Central has started shipments to Ashtabula and an early movement to all Lake ports is expected.

Following are retail prices of coal per net ton delivered in Cleveland.

Anthracite—Egg, grate, chestnut and stove, $14.90.

Pocahontas—Shoveled lump, $11.90; mine run, $11.

Domestic Bituminous—No. 8 Pittsburgh, $9.30; West Virginia splint, $11.75; Cannel lump, $15.75.

Steam—No. 6 and No. 8 slack, $7.50; No. 6 and No. 8 mine run, $9; No. 8 ¾-in. lump, $8.90.

CHICAGO

Retailers Are Heavily Stocked — Bargain Coals Have Flooded the Market—Encouragement Seen in Better Industrial Outlook.

All kinds and grades of coal are in little demand. On account of the continued unseasonable weather the demand for domestic coals has ceased, and with the industrial inactivity there is no call for steam.

The whole situation so far as it relates to coal is most unsatisfactory here. Unemployment is on the increase rather than on the decrease and this has a direct reflection on the business. The man out of a job does not care to put in much coal. He is buying just as cheaply as he can and by the bushel instead of the ton. What factories are in partial operation are buying only in a hand-to-mouth way, the average purchase being for one car. Retail dealers throughout the city report that all bins are loaded with coal, with but small prospects of moving this coal during the next few months. By this outline, it can be seen that conditions in Chicago are none to cheerful.

Eastern operators have now come to the conclusion that it is not a wise policy to ship their coal to Chicago on consignment. Bargains in Pocahontas,

New River and West Virginia splints as well as block coals from southeastern Kentucky are offered every day to the trade but it has so much coal on hand that it is not interested at any price. A number of dealers have told their coal connections that they could not take in any more coal even if it was shipped to them for the freight.

There are several men in the coal business in Chicago, who have been operators of mines during the last twenty-five to thirty years; and these men say without hesitation that they have never seen conditions as unsatisfactory as they are today.

MIDWEST REVIEW

No Improvement in Demand — Buyers Ask Further Price Concessions — Production Slowing Down—Some Contract Inquiries.

Expectations have failed to materialize, as there has been no improvement whatsoever in the Middle West coal market. In fact, it can hardly be said that coal is holding its own, when compared with market conditions week before last. Retailers are simply not interested, and the few manufacturing plants in operation are burning storage coal. Two great factors responsible for the present demoralization of the coal market are first, the warm weather which has completely upset the domestic market, and second, the industrial situation which has brought about no demand for steam coals. We have had practically no cold weather this winter and unfortunately for us, no cold weather is predicted in the immediate future. Some people say that the industrial conditions in the Middle West are improving slowly, but if any such improvement has materialized, it has not as yet affected the local coal market.

Current demand for coal is all on "quality products," and consequently coals from the central and northern portions of Illinois and parts of Indiana have fallen off, the public refusing to buy in spite of material price concessions. There is a very noticeable movement on the part of the public toward bringing down the prices to still lower levels. The average purchasing agent appears willing to buy good coal, but if he places an order he feels that he ought to have a special price. This situation, brought about during the past week, is responsible for the decided slump in prices as far as high-grade southern Illinois steam is concerned. It has been said that fully fifty per cent of the coal sold in the Middle West last week was sold below cost.

This condition will keep up just so long, and then the mines which have been taking this loss, will see the utter folly of continuing operating at such a loss and close down until the market improves. Coal production in the country is slowing down fast and it seems that production figures will go to far lower levels before the beginning of the summer months. A great many operators have been forced to sell their steam sizes at a figure considerably below cost. They are realizing the folly of this procedure because if they do it much more, their trade will expect a contract at a price considerably below the cost of production. Consequently, far seeing operators are preferring to close their mines awaiting further developments. They do not want to be caught like a well-known operator in the Middle West, who during the lean years of 1910 to 1914, sold his coal at cost or below in order to keep his mines in operation and then when the market mended and when the prices of coal permitted operating at a profit, found that his properties were nearly depleted.

The only encouraging feature of the week has been the increasing number of inquiries for contract prices for the coming year. While it is true the inquiries have been numerous, we have not heard of any contracts being closed, as operators are unwilling to book permanent business based on prices which are current in today's market.

Railroads are transporting coal very quickly and efficiently and the supply of cars at practically all mines is 100 per cent or over. Labor is doing its best to produce cheap coal, as efficiency of all mine labor has increased very sharply during the past sixty days.

Current prices f.o.b. mines are as follows:

Southern Illinois (Franklin, Saline and Williamson Counties):	
Prepared sizes	$3.50@$4.15
Mine run	2.25@ 3.25
Screenings	1.25@ 2.00
Springfield District (Central Illinois):	
Prepared sizes	2.50@ 3.75
Mine run	1.80@ 2.50
Screenings	1.00@ 2.15
Northern Illinois:	
Prepared sizes	4.00@ 4.25
Screenings (washed)	2.50@ 3.00
Indiana (Clinton and Linton, Fourth Vein):	
Prepared sizes	2.50@ 4.15
Mine run	1.85@ 2.50
Screenings	1.25@ 2.25
Indiana (Knox County, Fifth Vein):	
Prepared sizes	2.40@ 3.75
Mine run	1.80@ 2.50
Screenings	1.00@ 2.00
Pocahontas and New River:	
Prepared sizes	3.25@ 4.50
Mine run	2.00@ 3.50
Southeastern Kentucky C als:	
Block	3.25@ 6.00
Egg	3.75@ 4.25
Hocking lump	3.25@ 3.75
Smithing	3.00@ 4.50

ST. LOUIS

Warm Weather and "No Market" Bring Coal to a Standstill — Railroads Using Storage Supplies — Standard Prices Have Upset the Market.

Warm weather continues, with the result that the domestic demand is almost nothing. The demand for steam coal is negligible. Screenings have sold as low as 75c. in the past week from the Standard field. Mine run has been offered on a contract to a railroad as low as $1.85 for a year, and lump coal has been freely offered at $2.10, with egg and nut at about the same. These prices are the bottom. The prevailing prices range anywhere from 25c. to 50c. higher, but there is no buying. Railroad tonnage has gone down considerably in the past ten days. Many roads are now picking up some of their storage coal. There is considerable dissatisfaction among the miners on account of the poor working time offered.

Several northern and eastern companies who have the output of local mines at high prices are taking heavy losses daily, as the mines must work and the coal must move at some price. Some of these companies are located as far east as Philadelphia and New York and came into the Illinois market last fall when prices were at the pinnacle.

In the Mt. Olive field conditions were so bad the past week that the price on domestic sizes was cut from $4 to $3.50. There has been a surplus of steam sizes on the market that are piling up at the mine. The operators cannot afford to sell them at anything like the prices prevailing in the Standard field. Mines are working one to two days a week on domestic and as much as three days on railroad coal.

In the Duquoin field the association mines are working fairly well, averaging 3 to 4 days a week, all told. Other mines are having a hard time working 1 and 2 days a week. Prices by some of these operators go as low as $3 on domestic sizes and $1.25 on steam.

In the Carterville field circular prices by the more responsible operators are pretty well maintained. These prices range about $4@$4.15 on domestic sizes. There has been a slight break at times in the price of mine run and screenings, but they held up pretty well, with mine run about $3, and screenings $2@$2.25. Independent operators have, however, sold coal as low as $3.25 on domestic, mine run $2.50 and screenings considerably under $2. Railroad tonnage continues pretty fair.

In St. Louis proper there has been no change in the retail price situation.

No anthracite, smokeless, or Arkansas coals are moving in, there being no demand for high priced fuel.

COLUMBUS

Trade Still Quiet — Better Domestic Tone — Mine Operations Continue to Show Reductions.

There is no outstanding feature to the Ohio coal trade with the exception of a slight improvement in the tone. Operators and jobbers unite in saying that there is not so much offering as formerly and extremely low prices are not frequently heard. With a large number of operations closed down there is little consignment coal produced. But there is no marked tendency toward higher levels.

Domestic trade is showing a little more strength. Retailers are still slow in placing orders and are doing considerable shopping. This method of buying is expected to prevail for the remainder of the winter as sufficient coal is now assured. A cold spell would stimulate the trade but the time for much increased activity is about over. Retail prices are maintained at the levels which prevailed last week.

Production is falling off rapidly and is now about 25 per cent of capacity and 20 per cent of normal on the aver-

age over the state. The Southern Ohio Coal Exchange reported production for the week ended Jan. 15 at 186,214 tons out of a capacity of 601,371 tons. In all 379 mines reported. Of the shortage of 415,157 tons, no market caused 312,674 tons.

Steam business is extremely inactive and little hope for improvement is expected until around April 1. Manufacturing concerns are slow in resuming and in many cases reserve stocks are being used in preference to entering the market. Railroads are taking only a small tonnage.

Prices of the principal coals used in Ohio at the mines are;

Hocking lump	$3.75@$4.00
Hocking mine run	2.00@ 2.75
Hocking screenings	1.50@ 1.75
Pomeroy lump	4.00@ 4.25
Pomeroy mine-run	2.35@ 2.75
Pomeroy screenings	1.50@ 2.00
West Virginia splints lump	4.50@ 5.00
West Virginia mine run	2.50@ 3.00
West Virginia screenings	1.50@ 2.00
Pocahontas lump	6.25@ 7.00
Kentucky lump	4 50@ 5.25

DETROIT

All Buying Is in Small Volume—Contract Shipments Have Been Reduced to a Minimum—Prices on Lower Level.

Reflecting the depression in industrial and manufacturing activities the demand for steam coal has diminished to such a degree that wholesalers summarize the situation by asserting a local market no longer exists. The few buyers taking coal are ordering in small lots. Price reductions appear to have made no increase in sales.

Not very much bituminous coal is arriving in Detroit. Jobbers explain that a few producers who tried the experiment of shipping on consignment when orders dropped off encountered discouraging results and narrowly escaped losses from accrual of demurrage and switching charges before the coal was disposed of.

The volume of business in the domestic division of the trade also is very light. Weather conditions and the lack of employment have resulted in an unusual economy in consumption of domestic coal. Dealers finding that their stocks are moving very slowly, show no desire to place orders at present for additional supplies.

Domestic lump from the Ohio district is offered $4@$4.25 at the mines. Mine run can be had at $2.50, nut and slack at $1.75, though sales at a much lower price are reported. West Virginia lump is quoted at $4.50, with mine run at $2.75, and nut and slack for about $2. Smokeless mine run carries a nominal price of $4.50.

West

DENVER

Market Declining—Interest in Possible Wage Reductions.

There is a declining market in the Colorado territory. An instance of this may be seen in the prices of one company, operating in the Walsenburg field, which has always maintained that its product was worth a little more money than that of other mines. Recently the price of $8 for lump, and $7.75 for nut, was cut to $6 and $5.50, thus falling in line with the prevailing prices which the Colorado Fuel and Iron Co. and other mines had been maintaining for some time.

Production for the week ended Jan. 15 was 249,689 tons, the mines having operated 75 per cent. Lack of orders equalled 8.2 per cent.

"No market" in the lignite field held down production by 7,124 tons, showing an even greater proportionate weakness than bituminous.

Boulder or first-grade lignite is generally steady, remaining at $9.90 retail. The cut-throat war among operators and dealers of second-grade or Weld County lignite has brought the price to what is believed will be the low level for the winter—$6.75. Prices ranged upward from that figure to $7@$7.50, while the so-called legitimate dealers are standing firm for a price of $8.15 retail.

Bituminous coking steam is steady at $8.05, while straight bituminous is $6.75 in retail markets, lignite being $5.30 retail.

South

BIRMINGHAM

Steam Market Sluggish—Domestic Inquiry Sufficient to Absorb Output—Production Scaled Down to Market Requirements.

The past week has brought about no improvement in the steam trade, the calls for fuel being very light and comparatively few in number. Industries are apparently well stocked. The movement of coal against contracts in most instances has been cut to the minimum stipulated in fuel agreements. Quotations are as follows per net ton mines:

	Mine-Run	Lump
Big Seam	$3.00	$3.50
Cahaba and Black Creek	4.50	6.00@7.50
Carbon Hill	3.35@3.50	5.50
Corona Seam	3.50	6.00
Pratt	3.60@4.00	.....
Cahaba and Black Creek washed (Bunker)	5.00	.....

Production for the present week will show a marked decrease, as some small commercial mines have closed down and most all others are on a four-day schedule. Pig iron production in the district is at the lowest stage reached in several years, there being no demand for the product, and the large mines of furnace interests are also slowing down. The output for the week ended Jan. 22 as compiled from figures furnished the Alabama Coal Opertors' Association totalled 311,512 tons or a falling off of about 20,000 tons as compared with the peak production of the past twelve months reached the week ended Jan. 8.

LOUISVILLE

Cold Weather Stimulating Retail Demand—Steam Business Very Weak—Much Cheap Coal Offered.

If present cold weather continues a few days longer retail stocks will be so materially reduced that there will be a much better demand. The industrial market continues weak. There is some little improvement noted in mine run, but screenings are in large supply, and selling very cheaply.

There is no immediate prospect of a large increase in demand for any grade of coal. A good many small mines are down, and will remain so until conditions show material improvement. As a whole, prices are being fairly well maintained. Gas coal is in better call than other grades.

Quotations from eastern Kentucky show Elkhorn and Harlan as well as Jellico and Straight Creek fairly well in line. Hazard has been cutting prices a little to get business. Some Hazard block is as low as $4.25, with some mines quoting $5@$5.50. Elkhorn is around $4.50 for block. Harlan quotations run $4.75@$5.50 for block, with egg quoted at $4.50@$4.75. Most grades of eastern Kentucky mine run are $2.75 @$3, which is also the price on West Virginia. Screenings range $1.50@ $1.75. West Virginia lump is $4.25.

Louisville retailers note an improved demand from private heating plants, small industries, etc., but have fair stocks, and are mainly buying a distress car or two here and there.

Southwest

KANSAS CITY

All Demands Are Light—Mine Idleness Grows—Little Interest in Contracts.

Summer weather throughout the Southwest is not an encouraging feature of the domestic market. Steam demand is also light and "no market" idleness is the chief bar to production. Missouri mines are running about 80 per cent of capacity, Kansas operations 50 per cent and Arkansas 30 per cent. Many mines are down and there is much idle railroad equipment, as operators are adopting this policy rather than push production at unprofitable sales figures.

Very few contracts are being closed, as buyers are apparently holding off, expecting further reduction which is impossible unless costs are lowered or operators sell at less than production cost. However, the business outlook is encouraging and the weather is favorable to wheat in Kansas.

Current quotations show: Missouri lump, $5@$5.50, mine run $4.50, washed slack $4.05, raw slack $2@$3.15; Kansas lump $5.50@$6, nut $5.50, mine run $4.50@$5, mill $4@$4.25, slack $3.75@$4; Arkansas lump $6.75, mine run $4.50@$5, slack $4.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Fair Operation Maintained on Average —Many Small Mines Closed—Pittsburgh Coal Co. Reduces Prices.

Production continues to decline, but only at a slow rate, and is larger than might be expected from consideration of the slackness in industrial operations and the mild weather. All the truck mines disappeared from the scene of activity long ago and many of the smaller rail mines have followed, the chief production now being by the large interests, particularly those with contracts.

Without making any formal announcement the Pittsburgh Coal Co. has reduced its prices from the schedule of last August, which was $3.75 for mine run and slack and $4 for screened, there being no other differentials. Those prices represented a 25c. advance from the prices of late April, when there had been a 25c. advance from the opening prices of the coal year. The new prices are: Gas, 1¼-in., $4; ¾-in., $3.75; mine run, $3.50; nut, $3.25; nut and slack, $3.15; slack, $3; steam: 1¼-in., $3.75; ¾-in., $3.50; mine run, $3.25; nut, $3; nut and slack, $2.90; slack, $2.75. Thus, mine run gas is reduced 25c. and a differential of 25c. between gas and steam is established, making the reduction in steam mine run 50c., while differentials up for 1¼-in. over ¾-in., and differentials down for nut, nut and slack and slack, are established, whereby 1¼-in. gas is not reduced at all and steam slack is reduced $1.

The spot market remains rather indefinite as there is so little demand and some lots now and then are sacrificed to avoid demurrage. Mine run may be regarded as $2.50, though sales are sometimes made at less. Gas and byproduct are bringing less differential than formerly, and are quotable at about $2.75 for byproduct and $2.75@$3 for gas mine run, with screened gas of best quality sometimes bringing $3.25 or higher.

CONNELLSVILLE

Merchant Production Declining Still Further—Furnace Coke Goes for Heating Purposes—Lower Costs Neeessary.

Production of merchant coke is dwindling to almost nothing being already only one-third of the average rate last August, when buyers begged for coke at $18, while now coke begs for a buyer at $5 and frequently has to go for heating purposes.

One large operator, regarded as particularly well provided with contracts for furnace coke, has just received two additional suspensions on account of furnaces intending to go out of blast, the latest suspensions involving over 5,000 tons a week.

Considerably more than half the furnaces that normally use coke purchased in the Connellsville region are out of blast and have no thought of getting into blast in the near future. Their idea is that it will be necessary, when demand does revive, to sell iron at much lower prices even than those now ruling, hence cheaper coke is imperative.

While merchant coke operations are at such a light rate, furnace oven operations are heavier than last August, chiefly because of the activity of the coke subsidiary of the Steel Corporation, for the blast-furnace operations of the latter are practically normal.

The spot market is quotable at about $4.50@$5 for furnace and $6@$6.50 for foundry, or 50c. lower than a week ago.

The *Courier* reports production in the week ended Jan. 22 at 141,980 tons by the furnace ovens, an increase of 320 tons, and at 28,080 tons by the merchant ovens, a decrease of 440 tons, making a total of 170,060 tons, a decrease of 120 tons.

EASTERN OHIO

Production Still on Down-Grade—Prices Steady — Early Shipments to Lower Ports.

Greater depression in the coal trade is strikingly reflected in production figures for the week ended Jan. 22. Reports covering 170 mines in the district indicate an approximate output of only 297,000 tons, 45 per cent of the potential weekly capacity of 660,000 tons, which is 65,000 tons less production than that for the preceding week and over 100,000 tons less than that for the second preceding week.

Loss in production is attributable in the main to "no market." Industry has not resumed operations to the extent hoped for and manufacturing plants evidently are buying only to meet their immediate requirements. Consequently the demand for steam coal continues to sag, which has resulted in further closing down of mines.

While continued cold weather has stimulated domestic demand, dealers are slow to take deliveries on coal arriving for their account.

Notwithstanding inertia in the trade, there is practically no change in mine prices for spot steam coal and it is apparent they have reached the low mark. The range is about as follows: slack, $2.25@$2.75; mine run, $2.50@$3; ¾-in. lump, $2.75@$3.25; 1¼-in. lump, $3.50@$4; domestic lump, $3.75@$4.25.

Pennsylvania docks at Cleveland are making ready to dump the first lot of 10,000 tons of gas coal which is en route from the Pittsburgh district and another charter is being arranged to move a like amount. The Pennsylvania R.R. has notified coal shippers that further permits will be issued for the movement of Lake coal where charter arrangements have been made. It is also understood that the New York Central lines are opening up their facilities at Ashtabula to begin the dumping of coal now en route. This tonnage will be dumped immediately into boats tied up at the ports, ready to sail as soon as navigation opens. This is one of the earliest movements to lower port docks on record.

UNIONTOWN

Continued Inaction in Coal and Coke Markets—Operators Refuse Low-Price Contract Offers—Production Still Declining.

Continued inaction with decreased production on the part of independent coke and coal operators is the status of the trade in the Connellsville region. The market seems to have hit "rock bottom" inasmuch as operators claim it is below the cost of production, but it would appear that output is still in excess of the present demand. For such sales as are reported, steam coal is quoted $2.25@$2.50 with byproducts $2.50@$2.75. There is not sufficient tonnage of either grade moving to establish a market.

There is continued suspension and cancellation of contracts where consumers can find clauses to warrant such action. Coal contracts with railroads generally expire April 1 and some "feelers" have been received in the region from New England roads. Those "feelers," however, are based upon present market conditions and have not resulted in opening of negotiations with any operators, who hold the view that it would be folly to contract their output at spot prices when they are refusing to mine coal for the open market at this time.

Frick coke plants operated five days this week and Frick coal plants put in a full week. Independent operators, however, both in coal and coke, were forced to further shade production. There is virtually no spot coal moving and that on contracts has been pared down so sharply that it is negligible.

FAIRMONT AND PANHANDLE

Mine Idleness Growing—Contract Cancellations and Suspensions Are Heavy —No Attempt to Force Production at Low Prices Offered.

FAIRMONT

Mine idleness in the Fairmont region was growing during the week ended Jan. 22, particularly toward the latter part of the week. Mines in other sections of northern West Virginia were affected in the same proportion.

Spot shipments were extremely rare.

Only coal under contract was moving. There appeared to be a smaller volume of contract coal moving than during the preceding week, indicating further cancellations. It was deemed probable that cancellations of export contracts, and particularly contracts covering shipments to France, was responsible in part for reduced shipments. Most of the coal was being consigned to Eastern points. That was not the case, however, as to coke, the bulk being moved to Western markets. Coke production was being maintained, but little of that product was being purchased by steel companies.

In view of such unsatisfactory conditions operators were content to await further developments, making no attempt to force coal on the market. Pursuance of that policy prevented a very large accumulation of dead loads in northern West Virginia.

Shipments to Tidewater fluctuated a good deal during the week. The middle of the week they were rather small but Thursday saw an increase in the tonnage destined for Curtis Bay. As far as any particular class of customers was concerned the railroads were the largest purchasers. Producers in many instances were busying themselves in securing railroad contracts for the coming year.

Northern Panhandle

Mines were working less than half the time in the Northern Panhandle. Many of the mills and factories in the Wheeling district where much of the product is marketed were still shut down. The only coal marketed was being consigned to customers in other states whose plants had not been affected by general industrial conditions. Many contracts were still in a status of suspension or had been cancelled outright.

Although mine run may be said to have ranged $2.75@$3, yet those prices really meant nothing, for no sales were closed at those figures nor was there any serious attempt on the part of operators to market coal at prevailing prices. Of course with so many mines either closed down entirely or working less than half the week the large number of cars on hand more than took care of all needs.

CENTRAL PENNSYLVANIA

Many Mines Idle—Spot Market Stagnant — Some Industrial Resumption May Stimulate Demand.

But little improvement in the coal industry occurred during the past week and business is at a standstill in about one-half the mines in the district. Records show that 48 per cent of the mines on the Pennsylvania lines are idle.

The market seems to be oversupplied and prices are very irregular. Some resumption of industrial activity has been noted the past week and this is expected to strengthen the spot market to some extent. At Johnstown the Cambria plant will start at a 50 per cent basis, after being practically shut down since late December. Two weeks' orders are ahead.

Middle Appalachian

LOW-VOLATILE FIELDS

Only Tug River Production Withstands the "No Market" Onslaught — Prices Firm, but with No Takers—New Contract Negotiations.

Pocahontas and Tug River

The Tug River field stood out as the single exception in all the smokeless area in reduced production, for in that district during the period ended Jan. 22 there was an output of 98,950 tons, with loading generally holding up very well. Mine run was freely quoted at $4.50 and prepared grades at $6.10.

Shipment of prepared sizes to Western points tended to keep up that business, but as a rule spot orders were few and far between, contract orders furnishing the mines with their principal opportunity to produce. Although there had been cancellations here and there they had not been sufficiently general to affect production, which was averaging more than at a time when the demand was much stiffer, the large car supply enabling Tug River mines to produce and transport more coal to market. Most mines had a surplus, so plentiful was the run of empties, the placement only being increased by reduced operations at other points on the Norfolk & Western.

Operations were cut down at several mines in the Pocahontas region. Where mines during the preceding week had been able to operate on an average of four days, they had been reduced to two and three days. Contract cancellations were responsible for the curtailment, but assurances had been given in a number of instances that such suspensions were only temporary. "No market" greatly over-topped all other sources of loss.

To offset the suspension orders, inquiries for Pocahontas were becoming somewhat more numerous, and in a few instances new contracts were negotiated.

New River and the Gulf

For the first time during the year, New River production slumped in the week ended Jan. 22, being 5,000 tons a day less on an average than those during the preceding week. The slump resulted from more pronounced cancellation and suspension of orders than at any time since the market began to fall. There were no spot orders to replace the dwindling contract business. Mines with no contracts still in force were compelled to suspend operations for the time being.

There was still a fairly large contract movement of prepared sizes to Western markets but since there was no demand for slack the production of prepared coal was something which did not appeal much to producers. Although not to become effective for a time, additional contract business was consummated for the next coal year, one contract being closed for the delivery of 120,000 tons at $4.95 a ton. Cars were most plentiful, mines having five and six times as many empties as they could possibly use.

Dullness in the market was reflected to a most decided extent in the Winding Gulf region. Spot orders were almost entirely lacking. Contract customers had reduced, and in some instances, canceled their agreements so that upon the whole the output was much under 50 per cent. Some mines were unable to operate at all, a number having been closed down since the first of the year. Where mines did have contracts, it was not possible to operate more than three days of the week at the most.

Cars were furnished in great abundance and labor was very plentiful. The Virginian and the Chesapeake & Ohio had more empties on sidings than could be conveniently stored. The price range on mine run was $4.50@$5, but little or no coal was being sold on the open market at that or any other price.

HIGH-VOLATILE FIELDS

No-Market Losses Severe — Further Cancellation of Contract Orders — Spot Quotations Confined to Buyers' Offers.

Kanawha

Little coal was produced in the third week of January, the average not being over 25 per cent of normal capacity. Market conditions made it impossible to mine a larger percentage of the potential output.

Buying of steam coal was something which did not exist, and it had no outlet. A few orders, possibly, were placed for gas coal, but for the most part no shipments of coal except those to be applied on contracts were made.

Although some prepared coal was being sold, yet orders were not sought for egg and lump because it was not possible to dispose of the resultant sizes. A few offers of $2.35 for mine run were heard but the price was too far below cost for producers to accept and hence they chose to keep their mines idle.

Logan and Thacker

There was an output of not more than 150,000 tons in the Logan region in the period ended Jan. 22, production on an average not being over 25,000 tons a day. There was no spot business to stimulate production, a few offers for mine run being made but not accepted at about $2.50. That was about as near as it was possible to set any figure.

If anything there was less contract coal shipped than during the preceding weeks of January, owing to cancellations. Gas companies and public utilities were about the only consumers of contract coal, steam shipments being at the very minimum. Comparatively mild weather had the effect of holding down the demand for prepared sizes. In the face of the slim demand, the car supply sufficed many times over. As against a daily car supply of about

3,000 cars not more than from 400 to 500 were needed. With so few cars being loaded empties were accumulating in all parts of the field.

Neither the efforts of pickets nor market conditions served to cause any general suspension of operations in the Thacker field, though production was not on as large a scale by any means as it had been the first of the year, chiefly because of "no market." That constituted the largest loss, strike and labor shortage losses having been largely eliminated. Mines generally throughout the field were operating under guard of the state police, following the removal of Federal troops, though few if any mines were operating on a full-time basis.

It was on contracts only that mines were working, there being no spot demand. However, there was a larger percentage of production than in many other high-volatile regions. No serious trouble was experienced in any part of the field during the week, although during the early part of that period attacks were reported at three different points.

Northeastern Kentucky

With only between six and twelve mines operating daily further inroads were made on the production in the period ended Jan. 22, there being a loss of 5 per cent in the output as compared with the preceding week. Production losses were increased with a lack of market responsible for 184,000 tons.

A lessened demand even for contract coal caused additional mines to be shut down during the week, cancellations bringing that about. For steam coal no market could be found and nut and slack were not being moved at all. It was possible to handle a small amount of gas coal on contract but even the volume of that kind of coal produced and sold was small. A continuance of mild weather tended to hold down the demand for domestic sizes. The average price for mine run was not over $3 at the most and in many cases only $2.50 was being offered. Lump brought only $4.50@$5.50 a ton.

Middle West

WESTERN KENTUCKY

L. & N. Stop-Orders Causing Much Dullness—Lump Movement Fair.

Mines of the Western Kentucky field are complaining as are all district mines at this time, but feel that business is as good in that field comparatively as in others. Prices are being well maintained. Right now there are a good many mines down, and many men out of work. Car supply is so heavy that sidings are congested.

Average quotations for the field for the week ended Jan. 22 show prepared, $3.95 (range, $3.50@$4.25); mine run, $2.75 (range $2.50@$3.25); screenings, $2.10 (range, $1.85@$2.50).

Cold weather during the past few days has resulted in some little increase in demand for prepared sizes, while there has also been some little improvement in buying by small plants. Retailers are taking a little more coal, but it would require weeks of bad weather to develop any real demand from this source.

Hopkins County reports, that the order of the L. & N. cancelling all shipments for the time being is reducing production in that county 3,000 tons a day. Webster County reports two mines closed down as a result of the order.

INDIANA

Production Still Being Curtailed—Both Steam and Domestic Very Sluggish—Prices Almost at Production Cost.

Coal operators are not given to the opinion that any widespread depression and subsequent unemployment among the miners will be seen in the Indiana field. Though the demand, especially for steam purposes, is not what it should be for this time of the year, operators say there is no reason for alarm. For some days there have been signs of uneasiness among the men who dig coal. There has been an inclination to look for other work. Such fears are not borne out by opinions of some of the biggest coal operators in this section.

There are from 20 to 25 mines idle each day from lack of business. But this is generally the case when we are able to get all the cars needed, and they certainly are plentiful now. However, the coal companies are now producing coal right around the cost of production.

If the present conditions should continue indefinitely and the national market be filled, then the condition would be serious. The railroads, the biggest single users of coal produced in Indiana, are affected by the decrease of business and are not using more than 70 per cent of the coal used in normal times.

DUQUOIN

Even Curtailed Production Is Hard to Market — Prices Fairly Steady — Fine Coal Being Stored.

Production averages continued to fall during the week and some mines worked as low as two days out of the six. The fine coal seemed to be getting the heavy end of the stick, and much of the screenings and nut is being stored at the mines. Producers in and near Franklin County have maintained operations better than other mines in the southern part of the state. Even in that county, however, much difficulty was experienced in disposing of fine coal shipments.

The car supply, for the first time in two months, showed a slight weakness, however, lasting only during the first of the week and at the end a steady stream of empties was to be seen moving toward the larger mining towns.

The larger portion of southern Illinois shipments is still going north into Chicago and other centers, the Standard field having practically ruined the St. Louis demand by its low offerings, which have been commented on throughout this district even since the drop in coal prices started. Unofficial reports from Belleville say that screenings were offered in the St. Louis markets the first of the month at the low margin of 75c. This, together with the low freight rate from the Standard field into St. Louis, makes competition next to impossible.

Prices did not change much during the week, screenings ranged from $1 up to $1.25@$1.35; lump, $4@$4.50; mine run, $2.75@$4.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Market Lifeless — Few Mines Running Full Time — Open Weather Makes Traffic Conditions Almost Ideal.

There is no longer a spot demand for any grade, and all that is moved is the result of close bidding at prices that allow no room for profit. The prices on steam cannot get any lower, for it is simply impossible to get it out for less money, but prepared sizes continue to decline in an orderly manner. Quotations for best block coals are around $5, with gas producing egg going at $4, and steam from $1.75 for nut and slack up to $3.25 for mine run.

Contract talk is becoming common, but part of it seems to be just to fill up time, as there is not much else to do. There is considerable speculation as to what Lake prices will be on the opening of the season, but no one cares to commit himself just yet. However, if the mines are to make anything, they cannot sell at the present ruling prices for mine run. There is some bunkerage coal moving from this field, but the relative tonnage is small, and only a few of the larger mines are making any attempt to run even part time. The weather continues to be ideal, and traffic movement is good.

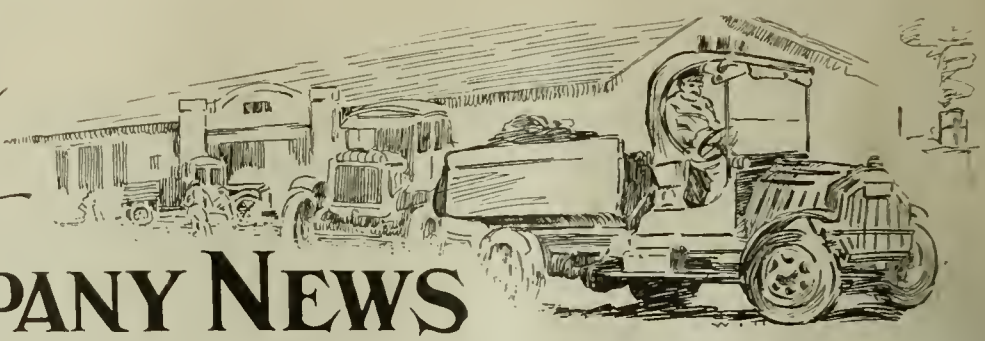
West

UTAH

Trade Continues Quiet — Labor and Cars Are Plentiful.

The coal trade here continues very quiet. The weather has been warm, much like spring, during the past week and the demand for coal has decreased accordingly. One of the largest producing companies in Salt Lake City, however, reports some improvement in the Coast trade. The demand for Utah coal in that market had been rather quiet for some time. The labor situation is good from every standpoint and the car supply is excellent.

MINE And COMPANY NEWS



ALASKA

Applications for leases of two blocks of coal land in the Matanuska Field, with development work costing $155,000 to be done within sixty days after granting of the leases, have been filed with the commissioner of the general land office, Department of the Interior, Washington, D. C. They are the first known applications and are believed by men familiar with the Alaska coal fields to mark a preliminary effort to develop the enormous coal resources of the territory. Following the custom prescribed by act of Congress and subsequently amended, the applications will be advertised for four weeks and on Feb. 20 will be considered with other bids for the same blocks of land which may have been received. A well-known Alaskan states that under present conditions anyone seeking an Alaskan coal land lease is bold of heart and purse, as coal mining there in competition with the daily wage of $8.75 paid to miners by the government was seemingly next to impossible. This wage is being paid by the Navy Department in its development work in block 12 of the Matanuska field.

The Alaskan Engineering Commission is designing and will shortly advertise for bids for the construction of a coal-cleaning and coal-washing plant in Alaska in connection with the mining of coal for the Navy. The coal-cleaning plant itself will cost $243,000, while other projects in connection therewith will bring the cost to $646,000. The plant will be designed to separate foreign ingredients from the coal and wash it in a flotation process. This and other features of coal mining were discussed before the House Appropriations Committee recently in connection with funds for the commission. At present about 4,000 tons a month are produced, of which about 3,000 tons are used by the railroad. About 30,000 or 40,000 tons are on hand. At Eska 85 miners are employed, and at Chickaloon 40 men, under a naval commission of four officers, assisted by Geologist Savage of the University of Illinois. The coal-cleaning plant will be located at Sutton. The mine worked for the Navy is 11 ft. thick, of high grade and expensive to mine. The Navy is mining about 25 or 30 tons a day and storing it.

COLORADO

A legislative probe of the coal industry in Colorado has been asked in the house of representatives. A resolution was introduced, providing for the election by the house of a committee of three to investigate the coal situation. The committee is to pay particular attention to the matter of state coal lands and leases, methods of avoiding strikes, and the reduction of coal costs to the consumer. The investigators will make their report to Governor Shoup before Jan. 1, 1922, if the resolution is adopted.

Articles of incorporation of the **Blue Coal Co.** of Denver, have been filed with the secretary of state. The company is capitalized at $1,000,000. Delmont B. Magee and Luke J. Kavanaugh are president and secretary respectively of the company, and R. J. Carns of Carbon County is local agent. The company owns a considerable acreage at Scofield and also has on royalty a big tract of the Kimball estate lands.

ILLINOIS

An explosion in which eight men were seriously burned and several others received minor burns occurred Jan. 4 in mine No. 8 of the **Old Ben Coal Corporation** of Chicago, located near West Frankfort, Williamson County. Officials of the company immediately ordered the Benton, Duquoin and other mine rescue teams from surrounding towns to their aid, and after hours of hard work the men were located and brought out alive. All are said to be out of danger. The mine is a large one and has been worked by the Old Ben people for several years.

A large tract of coal land was recently purchased by the **Peabody Coal Co.** for $75 per acre, the land being located near Taylorville. It has not been officially announced but it is supposed that the company intends to sink a mine in that vicinity in the near future.

All machine mining has ceased for the time being in two mines at Decatur operated hy the **Macon County Mining Co.**, of Decatur. The operators of the mines claim that an adjustment is necessary before the machines can be operated any longer. Some pick mining is still being done in the mines, but very little.

A wrecking company of Terre Haute will begin work shortly for the **Penny Coal Co.**, to wreck two ot their large mines at Herrin. The wrecking company has purchased all the mine equipment and will completely dismantle the mines, the contract being far more than $200,000.

The mine of the **United States Coal & Coke Co.**, near Rutland has been shutdown following the filing of suit against the company by the men working at the mine, over the method of payment of wages. It is not definitely known just when the difference will be settled and operations resumed although it is thought that the case can be kept from going through the regular routes of the courts.

It has been announced that the **United States Fuel Co.**, is making plans for the sinking of two more large mines in Franklin County, near its Middlefork mine now in operation. A sum of $2,000,000 is to be expended in the two mines which will soon be sunk. The company also maintains a large washer and crusher at Benton near the Middlefork mine. Plans are under consideration for the erection of byproduct coke ovens at Benton where the output of the mines will be put through the Semet-Solvay process. The ovens will cover an area of 25 acres, according to plans which have been formed. The United States Fuel Co., is the first to try the coking process on southern Illinois coals. At the present time the company after washing its coal is shipping it to its plants at Joliet, in the northern part of the state. Over 50,000 acres of rich coal land is controlled by the United States Fuel Co., all located in Franklin County.

The mine recently purchased and remodeled by the **Boehmer Coal Co.**, of St. Louis, located near Duquoin, was opened Jan. 11, the first time the mine has been worked for a number of years. The mine was operated for several years by the Jupiter Coal Co., and had been idle until the Boehmer Coal Co. purchased the property and re-equipped the mine both top and bottom.

INDIANA

The Zeller-McClelland mine, known at Bridgeton as No. 6, three miles southeast of Bridgeton, has been worked out after being in operation for eleven years. Isaac M. Hansel, mine superintendent, is directing the hoisting of the machinery from the mine which will be completed shortly. About 100 miners are thrown out of employment.

The Big Four Coal & Mining Co. is made defendant in a suit filed at Terre Haute by Stephen Tucker, in which he alleges the company owes him for lumber provided for the construction of the mine on Oct. 10, 1920.

The property of the **Shelby Coal & Clay Co.** was ordered sold at public auction recently by Judge Gleason of the superior court in Vigo County on the complaint of Ira Kidwell who had a claim against the company.

Articles of incorporation have been filed with the Secretary of State by the **Suwanee Coal Co.**, of Evansville. The company has a capital stock of $50,000 and the directors are Clarence A. Hartley, Joseph T. Herron and John C. Stephan. The company will do a general mining business.

The Lindsay Coal Co., of Vincennes, has been organized with a capital stock of $10,000 for the purpose of mining coal. The company is incorporated under the laws of Indiana and the directors are Edward J. Lindsay, James W. Prather and Gayle L. Prather.

The suit of the **Cleveland, Cincinnati, Chicago & St. Louis R.R.** asking for judgment in the sum of $150 against the Shirkie Coal Co. has been appealed to the Vigo County Superior Court. The case first was heard before Justice of Peace Madigan, of Terre Haute, who awarded the plaintiff judgment in the sum of $87.

Officials of District No. 11, United Mine Workers, invaded Indianapolis Jan. 21 for attendance at the state legislature. It is announced that the district officials will spend most of their time in Indianapolis until the end of the present general session. Several measures the miners are interested in are expected to come before the assembly shortly. The mine workers are said to have on file several resolutions passed by the local boards they will endeavor to incorporate into legislation.

The Winslow Mining Co. has completed its tramway, which connects its coal mining property north of Winslow with the Southern R.R. The capacity of the mine will be increased. Prior to the building of the miniature railroad the coal was hauled to the Southern on trucks.

A deal of unusual proportions is on tap now in the option of several of the largest coal mines of Knox County, Ind., to an eastern syndicate which is controlled by one of the largest railroad companies in the country. The deal will involve the issuing of securities of ten million dollars. The coal mines that are said to be in the deal are the **American Nos. 1 and 2** at Bicknell, the **Indian Creek**, the **Oliphant-Johnson mine** at Bruceville and the **Vandalia Coal Co.'s Nos. 1 and 2** at Bicknell.

The strike at the **Vandalia Mine, No. 28**, in the Dugger field which lasted for more than two weeks has been settled. The mine was shut down until one member of the district board and one of the international board visited the mine.

KENTUCKY

Vicissitudes of the coal market during the last few months were reflected in a suit filed late in January in the United States District Court, Louisville, by the Milwaukee Coke & Gas Co. and the Steel Tube Co. of America against the **Harlan Coal Co.** for $398,446 for alleged breach of contract. A counter claim will be instituted immediately, officials of the Harlan company said. The petition states that in March, 1920, the Milwaukee [illegible] entered into a contract with the Harlan company for 125,000 tons to be delivered at the rate of 10,000 tons a month, against which, to Dec. 13, 1921, [illegible] tons had been delivered, and that the difference between the contract and market price of the undelivered coal was $398,446.

The Bennett-Johnson Blue Gem Coal Co., Gatliff, recently organized, is [illegible] for the installation of operating and [illegible] ing machinery on its property. The company will concentrate initial work on about thirty acres of land. James Bennett is president.

The Kentucky Coke Co. has filed amended articles increasing its capital stock to $500,000 from $125,000. Officers of the Louisville Gas & Electric Co., are officers of this concern.

The Union County Coal Co., of Uniontown with headquarters at Louisville is about ready to start shipping coal. This company is headed by Dennis Long of Louisville. It is reported that the concern is planning to establish connections and facilities for shipping by water as well as rail.

MINNESOTA

If the Wisconsin legislature coincides with a suggestion in a resolution by the Minnesota body, there will be a joint investigation started of the **Northwestern Coal Dock Operators' Association.** In the resolution, it is claimed that the association has a monopoly of the dock business, and is accused of unethical practices in various ways. This is but a revival of an old story which has been up before former legislatures, and is revised to meet new conditions. Whatever the association may or may not do, it is openly understood that the cause of the high cost of coal in the Northwest is the existence of numerous charges which neither the dock association nor anyone else in this section has the slightest control over. Any member of the legislature may secure figures, getting at the wholesale cost, to which he may add the retail handling charge and profit, and get the net cost delivered. The investigation can hardly bring out any information that has not been given heretofore.

MISSOURI

The coal production of Missouri for 1920 will be about 5,000,000 tons, according to State Mine Inspector George Hill. Mr. Hill states that all the coal mines in the state have been working steadily through the year. The forthcoming report will show the leading coal-producing counties to be Macon, Adair, Lafayette and Barton. Macon County's production will be between 750,000 and 1,000,000 tons.

The large coal mine west of Youngstown, which is owned by the **Kansas City Midland Coal Co.**, is about worked out and will be closed down within a few weeks. The mine has been one of the best owned by the Midland Company and an immense amount of coal has been taken from it. The work was good and many of the miners have made record wages there in the past.

NEW MEXICO

The Gallup American Coal Co. of Gallup, is erecting a hotel at the new mine which the company intends to open in the near future. The building will contain fifty sleeping rooms. The company will also construct a boarding house. It is also the intention to put up about forty dwelling houses. The company is putting down a shaft at this new mine site. It will be the largest producing mine of the company's group.

The W. H. Hahn Co. has filed an amendment to its certificate of incorporation, changing its name to the **Hahn Coal Co.** and increasing its capitalization from $50,000 to $100,000. George A. Kaseman, Albuquerque, is the president of the company and R. A. Kistler, Albuquerque, the secretary.

NEW YORK

The Lehigh Valley Coal Sales Co. is building a bituminous coal plant of the silo type in Buffalo, which will store about 400 tons of coal. This will be located near the lake shipping coal dock and be of use in fueling vessels from a scow when they are taking cargo. This company last season did a large amount of fueling, though most anthracite shippers do not sell fuel.

The indictment by the Federal Grand Jury of the **Douglass Barnes Corporation,** and of Douglas Barnes and Joseph Weinhandler, president and treasurer, was described by Government officials as the first of several proceedings against coal firms on charges of having swindled foreign buyers. The indictment against the Barnes corporation was prepared on information furnished by the Tidewater Coal Exchange and several coal dealers. It was charged that the defendants, on June 12 last, sold 3,600 tons of coal to Jensen & Cox for delivery in Copenhagen at $32.75 a ton, which the Government alleged represented a profit of $6.29 a ton. It also was alleged that the defendants misrepresented the grade of coal sold, delivering a product little better than dust.

OHIO

The Burns Coal & Supply Co., organized some time ago, has taken over the business of the **Burns Coal Co.**, which operated two retail yards in Columbus. A new yard is in process of establishment and will be modern in every respect. Edward Kull is president and Edward Sharfenaker is general manager of the Burns Coal & Supply Co.

Papers have been filed with the secretary of state increasing the authorized capital of the **Powell Creek Coal Co.**, from $25,000 to $75,000.

The Maher Collieries, Cleveland, are having plans prepared for a new housing development for miners on a site just south of Powhatan. A number of homes, each 26 x 32 ft., will be constructed, to cost about $4,000 each. The Allen & Garcia Co., Chicago, are architects.

PENNSYLVANIA

Following its custom, **H. C. Frick Coke Co.'s** annual banquet to the executive and operating officials of the company was held at the Greensburg Country Club, Greensburg, recently, several distinguished visitors and "Frick men" from all parts of the region being in attendance. W. H. Clingerman, president, acted as toastmaster.

The H. C. Frick Coke Co. have started development work on a large tract of Pittsburgh seam coal in Washington County, known as the Mingo Creek field located on that stream near Monongahela. It is rumored that the **United States Steel Corporation,** of which the H. C. Frick Coke Co. is a subsidiary, is dickering with the **Pittsburgh Steel Co.** for their properties, including furnaces and mills at Monessen, Pa., and the Alicia Nos. 1 and 2 coal and coke plants on the Monongahela River above Brownsville. These operations would tie in well with the corporation's American Steel and Wire Co.'s plant adjoining the Pittsburgh Steel Co.'s plant at Monessen, and the Frick Co.'s mine above Brownsville. No authoritative information is available on the subject. The Pittsburgh Steel Co. have stopped reconstruction work on the big steel tipple and coal bin at their Alicia, No. 1 plant, damaged by fire a few weeks ago.

David E. Williams, Jr., & Co., of Philadelphia, closed a deal with the executors of the late Abraham Beam whereby they acquire the holdings of the owners. The property embraces 325 acres, lying eight miles north of Somerset, and the purchase price was announced as $150,000. The new owners plan to erect a tipple and start operations on the holdings in the near future.

The South Connellsville Coke Co. elected the following as directors at its annual stockholders meeting in Connellsville: George W. Thompson, Samuel J. Harry, F. E. Markell, J. R. Davidson and Charles Detwiler. Mr. Thompson and Mr. Harry succeed J. Fred Kurtz and W. D. McGinnis. The officers of the company are Charles Detwiler, president; F. E. Markell, vice president; J. R. Davidson, treasurer, and J. Lawrence Schick, secretary.

Work at the coal and coke plants in the **Connellsville coke region** continues to grow less. The Oliver & Snyder Iron Co.'s coal and coke operations near Uniontown have been closed down indefinitely, and the plants of the Pittsburgh steel Co. remain closed. The Eastern Steel Co. Tower Hill No. 1 coke ovens remain banked and their mine is operating about two days a week. The Republic Iron & Steel Co. and W. J. Rainey Co. are operating their coal and coke plants three or four days a week, as are the Hillman Coal & Coke Co. mines. The Vesta Coal Co., subsidiary to the Jones & Laughlin Steel Co., are mining very short time. The Pittsburgh & Erie Coal Co. at Bragnell is one of the very few coal companies, besides the H. C. Frick Coke Co. that is operating their mine full time, and they have hired a considerable number of men laid off at other plants and are operating to full capacity on a contract with the American Steel & Wire Co. for their Donova mills. The Snowdon Coke Co. is still idle and the American Coke Corporation and the Century Coke Co. are operating two to four days a week..

The Hudson Coal Co. has placed one side of its new coal breaker in operation, handling coal from the No. 2 shaft at the North Scranton properties. The structure is of steel and concrete, located on the site of the Old Marvine Washery No. 2, and will still require several weeks for completion. The work on the installation of breaker machinery will proceed as rapidly as possible. In connection with the new breaker, estimated to cost close to $500,000, a conveyor system will be run from the plant across the main line of the Delaware & Hudson.

The G. B. Markle Co., one of the largest companies working in the anthracite fields, has made application for a state charter, covering a change of name to the **Jeddo-Highland Coal Co.**

WEST VIRGINIA

The Chilton Eagle Coal Co. is planning for operations on a tract of coal property at Hughey, totaling about 1,500 acres. It is proposed to develop an initial output of about eight cars daily. E. H. Butts is president.

The General Development Co. is planning for extensive development work on about 2,000 acres of coal lands in Marshall County, recently acquired. Preliminary plans for the work are under way.

The Stone & Scott Coal Co. will increase operations at the Betty mine of the Hudson Coal Co., in Marion County, recently acquired. The property is located on the Wyatt-Bingamon branch of the Western Maryland. E. B. Stone and T. M. Scott head the company.

Several buildings connected with the plant of the **New River Collieries Co.** at Eccles were destroyed by fire early in the month, the loss amounting to $50,000. In one of the buildings, used largely as an entertainment hall, goods of the company store were kept, including a large amount of furniture. Another building destroyed was the ice manufacturing plant. The fire started in the poolroom and spread rapidly throughout the building.

W. C. Miller and W. E. Arnett, Morgantown, have sold to **The Glasscock Collieries Co.** a tract of 491 acres of coal in Cass and Grant districts, Monongalia County, for approximately $225,000. Extensive plans are under way for the development of this acreage. Along with the development of the coal a modern mining town will be built.

Development of coal land in the Philippi district of Barbour County will be undertaken by the **Cleveland-Freeport Coal Co.,** composed largely of Cleveland capitalists, with a capital stock of $100,000. General headquarters are to be at Clarksburg. Among those interested in the new concern are Clinton H. Bell, C. Schmitz, Gustav Lehnchen, Fred M. Vick and Alphonso M. Schmitz of Cleveland.

The Superior-Thacker Coal Co., one of the three companies with tipple mines in the Williamson field, which had signed a contract with the union was sold about the first of the year to **R. G. Bailey** and associates of Williamson, and converted into a non-union company. It is believed that the newly organized **R. G. Bailey Coal Co.,** of Williamson, was created for the purpose of taking over the Superior Thacker Co., the new company having a capitalization of $100,000. Offices of the company will be maintained in Williamson. Organizers of the new company are: R. G. Bailey, W. J. Bailey, H. H. Randolph, C. A. Hammond, and L. B. Saunders.

Several West Virginia companies increased their capital stock early in January. They were: **Gem Pocahontas Coal Co.,** of Welch, of which James P. Flanagan is president, from $25,000 to $100,000; the **Century Coal Co.,** of Baltimore, John K Shaw, president, from $1,150,000 to $2,000,000; **Flanagan Coal Co.,** of Pottsville, Pa.; James P. Flanagan, president, from $100,000 to $200,000.

Further impetus will be given to the development of coal lands in Boone County by the organization of the **Fred Coal Co.,** which is planning to operate in the Sherman district, those most actively interested in the new concern which has a capital stock of $125,000 being: T. Seden Jones, C. T. Egri, Ned Bryan, G. C. Garred, and James E. Hunt, all of Huntington, where the company will have its main office.

The Macfarlane Coal Co., with offices in the Goff building, Clarksburg, will buy and sell coal and is the selling agent of the Fort Pitt and other coal companies in Harrison County. G. C. Macfarlane has been made sales manager of the company.

Pennsylvania people are largely interested in the newly organized **Florence Coal Co.,** of Pittsburgh which will undertake the mining of coal in Upshur, the new concern being capitalized at $125,000. Its organizers were: Michael Sotak, John Gajasovay, Michael Bayks, of Pittsburgh, Pa.; Paul Muskal, John Kudray, of Export, Pa.

With a view to producing coal in Union district of Barbour County, the **Bush-Bar Coal Co.,** has been organized with a capital stock of $25,000.

Personals

C. P. White, of the Clarkson Coal Mining Co., Cleveland was a recent visitor in New York City, following a hearing of the Calder Committee in Washington, which he attended.

T. H. Huddy, general manager of the Williamson Coal & Coke Co. operating at Williamson, W. Va., was a visitor in the Kanawha field early in January.

New Mexico is the mecca to which **C. E. Hutchinson**, vice-president of the Hutchinson Coal Co. of Fairmont, has been drawn, being accompanied on his trip by **C. J. Ryan**, of Hepzibah, general superintendent of the same company.

A recent visitor in the Fairmont field was **G. W. Atkinson**, of Baltimore, president of the Equitable Fuel Co.

Effective Jan. 15, **Arthur Brobset**, engineer of the West Virginia Division of the Jamison Coal & Coke Co., was transferred to the Pennsylvania Division with headquarters at Greensburg.

Henry Wheyl, prominently identified with th Wheyl Coal Co. of Uniontown, spent a few days in the Fairmont region early in the year. Mr. Wheyl and his associates late in December acquired a large acreage of coal land in the Monongalia County field.

J. E. Watson, of the Bethlehem Coal Co. of Fairmont, and **Kenna Clark**, Fairmont representative of the Blair-Parke Coal Co. of Philadelphia left during the first week of January for a brief sojourn at French Lick, Ind.

Thomas W. Arnett, president of the Antler Coal Co. of Fairmont, left on Jan. 5 for a month's sojourn at Hot Springs, Ark.

George Wolffe, secretary of the Winding Gulf Operators' Association, with headquarters at Beckley, was in New York during the second week of January attending a series of association meetings there.

Following the death of Col. William Leckie, of Bluefield, W. Va., a short time ago, **A. F. Leckie**, his son, has been chosen to succeed him as the executive of all the companies in which his father held that post.

E. E. White, of Glen White, head of the E. E. White Coal Co., was a Charleston visitor during the first week of January.

A. A. Liggett, of Cincinnati, secretary and treasurer of the Raleigh Coal & Coke Co., spent a few days at the company's operations at Raleigh late in December.

J. J. Ross, of Logan, W. Va., president of the Logan Operators' Association, was in Eastern cities on business during a part of the first week of January.

C. J. Neecamp, of Logan, W. Va., assistant to the secretary of the Logan Operators' Association, was a visitor in Charleston recently.

George Bausewine, secretary of the Williamson Operators' Association, spent a day or two in Charleston, W. Va., during the early part of January, having been called to the capital city to attend a hearing in which the Williamson Association was interested.

J. D. Francis, vice-president of the Island Creek Coal Co., with headquarters at Huntington, W. Va., spent a few days in Charleston, W. Va., recently in order to attend a rate hearing.

John Deering has severed his connection with the Chesapeake & Ohio at Logan, W. Va., to become identified with the firm of Jewett, Bigelow and Brooks of Cincinnati, as field representative.

Arthur R. Wellwood, of the New York office of the Geological Survey's superpower investigation, is in Washington gathering statistics on freight rates during 1919 on interstate railroads in the superpower zone.

J. B. Eby, of the Geological Survey, has left for field duty in co-operation with **A. W. Giles** in a report on coal in Wise County, Va.

D. L. McDonald has resigned his post as manager of the Block Coal Co. of Iowa, and has been succeeded by **J. J. Meyers** of Davenport. Mr McDonald goes to St. Paul, Minn., as manager and a director of the St. Paul Coal Co., a subsidiary interest of the Block company.

Felix Notebaert has tendered his resignation as general manager to the board of directors of the Acadia Coal Co., Ltd., Montreal.

James A. Reilly, vice-president of the Queen City Coal Co., Cincinnati, and for several years prominent in the activities of the Cincinnati Chamber of Commerce was elected president of that organization.

Whitney & Kemmerer announce the appointment of **Harry C. Haggerty** as general sales agent to succeed **John W. Whiteley**, who has joined forces with George C. Foedisch in the firm of Whiteley & Foedisch, and of **George W. Scura** as assistant general sales agent. Mr. Haggerty has represented Whitney & Kemmerer for some time as its line agent in the New England States. During the war he was connected with the Fuel Administration. Mr. Scura has been connected with Whitney & Kemmerer since 1896. **S. C. Noblette** has been appointed manager of the bituminous sales department.

Dr. H. A. Garfield recently addressed the St. Louis Chamber of Commerce on matters pertaining indirectly to the coal trade, past and present. About sixty St. Louis coal men were present among the several hundred members of the Chamber.

Press reports contain the announcement of the election of **F. M. Chase** as president of the Lehigh Valley Coal Co., with **Judge F. M. Wheaton**, vice president. The new board is: **Messrs. F. M. Chase, F. W. Wheaton, W. H. Conyngham, T. S. Barber**, and **Samuel McCracken**, all of Wilkes-Barre; and **E. D. McKenna**, New York. The new arrangement follows the dissolution decree affirmed by the U. S. Supreme Court.

Whitely & Foedisch announce the association with them of **Carroll B. Nichols**, formerly general sales agent of the Westmoreland Coal Co. of Philadelphia.

K. L. Weimer, who has been superintendent of the Katherine colliery of the Treverton Coal Co., near Shamokin, has been appointed purchasing agent for the Leggitt's Creek Coal Co., owned by the same interests. He will maintain headquarters in Shamokin.

Thos. K. Maher, president of the Maher Collieries Co., Cleveland, was recently elected a director of the Central National Bank Savings & Trust Co., that city. The bank was formed Jan. 1, by the merger of the Central National Bank and The Superior Savings & Trust Co. and is one of the largest financial institutions in the state.

Effective as of Jan. 1, **C. S. Kenney**, assistant general sales manager for Weston Dodson & Co., Inc., was made general sales manager, as **W. R. Coyle**, vice president and general sales manager is now devoting himself entirely to the position of vice president in charge of sales. Mr. Kenney will supervise the opening of additional branch offices in Boston, Cleveland, Cincinnati, Chicago and Atlanta. **H. E. Faville**, formerly assistant manager of the New York office, has been made manager in succession to **L. B. Burger**, and **F. P. Wadleigh**, formerly export manager, is now giving all his attention to the engineering phases of selling. Export business of the firm is now being looked after by the various branch offices.

E. B. Sutton has assumed the duties of chief mining engineer of the Sloss-Sheffield Steel & Iron Co., Birmingham, having formerly been in the employ of the West Virginia Coal & Coke Co., Elkins.

Alfred D. Thompson, formerly associated with the Imperial Coal Corporation, has been appointed general manager of the Majestic Coal Co., Inc., 120 Broadway, New York City.

Traffic News

The commission has assigned for hearing at Washington Feb. 4 the **demurrage charges at Sewalls Point, Va.**, on coal and coke loaded in **cars of** 200,000 pounds capacity or over.

The Ohio Public Utilities Commission has permanently rejected railroad coal rate schedules filed by all coal-carrying roads in Ohio. The schedules previously had been temporarily suspended for investigation. By this action it was estimated that Ohio shippers and consumers of coal would save $1,000,000 a year in freight rates, which the carriers sought to add to the present increased rate. The railroads claimed that under a recent order of the Interstate Commerce Commission, which granted a 40 per cent increase in rates, they were authorized to restore the 40 cents and 60 cents per ton differential between rates on bituminous coal shipped from Ohio points, and the rates on coal shipped from points in West Virginia, Kentucky, Pennsylvania and Tennessee, and that to accomplish that purpose they were authorized to add approximately 16 cents per ton to the Ohio rate, which shippers claimed was already burdensome, and deduct 8 cents per ton from the more distant points known as the "outer crescent."

Obituary

The body of **George Beddow**, of Omar, W. Va., chief mining engineer of the Main Island Creek Coal Co. was found on January 17 between Red Jacket and Williamson, W. Va., on Evans Farrel branch of Pigeon Creek, it being the opinion of county officials that he died from exposure. He left Omar Jan. 10 on horseback, for Red Jacket and is believed to have lost his way.

Word is received of the death at Philadelphia of **Newman J. Woods**, of Huntington, W. Va. Mr. Woods succumbed to an attack of spinal menengitis. He was president of the Central West Virginia Fuel Co., having aided in the organization of that company more than a year ago, prior to which time he was with the Dickinson Fuel Co., of Charleston.

James P. Mingus, general sales agent for the Westmoreland Coal Co., at Philadelphia, died recently of a complication of diseases. He was well known in Irwin and other Westmoreland towns where he visited on business.

E. C. Pickett, of Wheeling, superintendent of the Hickman coal mines at McMechen and Glendale, was instantly killed while inspecting one of the company's mines.

Captain William T. Colton, identified with the development of the railroad industry in the West from the time of his discharge from the union army at the close of the civil war and until last June a resident of Salt Lake City since 1863, died recently at Bryn Mawr, Pa. Up to the time of his retirement he was treasurer of the Pleasant Valley Coal Co., predecessor of the Utah Fuel Co., having been one of the incorporators.

John L. Crawford, fifty years old, one of the officials of the Crawford Coal Co., died at his home in Terre Haute, Ind., recently. He had been in ill health for some time but had continued his business activities despite the advice of his physicians. Mr Crawford was president of one of the leading banks of Terre Haute.

Coming Meetings

Northwestern Pennsylvania Coal Operators Association will hold its annual meeting Tuesday, March 1, at Pittsburgh, Pa. Secretary, T. F. Diefenderfer, Butler, Pa.

The Rocky Mountain Coal Mining Institute will hold its annual winter meeting Feb. 25 and 26 at the Albany Hotel, Denver, Col. Secretary, F. W. Whiteside 307 Ernest & Crammer Building, Denver.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

American Institute of Electrical Engineers midwinter convention will be held on Feb. 16, 17 and 18 at the United Engineering Societies Building, 33 West 39th St., New York City. Secretary, F. L. Hutchinson, 33 West 39th St., New York City.

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York Feb. 14 to 17, 1921. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

Northern West Virginia Coal Operators Association will hold its annual meeting Feb. 8, 1921. Secretary, H. S. Rogers, Fairmont, W. Va., where meeting will be held.

Pittsburgh Vein Operators' Association of Ohio will hold its annual meeting Feb. 14, 1921, at Cleveland, Ohio. Secretary, D. F. Hurd, 415 Marion Building, Cleveland.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Ottawa, Ontario, Canada. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Canada.

American Engineering Council of the Federated American Engineering Societies Executive Board, will meet on Feb. 14 at Syracuse, N. Y. On Feb. 15 the National Council of the **American Society of Mechanical Engineers** will convene at the same place, with the society's new president, Edwin S. Carman presiding. Herbert Hoover is to address the meetings.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

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Control Here and Decontrol Abroad

GRADUAL letting down of the bars of governmental control since the armistice has been the program of the British government in its treatment of the coal industry in Great Britain. From early in 1917 to late in 1919 the industry was to all intents and purposes taken over by the government. Profits were pooled, wages rigidly regulated, and prices and distribution controlled to an extent not reached at any time in this country. In December, 1919, they began to release some of the restrictions, and through the more than twelve months since then decontrol has been the aim of the government. The process, on the whole, has been orderly and systematic. The result is that by the end of this month it is expected that the last vestige of control of prices and distribution will have been removed. There remains, however, a new Ministry of Mines, whose powers and responsibilities are yet to be given a trial. The point to be observed is that the tendency has been and is to let down rather than build up control.

French control of coal has been directed not so much toward the local producing industry as to the prices of imported coal. It is now announced that with the recent reduction in the prices allowed for imported coal the French government has taken the last step prior to complete decontrol. In Germany prices are yet under regulation, and so long as shipments to other countries are required by treaties it is to be supposed that the government will of necessity keep a strong hand on the coal industry. Italy also is lifting coal restrictions.

Within three months after the armistice practically all restrictions regarding coal were removed in this country, and except for those reinstated during and for the three months following the strike in 1919 the government has not attempted to control the industry. Turned loose to make its way in true American fashion our coal industry experienced first a year largely unsatisfactory and a year of great prosperity, and now because during the year there was a period of a few months in which prices were out of reason and many, but not all, took advantage of the situation, we are on the verge of new and unprecedented coal regulation and control.

Senator Calder has stated that he has received ten thousand letters on the coal question and leaves us to infer that they are all commending his bill. If those he read into the record of the Committee on Manufactures are true samples, what he has received are protests against high prices and poor quality of coal. The writers have no conception of his method to remedy their troubles. He has stated that he now considers that his bill needs considerable revision, and as the most recent hearings have gone forward it is becoming evident that what is wanted is not regulated price but coal.

We do not believe that, on the record before the committee, the Congress of the United States will commit the coal industry to such an undigested form of regulation. It is no more necessary to "hamstring" industry here than abroad.

Europe's Fuel Problem

REPORTS from Europe of coal production, stocks and requirements, of Germany's shortage and the needs of France, as recounted in the statements of our correspondents published in this issue, have taken on the semblance of some of the controversies in recent years as to the needs of New England and the Northwest. Each year we have heard of the coal troubles of these sections, and in the discussions figures have been bandied about in the fashion now in vogue in Europe.

Great Britain, with a production in 1920 of 228,887,000 gross tons, exported 24,932,000 tons and supplied an additional 13,840,000 tons as bunkers at home ports. These are all low figures compared with pre-war records. In 1914 exports from Great Britain were around 59,000,000 tons and in 1913 exceeded 75,000,000 tons. The difference of between thirty-five and fifty million tons gives a measure of the deficit in world supply created by the British decline in output and exports last year.

Belgian production in 1920 was more nearly normal than any other European country, and even here there was a slight decline. Less was exported and much less imported, and consumption is estimated at 78 per cent of the 1913 rate.

Production of coal and lignite in France in the first ten months of 1920 is reported as 20,000,000 metric tons, or at the rate of 24,000,000 tons per year, compared with 40,000,000 tons before the war. Imports less exports in the first ten months were about 18,400,000 tons —an annual rate for last year of 22,000,000 or about 2,000,000 tons in excess of pre-war rates. On the face of these figures France, despite the large imports from America, in 1920, was 8,000,000 tons short of the quantity available for use and consumption in 1913.

Germany is objecting strenuously to the "burden" impressed by the terms of the Spa agreement, but appears to be practically fulfilling her requirements. Production of bituminous coal in Germany has not yet been raised to pre-war levels, the total for 1920 being estimated at 133,000,000 tons, compared with 190,000,000 tons in 1913, from which must, of course, be subtracted the output of the Saar and other fields no longer a part of Germany. The net result of a largely-increased output of lignite and a steadily increasing production of bituminous coal appears to be that Germany is able to meet her obligatory export program and take care of home needs as they develop.

The spurt of last summer filled the coal bins of Europe, but a deficit in output that may be as much as 100,000,000 tons a year was not permanently overcome last year and will leave a call for American coal for several years to come.

Fire or Explosion—Which?

GOB fires are dangerous and expensive, but mine explosions are worse. Offhand one would be inclined to believe that it would be better to protect the mine and mine workers from an explosion than against a gob fire. Even if there is a tendency to gob fires when the air is humidified or the coal moistened—a fact that, as far as we know, has not been adequately proved—it would seem best to run the risk of a gob fire for the sake of making the mine proof or more nearly proof against explosions.

It appears that at Minnie mine, the explosion of which is discussed by James Ashworth in another part of this issue, several vital precautions which would have made the mine safe against explosion were neglected for economy or for fear they might cause mine fires. Not only was the mine kept dry but methane was allowed to accumulate on the plea that pure methane is extinctive, whereas oxygen is a combustible.

So also is pure gasoline an extinctive. If a burning body could be plunged beneath that explosive liquid without on the way coming in contact with the mixture of gasoline vapors and air it would neither explode nor burn. But though this is certainly true, the man who attempts to prove it is liable to find it the last experiment he tries and that the laboratory in which it is performed will not be available for further experiments of that or any other character.

Similarly, the man who relies on the extinctive qualities of methane takes a terrible risk. He is storing up an explosive in the mine and when the roof falls the methane will be driven out into the airways to be ignited if any lamp, defective or not in a blast of explosive gas, happens to be found, or if any sufficiently intensive electric spark is generated, perhaps also if any pick strikes a sulphur ball or any rockfall not in an extinctive atmosphere strikes a spark.

It is the general experience that most coals that ignite spontaneously in the mine, like the lignites of Colorado, have moisture in themselves sufficient to cause the ignition without there being much danger in the presence of atmospheric moisture. In fact if never dehydrated they are by that fact safer because they cannot be rehydrated and so heated.

However, a study of this subject should be made, for the facts are needed. If it should be found that coals in the mine heat more readily when moisture is introduced more weight might possibly be given to stone dusting. If the use of a moist atmosphere would reduce disintegration of the coal and dehydration and so prevent the dangers arising from the fine coal and from rehydration, it would seem best to keep the mine as wet as possible.

The argument based on the British Government's prescribing of 30 per cent humidification of coal dust is not to be regarded seriously. Governments have a way of prescribing somewhat more than they believe necessary because in that direction safety lies. Our prohibition amendment forbids the use of all liquor, not because a little liquor does much harm but because it is hard to enforce moderation, and entire abstinence is believed relatively easy to obtain.

To say that because the United States Government requires abstinence from alcohol proves that it believes a modicum of liquor harmful is no more ridiculous than to assert that the British Government believes the use of a certain percentage of water is of no material value when it asks for a 30-per cent saturation. Such a saturation of the coal on the floor of the mine is quite possible of attainment, but it can be accomplished only by continuous humidification of the air or by watering in excess of the quantity specified.

In general there are few in the United States that question the value of humidification as attained by adding steam to the air or water to the roof, sides and floor. The doubters of this country are sometimes in fear of roof falls—and get them where heat strikes the rock faces—but they have not so far feared spontaneous combustion. Nor is there any disposition to advocate the use of the extinctive qualities of methane.

There is a belief in some quarters, possibly justified in the sections where it exists, that as some coal develops little methane, makes a quantity of carbon dioxide and absorbs much oxygen, it makes an extinctive atmosphere that will be inexplosive no matter how much it is diluted with air. Wherever methane is generated in quantity a firm belief exists that the only safe expedient is ample ventilation of wastes and the bleeding of the methane by boreholes drilled to the mine falls from the surface. In any event it is customary to ventilate the area ultimately to be sealed until the time when it is shut off by substantial stoppings, which only an explosion will disturb.

Cannot Replace Law of Supply and Demand

ALAN C. DODSON, president of Weston Dodson & Co., Inc., has sent the following New Year's greeting to customers of the company. We are glad to pass it on to our readers:

"The coal industry, as usual, is being prescribed for by theorists, politicians and self-seekers. We know of no effective law to replace the law of supply and demand, which has been in effect since commerce began. Every business has periods of depression and losses, and in order to survive it must have periods of gain. Only a small proportion of coal mined in the year just past has been sold at an excessive profit.

"Force the coal industry to take the losses—to forego the gains—and we bring into bankruptcy the greatest industry of the United States. The administration of government control, now threatening, would be far more difficult and the result far more disastrous to the country and to the public, not to speak of the industry itself. than was the government administration of the railroads.

"We urge upon you to give this question honest analysis, considering that even though coal is a necessity of life, there are so many other things which also are necessities in modern civilization, that there will be no differentiation possible. We believe that 90 per cent of our customers produce or handle a necessity of life.

"Our government was founded 'to secure the blessings of liberty to ourselves and our posterity.' Patriotic service will secure this blessing and make effective the program of 'less government in business and more business in government,' which has been proposed by the President elect."

AN ECHO OF THE HIGH PRICES paid for coal by the War Department last year is reflected in the army appropriation bill just reported to the House by the Appropriations Committee. The bill specifically limits the appropriation for the fuel requirements of the army during the fiscal year ended June 30, 1922, to $6,500,000.

One Man Stores or Reclaims 1,500 Tons of Coal a Day at a West Virginia Mine

Costs of Storage and Reclaiming Are About 2.3c. Per Ton Including a Power Consumption Charge of 0.5c. Per Ton—When Output Exceeds Order, or Car Supply, Enough Slack Is Taken Out to Meet Demands

By F. C. Thornley*
New York City

UNTIL the last two or three years mine storage had seldom been seriously considered by the coal industry. The coal producer felt that it was a matter of interest solely to the distributor of coal, and aside from providing some small storage to take care of his boiler or coke-oven requirements over a temporary shut-down he has given the subject no further consideration.

As a consequence operating officials have had scant knowledge of storage-plant installation and management, and this has resulted in a number of instances in a serious bungling of the problem, causing adverse criticism and even a denial of the advantages of storing coal at the mines.

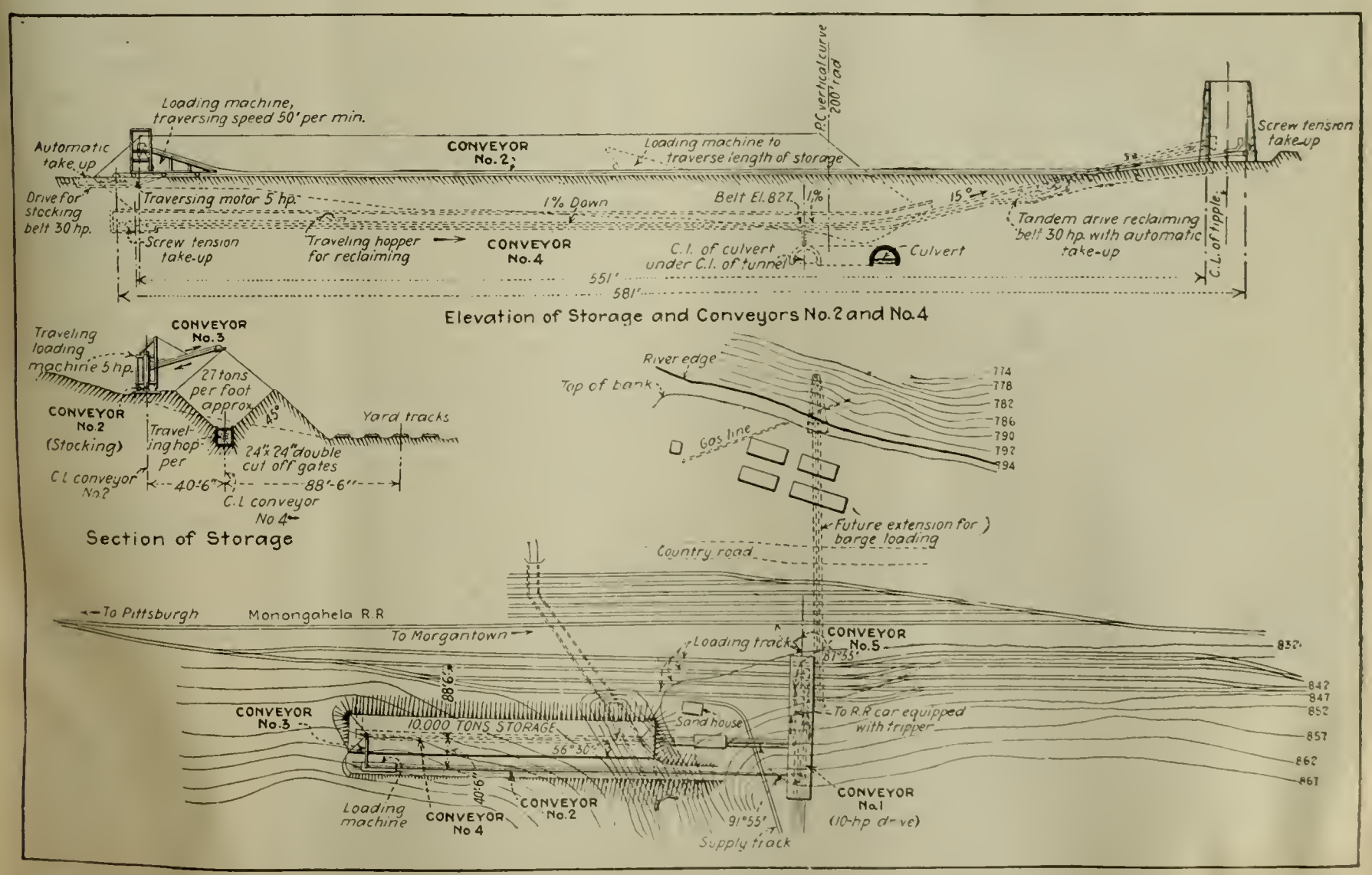
The design and construction of adequate and economical coal-storage plants is as much a specialized line of engineering as is the mining and preparation of the coal itself. A technical knowledge of all the installation and operating costs of the various methods of handling coal, together with a thorough understanding of mine-operating conditions, is needed if we are to decide with certainty what are the advantages and disadvantages of any of the many systems for any one of all the varying conditions of mining operation. In a number of instances with unfortunate results coal operators have failed to recognize this fact.

*President, F. C. Thornley & Co., 31 West 43rd Street, New York City.

Adequate Storage Space Hard to Find

In the summer and fall of 1920 I built a storage plant for the Consumers Fuel Co., Morgantown, W. Va. It was installed under unusually adverse conditions, the space available being much constricted by the railroad-tipple tracks and adverse side-hill contours. There were also other local conditions which introduced unusual difficulties in the construction of the plant. The accompanying drawing shows the general layout and its position in regard to the mine tipple.

This structure is of the type usually erected at drift



GENERAL PLAN OF SLACK STORAGE AT THE EUREKA MINE OF THE CONSUMERS FUEL CO., RANDALL, W. VA.

A conveyor takes the coal from beneath the screens, and conveys it to a belt which travels the full length of the storage, from which it is dumped by a traveling machine. On this is a boom which delivers the coal to storage. Coal is reclaimed by opening a gate in a tunnel under the coal pile. It falls into a traveling hopper, and is distributed onto a belt running the full length of the storage pile. The coal is delivered by this conveyor to the tipple, where another belt with a traveling tripper dumps it.

mines, having a capacity of about 2,500 tons per day and loading out coal on four different railroad tracks. It was, of course, in operation for a number of years before the installation of a storage plant was even contemplated. From this it may be judged that the system of storage adopted at this mine is sufficiently flexible to meet any tipple conditions likely to be presented.

In the accompanying illustration the dotted lines across the railroad tracks constituting the main line represent an economical river-loading installation of large capacity that the Consumers Fuel Co. proposes to build as soon as navigation facilities in this pool have been improved sufficiently to warrant the development.

The coal-storage plant lies immediately to the left of the tipple between a steep hillside and the tipple yard. The storage itself is about 400 ft. long by 50 ft. wide with a maximum storage depth of about 40 ft. The bottom has slopes of 45 deg., which is simple cut-and-fill work.

Concrete Tunnel Through Coal Pile

The general form of the storage is clearly shown in the accompanying cross-section, from which it will be noted that there is a concrete tunnel carrying the reclaiming belt, which runs the entire length of the storage and has overhead gates at 10-ft. intervals. These gates are 24 x 24-in. double cut-off type, and the coal passing through them feeds to a traveling hopper which is placed immediately beneath the gate through which the coal is to be discharged. This hopper serves the purpose of providing a uniform feed onto the reclaiming belt.

Referring again to this section, the loading machine for putting the coal into storage, which will be noted on the upper left-hand corner, travels longitudinally the entire length of the storage, so that coal can be put in at any point desired.

As will be noted, the main stocking belt is weaved through the machine in such a manner as to bring the coal to the required elevation, whence it is dumped onto a shorter transverse conveyor which acts as a boom and deposits the coal on the storage pile. Where it is desirable to do so, this boom can be hinged to the loading machine so that it can be raised or lowered as the height of the pile increases or decreases, thus eliminating unnecessary breakage of the coal. As this plant was designed primarily to handle slack coal the question of breakage did not enter into consideration, so that the boom was made fixed in the position shown.

Five Belt Conveyors Do All the Work

The general operation of the entire plant may be noted by following the conveyors around in their numerical order, the direction of operation of the different conveyors being indicated by arrows.

Conveyor No. 1 takes the coal from the tipple proper. It runs back longitudinally with the tipple from a hopper, located directly under the tipple screens, to a connection with the main storage conveyor No. 2. Conveyor No. 1 is 92 ft. long, operates on an inclination of 10 deg. 36 min. against the load, and is actuated by a 10-hp. motor. It is of comparatively simple construction and involves no special features of any kind.

Conveyor No. 2, which is the main stocking conveyor, is 581 ft. long between end pulleys and is horizontal throughout its entire length, with the exception of a very slight inclination in favor of the loads at the beginning. It is equipped at the tipple end with a standard screw-tension take-up and at the far end with an automatic take-up, where the 30-hp. driving motor also is located. This conveyor weaves through the loading machine, as is clearly shown in solid lines to the left of the illustration and in broken lines near the center of the same figure.

Conveyor No. 3 is on a boom of the loading machine and it is the shortest one in the installation, being only 35 ft. long and operated by a 5-hp. motor. Conveyor No. 4 is the main reclaiming belt and is the second longest one in the system, being 561 ft. long between extreme pulleys. It conforms to the level of the concrete tunnel underneath the storage, which was laid on a 1-per cent grade in order to insure proper drainage. From the end of the storage pile back up to the tipple it operates on a 15-deg. slope against the load. In order that the driving arrangement for this belt may be accessible, it is located about half-way up this slope at the point where the tunnel comes to the surface. It has a 30-hp. tandem drive with an automatic take-up; the extreme outside end of this conveyor has a screw-tension take-up as well.

Conveyor No. 5 takes the coal from conveyor No. 4 underneath the tipple out over the railroad tracks. It is 109 ft. long and is equipped with a traveling-tripper arrangement, so that the coal may be loaded onto any one of the four railroad tracks desired. It is driven by a 10-hp. motor.

One Man Operates the Entire Plant

The entire plant is readily operated by one man, exclusive, of course, of the regular tipple force necessary to shift the railroad cars under the tipple. Automatic control is provided for both the reclaiming and stocking systems, so that the belts start up and stop in the proper order to eliminate any congestion of coal at junction points. Thus, in the stocking system conveyor No. 3 starts first, and after it has attained its full speed, conveyor No. 2 then starts, and finally conveyor No. 1. The starting and stopping of both systems is controlled by simply pressing one button.

All the belts are 24-in. 7-ply rubber, and are designed for a speed of 350 ft. per min. At that speed the capacity for both stocking and reclaiming is 175 tons per hour, which has already been exceeded since the plant has been in operation, all motors being designed for a possible overload.

Throughout the system standard 5-pulley grease-lubricated idlers mounted on wood bases are employed. Under the loaded belts they are spaced at 3 ft. 6 in. centers and under the return belts at 10 ft. centers. The concrete tunnel under the storage is 7 x 7 ft. in the clear and 409 ft. long. It is built of reinforced concrete, with roof and side walls 10½ in. and the floor 14 in. thick.

Third of Tonnage Through Four-Inch Screen

In the first eleven weeks this plant was in operation there had been approximately 18,000 tons of coal stocked and reclaimed. While the plant was designed primarily for slack storage, it is interesting to note that about one-third of this tonnage was passed through a 4-in. screen. Computed on a conservative basis, allowing for all operating charges, this coal was stocked and reclaimed for about 2.3c. per ton. It will be difficult for those familiar with the usual costs of stocking and

reclaiming coal at other plants, even some of the most modern installations, involving heavy expenditures for coal bridges, etc., to accept this figure, but a little consideration of the little labor used, the limited amount of power required to operate the plant, together with its relatively large capacity, will show how this is possible with an installation of this kind. It should be noted especially that these are not theoretical estimates, but are on the basis of actual operation.

The power consumption for putting coal into storage amounts to 0.3c. per ton, and for reclaiming to 0.2c. per ton, figuring on a peak load which is somewhat more than is required in normal operation. Stocking and reclaiming are done by one man, preferably a fair mechanic, such as is usually to be found around machine shops at the mines. Computing this man's wages on the basis of 0.9c. per ton, the total cost of operating the plant amounts to 1.2c. per ton going into storage and 1.1c. for reclaiming, making the total cost for stocking and reclaiming 2.3c. per ton.

In practical operation interesting methods of handling the plant have been devised. For instance, the management of the mine has developed the plan of spacing the screen bars so that just sufficient coal to load out the railroad cars available for each day's run passes over the screen, the remainder passing through and going into storage. For instance, when only a 25-per cent car supply is available, the screens are set so that about three-fourths of the coal will pass through and be stored. This system assures a full day's run for the mine, eliminating the hour or two time for all the daymen which so frequently occurs around all mines.

On last Thanksgiving Day the storage provided enabled the company to load a large extra tonnage. During the several preceding days about 2,000 tons had accumulated on the storage pile. The mine was, of course, closed on Thanksgiving Day, and with two or three men to shift railroad cars and operate the storage there were thirty-seven full railroad cars loaded out in 6½ hours.

How a Small Mine Met Its Surface Problems

Coal at a Mine Covering Sixty Acres Had to Be Lowered Down a Mountain Side with Minimum Degradation— A Cable-and-Button Conveyor Solved the Difficulty

By Donald J. Baker

Wilkinsburg, Pa.

EXTENDING west from Pittsburgh toward the Panhandle section of West Virginia lies the steam-coal district, which takes its name from that region. In this field the Pittsburgh coal bed is found on only the highest ridges of an area exceedingly hilly. Mines operating in this district frequently find it difficult to plan an inexpensive way of lowering the coal from the hilltops to the valleys below.

At Thornburg, near Crafton, Pa., is a small mine owned by the Hammill Coal Co. This concern owns about sixty acres of coal lying at a high altitude on one of the adjacent hilltops. The working thickness of the Pittsburgh bed at this point averages a little over 5 ft., and the coal area usually is more or less closely confined by definite outcrop limits.

The inside of the mine is quite simple. A main haulage road with a single airway parallel to it passes through the hill from the outcrop opposite the railroad to that on the other side of the hill. Mules provide for the hauling of the coal and cars of 2-ton capacity are used.

Hammill Coal Co's. Plant

Only a 60-acre operation but it has a capacity of 650 tons a day. It is built cheaply and economically to last as long as the need exists for it and no longer.

For a company desiring to open a mine and develop such a small acreage as is owned by this firm, the problem of lowering the coal to the valley is one of no small magnitude. The product when ready for shipment must compete in the market with other carefully-prepared coals, and this it could not do if any appreciable breakage resulted from its transit down the hillside.

The bed is 195 ft. vertically above the railroad tracks, which are part of the main line of the Pittsburgh, Chartiers & Youghiogheny R.R. out of Crafton. From the drift the loaded cars are brought in trips to a headhouse, where an automatic Phillips kickback dump is installed. From the dump the coal passes directly into a hopper that feeds by gravity into a Fairmont button conveyor.

This conveyor, which is operated by a 20-hp. alternating-current motor located in the headhouse, is employed for lowering the coal from the hopper to the tipple through a slope distance of 585 ft. It consists primarily of a 1¼-in. steel cable to which is attached 12-in. split disks each weighing 48 lb. They are spaced at intervals of 4 ft. and held by bolts which clamp the half-sections together. This conveyor element moves in a wooden trough, the sides of which are lined with sheet iron. The bottom of the trough is composed of ¼-in. steel plates so curved as to coincide with the circumference of the buttons.

A trestle supports the trough for about half of the distance traversed. A simply-constructed roof affords protection to the return cable, which travels above the loaded strand. The conveyor itself is built on two slopes The first, or upper, reach is 200 ft. long and on a 27-deg. pitch. The remaining distance is on a slope of 17 deg. The broken grade was made necessary by reason of a roadway that passed along the side of the hill. It was thought preferable to take the coal beneath the road than to bridge over it; accordingly the conveyor passes that obstruction in an artificial tunnel.

The conveyor has, of course, to pass over two sprockets; the head sprocket, as stated, is driven by a 20-hp. motor, while the tail sprocket is merely an idler mounted in take-ups so as to assure continuous and easy operation. The head sprocket is gear-driven, making it possible to adjust the speed of the cable. Usually it is so regulated that about 200 tons can be delivered to the tipple hourly.

Though this type of conveyor is extremely simple and efficient, a certain amount of care must be given to it if steady operation is to be assured. Because of the steepness of the pitch over which it operates and the tension on the cable when it is loaded with coal, it is necessary that the disks be inspected for spacing and, if necessary, adjusted about once monthly. If they are not in true adjustment they will not, of course, take the sprockets easily. Furthermore, if only one is out of its true position, it will tend to displace the others. This periodic adjustment of the buttons is a small operating detail, however, and can be performed without interfering with production. The conveyor has given excellent satisfaction and is one admirably adapted to a small operation by reason of its relatively low first cost.

At the foot of the conveyor the coal is delivered to a hopper that feeds by gravity onto grizzlies. The product is picked before it passes into the hopper and may be loaded through steel chutes either as run of mine or as slack and lump. One man stationed at the headhouse and one on the tipple are the only ones employed around these two structures.

Only Power Used Is for Retarding Conveyor

The tipple is entirely constructed of wood. As the small acreage available makes it certain that the mine will have a short life no pretense has been made of constructing buildings of a permanent character. Any type of construction and installation that would effectively prepare the coal was adjudged sufficient under these circumstances. Power for the operation of the motor on the headhouse is purchased from the Duquesne Light Co., of Pittsburgh, the high-tension line of the company from the central power plant at Brunot's Island being readily available. About 75 men are employed at this operation, which has a daily output of 650 tons.

Operators are somewhat generally disposed to break away from the only system of operating high-lying coal

Trestle to Tipple

Built to accommodate the retarding conveyor line. Return cable passes above the loaded cable and is protected by a light shed. Note the derrick construction, which with lighter weight gives a rigidity equal to that of the trestle supported by bents.

Tipple

This building has no sides, merely a shed roof. It has no racking strains such as would be brought on it by a heavy descending trip. It can be put in line with the transporting unit, for there is no danger of runaways.

which earlier mine owners possessed—the gravity plane. With such an incline, if the grades were steep, it was extremely hard to maintain the tracks. The ties would not keep their spacing, level or alignment. As a result the tracks were always out of true, and derailments were frequent.

The boss, the tipple men and the men in the headhouse constituted a wrecking gang, and their time was taken up retracking cars and repairing the roadway. Not only did the plane usually involve the employment to two men at the head and two at the foot but it usually kept one or two men busy repairing cars, and the lumber bill for repairs was a big item in the running expenses.

The cars, being subjected to unusual strains, rapidly deteriorated, causing further wrecks, and every little while the couplings broke, with danger to the tipple men and complete demolition to the cars. For safety the tipple had to be built off the line of the plane, and this fact introduced curves at the foot of the hill, with further derailments, such as curves are always likely to cause.

The water which ran down the face of the hill washed out the plane and made it almost hopeless to keep up a road that could be reconstructed only at considerable expense and was apt to be destroyed before a month had passed. Moreover the tonnage that could be lowered over a steep plane with the few cars that it was safe to put upon it and with the slow speed that experience showed to be advisable was always limited. The delays in operation often caused the miners to go home early, wasted the time of the transportation force, so that the gravity plane, while simple and money-saving in appearance, was a steady source of loss to the company.

The men would not build up their cars, or if they did, the cream of the coal—the building lumps—fell off on the plane and ran down into the brush on either side of the road. The men, being paid for delivered coal, clamored for a weigh scale at the top of the plane. Even if they did not get it there were times without number when the loss of coal was so great that men had to be paid for more coal than reached the tipple.

These difficulties have established the retarding conveyor on a firm basis, though a 60-acre mine usually has been thought somewhat too small to justify such a preliminary expense. However, it must be remembered that, with the retarding conveyor, rails, ties, barneys and gravity hoist are saved, and that the saving in coal, cars and labor, the ability to fully load cars, the increased tonnage, the greater contentment and safety of the working forces and the fuller assurance of steady operation combine to make the retarding conveyor preferable to the gravity plane. Moreover, it delivers the coal in better condition at the tipple.

Desire to Drive Machine to the Limit as a Cause of Mechanical Efficiency*

By D. Vance Sickman
Denver, Colo.

FUNDAMENTALLY, our great industrial development arises from the use of mechanical appliances. In their introduction we have but followed the natural creative instinct of mankind. Psychologists might term a form of this instinct the "instinct of the machine."

The perfecting of the automobile and the aëroplane and their effect on human actions well illustrate the influence of this law. When a man buys an automobile or flying machine, a short period is devoted to mastering control of its forces, but the moment he has mastered them and gained confidence in his ability to control them, his natural instinct is to drive those forces to their limit. The result is that we have the speed demon of the boulevard and the daredevil of the air.

Then a second phenomenon occurs: The moment the operator learns to manipulate, control and direct the forces exerted by a machine, he subconsciously becomes dominated by these forces. The machine, for the moment at least, becomes master of the man. Observe any highly-developed labor-saving machine in the hands of a skillful operator. As long as the machine does not require an undue amount of physical effort for its manipulation, the operator will drive it to the limit of its capacity. He is captivated by the forces he controls and becomes temporarily and unconsciously the employee of the machine.

*Preface of an article entitled "A Powderless Mechanical Process for Mining Coal," read before the American Mining Congress, Nov. 17 at its Denver meeting.

Economies Effected in the Handling of Bank Coal and Breaker Refuse

Bank Coal and Breaker Refuse Formerly Were Handled by Separate Equipment, Causing the Cars to Travel Long Distances Empty—Standard-Gage Dump Cars of 50-Ton Capacity Were Installed to Obviate This Loss

BY DEVER C. ASHMEAD
Wilkes-Barre, Pa.

AT THE Cranberry Creek Coal Co.'s plant near Hazleton, Pa., coal from an old culm bank is hauled to the breaker by cars of standard railroad gage. The refuse made in that breaker, whether produced in the preparation of freshly-mined or culm-bank coal, was originally removed from the breaker by narrow-gage equipment. As may readily be imagined, this was an extremely uneconomical arrangement. It does not pay, of course, to haul large quantities of material in small cars where there is opportunity for the use of bigger equipment. But there was another and more important loss. The narrow-gage cars left the breaker loaded and returned to it empty and those of railroad gage left the breaker empty and returned to it loaded, the cycle of operation of the latter being exactly the reverse of that of the small cars

FIG. 1.

Dumping Culm

Train unloading culm from side-dump car at foot of conveyor which leads to the breaker. The car is of standard railroad gage. It is used for the conveyance of both bank coal and breaker refuse.

FIG. 2.

Culm Bank

At the foot of the bank to the right of the illustration may be seen one of the two steam shovels loading culm into the side-dump cars, of which there are two to each trip.

SIDE-DUMP CARS OF FIFTY TONS CAPACITY

After much study a system of transportation was devised that did away with this duplication of haulage and allowed the cars to leave the breaker loaded and to return to it in a similar condition. The company installed standard side-dump cars manufactured by the Clark Car Co., of the Oliver Building, Pittsburgh, Pa., each having a capacity of 100,000 lb. These are now operated in three trains of two cars each. Here the rock is discharged, after which the train returns to the switch previously mentioned and takes one of the tracks to the steam shovels shown at the right-hand edge of Fig. 2.

The cars are then loaded with bank material and proceed to the foot of the main conveyor, where they are discharged. This conveyor takes the culm to the breaker. The cars then go back under the rock pocket for another load of rock. The type of car employed is shown in Fig. 1, accompanying this article. Here a car is seen in the act of dumping. The lower end of the main conveyor is shown to the left of this picture.

For the loading of bank coal there are three shovels, only two of which are used. These work on two separate levels. On the upper level the material is coarser than on the lower, and by loading from both, the breaker is not encumbered with more of any one size than it is fitted to handle.

Thus, instead of making one-half of the trip empty the cars both reach and leave the breaker loaded. This

permits the same work to be done with about one-half the amount of equipment that formerly was needed. A number of men are thus released to be employed in other positions around the mine. Another advantage that this change afforded is that it allowed the narrow-gage track that formerly entered the breaker to be removed and the rock pockets to be deepened, thus practically doubling the capacity of these pockets.

While it may be quite true that an arrangement similar to this might not be feasible at another mine yet the idea here set forth may suggest some method that could be used with appreciable saving. A large number of mines have to handle both the bank coal and breaker refuse by means of locomotives and cars, and any saving that may be made in empty-car miles is well worth considering. Furthermore, there is no saving in the use of small cars for the handling of breaker waste, or bulky material, on the outside of the mine.

At Minnie Mine Methane Was Left in the Gob; Is This Why an Explosion Occurred?

The Recent Report of the British Commissioner of Mines, Who Made a Special Inquiry to Determine the Cause of the Explosion in the Minnie Mine, Has Renewed Interest in the Manner in Which Coal Dust and Gob Fires Are Related to Mine Explosions

By James Ashworth*

THE Minnie mine disaster that occurred in the Podmore Hall Colliery, Halmer End, Staffordshire, England, Jan. 12, 1918, was one of those great mining fatalities which still occur in mines despite all the precautions taken to avert them. Notwithstanding the careful revision of mining laws in keeping with our increased knowledge of mining conditions, such disasters continue to frustrate our efforts to render them impossible.

Recently the British Government issued two documents that will be read with deep interest by mining men in other countries. These are: (1) Report of the Commissioner of Mines on the Special Inquiry Into the Cause of the Minnie Mine Explosion, Podmore Hall Colliery, Jan. 12, 1918; (2) New Mines Regulation Act, Dealing Especially with Coal Dust, Gob Fires, and Other Minor Points Relating to Mine Explosions.

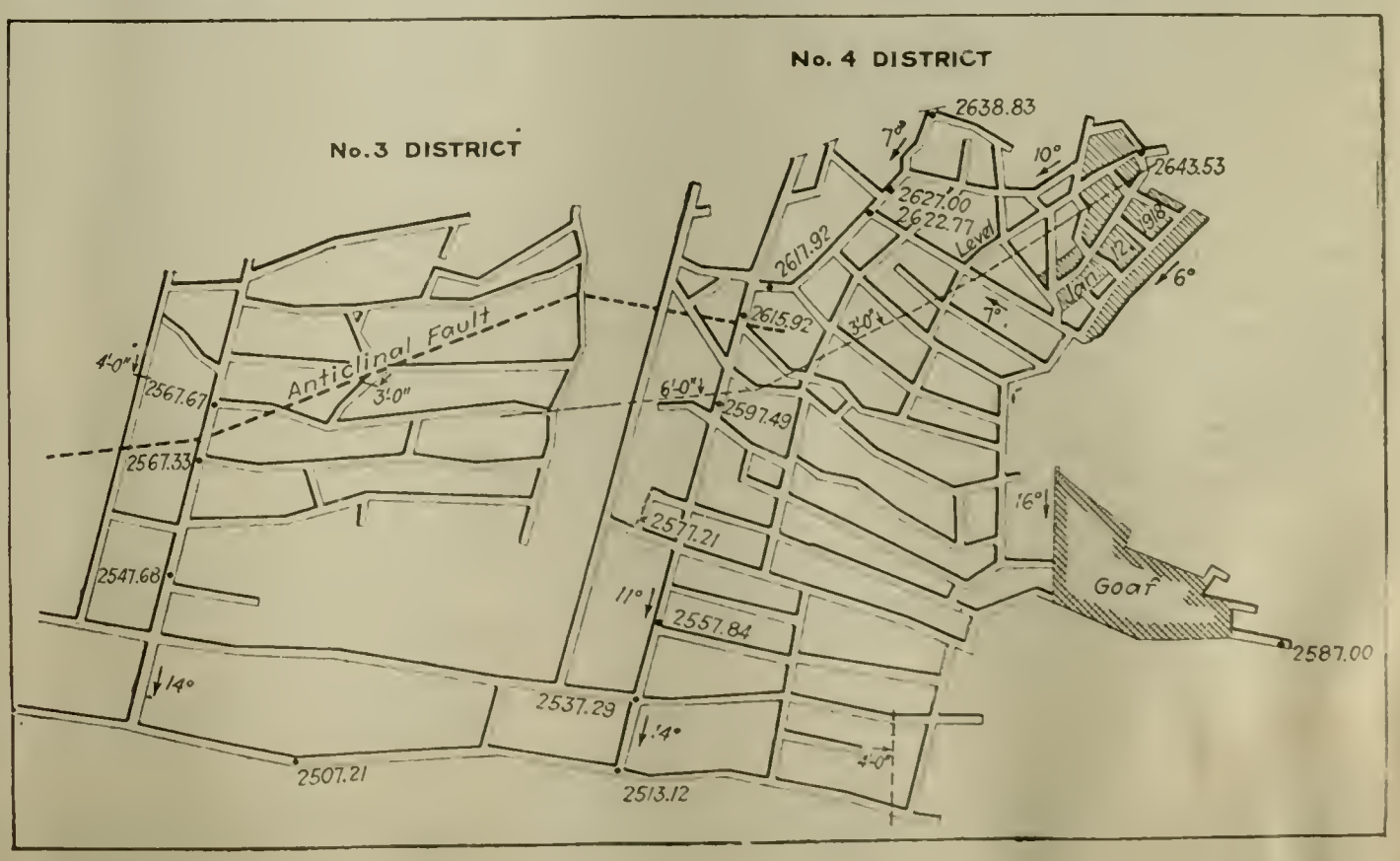
*Mining engineer, Livingstone, Alberta, Canada.

The accompanying figure is a plan of Districts 3 and 4 of the Minnie mine. Both the Bullhurst seam and the Seven Foot seam in this operation are badly folded. This made necessary the driving of many stone drifts throughout the workings. Both seams had fireclay floors, and the working places in each were generally dry and dusty. It had been assumed by the management of the Minnie mine that the amount of fireclay dust produced in the daily traffic underground was sufficient to render the coal dust safe from ignition.

The Minnie mine explosion occurred during the morning shift, about 9:45 a.m., when everyone was busy and giving no thought to possible disaster. It involved only District No. 4 of the Bullhurst and Seven Foot seams. The report of the Commissioner does not explain why other portions of the mine were not affected. The plan does not show District No. 5, which was in the course of being opened at the time the explosion occurred.

Minnie Mine

Showing a portion of the Minnie Mine where the explosion occurred, except No. 5 district, which adjoined No. 4 on the right but is not shown in the figure. The figures are elevations above an assumed datum. The dotted lines indicate slips and faults in the strata.



The mine was subject to gob fires and extreme precautions had been taken to control these whenever they occurred. Robbing of pillars always was commenced at the highest point in a section, it being argued that the accumulation of pure methane in the gob to the rise would reduce the tendency to start combustion, the gas being extinctive when unmixed with air. When a fire threatened or actually started, the place was immediately sealed with a strong brick stopping.

Only a few days before the explosion occurred, a gob fire was detected in District No. 5 and the place was immediately sealed. Indeed, at the moment of the disaster, masons were actually engaged in putting in additional brick stoppings. At the inquiry four well-known mining engineers expressed the opinion that the explosion originated in District No. 5, basing their opinion on the belief that the stoppings on the lowest level leading from District No. 4 to District No. 5 had been blown outward. This, however, was disproved later by the men who first reached the seat of the explosion and found these stoppings had been blown toward District No. 5.

Lamps Prove Safe in Laboratory Tests

Most of the witnesses examined attributed the ignition of the gas to a faulty safety lamp. One prominent inspector of mines (retired) laid the trouble to a certain safety lamp which was being used by a miner in a close place (*cul de sac*). The ex-inspector's argument was ingenious, but tests made on the lamp in question failed to show any weakness that would make ignition of the gas possible.

Other witnesses suspected one of the safety lamps had failed, without, however, specifying any lamp in particular, save one witness who named the lamp that he thought had caused the disaster. But here also tests made with the lamp failed to support his theory.

A lamp brought from District No. 5 had been punctured by a pick that had passed through both the shield and the lamp gauze. It was a grave question, however, whether this puncture had not been made by the pick of the workman who found the lamp when cleaning up the mine. While this seemed possible, there was no way of determining the facts in the case.

In my opinion there is only one sure indication of the failure of a safety lamp found following an explosion. A lamp showing an extremely clean condition of the gauze, described by one as being clean as a pin, points to a violent explosion having taken place within the lamp, by which every atom of dust was blown from the mesh of the gauze, leaving the latter clean.

The fact is well recognized that in the testing of safety lamps after an explosion it is practically impossible to subject them to the conditions to which they are subjected in the mine. In every authenticated instance of a mine explosion from lamp failure of which I have knowledge tests made on the surface later have not been able to duplicate the conditions within the mine and cause the lamp to fail a second time. This may be due to the fact that in none of the instances to which I refer did it happen that coal dust was introduced as a factor.

Why Laboratory Tests Are Inconclusive

The types of safety lamps that, to my knowledge, have failed in mine explosions include the Davy lamp and three types or patterns of bonneted Clannys. The latter differed in the diameter of the gauzes, which were either of the Marsaut multiple-gauze type or of the Mueseler type, which has an inner sheet-iron conical chimney within the gauze.

The matter of testing safety lamps that have failed in the mine is complicated further by the well-known fact that the failure may have been due to the tilting of the lamp so that the flame impinged against the gauze, or the lamp may have fallen, or been subjected to a quick jerky movement that would make it pass flame. Any of these conditions may have caused the lamp to fail in the mine, but would not be duplicated in the experimental tests made on the surface.

Other witnesses attributed the cause to sparks struck by falling rock. A portion of the roof in the Minnie mine consists of a hard siliceous stone, locally known as "bulldog." It has often been observed that when this rock fell in large quantities, large bright sparks were produced. Inasmuch as the evidence showed that a fall of roof occurred about the time of this explosion, it was thought by many that sparks from the falling rock ignited the gas.

However, here also experimental tests that were made later by two professors, with the purpose of determining this possibility, failed to produce an ignition of firedamp. Again, other witnesses inclined to the opinion that the cause of ignition was a gob fire. Opposed to that theory is the fact that no trace of a gob fire could be found in the suspected section of the mine, and only one of the five stoppings was blown outward. The work of cleaning up and restoring this section, however, occupied an entire twelve months, during which time conditions might have changed. It was necessary to perform the work equipped with breathing apparatus, and one man lost his life through a faulty oxygen valve which failed to close properly and so wasted the oxygen.

How Could a Sealed District Explode?

Altogether, aside from the conclusion naturally arising from the fact that only one stopping in five was blown outward from District No. 5, it hardly seems possible that the explosion could occur in that district, as it was completely sealed. Even assuming that a heavy fall of roof occurred in the section and blew out one of the stoppings, no air could have been in circulation. Certain it is that no explosion could occur until fresh air entered the district and rendered the atmosphere explosive.[1]

Speaking of gob fires as a source of the ignition, few instances are on record of colliery explosions being caused by gob fires. However, the suggestion of this as a possible cause has led the Mines Department to add a second part to the new Mines Regulation Act (Sec. 9), entitled Precautions Against Spontaneous Combustion of Coal.

These rules, however, apply to the treatment of a gob fire after it has started through spontaneous combustion taking place in the gob. It would seem more desirable to consider means of *preventing* the spontaneous combustion rather than to accept such combustion as an inevitable consequence of mining.

In the Minnie mine every possible precaution was taken to minimize danger. Because of the tendency to

[1] Assuming, what appears to be the fact, that one of the stoppings sealing off District No. 5 was blown outward, while the other stoppings sealing that district were blown inward, the conclusion would be justified that the heavy roof-fall said to have occurred about the time of the explosion blew out the one stopping. The accompanying rush of gas and air from District No. 5, would be quickly ignited by the safety lamps of the men in District No. 4, by reason of the blast forcing the flame of the lamps through the gauze. The resulting explosion in District No. 4 would then blow the remaining stoppings inward into District No 5.—Editor.

spontaneous combustion in this mine, practically speaking, the roads were not sprinkled and the air current was not humidified. The mine cars, however, were filled only level and were nearly dustproof. Haulage was performed at a low speed and the roads were cleaned with shovels at regular and short intervals. All shots were fired by certified officials. It was clearly proved in the inquiry that no shot had been fired for some time previous to the explosion. The miners used bonneted safety lamps, Marsaut type, burning mineral colza.

The practice, previously mentioned, of starting to draw pillars at the top of the pitch, to the end that pure methane would accumulate at these points and retard or prevent spontaneous combustion, would seem dangerous at first sight; but it is logical and would not appear to be risky. In my opinion, the most important safeguard to be taken against spontaneous combustion is to keep the gobs as nearly dry as possible, as without moisture it cannot occur.

Assuming this to be so, the management was justified in not spraying the roads or humidifying the air. The fireclay floor in both seams formed a further protection against a disastrous explosion. But, notwithstanding this feature, the new Regulations Order requiring that incombustible dust of a fineness that will pass through a 200-mesh sieve be applied to the roadways, as a means of arresting or retarding the progress of an explosion in the mine, is strictly observed.

An interesting feature of the new Regulations Act is the specification that the mine dust shall not contain more than 50 per cent of combustible matter. Where water alone is used it must saturate the roof, sides and floor of the airways to the extent of 30 per cent, which means that so much water is used that water can be squeezed from a handful of the mine dust.

Assuming this degree of saturation to be necessary to render harmless the dust in the mine, it follows that the spraying of dust by the usual method and the humidifying of the mine air could have no protective value. But if spraying is practiced in connection with stone dusting, it will be interesting to learn the result of this practice on the health of miners and to know to what extent the protecting dust was employed. Only anthracite mines are excluded from the operation of the new Regulations Act.

Test of a Carbon-Monoxide Detector Which Shows Green When That Gas Is Present*

Gives Truer Indications Than Canary or Mouse and Apparently Fails to Give Reliable Indications Only Where Percentages Are So Low That No Real Danger from Carbon Monoxide Is To Be Apprehended

By D. Harrington and B. W. Dyer†

From the activities of the U. S. Chemical Warfare Service has arisen a simple device and method whereby small quantities of carbon monoxide in air can be almost instantaneously determined. Since the war this device has been diverted to commercial uses, and it is now being marketed for the rapid determination of comparatively small but dangerous quantities of carbon monoxide, such as may be found in garages in sewers and around blast furnaces. Also it probably is well suited for use in both coal and metal mines in connection with fires and explosions, as well as in confined places after the firing of explosives, the latter application being of special importance in metal mining.

The device as marketed is readily portable, being small and light enough to carry in a coat pocket of medium size. In operation, a sample of the air mixture is drawn into a small rubber bulb, then forced through a small glass tube filled with certain chemicals which carbon monoxide turns from the original color, gray or white, to various shades of green, the deepness of the green determining the percentage of carbon monoxide in the air. A color scale is attached so that it may be compared with the color of the chemical and the percentage of carbon monoxide thus be determined. The result is obtained in a few minutes, all work being done on the ground.

*Article entitled "Tests of Carbon Monoxide Detector in Mines" in U. S. Bureau of Mines "Reports of Investigations."

†Mining engineers, U. S. Bureau of Mines.

The exact effect on the human system of carbon monoxide in quantities less than 0.1 per cent is somewhat uncertain, and much research has been, and is being, made to obtain definite data on this point. It is however, definitely known that in air containing more than 0.1 per cent of carbon monoxide men doing hard work are quickly and seriously affected. As the gas is tasteless, colorless and odorless, methods of determining the presence of both small and large quantities have been of much importance.

Technical Paper 11 of the U. S. Bureau of Mines gives much data as to the effect of the gas on mice and canaries. It was found that mice show very little distress until the carbon monoxide content is about 0.20 per cent, but quickly succumb when that percentage is exceeded; canaries are somewhat more susceptible; they quickly show distress in as little as 0.15 per cent of the gas, and soon collapse when more than that percentage is present.

Shows Presence of Gas Sooner Than Canary

Hence, while the canary and the mouse quickly give warning when the percentage is around 0.20 per cent, they do not help much when the percentages around 0.10 are encountered, yet in this latter percentage a man working hard may in time be seriously affected. The mechanical detector gives warning when percentages are even below 0.10, hence its use has a material advantage over the use of animals. Moreover, it is not always convenient to have mice or canaries available, and the expense of having the newly devised carbon-monoxide

detector on hand is comparatively small. Another advantage of the detector is the fact that it can be carried through air containing that gas to a point farther on, and accurate tests then be made, while a mouse or canary carried through an atmosphere impregnated with carbon monoxide would be dead when desired for testing the air at the farther point.

Read Lethal Mixtures Too High, Others Low

Below is a table showing results of tests of the detector in a fire area of a metal mine at Butte, Mont. The investigators wore oxygen breathing apparatus. Readings were made with the detector and simultaneously the air was sampled by use of evacuated tubes, the latter then being sent to Pittsburgh, Pa., for accurate analysis by chemists of the Bureau.

COMPARISON OF RESULTS OBTAINED BY DETECTOR AND BY ANALYSIS IN METAL-MINE FIRE AREA

Location in Mine	Percentage Estimated from Detector	Percentage by Analysis*
In drift 1920, about 100 ft. west of crosscut 1919	0.5	0.35
Samples taken near the back	0.5	0.26
In drift 1910, about 100 ft. west of crosscut 1919 near the floor	0.5	0.35
	0.5	0.38
At the entrance of drift 1910 and intersection of 1910-1919	0.1	0.11
	0.1	0.18
On the 1900 station	0.0	0.07
	0.0	0.06

*From test of a sample secured at an evacuated tube and analyzed by G. W Jones, Assistant Chemist, U. S. Bureau of Mines.

There were four mining engineers in the party taking the above data, and three of the four were able to agree on the coloration change as indicating the carbon monoxide percentages shown in the table. However, one engineer was utterly unable to agree with the others, and could see no coloration at a point where the gas sample on analysis showed 0.20 per cent or less. Also, the last two gas samples showed in the laboratory 0.07 per cent and 0.06 per cent carbon monoxide respectively, but the investigators could see no coloration with the detector.

Readings at Coal-Mine Fire More Correct

One of the investigators participating in the above work, later on tested the detector in a coal-mine fire area, with results as tabulated below:

COMPARISON OF RESULTS OBTAINED BY DETECTOR AND BY ANALYSIS IN COAL-MINE FIRE AREA

Location in Mine	Percentage Estimated from Detector	Percentage by Analysis*
At face of room No. 5, Fifth West entry	0.0	0.01
In Third West entry, opposite No. 5 room	0.0	0.03
In First West entry, 50 ft. west of First North entry	0.1	0.13
In Second North entry, 25 ft. north of West entry	0.2	0.11

*From test of a sample secured in an evacuated tube and analyzed by G. W. Jones, assistant chemist, U. S. Bureau of Mines.

In this case the actual analysis and the determination by detector are more nearly in agreement; possibly this was due to greater experience on the part of the investigator, or was in part due to the fact that the atmosphere in the coal mine was comparatively dry whereas the air of the Butte metal mine was saturated.

In a fire area in a metal mine in Idaho where the atmosphere was so smoky that a canary could not be utilized the detector showed 0.05 per cent carbon monoxide. On working in the atmosphere a few hours the workers became weak, and after coming to fresh air had headache and were nauseated showing effect of carbon-monoxide poisoning. Unfortunately, no samples of the air were taken for analysis.

From the above analyses it appears that the detector may be relied upon to show the presence of carbon monoxide when it occurs in concentrations of 0.1 per cent and greater. The degree of accuracy of the quantitative scale and its sensitivity for percentages below 0.1 per cent are now being investigated under accurately-controlled conditions in the gas laboratory of the Pittsburgh experiment station. These results will be published later.

Color Blindness and Diferences in Light

In exploring a mine after an explosion or fire, the canary or mouse gives by its condition a positive and reliable indication of immediate danger from poisonous or deadly gases, and also affords some indication of deficiencies of oxygen. The carbon-monoxide detector is more especially useful for an approximately accurate quantitative determination of that gas in air which is suspected to contain it in small, and possibly dangerous, quantities.

An element of possible hazard in using the new detector alone, in entering dangerous places, is the fact that some men are color blind, and hence might not detect the green coloration even should it be so marked as to indicate a deadly atmosphere. The indicator does not, of course, afford any warning of lack of oxygen.

Another difficulty is the fact that the light in underground places where the detector may be used is likely to vary widely, as it may be derived from a candle, an oil lamp, an acetylene lamp an electric cap lamp, a dry-cell battery lamp, or any one of several types of flame safety lamp; and this fact, together with the fact that the underground atmosphere varies widely as to dust, smoke and moisture content, adds to the uncertainty in determination of color changes. Hence while it is likely to be dangerous to rely too implicitly on the detector when it indicates absence of carbon monoxide, on the other hand when the device definitely shows coloration which proves the presence of that gas, the warning should be heeded.

The Condensed Chemical Dictionary. Compiled by the editorial staff of the Chemical Engineering Catalog; 6 x 9¼; 525 pages. The Chemical Catalog Co. Inc., 1 Madison Ave., New York City.

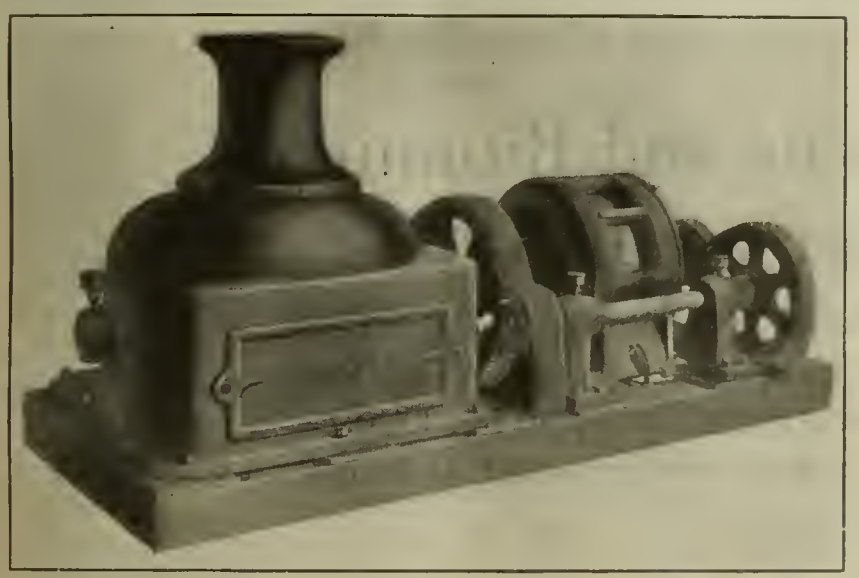
This volume comprises a complete dictionary of chemicals, giving them their numerous names, chemical, pharmaceutical and popular. Their colors and qualities are given, as also are their gravities, melting points, solubilities, sources and uses. The methods of purification, the containers in which they are shipped, the fire hazard and the shipping regulations pertaining to them also are given. The book concludes with tables of atomic weights and measures, metric equivalents, temperature scales and specific gravity equivalents and a dictionary of physical units.

F. R. Wadleigh announces that owing to existing conditions in the export trade, Weston Dodson & Co., Inc., have decided to discontinue their export department as a separate unit of their business, and he has, effective Dec. 1, 1920, severed official connection with them, although they have retained his services as consulting engineer, This arrangement leaves him free to do work for other interests, in a consulting or advisory capacity, on the general subject of the export of coal, foreign markets, foreign coal fields, classification of United States and foreign coals, inspection and purchase of coal, examination and valuation, purchase and sale of coal mines and properties, tests and analyses of coal and coke, combustion, briquetting and carbonization of coal.

Places Railroad Cars by Electric Power Instead of by Gravity

THE railroad car puller shown in the accompanying illustration affords accurate control in the placement of railroad cars either loaded or empty. This machine is especially useful during the winter season, when journals get stiff and frost-bound and it becomes difficult to move cars by ordinary means. It will be observed that all portions of the capstan spool are well above the motor and back gears. This permits a pull to be made from any angle and does not require that the machine be placed in a certain definite position.

When it is desirable to install the machine in the open a metal cover is provided for both motor and gears. The operation of this device is quite simple. After the motor has been brought up to speed (which gives approximately 40 r.p.m. of the capstan) a manila rope attached to the car to be moved is given a few laps



ELECTRIC CAPSTAN PLACES CARS WHERE NEEDED

The gear and dynamo can be covered with a hood. A capstan has the advantage that it does not have to stand at right angles to the direction of pull; it can do its work in any direction with equal facility.

about the moving spool. As the rope leaving the spool is drawn taut the car will be started, its speed depending upon the tension put upon the rope end.

This affords the operator complete control of the car, so that its proper placement becomes a one-man job. The machine may be furnished with a motor employing either direct or alternating current in voltages normally employed about the mines. This piece of apparatus is manufactured by the Mining Machine Co., of Mountville, Pa.

Navy Wants to Continue to Commandeer Coal Needs; Bill Offered in House

REPRESENTATIVE BUTLER, of Pennsylvania, Chairman of the House Naval Committee, has introduced the following bill to authorize the President to commandeer fuel, including coal for the navy until June 30, 1922, which was recommended by Secretary of the Navy Daniels:

"That, until June 30, 1922, the President is authorized to requisition fuel necessary to the maintenance of the navy, and to requisition facilities for handling and storing such fuel; and he shall ascertain and pay a just compensation therefor. If the compensation so determined be not satisfactory to the person entitled to receive the same, such person shall be paid 75 per centum of the amount so determined by the President, and shall be entitled to sue the United States to recover such further sum as, added to said 75 per centum, will make up such amount as will be just compensation for the property so requisitioned, and jurisdiction is hereby conferred on the United States District Courts to hear and determine all such controversies, provided that nothing in this act shall be construed to require any natural person to furnish to the government any fuel held by him and reasonably required for consumption or use by himself and dependents."

Majority Lacking in Labor Election; Another Contest to Be Held

WITH the exception of William Mitch, re-elected secretary-treasurer for the coming year, and a few minor officers chosen by District 11, United Mine Workers of America, which includes most of Indiana's coal fields, a second election will be necessary to fill other vacancies, a majority being lacking. Balloting, which began Dec. 14 and ended the first of this year, was by local unions. The official results are as follows: District President, John Hessler, Hymera, 6,262; Ed Stewart, Terre Haute, 5,426, and William Schmidt, West Terre Haute, 4,008; district secretary-treasurer, William Mitch, Terre Haute, 9,265; John J. Rice, Bicknell, 3,342, and Thomas White, Clinton, 2,844. Mitch's majority is 3,079. No one was elected in the contest for international or district board members.

Turns Over Mine to Creditor Employees

THE Shelby Coal & Clay Co., of Indianapolis, has turned its Kokomo mines, west of Brazil, Ind., over to its sixty employees. When the mine workers called for their pay Jan. 14, they were notified by Ed. Huffman, superintendent, that the company had no money wherewith to meet its payroll and that he had decided to turn the mine over to them.

The mine workers held a mass meeting to decide what to do with the mine. They appointed a committee to seek legal advice and to bring receivership proceedings for the possession of the property. The company's payroll amounted to about $6,000, in addition to which there is said to be approximately $4,000 due the men for work since Jan. 1. The miners have not decided whether they will sell the property or attempt to operate it on the co-operative plan.

Commerce Commission Orders Railroads to Report Fuel Costs in 1919-1920

AN ORDER issued Jan. 10 by the Interstate Commerce Commission directs the railroads of the country to render a report of their expenditures for fuel during 1919 and 1920. Authority for the order is contained in the following resolution passed by the U. S. Senate:

"Resolved, that the Interstate Commerce Commission is hereby directed to ascertain forthwith and report to the Senate the increased cost of railroad fuel to the railroads of the United States for the current year over the cost of the same to them for the year 1919, and to furnish in detail a statement of the tonnage of railroad fuel this year [1920], its total cost, its average cost per ton, and the average cost per ton of last year's [1919] railroad fuel, to the end that the difference in cost between the two years may plainly appear."

AT THE MUREN MINE, in the extreme southern part of Indiana, a dispute having arisen between the mine workers and the company officials, the company failed to blow the whistle for work. The company maintained that the men had struck but the men assert that it is a lockout in view of the fact that the men worked until the company ceased to blow the summoning whistle. Officials of District No. 11 have endeavored for some time to settle the dispute, but all efforts failed.

WAR DEPARTMENT EXPENDITURES for fuel during the current fiscal year will exceed by $10,000,000 all appropriations made for that purpose. A statement to that effect was made by the Secretary of War in an order for drastic curtailment of expenditures.

WHEN THE WHISTLE BLOWS AND THE DAY'S WORK ENDS

Wages of Both Anthracite and Bituminous Mine Workers Increase in 1920

Anthracite Men Get Average Raise of About 18 Per Cent — Bituminous Mine Workers Receive an Advance Averaging 27 Per Cent and Day Workers Get Further Advance of $1.50 Per Day — Union Tries to Extend Influence in West Virginia and Alabama

By R. Dawson Hall*

NEGOTIATIONS for the renewal of the wage agreement in the anthracite region which terminated on March 31 were held up till April 9 by the delay in completing the bituminous wage agreement, mention of which will be made later. On the latter date a general meeting of the representatives of the operators and mine workers was held at the Pennsylvania Hotel, New York City. At this meeting, following the plan adopted in 1912 and 1916, the negotiations were referred to a joint wage committee, which lost no time in getting to work. W. L. Connell, W. J. Richards, S. D. Warriner and C. F. Huber represented the operators; John F. Dempsey, Thomas Kennedy, C. J. Golden and John L. Lewis represented the mine workers, Alvan Markle acted as chairman and James A. Gorman as secretary.

Ask Bigger Wage and Check-Off

The negotiations of the conference committee were extended over a period of two months without coming to a conclusion, although, as it later developed, differences that kept the two sides from reaching an agreement were: (1) a matter of 5 per cent in the advance in wage rates offered and demanded, and (2) the fastening upon the anthracite industry of the closed shop and "check-off."

When it became evident that a disagreement was imminent, with the suspension of mining likely to ensue, the committee accepted an invitation of the Secretary of Labor to appear before him in Washington in the hope that some ground might be found for an amicable adjustment of the matters in dispute. The first meeting with the Secretary was had on May 11 and the remainder of the month was spent in joint and separate conferences with that official.

He finally offered certain compromise suggestions, which were in the main accepted by the operators but rejected by the miners. In the meantime the President had on May 21 addressed a letter to the committee in which he stated that if it was unable to reach an agreement he would insist that the matter in dispute be referred to a commission to be appointed by him.

At a tri-district convention held in Wilkes-Barre on May 24 the action of the miners' representatives on the committee was ratified and it was decided to refer the controversy to a committee of arbitration. During all of this time, in accordance with a resolution adopted at an early meeting of the committee in New York that any agreement should be retroactive to April 1 and that there should be no suspension of mining, production was going forward at a normal rate, except for the interruption to operations in April caused by the switchmen's strike.

On June 3 the President by proclamation appointed the commission with the following personnel:

Dr. William O. Thompson, president of the Ohio State University, presenting the public; William L. Connell, Scranton, Pa., representing the operators; Neal J. Ferry, McAdoo Pa., representing the miners.

The commission organized in Washington June 21, and on June 24 began taking testimony.

The hearings before the commission were adjourned July 20, and it reconvened in Washington Aug. 2, for the purpose of preparing its report to the President, which was submitted Aug. 30. It is apparent that the commission accepted the statement of the consulting economist that the exhibits presented him were "neither statistically nor mathematically correct," for its award on the wage demand was a close agreement with the compromise suggestion of the Secretary of Labor, with, however, a special consideration to the lower-paid class of labor, which was given a minimum of $4.20 per day, or per shift, as against a minimum rate of $4, suggested by the Secretary.

The report advocated increased rates for contract miners 65 per cent over rates effective April, 1916. The rate made Nov. 15, 1918, was 40 per cent over the rate of April, 1916, so the net increase was a little less than 18 per cent. The minimum rate for daymen was set at $4.20 per shift. The hourly rates for inside and outside com-

*Editor, *Coal Age*.

pany men receiving more than $15.45 per day under the agreement of May 5, 1916, were increased in general 17 per cent over those in force under the agreement of Nov. 15, 1918.

Those receiving less than $1,545 under the agreement of May 15, 1916, were given an increase of 4c. per hour over the agreement of Nov. 15, 1916. Consideration miners and monthly men received an increase of 17 per cent over the rates in force under the agreement of Nov. 15, 1916. The wage increase as a whole for all classes of labor averaged about 18 per cent. On Sept. 2 the members of the wage committee met and signed an agreement embodying the substance of the awards.

Signed Contract and Struck

Hardly was the ink of the signatures dry, however, when, as if by preconcerted action, almost the entire region was thrown into a state of idleness by the miners taking a "vacation." This action was denounced by the President himself as a violation of the agreement and was asserted by the officers of the United Mine Workers to have been in disobedience of their orders, though the records do not show that any order for the men to return to work was issued. The "vacations" ceased on Sept. 20, after the Secretary of Labor had indicated that he would hear what the miners' leaders had to say.

The conference with the Secretary was held at Canton, Ohio, on Oct. 6, immediately following which the President requested a reconvening of the wage committee for the purpose of adjusting certain inequalities in the agreement which the two sides might mutually agree upon. In accordance with this request the committee reconvened on Oct. 26, when it developed that the representatives of the miners desired a reopening of the entire case, and that their interpretation of the "adjustment of inequalities" was that it referred to anthracite scales of rates as compared to those paid in the bituminous field as well as inequalities in the anthracite scale resulting from the commission's awards.

To this the representatives of the operators would not agree. They held that only the inequalities arising from the awards were to be considered. These differences were finally submitted to the Secretary of Labor for his interpretation of the President's desires, and after a joint conference with the committee he gave out the following statement:

"The operators and miners of the joint scale committee of the anthracite coal field have had a misunderstanding concerning their authority under the communication of the President reconvening the scale committee. It is definitely understood that the agreement now in existence will continue in force and effect during the time for which it was entered into. The Secretary of Labor has interpreted the communication of the President to mean that the government will not interfere with the joint scale committee in making any changes or modifications which they may mutually agree should be made in the agreement."

The negotiations since the Secretary's statement was issued have been in response to a request to modify a recognized wage contract. Adoption or rejection of the request would, of course, have no effect on the binding character of the agreement. Secretary Wilson, speaking for the President, made it clear that the contract of Sept. 2 was recognized by the government as effective and binding for the term for which it was drawn up—i.e., until March 31, 1922—and could not be disturbed or altered without mutual consent of the parties signing.

The last occurrence of importance in regard to the wage question was on Dec. 23, when the operators, through their representatives on the joint committee, presented to the mine workers' representatives a formal reply declining the proposal to readjust alleged inequalities in the contract of Sept. 2, 1920, so as to give an additional increase of approximately 13 per cent, with a minimum of $6 a day for common labor. An offer to find a remedy for any individual cases of inequality under the contract was included. This concluded the negotiations mentioned above as having begun Oct. 26.

The operators held that to grant the miners' demands would be in effect a reopening of the case settled by the U. S. Anthracite Commission and an abrogation of the contract. They said that mediation and collective bargaining have no value unless both sides adhere to the verdict. They called attention to the fact that under the existing scale hourly earnings of inside employees are 132.8 per cent over 1912; outside employees are getting an increase of 167.5 per cent; and all employees are averaging an increase of 138.6 per cent over pre-war pay. As the prices of many commodities have fallen since the commission's award, the terms of that settlement are more favorable to the miners today than when they were originally made. With full time work offered in the anthracite mines, compared with part time and declining wage scales in other industries, no condition has arisen which the operators felt would justify a reopening of the wage issue.

When the year 1920 opened the bituminous miners were indeed working but at a wage against which they had offered a vigorous protest. They had received a 14 per cent increase, but the advance was in process of revision at the hands of a commission headed by Henry M. Robinson and consisting, besides himself, of Rembrandt Peale and John P. White who were representatives respectively of the operators and mine workers. This commission made the utmost effort to hear both sides, listening to the mine workers from every union section and to such operators in non-union sections as were willing to offer testimony. As a result the majority of the commission recommended a new scale to take effect April 1 and to be in force till March 31, 1922. It reaffirmed the Washington agreement of 1917 in so far as the conditions were not specifically changed by the decision rendered.

Raises Wages Over One-Quarter

It withdrew the 14 per cent advance in wages of the Fuel Administration and replaced it by an award made on a 27 per cent basis. The prices for mining run-of-mine coal, both pick and machine, were advanced 24c. Day labor and monthly men were advanced $1 per day and trappers and other boys 53c. per day. The compensation for the turning of rooms for yardage and deadwork was advanced 20 per cent. It bound the officers of the international organization to the fulfillment of all joint and district agreements. It rejected specifically the demands for a six-hour day and a five-day week.

Car pushing from the face to the room mouth and vice versa was not abolished; rules were made under which machinery could be introduced and thoroughly tested. A commission was set up for the Central Competitive Field (western Pennsylvania, Ohio, Illinois and Indiana) to handle questions of differentials in rate and certain other matters. It provided that if the recommendation of the President's Industrial Conference was adopted in regard to industrial tribunals and boards of inquiry, the machinery thus instituted elsewhere was to be set up in the coal industry. Otherwise a special board was to be established. Explosives were to be furnished at cost with handling and insurance expense included. House coal was to be charged for at the same rate as on Oct. 31, 1919, with the 27 per cent wage increase added. Blacksmithing charges were limited to three-quarters of one per cent of the miner's earnings.

Aggregate Rise 111 Per Cent

The report stated that the wage advances granted to miners between 1913 and Oct. 31, 1919 (when the strike occurred which the report was to settle) averaged 43 per cent for tonnage workers and 76 per cent for daymen, and that the wage advances to tonnage workers after the award would amount to 88 per cent since 1913 and to day workers from the same time 111 per cent. The commission justified the inequality by saying that day workers had been relatively underpaid before the war.

John P. White filed a minority report. He urged that the day workers should have a larger increase. He wanted an increase for the daymen and monthly men of $1.35 per day, the trappers and boys receiving less than men's wages an advance of 75c. per day. He proposed that car-pushing arrangements should be left to joint committees of miners and operators in the several fields. He urged that the differentials between fields be readjusted, declaring that conditions had changed since the differentials had been established, with the result that many were no longer

justifiable. He demanded that the price of powder be retained at the rate existing Oct. 31, 1919, and that detonators be furnished without charge. He urged that the price of house coal should be increased only in accord with the increased labor charge and that no stipulation be made as to cost of delivery of coal, lest that provision be abused.

Further Negotiation Promised

On March 23 President Lewis of the United Mine Workers presided over a meeting of one hundred mine workers' representatives and announced that orders would be sent to all the local unions instructing the men to remain at work. At the same time it was announced that the union would try to have the wage for day workers raised to $1.25 per day instead of $1. Telegrams were sent out on March 30 to all union officers and locals requiring the men to continue at work.

On March 29 and 30 a joint meeting of operators and mine workers of the Central Competitive Field was held in New York and agreed to accept the decision of the commission. The operators were somewhat afraid to make an agreement with the miners, as it seemed possible that by making such a contract they would be held to violate the law which had already been invoked against certain operators and miners who had met at an earlier date to discuss wages.

The agreement thus made far from satisfied the day workers, as under it they received a smaller wage increase than the tonnage men. A dollar a day was 20 per cent, a smaller increase than the average which was 27 per cent. The dissatisfaction resulted in sporadic strikes based on insignificant grievances or none at all.

Threaten An Extensive Strike

The dissatisfaction came to a head about July 14, when the representatives of the Illinois mine workers and those of the three operators' associations in Illinois met in conference. The meeting lasted two days. The mine workers' officials told the operators that the men regarded the wage award of the Presidential commission as not fair and were insistent on a change. The union officials were confident the men would strike if certain modifications in the contract were not made.

"The operators must agree to change our [the mine workers] agreements so as to give all shift hands and monthly men a much higher wage than is now paid and the penalty clause in the agreement must be rewritten so as to remove its present automatic feature." The foregoing is part of the letter from the district officials. It ends "in just what directions our efforts will take us we cannot now say, but we are determined, injunctions and indictments notwithstanding, to use every power and influence at our command to secure their attainment.

The Illinois Coal Operators' Association addressed a letter to the President on July 19 and the mine workers in 363 out of 375 mines of Illinois left

ONE OF THE RED JACKET CONSOLIDATED COAL CO.'S TIPPLES

The Red Jacket Company, operating in Mingo County, West Virginia, appealed to the courts in the Fall to restrain John L. Lewis, "Mother Jones" and other union leaders from attempting to organize its employees.

their work. The strike extended through Indiana and even into western Kentucky, greatly reducing the tonnage of the country. On July 30 the President of the United States wrote to the mine workers condemning the violation of the terms of their solemn obligation and declaring that if contracts might be broken by employees they might be broken by employers also.

Broke Up Competitive Region

On Aug. 1 several meetings of the mine workers were held at which it was decided to return to work. The President asked John L. Lewis and the operators to get together and arrange a settlement. The representatives of the Central Competitive region met the mine workers' representatives at Cleveland and after several days of conference the meeting broke up with the understanding that local arrangements would be made instead of a bargain in which the whole Central Competitive region would be a party.

The question was in process of yet further complication. The day workers were complaining that the miners had received larger increases than they, but when the miners saw the day workers trying to get more their cupidity also was excited. Especially was this true in central Pennsylvania coal mines, where the greater part of the coal area outcrops at the surface and where "snowbird" mines accordingly were numerous.

Here all kinds of tonnage rates were paid. A large amount of coal came from men who did not care how much they paid per ton so long as they got the coal. They were in the business only for the time being. Comparing the old mines with the new the miners were of the opinion that the old-time mines should pay more and supported their contention with strikes especially in the Bennetts Branch field. At a special convention held in Du Bois Aug. 19 the mine workers demanded a 50 per cent increase on coal three feet six inches thick or over, an additional 25c. per ton for every six inches under that thickness and a 50 per cent increase for day workers. Wagon mines were paying $10 a day for day labor and $2 a ton for mining coal and the miners in such banks were making $30 to $50 a day.

In the Indiana "bituminous" mines a settlement was reached Aug. 26 and the mine workers went back to work. Inside men and boys had their wages increased 25 per cent; monthly men and outside day men received an additional $1.50 per day. The provisions also assured that any extra time being paid day or monthly men should continue to be paid and placed the date for the new schedule of wages to commence as of Aug. 16.

The diggers were still dissatisfied. They desired a 10 per cent increase. A further tie-up of the field was expected but it did not come. This discontent of the diggers also occurred in the "block coal" mines of Indiana and the mines of Oklahoma. The miners were more than ever dissatisfied when the $1.50 increase was given to daymen.

The central Pennsylvania operators, as stated, were faced with a similar demand, which they countered with an ultimatum. They would give an increase to the day men of $1.50 a day, and the miners would have to be content with what they were getting. Eventually the employers won their point. The rate as soon as it was established in Indiana was granted by other parts of the Central Competitive region, central Pennsylvania and West Virginia.

The western Kentucky men, like the Pennsylvania bituminous miners, who work in a "snowbird" region, were insistent on more pay than the Central Competitive region was granting. The union was willing at its meeting with the operators in Louisville on Sept. 4 to accept an advance of $1.75 per day for daymen and 10c. per ton for tonnage men. On Sept. 7 4,000 men laid off to enforce this demand, which the operators did not concede.

The non-union mines in Somerset County and in the Connellsville region followed the general scale, giving $1.50 a day additional to day laborers. Big increases in day wages were given in the Winding Gulf, Pocahontas, Tug River and Thacker fields of West Virginia. Meantime miners in the first and fourth subdistricts of Iowa were granted an increase of 25.56c. a ton.

Problems of Operating Men

Edited by James T. Beard

Factors Responsible for Increased Production per Man

Unparalleled Increase in the Production of Coal per Man, During the Last Decade—Explained by the Introduction of Mechanical Appliances for Mining and Loading the Coal; Improved Systems of Haulage; Better Ventilation; Better Distribution of Car Supply, Etc.—Practical Effect of These Improvements in Equipment and Methods on Mine Workers

WITH very great interest I have read and studied over the preliminary statement of Pennsylvania anthracite operations during 1919, and the comments on the unprecedented increase of coal production per man, in the past ten years, appearing in *Coal Age*, Dec. 9, p. 1199.

It is indeed gratifying to learn that the production of anthracite has, during this period, gained 8.8 per cent, while the number of miners employed decreased 13 per cent in the same time. This means a net increase per man of $8.8 \div (1 - 0.13) =$ say 10 per cent, which is an unprecedented showing in coal production.

One naturally asks, What factors are responsible for this great increase per man, in the anthracite region? Let me pause here a moment to say, it would be interesting, were the figures available, to know how much more rock is being sent to the surface now than ten years ago. If I am not mistaken this item would show a still greater increase than the coal production.

Improved Equipment and Methods Now Employed

In attempting to solve the problem of what are the chief factors that have operated to increase the output per man per day, in the anthracite field, notwithstanding the undisputed fact that we are mining the coal from thinner beds than formerly and not working as many hours per day, while the standard of mine workers is certainly not higher than it was in 1909, we must look to our equipment and methods for a solution.

In the first place, we note the large installations of mechanical appliances that have been introduced into the mines. Great improvements have been made in drilling and coal-cutting machinery. The jackhammer and the electric drill have enabled us to blast more coal in the same time. Finally, not the least in mining equipment, are the coal-loading machines and coal conveyors now largely employed at the working face, for transporting and loading the coal mined.

In addition to these mechanical appliances, however, it seems to me that great importance is to be attached to the improved systems of underground haulage that have been introduced, made possible by the better planning and laying out of the mines, by which a greater concentration of work is effected. There is less delay in the regular supply of coal to the tipple and of empty cars at the working face.

Effect on the Miners

Now, we may ask, What is the effect of these improved conditions under which miners are working today? Can it be denied that a man will work with greater energy when he is furnished with all the cars he can load, and his coal is hauled promptly to the bottom? Or, does anyone doubt that a miner will get to his place quicker when he knows an empty car is waiting for him there in the morning?

Many a time have I heard my father remark that he would "retire a little earlier tonight" when he had an empty car waiting to be loaded in his place the next morning. Every practical miner knows that mining and loading coal at the working face is like running a footrace and depends much on the start one makes in the morning. A good start means a good day for the miner who wants to work.

No Empties to Load in the Morning Discourages the Miner

On the other hand, where the loads are left in the chambers overnight there is no incentive for the miners to break down more coal; the effect is discouraging, and by the time the driver has set in a car, later, the average miner will have lost his ambition and does not care whether or not he loads a car that day. I make it a point to insist that our drivers and motormen see that empty cars are placed at the face of every working place ready for the men to load in the morning.

It is not to be understood, however, that I am urging these men to work overtime in order to haul out the loads and set the empties in each working place. What I do urge is that men shall do a little extra hustling during the day. The possibility of being permitted to work overtime and getting credit for the same has led many a foreman, assistant foreman, driver and shifthand to lessen his activities in the day, and claim that he "could not finish the job." It is common for tracklayers, timbermen, machinists and mine electricians to plan throughout the week for a Sunday job.

We can do most anything if we try. I remember having an assistant who when doubt was expressed regarding the work would say, "Let us try," and *try we did* with generally good success. In the beginning of a new year let us, as workers, resolve to make ourselves as big as the job. Yes, a little bigger, so that when a greater task is before us we will be ready for it. Keep our eyes on the fellow ahead, and do our best to beat him. The man who succeeds is the man who is *in the race to win;* but this requires good condition and faithful training.

Many a battle has been lost for lack of training when the fighter underestimates his opponent, or the worker underestimates his job. The dreamer never accomplishes what his fancy pictures as being within his reach. I know of no better training for higher work, and no better promise of success, than to read and study in one's spare time what will aid him in his work. This has been my help in the past and promises well for the future.

Plains, Pa. RICHARD BOWEN.

Roller-Bearing Mine Carwheels

A scheme for replacing a roller-bearing carwheel when the rollers are not mounted in a cage but are loose and drop out when the wheel comes off.

MUCH time and aggravation can be saved by using a simple plan that I have employed for holding the rollers in place while slipping the wheel back over them, whenever it is necessary to replace a wheel that has come off or been broken in the mine.

In the use of the old type of roller-bearing carwheel, a most annoying and troublesome feature was met when a wheel would come off or was broken and had to be taken off and replaced at once by another wheel. In that type of wheel, the rollers were not set in a cage but were loose and would drop out in case the wheel, for any cause, had to be removed.

A scheme that I found very useful and a great time saver was to tie or bind the rollers in place by a little

string or fine wire, until the wheel could be slipped over them far enough to hold them in position. When this was done, the string or wire was removed and the wheel slipped in place, the washer put on and the cotterpin inserted.

In my experience, I have seen as many as four rollers left off of a pair of wheels, because of the difficulty of replacing the wheels with all the rollers in place. The omission of these rollers was, of course, bad practice; but it was done to save time and avoid sending the car to the shop for repairs. I thought this little scheme would be helpful to others who have experienced the same difficulty.

W. H. LUXTON.

Linton, Ind.

A Day in a British Coal Mine

Work in a coal mine in Great Britain is not to be compared with that in the mines of this country. Some of the British mines are a hundred years old and involve customs and conditions so different from American mining that an English miner coming to this country has much to learn.

WITHOUT doubting a word said in the letter of Richard Bowen, *Coal Age*, Dec. 2, p. 1140, regarding his experience in coal mining in Great Britain, I want to offer a word or two of comment, fearing that many will think the same conditions prevail in all British coal mines as he has said exist in the mines of Wales.

Like Mr. Bowen, I am an old English (British) miner, but my experience does not accord with what he has described. In my opinion, nature has bestowed on Great Britain its full share of wealth in the matter of coal and, while mining operations there have been going on a much longer time than in America, the supply is by no means exhausted. Much of the mining, it is true, is now done in thin seams.

Conditions Here and There

Again, human nature is the same the world over and I have seen much more harsh treatment of men, by bosses in this country, than I ever witnessed in the mines of Great Britain.

In what follows, I am speaking from an experience of many years as a miner in the County of Durham, prior to coming to this country eighteen years ago. Conditions there and customs may differ from those in South Wales regarding which Mr. Bowen has written, and this will explain the sharp contrast in our viewpoints.

It is true some of the mine foreman might be disposed to ride a high horse at times; but such were the exception in my experience, both in Great Britain and in this country, I am glad to say. It is my belief that there are other things of greater importance than those mentioned that serve to lessen the output per man in England, as compared with this country.

By way of illustration, I want to outline briefly, a day's work in a mine in Durham County, eighteen years ago, and say that these represent fairly well the conditions prevailing there today. Many of the mines are more than a hundred years old. One generation after another has worked in those mines and trapper boys, who were carried into the mines by their fathers years ago, are now old experienced miners working at the face.

Little, If Any, Change in Customs

Customs in those mines have changed but little, and it is hard to imagine what could happen to change them. Long established habits create prejudices and it is natural to understand that a Durham miner when coming to this country has much to learn. He must lay aside his prejudice and learn a lot of things over again. For this reason, it is out of the question to attempt to compare the work of a miner here with his work in Great Britain.

Let us imagine, for a moment, that we are working in a Durham County mine, in England. It was the custom to work those mines on the two-shift plan, the first shift going down at 4 a.m. and the second at 9 or 9:30 a.m., depending on the distance the men must go to reach their working places. Only the hewers (diggers) go down at this time, as the boys and other workers enter the mine at 6 a.m. and work through until 4 p.m.

A Day in a Durham County Two-Shift Mine

Reaching the mine at 4 a.m., we find from 200 to 400 men at the shaft head, waiting to be lowered into the mine. Perhaps, twenty minutes or a half-hour will pass before the mantrip, by which they are hauled into the mine, is started. The trip is drawn by a main-and-tail-rope system of haulage, and another twenty minutes is consumed in reaching the flat (landing). Then there are four self-acting inclines and a stretch of level road that the miners must climb and walk to reach their places.

It is now after 5 o'clock and the heading men start to drive their places, which are 6 ft. wide. The room men generally have some coal loose, but they start and mine a little more till the putters arrive, which is generally a little past 7 o'clock. At that time, the men load their turns and work hard till 9:30, when they quit and start for home, passing the incoming shift on their way out, as they must walk to the shaft bottom, while the second shift ride both ways. The putters remain and continue to haul coal for both shifts, being underground from 8 to 10 hours, hauling coal and caring for their ponies.

Thus passes the average day of a coal miner at work in Durham County, England. It is easy to see that other than natural conditions hinder his production of coal in those mines, as compared with what American miners produce per day, working under far simpler conditions that expedite their work and increase their output.

THOMAS HOGARTH, Supt.,
Indiana, Pa. Glenside Coal Co.

Examination for Shotfirers

The importance of the work of shotfiring in mines would seem to demand that the men employed for that class of work should be required to pass an examination, the same as mine foreman, assistant foremen and firebosses.

READING the several letters relating to the work of shotfiring in mines leads one to ask and wonder why the shotfirer is not required by law to pass an examination to show his competency for the position, the same as is required of mine foremen and firebosses.

That the work is just as dangerous and requires as competent men to perform it cannot be denied. The incident cited by R. H. Sisley, *Coal Age*, Nov. 4, p. 953, where a miner was injured by the explosion of a few caps carried loose in his hands shows the danger to shotfirers from this source.

In his letter discussing the safeguarding of the work of shotfiring, Mr. Sisley urges the need of making the appliances used in that work practically foolproof. I want to ask, why not make the men who use them, more competent?

By way of illustration, permit me to ask What would be thought of a fireboss who started to make the examination of a mine with a defective safety lamp, say a lamp with a hole punched in the gauze, or with some one of its parts missing? It goes without saying that we expect a fireboss to know the condition of his lamp and whether or not it is safe to use.

Shotfirers Should Be Required to Pass an Examination

There is just as much reason in requiring that a man charged with the dangerous work of firing shots in mines, should be competent to determine whether the appliances he uses and the shots he is about to fire are safe or dangerous. It is my opinion that a shotfirer should be compelled by law to undergo just as rigid an examination relating to his work as any other official in the mine.

If the mining law did require the certification of shotfirers any failure to properly perform his work would subject the man to a penalty. As most of our statutes now stand, the shotfirer is irresponsible. If he fails in the performance of his work, he stands before us very much as a school boy who forgot the admonition of his mother.

As long as it is possible to employ men for this dangerous work on the strength of their claim that they can fire shots as well as the next fellow, we must expect the continued recurrence of accidents from blasting.

Let me urge in closing that the question of certificaton of shotfirers shall be carefully considered and laws framed to safeguard this work in the surest way possible, by demanding the thorough competency of men to whom is given the charge.

Gans, Pa. R. W. LIGHTBURN.

Inquiries Of General Interest

Shifting the Location of a Slope Pump

Shifting a Pump From Its Present Location to a Point Higher Up the Slope May Increase the Suction Lift and the Total Length of Pipe, Including Suction and Discharge, but Effect a Saving in Horsepower by Reducing the Head Under Which the Pump Will Operate in Its New Location

IN ONE of our mines, we are operating a double-acting, 7½ x 9 in. Scranton pump, driven by a 25-hp., direct-current motor and having a rating of 300 gal. per min. At the present time, the pump is located near the sump that drains an abandoned lift in which the water backs up on both sides of the slope for a distance of about 220 feet.

As indicated in the sketch I send, the water is held back and prevented from reaching the slope by two dams that are built one on either side of the slope headings and connected by an 8-in. pipeline built into each of the dams. Another short pipeline, having a T-connection with the first pipe, conducts the water to the pump.

Between the 8-in. pipeline joining the dams and the pump, there is a 6-in. borehole sunk from the surface to the coal a distance of 91 ft. In its present location, the pump discharges its water through this borehole under a head of 94 ft. There is practically no suction lift, as the water flows into the pump under a head averaging from one to five feet. In this arrangement, the total length of suction and discharge pipe is about 116 feet.

The slope headings are driven in the coal seam and have a grade of about 4½ per cent. There is another 6-in. borehole sunk from the surface and penetrating the seam at a depth of 47 ft., at a point about 200 ft. up the pitch from high-water line.

It has been suggested to move the pump from its present location further up the slope to a point where it will discharge into the 47-ft. borehole, under a head of, say 52 ft. It is proposed to lay about 200 ft. of suction pipe, extending from the pump into the flooded section on one side of the slope. In that arrangement, the water would be allowed to accumulate in the abandoned workings up to the end of the suction line, and the total length of pipe, including suction and discharge, would then be about 367 feet.

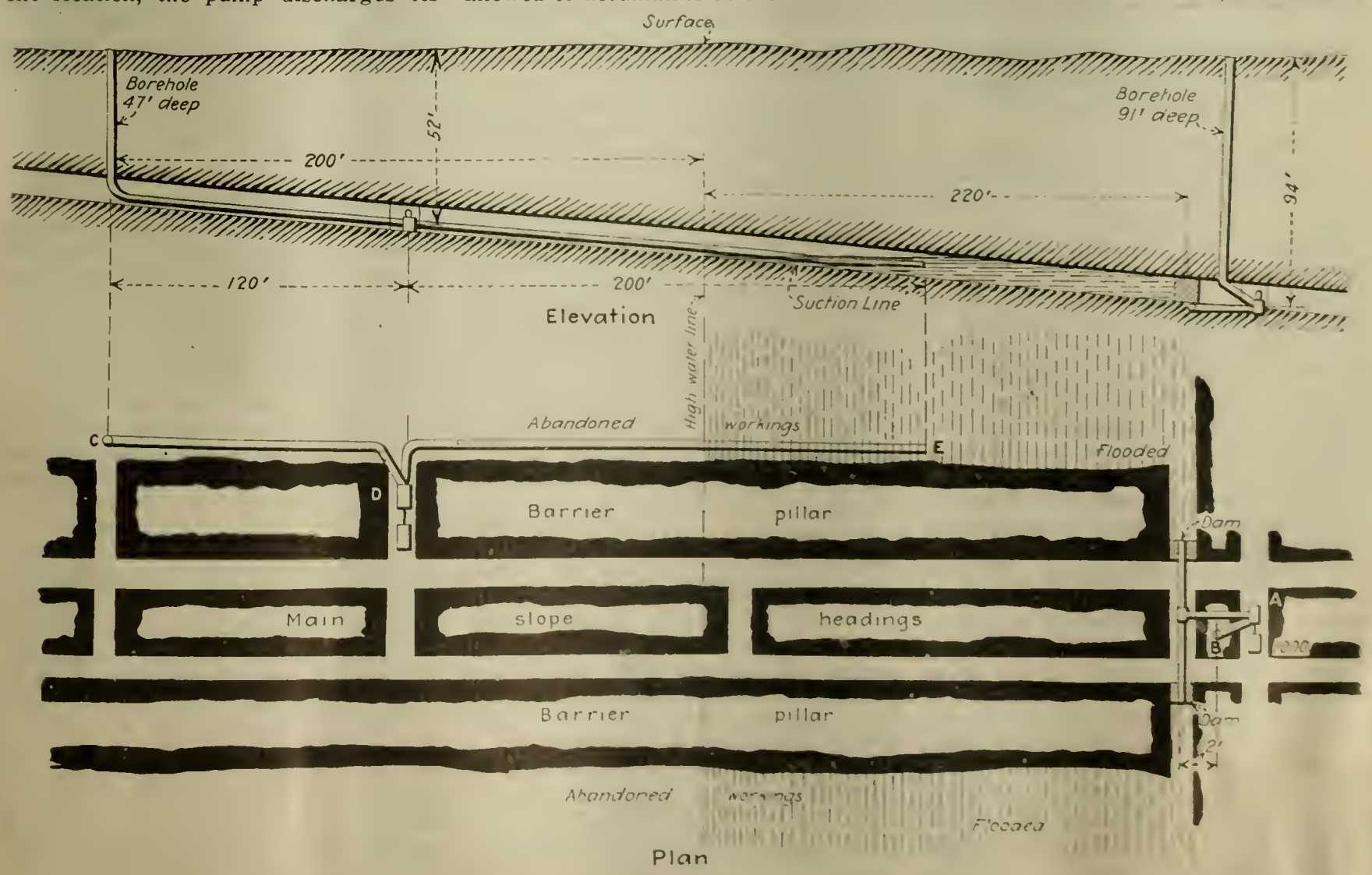
Now, I want to ask, Which is the most practical setting of the pump? Will there be any saving of power due to the resulting reduction of 30 ft. in the head against which the pump operates, considering the additional length of 367 — 116 = say 250 ft. of pipeline, besides an unusually long suction line and a 12-ft. section head, as compared with no head in the first position?

McIntyre, Pa. O. G. SHARRER.

From the description and information furnished by this correspondent, we have prepared the accompanying diagram, showing the supposed plan and elevation of the situation, which may not conform to the exact conditions, however, except in principle only. The first position of the pump is shown at A, where it is discharging into the drillhole at B. The proposed second position is indicated at D where it will discharge into the drillhole C and have a 200-ft. suction line, reaching to E.

In what follows, we will estimate on a 6-in. pipeline throughout, this being given as the size of each of the boreholes. A discharge of 300 gal. per min., however, while calling for a 6-in. suction pipe, would require only a 4½-in. discharge pipe, which if used would slightly reduce the discharge head. But that does not affect the choice of location for the pump in this case.

The first step in the solution is to calculate the effective head, which is the sum of the static head, the friction



ASSUMED ARRANGEMENT IN SLOPE MINE, SHOWING PROPOSED CHANGE IN LOCATION OF PUMP

head and the velocity head. For a discharge of G (gal. per min.), against a static head h (ft.), through a pipe having a diameter d (in.) and a length l (ft.), the effective head h_1 (ft.) is given by the formula,

$$h_1 = h + \frac{G^2}{800\,d^4}\left(\frac{l}{d} + 2\right)$$

In either position of the pump, we estimate on the same discharge, G = 300 gal. per min. and the same diameter of pipe d = 6 in.; but, in the first position of the pump, at A, the static head is h = 94 ft. and the length of pipe l = 116 ft. Substituting these values gives for the effective head

$$h_1 = 94 + \frac{300^2}{800 \times 6^4}\left(\frac{116}{6} + 2\right) = 95.8\ ft.$$

The horsepower required to drive the pump, under the assumed conditions is,

$$H = 0.00034\ G\ h_1$$
$$= 0.00034 \times 300 \times 95.8 = 9.77\ hp.$$

Again, estimating the effective head (h_1) in the second position of the pump, at D, where the static head is the sum of the discharge and suction heads, or h = 52 + 12 = 64 ft., and the total length of the discharge and suction pipes, l = 167 + 200 = 367 ft., we have:

$$h_1 = 64 + \frac{300^2}{800 \times 6^4}\left(\frac{367}{6} + 2\right) = 69.5\ ft.$$

In this case, the horsepower required to drive the pump is:

$$H = 0.00034 \times 300 \times 69.5 = 7.09\ hp.$$

The formula given for the calculation of the horsepower required to drive the pump, in each case, assumes a 75-per cent efficiency of the steam-end of the pump.

The saving in horsepower required to drive the pump when located at D, as compared with the location at A, is therefore 9.77 − 7.09 = 2.68, which represents a percentage of saving (2.68 × 100) ÷ 9.77 = 27 per cent, which is also the saving in steam consumption for pumping.

The net saving effected by changing the location of the pump, however, involves the expense of maintenance of 367 − 116 = say 250 ft. of pipe, which will need to be replaced, from time to time, as destroyed by the acid mine water.

We would suggest, in this connection, using 4½-in. pipe for the 167-ft. discharge line if the pump is located at D, as this smaller size of pipe will reduce the expense of installation and maintenance materially. The overhead charges, which include the cost of making the change, interest on the investment, and depreciation of material, should also be estimated in this case, as they may more than balance the saving in steam consumption.

Examination Questions Answered

Examination for Mine Foremen, Fifteenth Anthracite District

Selected Questions

QUESTION—*What are the dangers to be guarded against in removing pillars, and how should a mine be laid out to minimize these dangers?*

ANSWER—The dangers, in drawing back pillars in a mine, will vary with conditions. In a level seam with fairly good roof and floor, there is little danger to be feared by an experienced miner. The dangers increase with the inclination and thickness of the seam, depth of cover, character of roof and floor, and the presence of gas or water in the strata, or slips and faults that must be guarded against. There is always danger where the men employed in this work are not experienced.

In order to minimize the dangers incident to robbing pillars, a mine should be laid out with due regard to this work. The size of the pillars must be determined in relation to the width of opening, depth of cover, character of the roof, floor and coal, inclination and thickness of the seam and other conditions that affect the safety of the work. Experience in mining must determine what is necessary. Where gas is present in the strata, only safety lamps should be employed when robbing pillars and care must be taken to keep the necessary timbers behind the men at work on the pillar.

QUESTION—*Should you suddenly come upon a body of gas and discover your safety lap filled with flame, what action would you take?*

ANSWER—Keep calm; make no quick movement but promptly and slowly lower the lamp toward the floor, at the same time withdrawing quietly from the place while attempting to protect and smother the lamp with a coat or otherwise, as may be possible. Any quick movement would only disturb the gas at the roof and increase the danger of the lamp passing flame and igniting the gas-charged air surrounding the gauze.

QUESTION—*To make a successful mine foreman are there any other qualifications that a person should possess in addition to the certificate he might obtain? If so, state fully.*

ANSWER—A good mine foreman will regard his certificate as one of the least of his qualifications for the position. He must be a man of character, sober, conscientious, industrious, a good judge of human nature and, finally, kind but firm in his treatment of men, having no favorites, but being square and fair in all his dealings and making no promises that he does not or cannot keep.

QUESTION—*As electricity is becoming a factor in coal mining, state fully to what uses it has been applied and how dangers arising from its use are to be guarded against.*

ANSWER—Electricity is largely used in coal mining for the purposes of haulage, operating coal drills, cutting machines, mine pumps and fans. Also, to a considerable extent, electric hoists are employed. All up-to-date mines have installed electric signaling systems and telephones.

Electric mine installations should always be made by a competent mine electrician who is familiar with underground conditions. As for as practicable, high-power lines, transmitting current a considerable distance to the working face, should be carried over the surface to a point near the face and there lowered into the mine through a drillhole. All live wires installed underground must be hung on good supports placed in the roof or the timbers, and every precaution taken to prevent a fall of roof that would bring down the wires. Danger signs must be placed at all points where live wires are exposed.

Power lines should be insulated and kept off the traveling ways and, as far as practicable, trolley wires must be carried on one side of a haulage road. At all points where men or animals must cross the haulage road, the trolley wire must be carried at a good height above the floor and protected by suitable guardboards to prevent accidental contact with the wire.

In the installation of electric wires care must be taken to guard against possible fire from the sparking of wires, blowing out of fuses, or short circuiting of the current. All employees must be warned of the danger of contact with live wires and forbidden to tamper with the same.

QUESTION—*A gangway is driven from one tunnel a distance of 5,280 ft. Another gangway is driven parallel with it in another seam. It is found too expensive to keep both roads open. Can you suggest any way by which these gangways can be operated more economically? Also, how long would these gangways show on the mine map?*

ANSWER—Drive a seccond tunnel to connect the two gangways near the head of each. This being done, pull the track and abandon the road in one gangway from the first tunnel to the second.

In order to determine the economic distance between the two tunnels, estimate the expense of driving a second tunnel at a point near the faces of the two gangways for the purpose of hauling all the coal out on one gangway. Also, estimate the cost of maintenance per day, per hundred feet of roadway. Dividing this latter estimate by the former will give approximately the number of hundred feet the gangway should be extended before driving a second tunnel. Interest on the investment is so small that it can be practically ignored.

Though Output Is Increasing Slightly, Germany Continues to Suffer Coal Shortage

Situation Is Intensified by the Fact That Only Better Grades Are Accepted as "Reparation Coal"—German Industries Compelled to Depend Largely Upon Inferior Fuel—Coke Ovens Forced to Shut Down

By C. A. Heise
Berlin, Germany

PRESENT conditions in the coal market [Dec. 28, 1920] hardly exhibit any particular features compared with the last few months. In spite of a slight increase of output there is no abatement of the coal shortage, which continues to affect the manufacturing industry to a large extent and has been responsible for temporary suspension of operations and shutdowns of plants of late. The shortage is the more keenly felt because for "reparation coal" only the better grades enter into consideration, thus compelling the German industry to use inferior kinds of fuel to an increased extent. Coke and coking coal are rather scarce. Several coke ovens had to shut down recently for want of coal, rendering conditions for smelters even more difficult, with the result that—owing to the pig iron shortage—French pig had to be imported.

Turning to the Ruhr district, it will be seen from the figures in the appended table that the output during the last few months has slightly but steadily increased—principally due to an increase in the number of colliers and the putting in of extra shifts. Furthermore, extensive housing schemes have enabled some collieries to attain once more the pre-war level of production. These, of course, are isolated instances only, for, despite all extra shifts and putting more men to the job, it has not been possible for the coal industry as a whole to make up for the deficiency caused by the reduction of working hours and the decreased productive capacity of the men, caused by undernourishment. The truck shortage is another serious factor hampering output, the shortage amounting to 92,413 trucks in November, so that the stocks stored at the pitheads about the middle of December reached a total of 535,000 metric tons, compared with 80,000 tons at the end of October.

Government Denies Application for Price Increase

The total output for 1920 will be around 88,000,000 tons, or 26.5 million tons less than in 1913, despite an increase in the number of miners by about 100,000 men. As was to be expected, the application of the Rhenish-Westphalian Coal Syndicate for an advance of prices has again been refused. Under-Secretary Hirsch, on behalf of the government, pointed out that the attitude of the Cabinet regarding the coal price policy had not changed. The present economic situation, he held, renders an advance of prices impossible seeing that the inland market will not stand a further increase of prices nor would, in face of the obtaining depression in the world's market, the export industry. The fact that some districts were granted an advance (Saxon pit coal by 13 marks, Bavarian tar coal by 19.80 marks, Rhenish lignite briquets by 18 marks, Frankfurt raw lignite by 9 marks per ton) was solely due to compensatory measures rendered necessary by local considerations and being in no way at variance with the adopted policy of the government.

Coal prices have been increased, ranging now from 209.40 marks per ton for best gas coal to 186.40 marks for dust.

The total amount of coal raised in the Ruhr district in recent months, including collieries on the left bank of the Rhine, is given in the following table:

PRODUCTION OF COAL IN THE RUHR

	Total Output, Tons	Number of Working Days	Daily Output, Tons
December, 1920	8,200,000	.....	324,750
November, 1920	8,031,711	24½	331,205
October, 1920	8,117,178	26	312,199
November, 1913	8,932,276	23½	386,261

The number of men employed at the end of November was 527,348, compared with 519,685 at the end of October and 467,094 at the end of November, 1919. The above table shows that, while the absolute output has slightly decreased, the intrinsic output shows an increase over October by approximately 19,000 tons, and it goes without saying that the latter way of determining actual production is the only one entering into consideration. Parenthetically it may be remarked here that the swelling of the November output figures is quite a recurring feature, as the men are anxious to make a few extra marks to cover Christmas expenses, extra shifts being paid double time. It is also interesting to note that while the daily output during November shows a decrease of 55,000 tons compared with November 1913, the number of men increased by about 70,000! This anomaly is finding its explanation partly in the reduction of working time from 8½ to 7 hours partly in the food question and the numerous labor troubles following in the wake of the revolution. The increase of output is depicted in the table below, which also shows that the output per capita per shift has remained practically unchanged throughout the year:

TOTAL OUTPUT OF RUHR COLLIERIES, 1913–1920

(In Tons)

1913	114,536,000	1917	99,055,000
1914	98,260,000	1918	95,942,000
1915	86,794,000	1919	70,946,000
1916	94,163,000	1920	88,019,000

Strikes were few and far between in the Upper Silesian district so that output during December was fairly steady, the average daily output being 112,029 tons. During 24 working days, 2,688,698 tons were raised compared with 2,726,463 tons in November (26 days) truck service was rather irregular, the shortage being 38,389 cars out of a required total of 220,840. Shipments to foreign countries register a considerable increase compared with November, as is shown in the following table.

Only 75 Per Cent Car Supply Available

While the absolute output in Upper Silesia during November does not show an increase over October, the production figures for the two months being 2,726,463 and 2,797,290 tons respectively, yet the relative output is higher, as there were twenty-five working days in November as against twenty-six in October. Car supply was rather irregular.

OUTPUT OF RUHR COLLIERIES DURING 1920

	January	February	March	April	May	June	July	August	September	October	November	December
Total output in million tons	6.66	6.88	6.40	6.51	7.09	7.45	7.56	7.29	7.59	8.10	8.03	8.20
Daily output in tons	264,875	286,511	236,951	271,314	305,043	304,246	280,154	280,445	291,940	311,500	329,800	324,750
Output per capita per shift in tons	0.591	0.613	0.581	0.580	0.593	0.591	0.577	0.574	0.578	.....	.....	.....

only 75 per cent of the required cars being available during the latter half of November. Exports amounted to 465,954 tons (October, 456,550 tons), shipment to various countries being as follows in metric tons:

	November Tons		December Tons
Poland	89,774	Poland	240,467
Austria	175,314	Austria	173,332
Czecho-Slovakia	73,195	Czecho-Slovakia	68,338
Italy	107,813	Italy	95,665
Hungary	3,417	Hungary	17,424
Free State Danzig	14,279	Danzig	12,095
Memel District	4,167	Memel District	4,302
Total	467,659	Total	610,623

In October, 1920, shipments to Poland reached an aggregate of 100,298 tons.

Car Shortage Causes Accumulation at Mines

Owing to the car shortage, stocks had piled up at the mines to the extent of 519,488 tons toward the end of November, compared with about 300,000 tons at the beginning of October. The daily output for the first half of December shows considerable improvement over November although the proposed extra shift agreement had not been put into effect pending the sanction of the Inter-allied Commission. The average daily output for eleven days was 112,766 tons against 108,232 tons in the corresponding period of November. The car shortage continues to interfere with operations, a shortage of 12.3 per cent being registered during the first half of December. Stocks during the same period amounted to 497,330 tons, compared with 422,107 tons in the first two weeks of November. A decrease in coke and briquet production is noticeable, the respective figures being 216,000 tons (223,545 tons in October) and 25,000 tons (27,385 tons in October).

An output of 423,659 tons was registered in Lower Silesia during November from 38,655 colliers. The corresponding figures for 1913 were 501,276 tons from 27,706 mines.

The output of the Aachen district in November was 189,153 tons compared with 270,401 tons in 1913. The number of colliers in operation was 17,806 compared with 16,980 in 1913.

No exact figures are available on the production in Saxony, but the November output will not differ to any material extent from the October figure of 372,972 tons. Owing to strikes, the December returns will show a considerable drop.

Aggregate Production During November

The total output of coal in Germany in November, 1920, in metric tons excluding Alsace-Lorraine, Saar district, and Palatinate, is given in the following table:

	Nov., 1920	Nov., 1919
Pit coal	11,814,090	9,543,337
Lignite	9,839,108	7,972,842
Coke	2,245,434	1,929,103
Lignite briquets	2,037,324	1,552,157

The figures for the corresponding eleven months, January-November, 1920 and 1919 follow:

	Jan.-Nov. 1920 *a*	Jan.-Nov. 1919 *b*
Pit coal	119,420,430	97,540,820
Lignite	101,523,999	85,587,745
Coke	22,822,485	19,182,579
Hard coal briquets	4,484,128	3,691,037
Lignite briquets	22,194,348	18,031,138

a Excluding Alsace-Lorraine, Saar and Palatinate.
b Excluding Alsace-Lorraine; including Saar and Palatinate.

The table appended below shows that the Rhenish-Westphalian Coal Syndicate controls 53.5 per cent of the total German output and 88.8 per cent of the Ruhr district output.

OUTPUT OF GERMAN COLLIERIES

(In Thousand Tons)

Year	Germany	Prussia	Ruhr District	Syndicate Collieries	Upper Silesia	Saar
1913	190,109	179,861	114,487	101,652	43,435	12,223
1914	161,385	152,956	98,358	84,810	36,996	9,276
1915	146,388	140,007	86,778	73,984	38,107	7,749
1916	159,170	152,284	94,563	93,556	41,723	8,275
1917	167,311	159,531	99,365	98,714	42,752	9,514
1918	160,508	152,810	96,028	95,516	39,648	9,216
1919	116,500	112,031	71,164	70,266	25,932	8,971

According to a recent statement by Herr Fischbeck, Federal Minister of Trade, the total German pit coal production during the year may be estimated at 133,000,000 tons while the lignite output probably will amount to 114,000,000 tons.

EXPORT, IMPORT, AND INLAND CONSUMPTION DURING THE WAR AND IN 1913

(In Thousand Tons)

	Output	Import	Export	Export Surplus	Inland Consumption
1913	190,109	11,324	44,911	33,587	156,522
1914	161,385	6,956	33,960	27,004	134,381
1915	146,868	2,65[illegible]	22,732	20,074	126,794
1916	159,170	1,403	20,946	19,543	139,627
1917	167,311	584	18,957	18,373	148,938
1918	160,508	143	14,050	13,907	146,601

The following table illustrates the trend of prices for bituminous rough coal, which prices serve as a basis for calculating the other prices by the Syndicate. Prices for bituminous best coal No. 1 as well as blast furnace coke No. 1 also are given.

BASIC PRICES, IN MARKS PER METRIC TON, F.O.B. MINES

	Bituminous Rough Coal	Bituminous Best Coal No. 1	Blast Furnace Coke No. 1
1913 April	12	14	18.50
1914 April	11.25	13.50	17
1915 April	13.25	15.50	15.50
1915 September	14.25	16.50	17.50
1916 March	.....	.....	19
1917 January	16.25	18.50	22
1917 May	18.25	20.50	25
1917 October	24.30	27	33.60
1918 September	26.85	29.55	37.20
1919 January	41.30	44	58.90
1919 May	61.30	64	88.90
1919 June	67.40	70.10	97.40
1919 October	77.90	80.60	113.15
1919 December	86.90	89.60	126.65
1920 January	106.90	109.60	155
1920 February	149.70	174.90	217.70
1920 March	168	196.50	244.50

Judge Anderson Considers Motion to Dismiss Suit to Enjoin Coal Commission

JUDGE A. B. ANDERSON, of the Federal Court of Indianapolis, has taken under advisement the motion of the State Special Coal and Food Commission to dismiss the suit for an injunction filed by E. E. Heller & Co., retail coal dealers of Indianapolis. Arguments were based chiefly on the lengths to which the state might go under its police powers. Judge Anderson indicated that he thought another means might have been found for remedying the condition sought to be remedied by the creation of the commission. An attorney for the company in arguments against the motion to dismiss contended that the commission could not be regarded merely as an adjunct to the State Board of Public Accounts, inasmuch as the Legislature had created a new body and had said nothing about the commission being formed to carry on the work of the Board of Accounts. The act of the Legislature in naming the members of the commission, he contended, was unconstitutional.

Wants Indiana Law Requiring Replacement Of Soil Removed in Strip Mining

ELMER W. SHERWOOD, representative from Greene County, Indiana, is preparing a bill to be introduced in the State Legislature soon requiring strip mining companies to replace the soil removed in the process of strip mining. Senator Sherwood says that the bill is important because many thousands of acres of valuable land are being irreparably damaged by the stripping process of taking the soil from above the shallow veins of coal. "Coal is being stripped as deep as fifty feet under the surface of the ground, resulting in the throwing up of large uneven hills of dirt, slate and débris," said Mr. Sherwood. In this way, he says, the state is not only losing revenue from taxation but the health of the people in those communities is endangered by the ponds of water that form, becoming stagnant and unhealthful. Mr. Sherwood says the State Board of Health is back of the bill.

Want Senate to Probe Mingo Troubles

ACCORDING to C. F. Keeney, president of District 17, industrial disturbances in Mingo County, West Virginia, are to be probed by a committee of the U. S. Senate. Mr. Keeney states that a resolution providing for such a probe will be introduced in the Senate and that it will have the unqualified support of Senators La Follette, Walsh, Borah, Johnson and Kenyon, all of whom, he asserts, are pledged to support the resolution openly if it should encounter any opposition after being introduced.

At the time that a similar resolution found its way into the West Virginia Senate it was alleged that the United Mine Workers were largely instrumental in having it brought forward. Mr. Keeney corroborates that statement. It will be remembered that the West Virginia Senate after adopting the resolution reversed itself by laying the resolution on the table. Strike leaders do not hesitate to say that they have sought for a Senatorial investigation because of their failure in the legislature of West Virginia.

Mr. Keeney contends that the miners are not responsible for the industrial disturbances in Mingo County and that the only way in which they can be relieved of such a stigma is through a federal investigation. He also states that he has stood ready at all times for an honorable settlement in the Tug River field.

Operators declare that the only question at issue is, and always has been, whether the field should remain non-union or not and that that question has been settled by the outcome of the strike, which finds all mines operating and production only a few thousand tons short of normal. In other words, it is their claim that the strike exists only on paper but that the strike leaders will not admit defeat.

Will Not Work in Same Mine with "Hustlers"

AT THE mines of the Pennsylvania Coal Co. and the Hillside Coal & Iron Co. much agitation has arisen against certain men who, in the time of the system of working by subcontractors, were engaged to keep the employees of these men steadily and energetically at work. These men were termed "hustlers." The mine workers desire that they shall share the fate of the subcontractors and like them be denied work at the mines, though the agreement specifically states: "The hustlers and pushers formerly employed by contractors at the Butler colliery, who have recently resigned, will be given other work by the company. They will not be in authority over contract miners."

Some of these hustlers have been given work. It is variously reported that there are from seven to eighteen of these men at the Butler colliery. Rather than work with them the men at that plant quit work. Those at the Barnum colliery refused to strike and also declared that they would not contribute to the financial support of the insurgent grievance committee headed by Rinaldo Capallini. On Jan. 28, after a week's idleness, the Butler men returned to work as the result of a meeting held the previous day. Capallini wanted the men to remain out till the "hustlers" were discharged and favored the calling of a general strike at all the mines of the company Jan. 30.

Miners' Union Will Lobby at Harrisburg

ALL THE time that the Pennsylvania State Legislature is in session three men from each anthracite district will lobby at Harrisburg on behalf of the United Mine Workers of America. A man will be in Harrisburg every day to work in favor of legislation such as the union desires to see enacted. The union desires the following:

An amendment to the Workmen's Compensation Law that will provide for an increase of at least 75 per cent in the schedules and for a reduction of the non-payment period from ten to three days and a substantial advance in the allotment for funeral expenses. A contribution of at least $3,000,000 by the state to the mother's pension fund. An old-age pension bill based on the report of the State Old-Age Pension Commission.

An adequate minimum salary law for the teachers of the state. A law prohibiting the use of electricity in gaseous mines and requiring adequate safeguards where hoisting engines are employed and demanding that proper ventilating machinery be installed at the mines. A law calling for a nonpartisan state convention to revise the state constitution.

A law making every man holding a mine foreman's certificate eligible for mine inspector without further examination and a law providing adequately in the hard-coal region for the maintenance of the present hospitals in the anthracite region and for the erection and maintenance of additional hospitals.

The mine workers oppose the law against sedition and that creating the public service commission and seek their repeal.

Men in Union Camp Fire On Non-Union Town

VIOLENCE recurred in a worse form than ever on Willis Branch during the night of Saturday, Jan. 29, when persons hidden on nearby hills poured volley after volley of lead onto the open-shop plant of the Willis Branch Coal Co., keeping up the firing during the greater part of the night. Some of the shots were fired from a point near the residence of the superintendent of the Weirwood plant of the New River & Pocahontas Consolidated Coal & Coke Co., which employs union miners, and some of the shots were fired from a point near the Weirwood school.

On the day following the attack hundreds of shells were picked up in the neighborhood of the Weirwood plant and also within a distance of half a mile of the Willis Branch plant. That those in the attacking party were shooting to kill was indicated by the fact that many bullets lodged just about on a level with the beds in various homes. Since the Willis Branch company began to operate its mines on an open-shop basis on Sept. 1, 1919, every possible effort has been made to close down the plant. While the Baldwin guards were on duty it was said that they were a source of irritation to the union men, but there has been no cessation in attacks since private guards were removed.

Anthracite Union Men May Seek Conference

FURTHER negotiations may be opened soon between anthracite operators and mine workers. The operators have agreed to grant such a meeting if requested, and the mine workers' representatives believe that by concentrating on the demand for a general eight-hour day they may be able to obtain that concession for the men who tend machinery and fill other places that require attendance rather than work. All the others already have the eight-hour day. President Thomas W. Kennedy of the Hazleton district has called a meeting, at which the future policy of the union will be determined.

STATISTICS SHOWING THE RECEIPTS of bituminous coal and anthracite in New England for the years 1916-1920, published in the Tenth Annual Review and Forecast Number of *Coal Age*, page 134, were obtained through the courtesy of the Massachusetts Fuel Administration. It will be remembered that during the war the New England Fuel Administration built up an elaborate system for obtaining these figures. The collections of these data were allowed to lapse from April 1, 1919, until the Massachusetts Fuel Administration was revided in the summer of 1920. Captain Edward F. O'Dowd, who had been statistician for Mr. Storrow during the war, was brought back on the job, and it is due to his enterprise and the support of Mr. Hultman that these valuable figures have been brought up to date and are now being kept currently.

IN A PETITION FILED in the Chancery Court at Birmingham, Ala., Feb. 2, W. L. Harrison, international officer of the United Mine Workers of America, asks that Conrad W. Austin, chief state law enforcement officer, and the members of his force be restrained from shadowing him and picketing his office. The petition declares that members of Austin's squad, heavily armed, follow him around, listen to his conversation, stand outside his office, destroy his privacy and peace of mind and that of his wife.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THE general business situation, according to a statement of economic conditions issued by the National City Bank of New York, is marked by greater confidence than was manifest in the last weeks of 1920, and there are tangible evidences of improvement. "The apprehensions and rumors of impending trouble which are always a demoralizing influence when the credit situation is under strain," the statement continues, "have been largely cleared away. The irresponsible talk about a panic has been silenced. The epidemic of business failures predicted for the end of the year did not come. The substantial business structure of the country is unshaken, and whatever anxiety there may have been upon that score has been relieved.

"The movement of crops, particularly of grain and live stock, has increased notably during the past month, in fact is practically normal. The receipts of wheat at primary markets are now running over those of the corresponding weeks of last year. With products actually moving in the Middle West, the money situation relaxing, the reserve banks getting into better shape, and a fair degree of trade revival, the whole situation is looking better.

"In cotton, woolen and silk goods a substantial gain in volume of business has been made since the first of the year. Trade in wholesale markets and also production have been for several months not only below normal, but below current retail distribution.

"The important thing in this readjustment is the maintenance of the equilibrium in industry, so that the various branches will continue to be mutually supporting. The market for the products of each industry is with the people employed in the other industries. This means that the prices of products must maintain a fairly uniform relation or distribution will be interrupted and production will have to be curtailed. This is the essential thing in keeping the industries running and in maintaining employment for the workers."

Southern Mills Gain Impetus

Cotton mills at Augusta, Ga., with the exception of one plant, were in operation on a basis of from 60 to 100 per cent capacity Jan. 31, according to an announcement made by the mills. The Graniteville Cotton Manufacturing Co.'s mill, which had been shut down for several months, is in operation full blast. This company controls the Hickman and Vauclause mills. The two plants at Warrenville, S. C., also are in operation. The Bath and Clearwater mills continue in operation with increased capacity. The Augusta factory and the Enterprise mill, which obtain their power from the Augusta canal system, have started up, utilizing about 60 per cent of capacity. The John P. King Manufacturing Co., one of the largest mills in the South, is now running 75 per cent capacity. The Sibley Manufacturing Co. is running full time. It is the belief that all the textile plants in this district will be in full blast within a fortnight.

Two big cotton mills near Columbus, Ga., the Eagle and Phenix and the Swift Manufacturing Co. plants, announced resumption of full-time operation Jan. 31 after two months on half time. No wage reductions were made, but bonus payments are discontinued. Receipt of new orders caused the resumption, officials said.

Management of the Blue Buckle Mills, Rock Hill, S. C., announce that the plant will resume operations on Feb. 14, working day and night shifts. The plant, a subsidiary of the Jobbers Overall Co. of Lynchburg, which recently met financial difficulties, has been idle since the middle of December.

Government Armor Plant Starts

The first steel was made at the armor plate plant of the United States Government in South Charleston, W. Va., Feb. 2. Gordon Woodbury, Assistant Secretary of the Navy; Admiral C. B. McVey, Jr., chief of the Bureau of Commerce, and other Navy Department officials from Washington were present at the opening of the plant.

Textile Industry Revives

New England's textile industry reported marked improvement in the general business situation so far as it applies to its output during the three weeks ending Feb. 5. Big mill men assert that more orders were taken during that period than in the previous six months. They expect the new Congress to grant New England tariff relief in order that its manufacturers will be protected from the production of "cheap labor" in Europe.

Several of the cotton mills in New Bedford, Mass., on Jan. 31 started machinery that had been idle for weeks. Fully 20 per cent more operatives were given employment by the cloth mills than two weeks previously. There is also increased activity in the yarn mills.

The factories of the Winsted Hosiery Co. and the New England Knitting Co., Winsted, Conn., which had been closed for a month, reopened Jan. 31. The companies employed a total of 800 persons before the shutdown.

Broad Silk Mills Re-employ 3,500

Mills of the J. H. & C. K. Eagle Silk Corporation at Shamokin, Trevorton, Phoenixville, Austin and Bellefonte, Pa., resumed work Monday, Jan. 31, after a lay-off of three months. The concern manufactures broad silks. Thirty-five hundred employees are affected. Nothing was said in the announcement about wages, but it is understood that a reduction of 25 per cent over old rates was to be put into effect.

15,000 at Work in Ford Plant

About 15,000 men resumed work in the Ford Motor Co.'s Highland Park plant Jan. 31. The factory had been closed since Dec. 23.

Steel Mills Increase Output

From points outside the immediate Pittsburgh district come steady reports of increased operation, including the Youngstown Sheet & Tube Co. at Youngstown, Ohio; Berger Manufacturing Co. and Stark Rolling Mills Co. at Canton and Trumbull Steel Co. at Warren. The Trumbull company, which had been operating on about a 50 per cent basis for several months, resumed full force operations at all of its thirty-four mills. About 2,500 idle men returned to work.

Proposes Production Tax in West Virginia

A PRODUCTION tax of 2c. a ton on coal produced in West Virginia is proposed in Senate Bill No. 4 introduced in the State Senate on Jan. 17 by Senator Poling. In the first section of the bill it is provided that no person shall, after July 1, 1921, engage in or continue the production of coal without first obtaining a state license.

In the third section of the bill it is provided that the tax shall be paid semi-annually—on Jan. 1 and July 1 in each year. Information required to be furnished to the State Tax Commissioner would show the location of every mine, ownership, gross tonnage produced, tonnage sold, to whom sold, date of sale, date of shipment, whether within or without the state. Power is given the State Tax Commissioner to examine the books and records of all persons producing coal. Failure under the provision of the bill to procure a license would be attended by a penalty of not less than $1,000 nor more than $10,000, or by imprisonment for one year, or both.

Indict Coal Companies Accused of Charging Excessive Prices

THE Federal Grand Jury at Cleveland on Jan. 31 returned five indictments under the Lever Act, charging five Cleveland coal firms, both retailers and operators, with selling coal at excessive prices during the last few months. The indictments named the following corporations and their officers:

The Goff-Kirby Co., charged with fifteen separate violations of the Lever Act in sales of coal since last April and with an additional count alleging conspiracy with persons and firms unknown to the Grand Jurors to commit such violations.

Glenville Coal Co., charged with six separate violations of the Lever Act in sales of coal since Nov. 13 and with an additional count charging conspiracy.

The George U. Markley Co., of Mineral City and Cleveland, charged with ten separate violations of the Lever Act in sales of coal since Aug. 3, and with an additional count charging conspiracy.

Federal Clay Products Co., of Mineral City and Cleveland, operators, charged with four separate alleged violations of the Lever Act in sales of coal since June 30, and with an additional charge of conspiracy.

Union Coal Co., charged with seven separate violations of the Lever Act in sales of coal since June 10, and with an additional conspiracy charge.

The indictments, returned to Federal Judge D. C. Westenhaven after the jurors for weeks had been examining coal selling conditions in northern Ohio, listed the details of the separate sales whose prices, it is charged, were violations of the Lever Act. Soft coal figured in the majority of the transactions, but hard coal and coke were named as well.

Examination of witnesses in the coal investigation will be continued before the new Grand Jury to be assembled this week. The chief documents in the investigation that resulted in indictments were the books of several coal companies of Cleveland whose names were not made known. Witnesses heard were H. W. Kage, special agent of the Department of Justice, who, made a survey of the prices paid at mines in Ohio, Pennsylvania and West Virginia; H. M. Griggs, secretary of the Coal Ore Exchange, and D. H. Hurd, secretary of the Pittsburg Vein Coal Operators Association.

An indictment charging the B. J. Lynch Coal Co., Inc., of New York City and Bernard J. Lynch, its president, with violating the Elkins Act and misuse of priority orders granted by the Interstate Commerce Commission, was returned Jan. 31 by the Federal Grand Jury to Judge Frank Dietrich in the U. S. District Court. The indictment was returned on evidence presented by William McMurtrie Speer, special government prosecutor.

According to the indictment the company and its president procured the transportation from mines to Tidewater of coal for export on the representation that the coal covered by the priority and preference orders granted by the Interstate Commerce Commission was to be used for domestic purposes. The various counts in the indictment concern large quantities of coal, which, by the subterfuges complained of by the government, during the months of June and July last, it is alleged, were delivered by the defendants to steamship lines within this jurisdiction for shipment to France and other foreign ports.

On Feb. 2 Coale & Co., Inc.; W. H. Bradford & Co., Inc.; the B. J. Lynch Coal Co., Inc., and William F. Coale, president of the first concern; Lloyd G. McCrum, general manager of the Bradford company, and Bernard J. Lynch, head of the Lynch company, entered pleas of not guilty before Judge Dietrich. The individuals were held in $2,500 bail each and no date was set for their trial. Surety was furnished.

Senator Elkins Opposes Calder Coal Bill as Form of Government-Control Mania

OPPOSITION to the Calder Coal-Control Bill as a socialistic intrusion of Federal Government into private enterprise was expressed by Senator Davis Elkins, Republican, of West Virginia, in a statement at the Capitol, Tuesday, Feb. 1. In his statement Senator Elkins deplores what he characterizes as "decentralizing industry and centralizing government at Washington."

Senator Elkins' statement, as given out at his office, was as follows:

"One of the undoubted causes for tne voters of the country turning en masse to the Republican party last November was that they were heartily sick and tired of the intrusion of the government into private business. The government had tried its hand along these lines with disastrous results. From virtual ownership of railroads to running war-workers' hotels in Washington the result was the same—dislocation of business, stupendous waste and economic chaos. The people turned to the Republican party for relief, expecting and demanding an end of socialistic and paternalistic adventures on the part of the Federal Government into the realms of private business enterprise and a stop to interference with local government as exemplified in the sovereign states. They wanted to get back to 'normalcy.'

"It is to be hoped that the Congress elected last November will understand that that is what should be read from the verdict of the voters. This expiring Congress apparently places no such interpretation on the election returns. There is evidence of it in the passage by the Senate of the so-called packers' bill, and of the apparent excited haste to shove through the Calder Coal-Control Bill. The packers' bill is to give livestock raisers better prices, wholesale and retail meat dealers lower prices and higher profits, and the ultimate consumer cheaper prices. All three of these interests clamored for the law with a faith as great as it was absurdly impracticable. No such conflict as this can produce the outcome hoped for by its advocates.

"The same applies to the coal industry, with the bituminous part of which I deem myself thoroughly familiar. After meat and coal, it is evidently the plan of many to force the government into the clothing, shoe and other lines of business which private enterprise has developed to the nth degree of efficiency. Decentralizing industry and centralizing government at Washington has become a mania with many people, whose ultimate goal is apparently government ownership and control of all private business and enterprise. But they are not the great mass of the American people by any manner of means. The great mass of the American people spoke in no whispering and uncertain tones their opposition to this form of mania at the polls.

"I voted against the packers' bill and I expect to vote against the Calder bill and all legislative propositions of that variety. It is time we start on the work of fulfilling Senator Harding's promise to the country to return to 'normalcy.' The country's hope for a realization of that pledge rests with the Congress which was elected on the strength of it, and it is fortunate that it is so soon to come into power, for the present Congress has, in my opinion, failed to read aright the message written by the people at the polls last November."

Foreign Markets and Export News

British Miners Gain Increase in Wages

The week ended Dec. 18 concluded the test period of five weeks selected under the provisional settlement arrived at in November, to govern the rate of wages to be paid from January 1 to British coal mine labor. The total output for the five weeks, according to the *Colliery Guardian*, amounted to 26,075,800 tons, giving a weekly average of 5,215,160 tons.

The working year is calculated on the assumption that two weeks are absorbed in holidays, and fifty times 5,215,160 tons gives an annual output at the rate of 260,758,000 tons. The miners will therefore, under the agreement, become entitled to an advance of 1s. 6d. per shift in addition to the 2s. already conceded, making an advance of 3s. 6d. per day as compared with the wages paid prior to the strike. For every 6d. per shift advance in wages the owners receive an addition of one-fourth of 10 per cent of the excess profits payable under the Coal Mines (Emergency) Act. The actual amount depends, of course, on the quantum of surplus profits and indirectly on the revenue from exports.

European Freight Rates Decline Further; South American Market Firmer

According to W. W. Battie & Co.'s weekly coal trade reports, the freight market on export coal has declined still further, and to certain European destinations charters have been effected at new low levels. The South American situation is a little firmer.

Freight rates by steamer are about as follows:

	Jan. 10, 1921	Jan. 21, 1921	Tons Discharged Daily
Malmo	About $6.75	$6.25/$6.75	1,000
Copenhagen	About 6.75	6.25/ 6.75	1,000
Stockholm	7.00/ 7.50	6.50/ 7.00	800
Gothenburg	About 6.75	6.25/ 6.75	1,000
Antwerp/Rotterdam	4.25/ 4.50	About 4.00	1,000
Hamburg	5.25/ 5.50	About 4.75	1,000
Fr. Atlantic ex. Rouen	About 5.00	About 4.50	700
Lisbon	5 00/ 5.25	About 5.00	700
Algiers	About 6.25	About 6.00	800
West Italy	5.25/ 6.50	5.75/ 6.00	1,000
Marseilles	6.25/ 6.50	5.75/ 6.00	1,000
Piraeus	About 6.75	About 6.50	1,000
Trieste/Venice	About 7.00	6.50/ 6.75	1,000
Port Said	About 6.75	About 6.50	1,000
Alexandria	About 6.75	About 6.50	1,000
Constantinople	About 7.50	About 7.00	500
Gibraltar	5.25/ 5.50	About 5.00	1,000
Teneriffe	5.00/ 5.50	5.00/ 5.50	500
Pernambuco	About 6.00	About 6.00	500
Bahia	About 6.00	About 6.00	500
Rio	5.00/ 5 50	5.50/ 5.75	750
Santos	About 5.75	About 6.00	500
Buenos Aires, La Plata or Montevideo	5 00/ 5.50	5.25/ 5.50	500
Para	About 6.00	About 6.00	500
Rosario	5 50/ 6.00	About 6.00	750
To Nitrate Range	About 5.40	About 5.25	500
Havana	2.75/ 3.00	About 2.75	500
Sagua or Cardenas	About 4.00	About 4.00	300
Cienfuegos	About 3.75	About 3.75	500
Caibarien	About 4.00	About 4.00	300
Guantanamo	About 3.75	About 3.75	500
Manzanillo	About 4.50	About 4.50	300
Bermuda p. c. and dis. free	3.25/ 3.50	3.25/ 3.50	300
Kingston	About 4.00	About 4.00	400
Barbados	About 4.00	About 4.00	500
St. Lucia	About 4.00	About 4.00	500
Santiago	About 4.00	About 4.00	500
Port of Spain	About 4.00	About 4.00	500
Curacao Free p. c. Curacao	3.75/ 4.00	3 75/ 4.00	500
St. Thomas	3.50/ 4.00	About 3 25	500

All above rates gross form charter

ITALY HAS RECEIVED 1,618,514 tons of coal from Germany in fulfillment of the Treaty of Versailles as against over 14,000,000 tons supplied to France, 1,400,000 to Belgium and 600,000 to Luxemburg.

Coal Exported During December, 1920

EXPORTS of coal and coke, as reported by the Department of Commerce, for December, 1920, and the figures for December, 1919, as finally revised, are as follows, in gross tons:

	Dec. 1919	Dec. 1920
Anthracite	345,402	372,441
Bituminous	341,064	2,682,715
Exported to:		
France	.....	217,497
Italy	11,040	189,346
Netherlands	.....	102,986
Sweden	.....	54,637
Switzerland	.....	27,949
Canada	208,691	1,332,258
Panama	16,300	18,478
Mexico	8,489	46,261
British West Indies	11,589	25,073
Cuba	57,478	69,919
Other West Indies	12,255	8,456
Argentina	.....	119,763
Brazil	4,590	50,396
Chile	4,226	112,102
Uruguay	.....	4,537
Other countries	6,406	303,057
Coke	43,320	77,109

MEXICO IS NOW MAKING HEAVY PURCHASES of coal in the United States, and this is being shipped to Mexico by rail. Lines of the Southern Pacific, International & Great Northern, and other companies entering Mexico are congested with coal cars moving this fuel into the Southern Republic. The shortage of coal in Mexico was caused by the recent strike of coal miners in the state of Coahuila. A large part of this coal is entering Mexico via Eagle Pass, Texas. Under the present rule, the coal is held on the American side until paid for, and this causes considerable delay at times.

RESTRICTIONS ON COAL BUNKERING at the Panama Canal, in effect since our entry into the war, have been removed. As a result of these restrictions, many vessels, unable to secure sufficient supplies at the Canal, have had to change their voyages and put in to San Francisco for additional supplies. A supply of about 200,000 tons is maintained at the Canal.

COAL PRICES have been reduced 90 francs per ton and 110 francs on briquettes to industries, and 20 francs per ton on coal and 40 francs on briquettes to households. This makes the new prices for coal 250 francs and for briquettes 230 francs. All restrictions on consumption for manufacturing purposes have been removed and coal cards for domestic users are abolished, according to French reports.

ALL CONTROLLED PRICES on the distribution of inland coal will be removed March 1, according to the announcement of the British Department of Mines. The only restriction which will remain on export coal is where it is probable there will be a deficiency for the home supply.

THE ITALIAN FUEL CONTROLLER has fixed prices per metric ton, free on truck, at Italian port, as follows:—Belgian coal, 580 lire; German coal, 650 lire (Silesia) to 900 lire (Westphalia); United Kingdom and United States steam coal. 770 to 800 lire.

THE GERMAN GOVERNMENT has authorized the Coal Syndicate of Upper Silesia to increase prices by 30 mk. per ton from Jan. 1. A similar demand has been presented by the Rhenish-Westphalian Syndicate, but it appears to have been rejected by the government.

European Coal Production Shows Variation

(Special Correspondence to *Coal Age* from Berlin, Jan. 10, 1921)

DURING December, 1920, Switzerland imported 9,270 tons of coal from the Ruhr district and 17,051 tons from the Saar district. The total importation of foreign coal (in tons) by Switzerland during 1919 and 1920 is shown in the appended table:

	1920	1919
Germany:		
Ruhr district	250,079	182,688
Saar district	245,890	322,728
Rhenish lignite district	* 70,575	* 65,365
Belgium	105,078	419,333
France	50,656	69,818
England	638,497	121,241
United States	1,227,259	508,632
Total	2,588,034	1,694,088

*Lignite briquets.

It will be seen that the coal supply shows a considerable improvement, which is evidenced also by the fact that the Swiss Federal Railroads have now stocks on hand sufficient for a period of about nine months, whereas supplies during the last few years were generally of a hand-to-mouth order.

Coal Shipments from Czecho-Slovakia Gain Gradually

Shipments of coal from the different Czecho-Slovakian coal districts during November and the period January-November, 1920, were as follows:

	November, 1920 Truckloads	January-November, 1920 Truckloads
Northwestern Bohemia	88,820	925,947
Pilsen	3,431	42,408
Buschtiehrad-Kladno	5,598	60,775
Schatzlar-Schwadowitz	1,702	17,818
Rossitz	933	11,715
Oestrau	25,489	269,415
Dombrau-Karwin	9,641	90,079
Total	135,614	1,417,857
Total 1919	117,167	1,284,976

The situation of the Polish coal industry remains rather unpropitious. The output during September, 1920, amounted to 404,900 tons in the Dabrowar district and to 17,900 tons in the Cracow district. The total amount of coal raised during the first nine months was 3,671,000 tons, representing an increase of 400,000 tons compared with the corresponding period of 1919. The October production, however, shows a decided falling off, the output total of both districts registering a decrease of 72,000 tons compared with September. The 1920 total probably will show but slight increase over 1919.

Holland To Establish Central Sales Body

In view of the imminent changes in the Dutch coal market due to the contemplated lifting of control of coal, it is purposed to establish a central sales organization on the lines of a coal syndicate, which is to comprise all private as well as state-owned collieries. With the release of coal control the official price bureau will bring prices in line with the free market quotations. Supplies of foreign coal to Holland have steadily increased of late, Germany shipping approximately 100,000 tons per month from the Ruhr district, Holland furnishing part of the rolling stock. Considerable quantities also are coming from the United States, Canada and England.

Another important factor in considering the marketing of foreign coal in Holland is the increasing output of Dutch collieries, the production for the period January-November, 1920, being 4,100,000 tons as compared with 3,500,000 tons during the corresponding period of 1919. The total 1920 output is estimated at 4,500,000 tons, against 3,500,000 tons in 1919.

French and German Press Disagree on German Coal Requirements

THE press campaign between France and Germany about Upper Silesia is filling columns of both countries' leading papers. While the French press asserts that Germany can live and satisfy its obligations without remaining in possession of the Upper Silesian coal fields, the German press is strongly contrary-minded.

According to the French statements Germany consumed up to the outbreak of the war only about 25 per cent of the Upper Silesian coal production, while 40 per cent went to Poland. In 1913 Germany produced 190,109,000 tons of coal, of which 46,090,990 tons were exported. The German coal imports during the same year amounted to 11,416,628 tons, so that the total consumption of the Empire before the war was 155,435,878 tons. The coal districts which Germany lost through the war produced in 1913 25,526,000 tons.

The French press now calculates that on account of the reduction of the German fleet and the abolition of the war industries the figure for Germany's coal consumption has to be reduced by 3,000,000 tons. Adding thereto 14,012,000 tons, which Germany would lose if Upper Silesia went to Poland, a total sum of 42,538,000 tons would have to be deducted from the estimated ante-war consumption in order to obtain the figure of the amount of coal Germany would need in view of her present frontiers and in case Upper Silesia should vote for Poland. Thus, according to the French press, Germany's total coal consumption would amount to 112,897,078 tons. To this amount there would have to be added furthermore the equivalent of the brown coal consumption.

Germany needs, says the French press, at present 140,088,865 tons, while she produces only 120,110,000 tons. A close examination, however, would show that the situation was not so bad as these figures seemed to demonstrate. The coal mines produced only 78 per cent of their normal output. The German government would easily be in a position to increase its coal production to the ante-war standard, for no coal mine had been destroyed or damaged as has been the case in France and in Poland.

According to leading German papers the French statements are incorrect. They argue as follows: Germany consumed in 1913 156,472,561 tons of bituminous coal. The total consumption of bituminous coal by the territories lost by the Versailles treaty, including Upper Silesia, amounted to 33,223,589 tons. Therefore Germany's requirements of bituminous coal amount to 123,248,972 tons. The total consumption of brown coal in Germany in 1913 was 29,202,623 tons. According to the present production the situation is as follows:

Germany's production of bituminous coal, 1920	102,110,000
Germany's production of brown coal	30,000,000
Imports of Upper Silesian coal	12,000,000
Total	144,110,000

From this sum must be deducted the quantity of coal to be delivered according to the Spa arrangement, 24,000,000 tons, so that there remain for Germany only 120,110,000 tons, whereas its actual requirements are as follows:

	Tons
Bituminous coal	123,248,972
Brown coal	29,202,623
Total	152,451,595

These figures show that there remains a deficit of no less than 32,341,595 tons, and from these figures the German papers draw the conclusion that the loss of Upper Silesia would mean the ruin of the German industries.

International Labor Conference Postponed

THE Third International Labor Conference, which was to be held in Geneva, Switzerland, in April, has been postponed until next October, according to a cablegram from Albert Thomas, director of the International Labor Office, received at the office, in Washington, of Ernest Greenwood, the American correspondent. It is presumed that the postponement is attributable to the elaborate agenda which has been prepared, resulting in a delay in obtaining all the necessary information from the member states concerning the various items.

The first meeting of the International Emigration Commission, which was to be held in March, has been postponed until August, 1921.

Dr. Garfield Supports Fact Finding on Coal; Opposes Giving Quasi-Judicial Power to Trade Commission

WHILE a large number of persons testified before the La Follette committee, which is continuing its hearings on the Calder coal bill, the outstanding witnesses of the past week were Dr. H. A. Garfield, former Fuel Administrator, and William Green, secretary and treasurer of the United Mine Workers of America.

Dr. Garfield read from a letter which he wrote to Senator Calder, which expresses his views as to the bill. The more pertinent part of that letter is as follows:

The bill impresses me as proceeding in the right direction with reference to the finding of the facts, but it goes further than I believe to be either necessary or wise, in conferring upon the Federal Trade Commission quasi-judicial powers and especially in making it the agency to formulate recommendations to the President. In my judgment, the distinction between fact-finding and policy-determining powers is basic. The Federal Trade Commission's powers should be limited strictly to finding of the facts. The use to be made of the facts and the conclusions to be drawn should be vested in the President, who should bring to his aid the Secretary of the Interior.

Dr. Garfield suggests an additional section to the Calder bill providing that the Secretary of the Interior is to set up an anthracite advisory commission and a bituminous advisory commission, each being composed of the Secretary as chairman and an equal number of operators and mine workers. Dr. Garfield's idea is that three members should be chosen by the operators and three by the mine workers. In the case of non-union mines he suggests a plan on the order of a political convention for the selection of representation. Dr. Garfield would limit the powers of these advisory commissions to advice upon the facts found by the several commissions and bureaus mentioned in the act. The power to use the facts for recommendations or in formulating policies would be vested solely in the President.

Old Plan Amplified by Dr. Garfield

The plan as outlined by Dr. Garfield for handling the coal situation is not new. He stated that it had been agreed upon during the days of the Fuel Administration. He told of a gathering at the Fuel Administration of representative groups concerned with the industry and the working out of a plan which later was amplified by Dr. Garfield, at the request of the President, and forwarded to the President in France. The amplified report never has been made public. Dr. Garfield believes it would do good to have it generally available, and agreed to furnish to the committee a copy of his communication to the President.

At another point in his testimony Dr. Garfield said:

We cannot get along, either as a government or as an industry, whether you view it from the standpoint of the operator or of the mine worker, without knowing the facts. The public also is interested vitally in those facts. I think it is plain folly not to provide for a continuous finding of the facts as to the cost of production, as to the stocks of coal on hand, as to working conditions in the mines and as to the cost of living. I think everybody concerned is entitled to those facts. I do not believe wise legislation can be put upon the books or wise action taken without a knowledge of those facts.

To wait until an emergency arises is folly. I speak advisedly because when I found myself charged with the responsibility with reference to prices and price fixing, there were no facts sufficient to enable any of us to decide with satisfaction as to what should be done.

This led Senator La Follette to ask:

Do you think it would be advisable for Congress to provide by legislation, before attempting to deal with this subject, for the gathering of information?

In reply Dr. Garfield said:

I do, but I should hope Congress would couple with it the essential part, as I see it, of the whole matter—the authority to the President to set up these advisory commissions. Possibly Congress would say that it is not necessary; that the President can do it now. I am under the impression, however, that there is a law that makes it doubtful whether the expense of running such an advisory commission could be borne, let us say, by the Interior Department.

My conception of the fact-finding agency is that a corps of skilled accountants should be at work day in and day out. They should not care anything about the disposition to be made of these facts. Their single duty should be—what an auditor's single duty is—to find the facts.

If the operators among themselves formed the best organization in the world for fact finding, it never would be satisfactory. The results never would be satisfactory in a crisis, either to the consuming public or to labor. The facts must be found by as impartial a body as we have set up in connection with the fact finding in our courts. In the same way, fact finding by labor as to the cost of living and other things never would be accepted as wholly satisfactory by the public or by the operators.

Tables on Wage Increases at Variance

In discussing the amount of the cost of coal which is represented by the various increases in wages since 1916, it became evident that the committee is determined to have accurate figures, entirely comparable, from both the operators and the mine workers. The National Coal Association submitted figures showing that the increase in labor costs from April, 1916, to date has been $1.70 per ton. The figures submitted by the United Mine Workers showed the increase as they figure it to be $1.12 a ton. It developed, however, that the two tables are not entirely comparable. The mine workers were instructed to furnish a table which would cover exactly the same districts as does that submitted by the National Coal Association. In addition, the committee called for similar tables covering all producing districts in the United States.

William Green, secretary of the United Mine Workers of America, referred to the objection of the miners to the bringing into the West Virginia strike region of Baldwin-Felts detectives, who he said were employed by the coal operators, and he admitted that nearly all the miners were armed. He sought to refute the statement previously made that miners received $7.50 a day and cited New River, W. Va., wages, which ranged from $6.50 to $7.50, and for boys as high as $4.68. He admitted, however, that these rates were lower than in other coal fields.

He estimated that the total labor cost per ton due to wage increases since 1916 had amounted to $1.12 per ton, as against a cost of $1.70 per ton submitted by the National Coal Association. Senator Reed brought out that Mr. Green had included other fields than those on which the Coal Association estimate was based, and that therefore the two were not comparable.

Mr. Green referred to the hazards of coal mining, but Senator Reed developed that state laws and action by the

Bureau of Mines had made mining safer. Mr. Green admitted the "splendid service of the Bureau of Mines." He estimated that one miner was killed for every 260,000 tons of coal mined.

Under questioning by Senators Reed and La Follette Mr. Green was unable to refute Mr. Taylor's charges of the preceding week of undue absence of miners, but the witness insisted it was not true as a general proposition. Senator Reed brought out that the key men around mines were members of the union, and that the unions did not enforce penalties on miners for striking without exhausting conciliatory measures.

Mr. Green gave the average annual earnings of miners as $1,400 in 1918 and $700 in 1913. Discussion as to nationalization of coal mines developed when Senator Kenyon brought out that the miners at their Cleveland convention last autumn endorsed nationalization of coal mines, which seemed inconsistent with their present opposition to the Calder control bill. Mr. Green was forced to admit that nationalization of anthracite mines would not be desirable, and Senator Reed said if the coal mines were taken over by the government it would lead to control over other forms of mining.

Dr. Garfield, in advocating cost finding in the interest of the public recommended that the facts as to costs, supplies, profits and living conditions be gathered by the fact finding agencies and published quarterly. He thought there should be uniform accounting methods, not in detail but on certain large items.

Dr. Garfield discussed price regulation and said that had not the government fixed prices during the war they would have ranged at the high levels that have prevailed in recent times. He admitted that strikes and transportation conditions may have been a cause for some of the increase, and he did not blame the high prices wholly on the operators or wholesalers. He referred at some length to the work of the Fuel Administration and explained the reason for the famous "heatless Mondays" of 1918, which he said were imposed not to move coal primarily but to clear the railroads of congestion, due to the fact that the munition plants had suffered a reduction in a month of half of their normal coal requirements.

Shipping Board Formerly Exercised No Supervision

M. W. Bowen, in charge of coal purchases for the Shipping Board, said that prior to Admiral Benson becoming chairman of the board the 150 individuals or companies operating ships for the board bought their supplies, and the Shipping Board simply checked their accounts, there being no strict supervision. He said there was a division of opinion in the board as to whether it should buy coal and other supplies for the ships, or whether the ships should buy the supplies, a majority of the ship operators favoring the purchase of their own supplies.

He gave a list of companies from whom the board had purchased coal last year, showing maximum and minimum prices, which list had been sent to the Department of Justice for investigation as to the advisibility of prosecution for profiteering. The maximum and minimum prices by ports he named as follows:

New York—$7.25 by Whitney & Kemmerer; $18.50 by J. J. Kehoe & Co.

Philadelphia—$7.15 by George Patchell & Co.; $17.50 by Burtner Coal Co.

Baltimore—$8.10 by Hall Bros.; $16 by Bayrs Co.

Norfolk—$6.14 by Berwind-White Coal Co.; $16.50 by Hall Bros.

Boston—$10.65 by Staples Coal Co., and $18.50 by Maritime Coal Co.

Portland, Maine—$18 and $19 by Kennebec Wharf Coal Co.

Providence—$15.50 by Seaconnet Coal Co. (Only one purchase).

New Orleans—$10.50 and $11.50 by W. G. Coyle & Co.

He said the board had rejected the bids received Jan. 14 last after determination of the mine cost by deducting handling charges, which showed an excessive mine cost of $4.98, and that one complaint had been made against rejection of the bids. By cross-examination Senator Reed brought out that the requirements of the board differed from those under commercial contract and also that the handling charges added to the cost and did not permit mine operators to bid.

Figures as to mine profits of fifty-one companies in 1919 and for the first nine months of 1920 were given by David L. Wing, statistician of the Federal Trade Commission. On objection of the National Coal Association that the figures were furnished voluntarily, the committee for the time being decided not to reveal the names of the companies, which covered the central Pennsylvania, northern West Virginia and smokeless coal districts. Six of the operators showed losses during 1919, but none showed a loss in 1920.

On Friday and Saturday, Feb. 4 and 5, Senator Reed cross-examined David L. Wing, statistician of the Federal Trade Commission, as to profits of coal companies, seeking to show that as the reports covered so few operators, general conclusions as to profiteering were not representative of the industry. It also was brought out that Mr. Wing's calculations did not include deductions for interest on borrowed money, increased valuations of properties, or taxes. Mr. Wing admitted that transportation was an important factor in coal cost, and Senator Reed brought out that the situation would remedy itself if transportation was adequate.

Director George Otis Smith of the Geological Survey was recalled, and referred to a recent article in *Coal Review* which declared the super-power project of the Survey would deprive the coal industry of a market of thirty million tons of coal a year. Director Smith defended the super-power project as a conservation measure.

Calder Attributes Acute Housing Problem to Priority Orders on Coal

IN an address before the Real Estate Board of New York at its annual dinner on the evening of Feb. 5, U. S. Senator Calder, who is chairman of the Senate Committee on Reconstruction, devoted a considerable portion of his address to the coal situation and incidentally charged that the acuteness of the housing problem was due, at least in part, to the placing of priority orders on coal shipments. In June, 1920, the Senator said, preference was given to the shipment of coal through priority orders issued by the Interstate Commerce Commission on the ground that coal was charged with "public use and necessity." This brought about high prices of building materials in various localities, into which the steady flow of building materials was interrupted. Inasmuch as the priority orders deprived the building industry of adequate transportation facilities, the supply of building materials was limited in many markets, with consequent inability of the local supply to meet the demand. Such conditions, the Senator said, inevitably brought about high local prices of building materials.

"The coal industry," the Senator said, "has been very faulty in the maintenance of contractual relations with its customers during the past year. In the early stages of our investigation, in the hope that the situation might be corrected without legislation, I very emphatically impressed this matter upon the leaders of the coal industry, but to no avail. While the coal industry deplores profiteering and high prices, pyramiding of commissions and sale of car numbers, the misuse of transportation facilities and priority orders, the cancellation of contracts and the inferior quality of coal, it has been unable to cure these abuses itself. The only remedy proposed by them has been increased car supply, which cannot always be placed at their disposal without disrupting the general industry of the country and even then without the recognition that coal is charged with 'public necessity and use'."

The Tidewater Coal Exchange will hold a meeting Monday, Feb. 14, at 11 a.m., in the east ballroom of the Commodore Hotel, New York City, for the purpose of liquidating the old Tidewater Coal Exchange. All members are invited to attend.

Shipping Board Accepts One Coal Bid; Rejects Fifty-one

THE U. S. Shipping Board has accepted but one of the 52 bids received by it for coal Jan. 14 and will later readvertise for new bids. The bid accepted is that of Dexter & Carpenter, Inc., New York, for 300,000 tons of bunker bituminous coal at New York, 20 per cent from pool 11, 25 per cent from pool 9 and the balance from pool 10, at $7.39 gross ton free alongside steamer; $3.73 gross ton f.o.b. mine and $3.28 net ton, subject to change in rail rates and mine rates.

Alabama Supreme Court Upholds Rights to Evict Strikers from Company Houses

A DECISION of great interest and import to all mine operators and other industries employing labor for which they provide housing facilities has been handed down by the Alabama Supreme Court in test cases appealed from the Circuit Courts of Bibb, Shelby and Jefferson counties, involving the tenure of houses by striking employees. Every provision of the leases under which the miners were occupying houses, attacked by counsel of the strikers to prevent the affirmation of eviction suits, was upheld by the Court in the unanimous decision rendered.

The section providing that employees should vacate houses when they ceased to be employed by the companies and that they might be removed from the premises on twenty-four hours' notice was stubbornly contested on the ground that it was a one-sided provision, the lease not giving the employee the privilege of vacating the house on twenty-four hours' notice. The court however, held that the lease contracts were legal and binding when both parties assented to the conditions thereof. The Court also held that the coal companies might properly collect liquidated damages totalling three times the rent due by the striking employees during the time they were in unlawful possession of the houses, and that reasonable attorney's fees might be provided by the decision of the courts.

The dispossession notices of the operators were attacked in some cases on the grounds that the leases were abrogated when the companies increased the rents based on the award of the bituminous coal commission which granted higher wages to mine employees. The Court ruled that this increase without a change in the provisions of the lease did not invalidate the instrument, as the miners assented to the change in conditions by paying the rental money after the increase had been made. The settlement of some 1,500 eviction suits in the mining district will rest upon the Supreme Court decision in the test cases, which have not been certified to the lower courts pending the application for a rehearing by counsel of the United Mine Workers.

"Journal of Electricity" Enlarges Scope

ENLARGEMENT of the editorial scope of the *Journal of Electricity* and a change in its name to *Journal of Electricity and Western Industry* were announced at a dinner given on Feb. 1 in the Palace Hotel, San Francisco. The date marked the thirty-fifth anniversary of the *Journal of Electricity*, which has been one of the McGraw-Hill publications since September, 1919. Robert Sibley will continue as editor of the enlarged paper.

The *Journal of Electricity and Western Industry* will be devoted to the upbuilding of the West as an industrial section, and it will interpret Western progress through the application of electric power, light and heat in industries and homes. In its enlarged scope the publication will record the progress of the Far West, not only in the electrical industry as such but also in all industry dependent upon electrical energy. The fullest editorial support will be given to financing the huge building programs of the Western electrical utilities in the development of hydro-electric power, as this is held to be the greatest single asset of the West.

The tremendous value of utilized water power was emphasized by John A. Britton, vice-president and general manager Pacific Gas & Electric Company, who was among the speakers at the dinner, and the relation of industrial research to the use of this energy was explained by Dr. B. M. Rastall, industrial manager San Francisco Chamber of Commerce. "The Real Vision of the Industrial West and its World-Wide Meaning" was the topic of F. T. Griffith, president Portland Railway, Light & Power Company, and E. S. Carman, president American Society of Mechanical Engineers. "Civic Growth and Its Place in Industry" was discussed by M. M. O'Shaughnessy, "Finance and Industry" by C. F. Stern and "The Aid that Helpful Utility Regulation Can Give Industrial Growth" by E. O. Edgerton. Dr. David P. Barrows, president of the University of California, spoke on "The University Ideal and the West."

Carriers Propose Cancellation of Coal Rate

THE Coal, Coke and Iron Ore Committee, Central Freight Association territory, Pittsburgh, advise that the following subjects have been docketed and will be disposed of not earlier than Feb. 15: To cancel rates on Bituminous Coal, carloads, from Western Maryland Ry. stations, Meyersdale, Pa., to Indian Creek, Pa., Index 698A to 698F, and from Chieftan, W. Va., to Wyatt, W. Va., Index 403A to 403K, all inclusive, as shown in B. & O. R.R. Tariff, Coal and Coke Series, I.C.C. 1923.

If hearing is desired by shippers or carriers on any of these subjects request therefor must be made to the chairman not later than Feb. 15.

Naval Appropriation Bill Provides for Fuel $12,500,000 Less Than Last Year

THE Naval Appropriation bill reported to the House provides $17,500,000 for fuel for ships' use during the year beginning July 1 next, or $19,500,000 less than the estimate. The appropriation for fuel for the year ending June 30 next was $30,000,000, of which $10,000,000 was appropriated last session, $20,000,000 being carried in a deficiency bill now before Congress. The navy estimated for coal next year on a basis of 143,000 enlisted men and of vessels being at sea twenty days a month. The bill provides fuel funds for a navy of 100,000 men and on ships being at sea for ten days a month.

During the current year the navy had $85,000 for coal depots, and for next year asked $1,836,000, but the committee allowed only $60,000, which is $25,000 less than the current year and $1,776,000 less than the estimate. An appropriation of $1,150,000 for a naval fuel depot at San Diego was refused. The Marine Corps this year had $450,000 for fuel and asked $864,800 for next year, but the committee provides only $590,000.

STATISTICS FOR 1918 TAXATION, issued by the Commissioner of Internal Revenue, show that out of 10,661 corporations engaged in mining and quarrying, 5,524 companies reported taxable income for that year. The gross income was $3,597,203,674, total deductions were $3,029,426,465, net taxable income was $567,777,209, and the taxes collected—income and profits—were $191,364,377. Of the total taxes paid by this group, the coal corporations paid $76,961,211, or about 13c. per gross ton on the total production of coal that year, which was 678,211,904 net tons, equivalent to 605,546,343 gross tons. On the basis of coal shipped, sold locally or coked at the mines (excluding the 22,745,395 net tons used for mine fuel), the taxes paid averaged 13.15c. per gross ton of production.

THE SOUTHERN APPALACHIAN COAL OPERATORS ASSOCIATION met in extraordinary executive session at Knoxville, Tenn., at 2 p.m. Friday Feb. 4. J. E. McCoy was re-elected as secretary-treasurer at an increased salary and an audit of the books was ordered for 1920. A committee was appointed to give testimony in the rate cases now pending at Louisville entitled Western Kentucky Coal Bureau vs Louisville & Nashville R.R. *in re* rates on coal from Louisville & Nashville mines in western Kentucky to Southeastern destinations.

Tidewater Coal Exchange at Charleston Is Organized; Uncontracted Output of 3,945,000 Tons Represented

As A result of the preliminary meeting held at the offices of the Southern Ry. in Washington a few weeks ago, about fifty operators and transshippers met at the Business Men's Club in Knoxville, Tenn., at 10 A.M., Friday, Feb. 4, to organize a Tidewater Coal Exchange for the Port of Charleston, S. C. The meeting was called to order by J. E. McCoy, secretary of the organization committee, and Henry M. Payne of New York was made chairman. Dr. Payne described the functioning of the exchanges at the Northern ports, and during the general discussion which ensued, answered numerous inquiries regarding classification, demurrage, and the technique of operation. Thereupon the meeting proceeded to organize an exchange modelled on the Tidewater Coal Exchange Inc., and as far as practicable to adopt the same by-laws and regulations.

The following executive committee was elected: L. C. Gunter, president Southern Appalachian Coal Operators Association; J. E. McCoy, secretary-treasurer Southern Appalachian Coal Operators Association; John E. Patton of Chattanooga, representing the N. C. & St. L. Ry. operators; John L. Boyd of Knoxville, representing the Jellico field; R. E. Howe of Middlesboro, representing the Middlesboro field; E. C. Mahan of Knoxville, representing the operators at large; Guy Darst of Knoxville, representing the Harlan and Virginia operators; G. W. Stephenson of Nashville, representing the operators on the Tennessee Central R.R. and on the Queen Crescent south of Harriman; K. W. Dyas of Stearns, representing the operators on the Queen & Crescent north of Harriman; I. L. Graves, advisory representative of the Southern Railway at Knoxville; Henry M. Payne (with F. C. Koenig as alternate) of New York, representing the transshippers and the Tidewater Coal Exchange, Inc.

Dr. Payne was then instructed to present to the Tidewater Coal Exchange, Inc., a request that it make the Charleston exchange a branch, with a deputy commissioner and inspectors under the main organization. It was expected that this would be acted upon at the next regular meeting in New York on Feb. 10.

Deposits of $100 To Be Used as Working Capital

Subsequent to adjournment of the general meeting the Executive Committee met and elected J. E. McCoy as secretary-treasurer of the Exchange, and instructed him to collect the $100 deposit as working capital from each member, to be deposited in a special account for this purpose. If for any reason the Charleston branch should not affiliate with the Tidewater Coal Exchange, Inc., incorporation papers will be taken out, and corporate officers elected.

I. L. Graves, representing the Southern Ry., immediately reported the progress of the organization to the railway executives in Washington in order that their participation may be formally agreed upon at an early date.

The following companies signed membership agreements: Alden Coal Mining Co., New York; Andrade-Eyre, Inc., New York; Bear Wallow Coal Co., Knoxville, Tenn.; Bewley Darst Coal Co., Knoxville, Tenn.; Caney Fork Collieries, Minneapolis, Minn.; Climax Coal Co., Middlesboro, Ky.; Coal Export Corporation, New York; Cross Mountain Coal Co., Knoxville, Tenn.; Elkhorn Creek Coal Co., Minneapolis, Minn.; Harlan Coal Co., Louisville, Ky., LaFollette Coal & Iron Co., La Follette, Tenn.; Liberty Coal & Coke Co., Straight Creek, Tenn.; Little Brushy Coal Co., Harriman, Tenn.; Manufacturers' Coal Co., Toledo, Ohio; McNeil, Archibald & Sons Co., New York; Petros Coal Co., Harriman, Tenn.; Proctor Coal Co., Knoxville, Tenn.; Riddle Coal Co., Chattanooga, Tenn.; Sewanee Fuel & Iron Co., Chattanooga, Tenn.; Signal Mountain Coal Co., Chattanooga, Tenn.; South Atlantic Coal Co., Charleston, S. C.; Stearns Coal & Lumber Co., Stearns, Ky.; Stephenson, G. W., Nashville, Tenn.; Stoney Fork Collieries, Knoxville, Tenn.; Summit Coal Co., Harriman, Tenn.; Tennessee Consolidated Coal Co., Tracy City, Tenn.; United States Fuel Corporation, Chattanooga, Tenn.; Wheeler Coal Co., Knoxville, Tenn.; Wholesale Coal Co., Pittsburgh, Pa.; Wynn Coal Co., Middlesboro, Ky.

W. C. Gilbert, representing the L & N. R.R., and about twenty others not authorized to sign for their respective companies were present, and it is expected that the membership will be rapidly augmented now that the organization has been formed. The charter membership represents an uncontracted output of 3,945,000 tons.

As soon as action has been taken by the Tidewater Coal Exchange, Inc., and the Southern Ry. can report, another meeting of the Executive Committee will be called by Mr. McCoy for final action on by-laws, etc., and to arrange for the immediate inspection and classification of the mines operated or controlled by the membership.

Among the districts represented are some of the lowest ash and low sulphur gas coals in America, and the famous Elkhorn byproduct coal.

Adjourn Coal Rate Hearing of Trunk Line Roads; to Revoke Conflicting Rates

THERE was a large attendance at the hearing by the Coal and Coke Committee of the railroads for the Trunk Line Territory on Feb. 3, at 143 Liberty street, New York. Most of those in attendance came from the New England States or represented shippers of coal into New England and were interested in the proposed readjustment of rates on anthracite and bituminous coals from the mining fields.

In setting forth its reasons for the readjustment of rates on anthracite from the coal fields to points in New England the Coal and Coke Committee stated that the present rates are such that many violations of the fourth section of the Interstate Commerce Act exist, which violations can no longer be justified; that the present rates are inconsistent because of variation via different routes; that rates producing fourth section violations, coupled with inconsistencies caused by varying rates via different routes create discriminations and inequalities which have been increased by the recent rate advances. It is also intended to make a relative adjustment on the smaller sizes of anthracite.

The committee said that in readjusting the rates on bituminous coal from origin points in Pennsylvania, West Virginia, Maryland and Ohio it is proposed to eliminate all violations of section 4 by restoring to normal basis present rates to competitive points, and to revise rates in order to remove discriminations and satisfy numerous complaints.

After many of those at the hearing had expressed their views, those whose rates would be increased objecting in the main to the changes proposed, it was decided, inasmuch as some of the shippers and consignees affected had not had time to devote sufficient study to the proposals, to adjourn the hearing until March 3 at the same place.

The proposal of the committee provides that where there are now two rates into one city or town, the double rate be eliminated and one rate made, as for example the rate on anthracite to Boston and surrounding towns over the Delaware & Hudson at present is $4.20 and on other roads, $4.34. The proposed new rate is to be $5.18. The rate to Worcester, Millbury, North Grafton and Jamesville is to be $5.04, if the new rates are adopted. This is an increase of 42c. over the D. & H. rate but is the same as is now charged by the other roads.

The rate on anthracite to Springfield is to be $4.62, as increase of 14c. over the present D. & H. charge, but is similar to the rate of the other roads. The rate to Pittsfield, which is now $4.20 over the D. & H. and $4.34 over the other roads, is to be changed to $4.48.

Similar and multitudinous changes are proposed in rates on bituminous coal.

G. T. Bell Resigns as Association Executive To Engage in Law Practice

GEORGE T. BELL, executive vice president of the Northern West Virginia Coal Operators' Association, Fairmont, has tendered his resignation after two years connection with the coal industry in that field and will engage in the general practice of law at Washington, D. C. Mr. Bell was formerly attorney-examiner of the Interstate Commerce Commission for five years, and prior to that time was traffic commissioner and commerce counsel for various

GEORGE T. BELL
Formerly Executive Vice-President of the Northern West Virginia Coal Operators' Association

organizations and shippers in Missouri River cities. He purposes giving special attention to rate and car supply matters before the Interstate Commerce Commission, income tax matters before the Internal Revenue Bureau and other matters before the various governmental departments.

During his connection with the association its membership practically doubled, while cash resources of the organization increased more than 1,000 per cent. He was largely responsible for the issuance of Service Order No. 18 of the Interstate Commerce Commission, which provided that a railroad must purchase a mine's entire output for six consecutive months before it would be permitted to assign more than its pro-rata share of cars to the loading mine without counting the excess cars against the operation.

N. & W. to Open 26,000 Acres of Coal Land In $18,000,000 Betterment Plan

IMPROVEMENTS and betterments to its properties amounting to approximately $18,000,000 are being made by the Norfolk & Western R.R. The improvement work as mapped out calls for the opening of 26,000 acres of new coal land, construction of more freight cars and the electrification of the company's coal piers at Norfolk. Electrification of the piers is expected to increase their capacity by 50 per cent. In addition the company is designing a trimming machine which it is hoped will save two-thirds of the labor now required for the same work.

Additional yard tracks, under construction at an estimated cost of $210,000, are expected greatly to expedite switching and delivery of coal and to increase the capacity of the terminal. New locomotives and improved labor-saving shop tools are being purchased at a cost of $1,265,000, and superheaters and stokers applied to locomotives.

Additional yard tracks and engine terminals are being constructed at Bristol, Va., which will make possible a 100 per cent increase in traffic through Bristol. The new yard is of sufficient capacity to handle all trains without doubling over and also will result in economy in maintenance of power.

British Columbia Consumers Demand an Inquiry Into Coal Prices

AN INQUIRY into the reasons for the high cost of coal to the consumer in British Columbia, where there is produced annually between two and one-half and two and three-quarters of a million tons, is demanded by the citizens of the City of Vancouver. The agitation does not appear to be of the usual ephemeral character. At a mass meeting called to discuss the situation a large crowd was addressed by Mrs. Ralph Smith, member of the Legislative Assembly, who is reported to be likely to receive a call by the executive of the Provincial Government, and other prominent persons. The upshot was the unanimous passage of a resolution calling upon the government to take such action as is necessary to disclose the reason why coal mined sixty or seventy miles from Vancouver should cost the people of that city about $15 a ton delivered to their homes. The Mining Bureau of the Vancouver Board of Trade is understood to have undertaken to make an investigation, and there is a well grounded belief that the government will take official cognizance of the discontent of the consumers.

A section of the press has been diligent in the collection and the publication of information as to mining and delivery costs. How much reliance can be placed on figures so assembled and circulated, of course, is problematical, and it does not seem that reliable knowledge is yet available regarding the financial situation of the mine operators and the coal dealers. The statement that Vancouver Island coal may be bought cheaper in the City of Seattle than in Vancouver, for instance, scarcely appears to be borne out by the facts, because the quotations ordinarily given are prices in the dealers' bunkers and there are to be added delivery charges, which vary in proportion to the distance of the particular residence from the centre of the city.

Other assertions have been made with which those concerned in the production and the distribution of the fuel disagree, so that it is improbable that the air will be cleared until the government, or some public body, probes the companies' affairs, as well as those of the dealers, and publishes the results. Certainly that would appear to be the only avenue open either to force down an unjust exaction for one of the necessities of life or to wipe out the public's impression that the consumer is being villainously robbed by profiteers.

The Premier of the Province and the Minister of Mines, are to meet a committee of Vancouver citizens in a few days to discuss the matter and its is possible that the outcome will be the institution of a public inquiry.

The residents of the coast cities of British Columbia are not alone in their concern over the price of fuel, for there is deep feeling in the Kootenays on the same question, as is manifested by a resolution recently passed by the Nelson Board of Trade for submission to the approaching convention of the Associated Boards of Trade. The latter body will be asked by the Nelson organization to endorse a request addressed to the Dominion Government for the undertaking, through that government's Fuel Controller in this Province and in Alberta, of a thorough investigation of the cost of coal and coke. It also is to be urged that the controller be empowered to investigate the cost of living in coal towns and that a public representative be appointed to participate in the inquiry.

COAL AGE INDEX

The indexes to Coal Age are furnished free to all who ask for them. The index for the last half of 1920 is now ready for distribution, and a copy can be had by addressing a postcard to the Subscription Department of Coal Age.

Production and the Market

Weekly Review

NEITHER shippers nor buyers are taking interest in the current soft coal market. Demand for coal is almost nil, and "no market" is the ruling cause for closed mines. Reports for the week of Jan. 29 show production of soft coal at 8,525,000 net tons, compared with more than nine million the preceding week. A further drop occurred in the week of Feb. 5.

Demand is lifeless because stocks are good and consumption is light. Shippers have come to the conclusion that no general improvement can be expected until these stocks are burned up. The steel industry is feeling a slight stirring of new interest, for while the corporation is slowing up, independents are taking on some new business, and it is the independents that buy coal. Until they better their present operating level of 30 per cent there is slight hope for material stiffening of coal prices.

Railroad Business Slumps; Coal Needs Remain

Railroads are in the peculiar position of having a tremendous slump in traffic without corresponding decrease—as far as many Eastern roads are concerned—in coal requirements. This comes about from the fact that such traffic as is offered comes East, and in the absence of westbound freight the empty car movement West must be maintained. The roads are holding considerable coal on wheels but have largely stopped taking more than the barest necessities on their contracts.

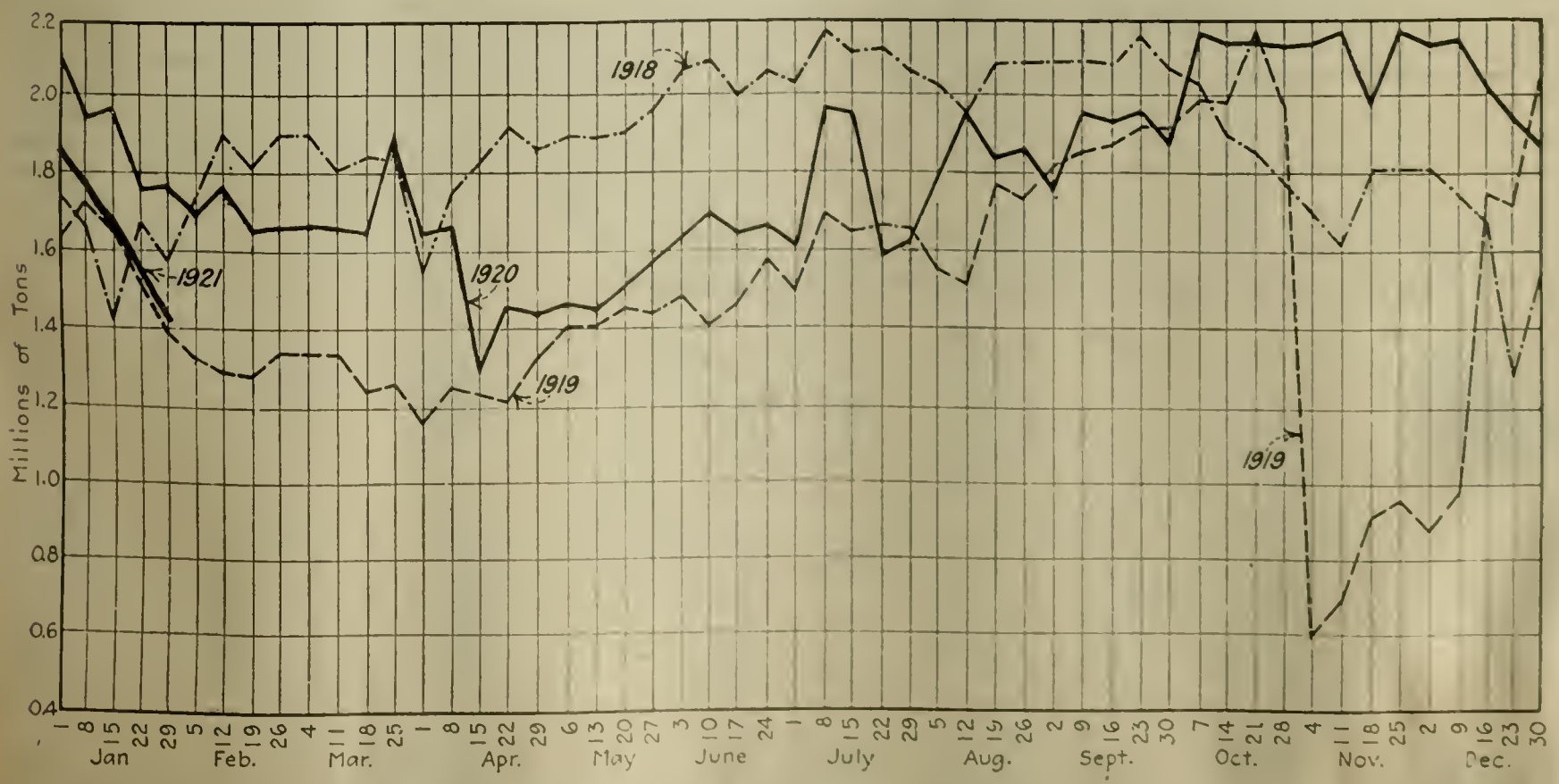
Coal is being consumed, of course, probably in excess of 9,000,000 tons a week, or in amount greater than present production.

Spot prices are significant only of the dullness of the market. Such contracts as are being made are above the spot market levels quoted by *Coal Age*. One company after another is closing mines down to one day a week operation. Contracts are being filled and that is about all that is moving. The hopeful attitude with which shippers to the Lakes are preparing to open that outlet at the unprecedented date of March 15 is a strong indication of the desperation of the field conditions.

Independents Find Premium Prices Scarce

Anthracite production is holding up despite the warm weather, largely because of the actual shortage with which the winter was begun through last summer's strikes. Domestic sizes are quickly absorbed, although independents are not easily obtaining such high premiums for their coal. Company prices remain unchanged. The lack of demand for egg coal forced the independent price below last week's figures. Coal men see in this a bettered condition among consumers, resulting in more critical buying. Steam sizes are moved

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

with increasing difficulty. Many producers are forced to stock heavily and salesmen are again actually seeking steam business at somewhat reduced prices.

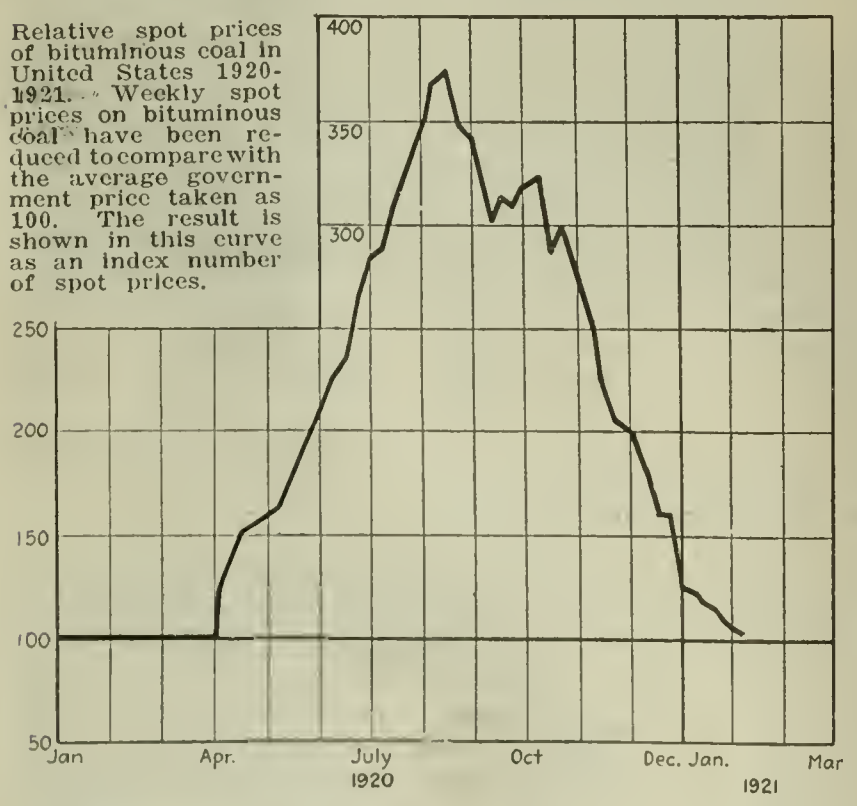
BITUMINOUS

Production continued to decline during the week ended Jan. 29. The Geological Survey reports a total output of 8,525,000 net tons, a decrease of 673,000 tons, or 7.3 per cent when compared with the preceding week. Average production per working day has been steadily falling since the middle of December and now parallels that of early 1919. The present situation, that of warm weather and industrial inactivity, bears a striking resemblance to the period following the Armistice. Loadings during the early part of the next period (Jan. 3 to Feb. 5) declined still further, indicating a drop of perhaps 6 per cent.

The output in the Northern and Middle Appalachians has been steadily decreasing since the beginning of the year. Present production is but 80 per cent of the 1920 average and is being lowered still further.

"Coal Age" Index Indicates Better Market Tone

Coal Age index of spot prices declined to 102 during the past week, a drop of only one point, indicating a distinctly better tone to the market. Prices now average but 2 per cent above the average government price established during the war, despite the advanced production costs since those prices were established. The course of this index, based on spot quotations for all important coals, is shown in the accompanying diagram.



Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.

Estimates of Production

From the Weekly Report of the Geological Survey
(Net Tons)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921		1920	
	Week	Coal Year to Date	Week	Coal Year to Date *a*
Jan. 15*b*	9,936,000	441,939,000	11,507,000	376,411,000
Daily average	1,656,000	1,819,000	1,918,000	1,550,000
Jan. 22*b*	9,198,000	451,137,000	10,464,000	386,875,000
Daily average	1,533,000	1,812,000	1,744,000	1,554,000
Jan. 29*c*	8,525,000	459,662,000	10,594,000	397,469,000
Daily average	1,421,000	1,803,000	1,766,000	1,559,000

(*a*) Less two days' production during first week in April to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921		1920	
	Week	Coal Year to Date	Week	Coal Year to Date *a*
Jan. 15*b*	1,895,000	71,814,000	1,847,000	73,913,000
Jan. 22	1,819,000	73,633,000	1,757,000	75,670,000
Jan. 29	1,998,000	75,631,000	1,839,000	77,509,000

(*a*) Less two days' production during first week of April, to equalize number of working days covered for the two years. (*b*) Revised from last report.

BEEHIVE COKE

Week Ended				
Jan. 29*a* 1921	Jan. 22*b* 1921	Jan. 31 1920	1921 to Date	1920*c* to Date
249,000	258,000	474,000	1,043,000	1,784,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less two days production during New Year's week to equalize number of days covered for the two years.

Spot prices changed but little during the week. It is evident that we are fast returning to a normal state wherein a very small difference in quotations makes a sale, due to extreme competition of good coals. Producers of poorer grades have been forced to cease or are selling at a loss, as buyers are now able to "pick and choose," and are paying particular attention to quality before closing a sale. An influence in steadying the downward trend of prices is the curtailment program adopted by producers. The far-seeing operator is now refusing to mine unsold coal and is not taking orders unless the price is at least equal to production cost.

Awakened interest is noted on the part of contract buyers, as production lags behind consumption. While, as a rule, reserves are sufficient to last large industries for some time, owing to curtailed operation, consumers are feeling out the coal man on his ideas of contract prices for the new year. A wide difference exists between buyers' and sellers' ideas, and the producer is generally refusing to negotiate any agreement based on current market fig-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Coal	Market Quoted	Gov't Price	Jan. 6, 1921	Feb. 1, 1921	Feb. 8, 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$4.80	$3.75	**$4.00**
Pocahontas lump	Columbus	2.60	5.25	6.25	*6.00*
Pocahontas mine run	Chicago	2.35	4.70	2.75	2.75
Pocahontas lump	Chicago	2.60	5.50	4.25	*3.90*
Pocahontas mine run	Boston*	..	7.70	6.00	**6.50**
Pool 1	New York	2.35	4.75	3.75	*3.50*
Pool 1	Philadelphia	2.35	....	3.60	*3.50*
Pool 1	Baltimore	2.35	4.60	3.25	*3.25*
Clearfields mine run	Boston	2.95	3.25	2.75	2.25@3.25
Somersets mine run	Boston	2.95	4.35	3.55	*2.75@4.00*
Pools 10, 11	New York	2.95	3.35	2.75	*2.50*
Pools 10, 11	Baltimore	2.95	3.45	2.80	*2.50*
Pools 10, 11	Philadelphia	2.95	3.60	2.80	*2.45*
Pool 18	New York	2.95	....	2.10	2.10
Pool 18	Philadelphia	2.95	2.40	2.15	....
Pool 18	Baltimore	2.95	2.25	2.10	*2.00*
High-Volatile, Eastern					
Pittsburgh mine run	Pittsburgh	2.35	2.60	2.50	2.50
Pittsburgh sc'd. gas	Pittsburgh	2.35	3.15	3.25	*2.75@3.00*
Kanawha mine run	Columbus	2.70	2.75	2.35	**2.40**
Kanawha lump	Columbus	2.95	4.65	4.80	*4.40*
Hocking mine run	Columbus	2.50	2.50	2.40	*2.35*
Hocking lump	Columbus	2.75	4.50	3.85	3.85
Pitts. No. 8 mine run	Cleveland	2.35	2.75	2.50	2.25@2.75
Pitts. No. 8 lump	Cleveland	$2.60	$3.90	$3.75	3.50@4.00
Pool 34 (54, 64)	Philadelphia	2.50	2.50	2.25	2.25
Pool 34 (54. 64)	New York	2.50	2.75	2.25	*2.15*
Pool 34 (54. 64)	Baltimore	2.50	2.50	2.25	*2.15*
Midwest					
Franklin, Ill., mine run	Chicago	2.35	3.00	2.75	2.25@3.25
Franklin, Ill., lump	Chicago	2.55	4.25	3.80	3.50@4.15
Central Ill., mine run	Chicago	2.35	2.50	2.15	1.80@2.50
Central Ill., lump	Chicago	2.55	3.75	3.15	2.50@3.75
Ind. 4th Vein, mine run	Chicago	2.35	2.75	2.15	1.85@2.50
Ind. 4th Vein, lump	Chicago	2.55	4.25	3.35	2.50@4.15
Ind. 5th Vein, mine run	Chicago	2.35	2.50	2.15	1.80@2.50
Ind. 5th Vein, lump	Chicago	2.55	3.85	3.10	*2.40@3.15*
Standard mine run	St. Louis	2.35	2.30	2.00	2.00
Standard lump	St. Louis	2.55	3.50	2.35	**2.50**
West Ky., mine run	Louisville	2.35	2.60	2.50	**2.35@2.75**
West Ky., lump	Louisville	2.60	4.50	3.95	*3.25@4.00*
South					
Big Seam mine run	Birmingham	2.45	3.25	3.00	*2.95@3.00*
Big Seam lump	Birmingham	2.75	3.75	3.50	3.50
S. E. Ky. mine run	Louisville	3.00	3.00	2.70	2.70
S. E. Ky. lump	Louisville	3.25	5.25	5.00	*4.25@5.00*

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

ures. At the same time some wholesalers have accepted contracts at low figures, evidently with the intention of buying up distress coal to fill.

The industrial situation has improved slightly. Textiles are resuming operations, as are some steel interests. An early start of the Lake season is scheduled; in fact, shipments to lower ports have already been started to boats tied up for the winter. It may be some time before the effect of this will be felt in a revived spot demand, but the coal man is seeing a rift in the clouds of depression and is decidedly optimistic of what the next few months hold in store for the industry.

TIDEWATER

Conditions at the piers have improved. Accumulations at Tide have been cleared up partly at least, and the rigid curtailment of production in the Pocahontas and high-volatile fields is having the same effect as the Inland markets—fewer sales at ruinous figures are being closed. Little new overseas business is being done and while reports are that there will be a good market abroad for American coals later on they also indicate that France, Italy and Spain are well stocked and it will take some time for this to be worked off. Dull markets and low prices have driven from this field many export concerns which engaged in business during the period of greater activity.

ANTHRACITE

A sharp increase in anthracite production marked the week ended Jan. 29. According to the Geological Survey the output is estimated at 1,998,000 net tons, or an increase over the preceding week of 179,000 tons. There is now plenty of hard coal to meet all immediate demands and the market for the rest of the season will depend entirely on weather conditions. Independent producers are not having the former heavy call. With the better movement of company coal, dealers are loath to pay the premiums asked by independents, and some of the smaller operators are quoting as low as $9.25; the usual range last week, however, was $10@$10.50. Steam sizes are slow. Buckwheat was quoted $3@$3.75; rice, $2.20@$3, and barley, $1@$1.50, f.o.b. mines, New York market quotations.

COKE

Beehive coke production declined to 249,000 net tons during the week ended Jan. 29, as compared with 258,000 the week preceding. The spot Connellsville market is $4.50@$5 for furnace and $6@$6.50 for foundry.

The majority of merchant coke producers have closed and are simply waiting for favorable developments. Some improvement has been noticed in the last few days and a few operators have obtained sufficient orders to enable 100 per cent operation throughout February.

Reports From the Market Centers

New England

BOSTON

Pause in Downward Price Trend—Less "Distress" Coal — Contract Quotations Being Revised — Hampton Roads Market in Better Shape.

Bituminous—There is a distinct pause in the downward trend of prices. A succession of sad experience by operators who felt that coal could be forced on the market "at a price" has now supplied the needed corrective in most cases. An increasing number of producers are keeping coal in the ground except where they have valid business on which the coal can legitimately go forward. So-called "distress coal" of Navy acceptable grade has been sold within a few days at prices well down to $3 per gross ton at the mines, but it now seems unlikely that such figures will be duplicated during February.

Certainly there is much less distress coal than was offering a week ago. The railroads benefited to an extent by corralling cars that were waiting consignment, but most of the Eastern carriers had accumulated such heavy reserves before the market weakened that they have been in no position to pile up fuel. Sales agents are becoming convinced that it does no good to pester consumers with low prices when the latter are in no position to take on coal.

In all the bituminous districts there are large operations now being worked only on part time, varying from one to three days per week. In this way only can the volume of coal pressing for disposition be reduced and it is a good sign when producers are able to see the handwriting on the wall. It would be no proper part of a policy of reconstruction so to depress prices that labor must take an old-time $2@$3 a day wage. It is far better to trim supply to the current demand and make possible reasonable pay for mine-workers and others who depend upon the industry for their livelihood.

At Hampton Roads the market already shows a somewhat steadier situation. The visible surplus is gradually being moved. High-volatiles are much less in evidence. Prices therefore are less soft than a week ago and "rumors" are more difficult to verify. The range today on Pocahontas and New River, Pools 1 and 2, is reported $6.25@$6.75 per gross ton f.o.b. vessel at Norfolk or Newport News. On cars Boston for inland delivery the same grades have been quoted at $8.50.

Correction should be made of a rumored price mentioned in our report last week. The $5.40 sale of Pocahontas or New River was in error so far as we intimated the coal to be mine run. It was in fact Pool 3, Pocahontas or New River slack.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, per net ton	$2.25@$3.25	$2.75@$4.00
F.o.b. Philadelphia, per gross ton	5.20@ 6.30	5.75@ 6.15
F.o.b. New York, per gross ton	5.75@ 6.85	6.35@ 6.80

Anthracite — Receipts of domestic sizes continue to drag both all-rail and by water. Output is better, but it is amazing to see the extent to which demand is maintained all over the Eastern half of the country. New England has had almost nothing that resembles winter weather, but retail trade, while light, is continuous and readily absorbs current shipments.

Tidewater—East

NEW YORK

Anthracite Receipts Improving — Independent Quotations Easier — Steam Coals Are a Drug — Bituminous Demand Slow—Contract Market Inactive.

Anthracite—Conditions are slowly improving. Company domestic sizes are coming forward in larger volume which means that the demand for independent coals will slow down. From now on demand will depend entirely on weather conditions.

Independent producers are not having the heavy call that prevailed a couple of weeks back. With consumers easier and the movement of company coals larger, dealers are ignoring the independent product, which with the exception of the largest producers, is being quoted higher than the 75c. differential above the company schedule.

Some of the smaller operators are having difficulty in finding a market and are quoting as low as $9.25, but from $10@$10.50 seems to be the ordinary quotation.

Movement of steam sizes is slow and they are accumulating rapidly. Because of the easiness of quotations for independent steam coals the companies are finding it necessary to stock some supplies. There is a report current here that some of the companies are considering the advisibility of changing the sizing of steam coals. Because of the cheapness of bituminous, sales agents are finding it difficult to move these coals in sufficient quantities to keep stocks down.

Buckwheat was quoted $3@$3.75 at the mines; rice, $2.20@$3 and barley $1@$1.50. Some stray lots of barley have been sold less than $1. In this harbor loaded boats of buckwheat were quoted $6@$6.25; rice $4@$4.50 and barley $3@$4.

Bituminous—Due to less coal coming to this market conditions show some slight improvement. Accumulations at the piers have been partially cleared up.

The trade believes the bottom has been reached. Inquiries are increasing and while actual sales may be slow the feeling is that orders will soon begin to come in. In the meantime most producers are not forcing their coals upon the market, because of the chance that it would bring less than the cost of mining.

With quotations for the various grades at their present level there is not much incentive for making contracts and because of this the closing of contracts for the new coal year has not been as active as it should be.

Suspension of factories and the curtailment of railroad activities is closing a big outlet and although there are many mines idle sufficient coal is being mined to meet all requirements. There is little demand for the poorer grades with quotations for the better coals at their present level. Mine quotations are about on the same basis as last week.

In this harbor quotations range about as follows: Pool 9, $6.15@$6.50; Pool 10, $5.75@$6; Pool 11, $5.25@$5.50 and Pool 71, $6.35@$6.75.

PHILADELPHIA

More Favorable Weather Increases Anthracite Buying—Deliveries Improve—Steam Sizes Dull and Prices Cut—Bituminous Quiet—Some Signs of Industrial Improvement.

Anthracite—Demand has been considerably strengthened by weather a trifle more wintry. Every dealer was kept busy last week if he had sufficient coal. There has been considerable improvement in the tonnage received.

February started without any of the big companies increasing circular prices and it now looks as if the trade would run right up to spring on current circular. Independents with top figures are finding it harder every day to maintain their prices and we have heard rumors of slight curtailments. Very little of the family size coal has been bought at the top price of $10.50. With the demand for egg decreasing this is the size that some shippers are quietly shading. Pea is even more difficult to market.

For the past few years at this season of the year the retailers revive the old story about a change in sizes and express the wish for two sizes only. This would relieve them of the constant criticism of their customers about the excess of small stuff in chestnut, and their objection to take pea on the same account.

Steam sizes have in no manner improved and even buckwheat is causing many anxious moments. The larger companies occasionally have their salesmen on the street in their endeavor to get new trade and also to urge regular users to take in more for storage. Rumors are abroad that the companies are cutting the price of their steam coals in order to avoid storing, the claim being that buckwheat can be had at $3.25 at mines, rice $2.25 and barley $1.25.

Bituminous—The trade is quiet, and some big producers do not expect to see any decided change for six weeks to come. However, there is a slight increase in working time of the various industries. The textile trade is making better time and there are reports of some business stirring in the iron trade. Despite this, buyers are slow to add to their stocks, which are still heavy. There is hardly a plant of any importance that does not have enough fuel to run until April 1 and even beyond.

Prices for spot coal are inclined to run a wide range. As to Pool 18 we have heard of no quotations whatever and the consumer generally does not want this grade any longer. We know of at least one good house who declines to handle even Pool 11, feeling that the interests of the trade are best served at this time by pushing only the better coals. Quotations appear in the Weekly Review, pp. 291-2.

The consumer still inquires for contract prices, but the market is almost devoid of quotations for such business. The consumer insists on comparing them with current spot prices. As the producer grows more firm in objection to this there is expected to be something of an increase in buying on the spot market.

Coke—Some of the iron plants are making better time, although buying is extremely moderate. Quotations still range $6@$6:50 on foundry and $4.25@$5 on furnace.

BALTIMORE

Prices Shade Down Despite Belief That Bottom Had Been Reached—Exports Are Still Falling Off—Plenty of Hard Coal.

Bituminous—Price of both steam and gas has shaded a bit lower; notwithstanding the belief that the bottom had already been reached. The decline was not so much in the bulk sales that set the average market, as in some of the individual break-aways in which there were sales at from 25 to 50c. below the general standard. Thus, while best steam coals were selling generally $2.75 @$3 there were a few sales noted down to $2.50. Poorer coals were offering as low as $2. Best gas coals were bringing around $2.75. Mine run gas went begging in many cases $2@$2.15. Some of this class coal caught in a jam with no demand was said to have been offered free to the B. & O. and to have been declined because the road had no place to put it.

Still more mines closed in the past week, among these being some of the Bethlehem Steel Co. chain which were over-supplying that company and then found it impossible to advantageously market the surplus on the outside. The export situation is less satisfactory. The entire export cargo movement for January was 154,676 tons with 19,567 tons additional taken as bunker. While reports from the other side are that there will be a good field for American coal later, they also indicate that at present France, Italy and Spain are well stocked.

Anthracite—There is now plenty of hard coal to supply immediate demands, especially as there is a new spell of "spring weather" to further cut down consumption. Stocks in yards are growing. This growth has been made in the face of the fact that the receipts here in January of 1,125 cars were nearly 600 cars less than those to arrive in December and over 200 less than the November receipts.

BUFFALO

Bituminous Market Dullest Ever—Coal on Track at Yard Centers—Larger Supply of Anthracite—Coke Does Not Move.

Bituminous—Less is doing in the trade than at any time in late years. Consumers do not see any industrial improvement and do not care to buy till some stir is in sight. Prices are at the bottom and as soon as there is failure to obtain them the mines shut down. Some quite wide districts in the Allegheny Valley are all idle and it is estimated that no district is working more than half time.

The consumer is buying just what coal he pleases and about at his own price. A few small contracts are reported, now and then one being made at $4, but most of them will not pay as much.

Bituminous quotations are about what they were, $3.25@$3.50 for Youghiogheny gas, $3@$3.25 for Pittsburgh and No. 8 lump, $2.75@$3 for mine run and $2.25@$2.50 for slack, adding $2.51 freight from Pittsburgh and No. 8 districts and $2.36 from Allegheny Valley.

Anthracite—The situation slowly improves. January coal consumption was light. Most of the demand now is from families who seldom buy more than a load at a time, so that they are continually on the market. Mine output is ahead of last year and will probably be good for the rest of the cold weather. The Canadian demand is not as heavy as it was and it will take only a few forerunners of spring to weaken the general demand.

Small sizes of anthracite are very cheap. Bituminous jobbers report that they can get screenings for 25c. a ton and all steam sizes in proportion. The independent premium holds out well, operators still asking $10.25 for furnace and $10.50 for stove at the mine, as against about $8.50 circular. As a rule the trade here refuses to pay this and if the present improvement in the supply goes on there will soon be no premiums possible.

Lake trestles are receiving their usual repairs and will soon be ready for next season's trade, but it will be close to

the opening of navigation before any coal will be ready to load. Meantime the Northwest supply is not large and may all be gone before May.

Coke—Demand does not improve and but for the fact that many ovens are still shut down the local trade would get next to no business. Jobbers usually report that they are able to get quotations a little under the regularly quoted prices, but even this does not bring much trade. Connellsville 72-hour foundry is $7, furnace is $5.50, off-grades and stock are $4.75 and domestic sizes $6.50.

Northwest

MILWAUKEE

Eastern Soft Coal Prices Shade—Market Dull and Listless, but Early Improvement Seen.

February brought the expected cut in Eastern soft coal prices. Pittsburgh, Hocking, Youghiogheny and West Virginia coals are down $1 and Pocahontas $2.75. Pittsburgh screened now sells at $9.75, pile run $9.25 and screenings $8. West Virginia screened is $10, pile run $9.50 and screenings $8. Pocahontas screened is $13.50, mine run $9.75 and screenings $8.25.

Anthracite remains unchanged. Chestnut and stove sizes are not to be had. Illinois and Indiana coal is offered freely at prices ranging $8@$11. The market continues dull and listless in the absence of wintry weather. The outward movement is about as slow as the local demand. There is a slight improvement in the industrial situation, but it will be a long time before plants will be operating at 100 per cent.

The car situation is good and nobody in the interior will want for fuel during the remainder of the winter unless there should be a prolonged snow blockade during February or March. The United Coal & Dock Co. secured the contract for the delivery of approximately 30,000 tons to municipal institutions at Milwaukee. Prices range $6.98@$9.98, based on heat unit content. The city has been paying as high as $12 in the open market since July 1.

MINNEAPOLIS

Continued Inactive Market — Prices Dropping Steadily—Interest in Rail Wage Controversy.

In its present state the market greatly resembles the function of "sitting up with the corpse." There is not a sign of life in business, and what orders are placed at this time are under protest, either mental or expressed. People will not buy any commodity under present conditions until they have to, and then only if they can get it at a cut price. Where conditions, such as exist in the coal business, prevent them from getting the reductions they expect, they do the best they can on such business as they must place.

Local markets are dropping steadily, not always directly but easing off from one time to another. The buyer is supreme. He can choose and pick, can get service from anyone, and may select the grade which pleases him and then drive a bargain to his heart's content. It has been many a long day since the buyer has had anything to say except to petition humbly to be allowed to book an order in blank and to express the hope that it would be reached for delivery before the German war debt was extinguished. From being one of the mute inglorious proletariat he has become the patrician to whom all honor is paid.

But the new coal season gives promise of a real market, when buyer and seller will get together with an old-fashioned dickering party, instead of a sort of civil service explanation in which the party of the second part gives his history, his hopes and his promises of performances, and then waits indefinitely to hear from it all.

If jobbers hold to their threats made when they were held so close last season, they will endeavor to tie in stringent promises with the mining companies in their contracts this time. Last spring the producers had full swing and they certainly swung well and far. Will they be "poor sports" if the other fellows operate the merry-go-round when they get hold of the engineer's throttle? There is no doubt the example set last season will result in some demands never before made.

There is constant agitation in certain circles for a reduction in freight costs on the ground that they were made too high. Coal is often named as an example of the unwisdom of the extreme freights. If there shall be any outcome in the move to reduce rail wages, it will doubtless be followed by a demand for a re-adjustment of coal freights.

Inland West

MIDWEST REVIEW

Production Greatly Curtailed — Prices Fairly Steady—Screenings Accumulate —Buyers Show Interest in Contracts.

During the past ten days there has not been much change in the market. In larger numbers than before, mines are closing down in Illinois and Indiana and will undoubtedly stay closed until conditions are very much better. Even now, production in the Middle West has fallen considerably below consumption.

The weather continues to be unseasonably mild and big producers in southern Illinois are meeting with a little more difficulty in moving domestic sizes. Early in December a number of Illinois and Indiana operators came to the conclusion that it would be wiser to store their coal near the mines rather than send it to a market already badly demoralized. As a result there are huge storage piles of screenings in the various mining centers. However, a number of mines have reached the limit of their storage capacity and are now faced with the alternative of either closing or sending the coal to market to be sold at a loss. The wise ones are closing their mines.

The buying public is slowly but surely beginning to show signs of an awakening. Salesmen report that general conditions show improvement. Whether this little improvement is merely a small flurry or the first step toward a general betterment of conditions remains to be seen. The fact is, however, that those who buy coal in large quantities are circularizing the trade in an endeavor to get contract quotations on their coal requirements. Few operators have been found who will quote a contract price on today's market. The wholesalers however, are glad to quote prices and in doing so, trust to their ability to get some operator in financial straits to supply the tonnage required. It may be added that there is a decided movement on foot among the more powerful operators in Illinois and Indiana to eliminate the jobber.

Eastern operators are still continuing in an unsuccessful attempt to force their coal on the Middle West trade. Coal has been moving forward on consignment and as the public is not particularly anxious to buy Eastern coal on account of the high freight rate and because of the fact that they already have large tonnages on hand, whole train loads of coal are drawing demurrage and low prices are being quoted. Pocahontas and New River, as well as high-grade splint coals, may be purchased for less than the better grade Illinois lump and egg coals; a situation that is far from normal. Current quotations are shown in the Weekly Review, pp. 291-2.

CHICAGO

Industrial Situation Still Unimproved —Steam Trade Lags—Domestic Buying Slightly Better.

On account of the continued mild weather but few orders were placed during the past week. Retailers are having great difficulty in taking care of the coal that is shipped to them on contract and in a number of cases have had to request shippers to discontinue. There is, however, some activity on the part of the owners of apartment houses toward buying a little coal to tide them over. On account of the coal shortage during the summer, and the consequent high prices, all of the apartment houses started the winter with only from one-half to three-quarters of their normal coal supply on hand.

One retail firm has been advertising in the daily press quite freely and quoting prices so low that it has caused those closely in touch with the trade to wonder where it is getting its coal and whether or not the retailer in question is delivering on his orders.

The market for steam continues to lag. Industrial plants are either closed

or work only one or two days a week and the big companies maintaining purchasing offices in Chicago are not buying to any great extent.

The market on Eastern coals is practically dead. Those retailers whose custom it is to handle Pocahontas, long since have had their bins filled by contract shipments, and others have had ample opportunity to purchase all they want at a figure attractive to them. Demand for anthracite is slowing up materially and it is expected that there will be a general reduction in price.

CLEVELAND

No Improvement Expected Before March 1—Steam Users Buying Sparingly—Retail Prices Slump.

Bituminous.—No rift in the cloud of inactivity enfolding the coal market is expected to appear before March 1. Demand is actually less than during the last few weeks. The logical result of this has been to produce a situation which hardly justifies operators to work their mines. Even railroads are catching the retrenchment epidemic and are buying with excessive caution.

In the eastern Ohio and Hocking valley fields a number of mines are closed with no indication of resumption this month. Many consumers are holding off from making contracts at present levels. They believe that a falling market exists and that better contract prices may be obtained later on. Current mine quotations will be found in the Weekly Review, pp. 291-2.

As a result of the almost uninterrupted mild weather retail demand is light. Dealers are getting all the coal they can handle and prices are beginning to slump. Although general business sentiment in this district is better, there has been little in the way of tangible encouraging developments.

Anthracite and Pocahontas.—Domestic demand for anthracite remains fair with the supply rather low. Prices are unchanged. Pocahontas lump is somewhat scarce with prices steady. Mine run, however, has dropped 50c.

Lake activities at the lower ports are expected to start about March 15. The first quotation of $3.50 covering the early contract for 100,000 tons sold for Lakes shipment still stands.

Retail prices of coal delivered at Cleveland are:

Anthracite — Egg, chestnut and stove, $14.90.

Pocahontas—Shoveled lump, $11.90; mine run, $10.50.

Domestic Bituminous — West Virginia splint, $10; No. 8 Pittsburgh, $8.15; Cannel lump, $12.15.

Steam coal—No. 6 and No. 8 slack, $6.60; No. 6 and No. 8 mine run, $9; No. 8 3-in. lump, $7.50.

DETROIT

No Active Demand—Shipments Are Cut Down, but Supply Is Larger Than Is Readily Absorbed.

Bituminous—Price reductions fail to attract buyers of either steam or domestic sizes. The volume of shipments has been greatly reduced but receipts are apparently somewhat more liberal than present needs of the market.

Though several large industrial establishments have resumed operation on a small scale, there is not yet any appreciable increase in demand for steam, as their fuel consumption is reduced to a minimum. Some time probably will elapse before the stocks many of them have on hand will be marked down.

There is little inquiry for domestic. With moderate temperatures and much unemployment, there is a tendency to curtail consumption. Finding yard stocks moving slowly, retailers are taking little interest in adding to them.

West Virginia lump is offered at the mines at $4.50, mine run $2.25@$2.50 and nut and slack around $1.75. Ohio lump ranges $4@$4.25, mine run $2@$2.25 and nut and slack at about $1.50@$1.75. Pocahontas mine run is $4.50, with little available.

Anthracite—Owing to the curtailed consumption, the market is easier with a tendency to sluggishness.

ST. LOUIS

Warm Weather Continues—No Market for Steam—Mines Everywhere Shutting Down with Coal Selling Below Cost.

Continued warm weather has about brought the coal trade to a standstill. Failure to move screenings in the Standard district has caused side-tracks to be filled with loads and railroads refuse to furnish any more cars for lump until the screenings are moved, with the result that mines are idle for long periods and screenings are down to 70c. with no demand.

The steam situation is bad not only in St. Louis, but throughout the Mississippi Valley. Industrial demand is almost nothing. Railroads are using minimum tonnage and some are picking up their storage supplies. Domestic demand is less than in the spring and summer months. Dealers everywhere have idle equipment and yards full of coal.

Standard mines working one and two days a week are considered fortunate, with railroad mines working as many as three and four days. Mt. Olive field conditions are somewhat similiar. The railroad tonnage is fairly good. Prices also broke here on the steam sizes, with domestic at $3@$3.50.

In the Carterville field the association operators are maintaining circular prices on domestic, with one or two exceptions. Independents are selling some domestic as low as $3, mine run at about $2.50, and screenings below $2.

In St. Louis proper no anthracite, smokeless or Arkansas coals are coming in. Coke is moving slowly and mostly to outside points. A peculiar movement in the market the last day or two was the fact that Livingston and Hillsboro domestic sizes went down to $3, while better grades of Standard 2-in. lump were moving up from $2.25 to $2.50@$2.75.

Mine prices are quoted in the Weekly Review. No change in retail prices.

COLUMBUS

Slight Strength Appears in Steam Grades—Domestic Sizes Are Quiet—Contract Interest.

A slightly firmer tone is shown in steam grades, brought about by better demand from plants which have resumed operations, coupled with the fact that suspension of many mines has reduced the available supply. However, steam users, operating on a 25 to 35 per cent basis will require considerable time to consume reserves. Steam prices generally are unchanged from the previous week. Quotations will be found on pp. 291-2.

Owing to the mild weather retail sales are not up to records of previous years. It is the policy of consumers to buy only in small lots as they are now satisfied there will be plenty of fuel. Retail stocks are fairly good and dealers are loath to increase them under present conditions. Prices show a tendency to decline. Hocking lump retails $7.75@$8.25 while mine run sells around $5.50. West Virginia lump retails $8.75@$9.50 and mine run around $6.25. Pocahontas lump is still rather high, $10.50@$10.75. Kentucky lump sells around $9.50.

Production is still curtailed by "no market," according to reports from the Southern Ohio Coal Exchange for the week ended Jan. 22. With 373 mines reporting, the output was 82,645 tons out of a full time capacity of 586,964 tons. Of the shortage, 315,100 tons was caused by "no market."

Little contracting has yet been reported. The question of price is being discussed and no conclusion has been arrived at. Mine run from the Hocking Valley and other Ohio fields is expected to be contracted for around $2.75@$3.

West

DENVER

Retail Trade Somewhat Better—Prices Soften—Competition Keen.

Colder weather has caused more activity in retail markets, but conditions generally are lagging, particularly in the lignite field.

First grade lignite is $5.75 at the mine. Three different prices were found in retail markets here—$8.75, $9.25 and $9.90—in a canvass of fifteen different retailers. Second grade lignite is $4 at the mine. Ten retail prices were quoted for this grade, ranging $6.95@$8.40. Lignite steam is $2.40 at the mine.

Routt County bituminous is $6.25@$6.50 at the mine, lump and nut $6; similar prices obtain in the Walsenburg field, with a tendency to bring the price to $6 in several instances. This brings bituminous lump to $12@$12.50 in retail markets. Bituminous steam is $3@$3.50 in Routt and Southern fields, bringing a retail price of $6.50@$6.75, and $8.05 for coking mixed steam coal.

Southwest

KANSAS CITY

Prices a Trifle Weaker—All Grades in Light Demand—Production Hard Hit —Some Contract Negotiations.

Spring weather prevails throughout this territory and demand for domestic is almost down to the zero mark. Steam plants are running short time because of light buying of all commodities.

Prices have shaded down a trifle during the past week. Present quotations are: Missouri lump $4.50@$5.50, mine run $3.50@$4.50, slack $2@$3.15; Kansas lump $5.50@$6, nut $5.50, mine run $4.50@$5, mill $4@$4.25, slack $3.75@$4; Arkansas lump $6@$6.75, mine run $4@$5. Some contracts have been closed at the above figures but the tonnage involved is small. Many consumers are withholding any future sales agreements, expecting further price reductions which do not seem probable under present operating conditions. Mines are running from 80 per cent in Missouri, down to 25 per cent in Arkansas.

LOUISVILLE

Demand for All Grades Dull—Much Cheap Coal Sold—Mines Operate About Two Days a Week.

Mild weather is resulting in demand for block coal slackening up. There has been a better call from the South for prepared sizes, while industrial demand from the North has been much better than from the South. However, the general demand is dull.

Some jobbers and producers report that it is now largely a one car market. One of the most prominent operators, in discussing conditions said: "I'm afraid that we are in for several months of dull business. There is really nothing upon which to base a belief that there will be any marked increase in the spring. Buyers who loaded up last spring and summer on a high market are not likely to take chances this season, unless prices are very low."

Domestic demand is largely for the cheapest coal on the market. Some operators in producing lump have been virtually giving their screenings away.

One jobber has received quotations of $1.20 on eastern Kentucky screenings and $4.25 on lump, which would figure an average of about $3.25 for production.

Prices have been weaker during the past ten days. Spot quotations will be found in the Weekly Review, pp. 291-2.

BIRMINGHAM

Trade Dull with No Signs of Immediate Improvement—Little Spot Coal Moving —Production Further Curtailed.

No signs of betterment in the coal market have appeared, inquiry being confined to small lots here and there, which in the aggregate do not amount to any considerable tonnage. Contract movement is also on a basis of minimum requirements, the railroads having restricted deliveries heavily and in some instances temporarily suspended shipments from the mines. Quotations as a whole are being maintained on a basis of the last named government figures plus the increase allowed following the wage adjustment, or practically the prices in effect April 1, 1920, and are shown in the Weekly Review, pp. 291-2.

The domestic market is fair and the demand adequate to take care of all the coal domestic operations are turning out. There is comparatively little of this class of coal coming from mines primarily serving the commercial trade, which are on short time schedules.

The output is being trimmed to meet actual needs of the trade and to prevent further accumulation for which no buyers can be found. Commercial mines are operating three and four days per week, with a few temporarily idle. Mines of the furnace companies are also running on about the same basis, it becoming necessary to decrease production of furnace coke, as few of the stacks of the district are in operation.

Canada

TORONTO

Anthracite in Good Demand—Bituminous Very Quiet and Prices Lower.

There has been little change in trade conditions for some weeks. Domestic demand has been active though by no means as heavy as usual owing to mild weather. Anthracite has come forward in a fair amount, keeping the yards well stocked. Many industrial plants remain closed and others working at greatly reduced capacity.

The market is decidedly overstocked and dealers shading quotations in order to unload. Quotations are as follows:

Anthracite egg, stove, nut and grate	$14.25
Pea	13.25
Bituminous steam	$11.50@$12.00
Domestic lump	13.50
Canal	11.50
Wholesale lots cars at Toronto	
Three-quarter lump	2.00
Run	1.75

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Production Curtailed to Meet Low Demands—Spot Prices More Steady.

Coal production has continued to decline. Additional mines are closed entirely while others are operating at lower rates than formerly. Average operation for the whole district is about 50 per cent of rated capacity. The highest average maintained for any length of time last year was about 80 per cent and that was while Lake shipments were fairly heavy, so that production now is at about two-thirds of what may be considered a reasonably full operation. The prospect is that there will not be much further decrease, and of course operations will begin to improve at the opening of Lake navigation. As the iron ore movement early in the season is certain to be very light there is some question whether a full movement of coal will occur at the outset.

Operators are making every effort to adjust production to the actual demand and avoid the necessity for sacrificing coal to avoid demurrage. In the past few weeks there has been a great deal of this demurrage coal, but of late these cars have been fairly well cleaned up.

The spot market has firmed up somewhat and sales under $2.50 are more exceptional than formerly, while there is a possibility of the market strengthening up to the level at which operators would sell for regular production over short periods, say $2.75@$3 for steam mine run. Current quotations are shown in the Weekly Review, pp. 291-2.

CONNELLSVILLE

Spot Coke Easier — Merchant Production Very Light — Producers Await Favorable Developments.

The majority of merchant coke producers have closed all ovens and are simply waiting for favorable developments to occur. One or two operators having contracts at 5 to 1 against basic pig iron and finding that furnaces are unable to run are in mood to cooperate with their customers along the line of telescoping prices and developing prices for coke and pig iron that would create a demand. While on a regular ratio contract a furnaceman would be getting cheaper and cheaper coke as the pig iron market went down, some contracts have a minimum, based on $22.75 pig iron, and it may be necessary to sell pig iron cheaper than that in order to produce a movement. How far operators could go is a question, but it is possible they may be able to figure out a cost somewhat under $5.

Spot furnace coke is available at various prices. Coke slightly weathered but of good quality can be picked up at $4.50 while production coke can be had at $5. There is hardly any furnace buying. Spot foundry coke is easier. One maker of a very good brand is down to $6.50 on spot or contract. We quote the spot market $4.50@$5 for

furnace and $6@$6.50 for foundry. Contract prices are practically nominal at $6 for furnace and $6.50 for foundry.

The *Courier* reports production in the week ended Jan. 29 at 27,230 tons by the merchant ovens, a decrease of 850 tons, and 139,400 tons by the furnace ovens, a decrease of 2,580 tons, making a total of 166,630 tons, a decrease of 3,430 tons.

EASTERN OHIO

"No Market" Losses Heavy — Lakes Tonnage Starting — Prices Fairly Stable.

Reports covering 170 mines for the week ended Jan. 29 indicate an approximate production of 295,000 tons against potential capacity of 650,000 tons, or about 45 per cent. The volume of coal mined just about held its own with that of the preceding week, and resulted in a potential loss of some 355,000 tons due principally to "no market" conditions. Railroads continue to take around 50 per cent of the output at the present rate of production and there has been little if any let-up for their account.

Mines on the N. Y. C. are working but four days per week. The majority of all mines are operating irregularly and others are closed down indefinitely. Were it not for the slight stimulus in production resulting from shipments to Lake at this time, no doubt a new minimum figure would have been established.

It is understood that the number of coal salesmen in the field has been considerably increased and they are actively soliciting the trade in an endeavor to keep mines going. Users would do well to as far as possible make purchases while demand is dull and thereby replenish stocks at the very low prices now prevailing. General optimism prevails that there will be a decided change in the situation within sixty days.

Spot coal prices remain about the same, the range being: Slack, $2@$2.50; mine run, $2.50@$3; ¾-in. lump, $2.75@$3.25; 1¼-in. lump, $3.25@$3.75; domestic lump, $3.50@$4.25.

FAIRMONT AND PANHANDLE

Production Declines with Fewer Contract Orders—Spot Demand Very Sluggish—Distress Coal at Low Figures

Fairmont

For a time during the final week in January production was at an even lower rate than during the preceding week, but increased loadings toward the end of the period made it possible to produce about 5,000 cars of coal and coke combined. Because of the extremely weak market shipments were confined almost exclusively to contract orders. All markets appeared to be well stocked with coal.

It has been some time since any definite spot quotations have been made in northern West Virginia. Some distress coal is going as low as $2, but producers are apparently waiting until the demand regains its strength before making an effort to sell coal. However, unconsigned loads at various points were somewhat more numerous than for some time. Most of the coal output went to Eastern markets, although Tidewater movement was on the decline.

Northern Panhandle

Neither shading of prices nor any other inducements were sufficient to attract new business in the Northern Panhandle. However, as in other fields operators were content to bide their time with their mines idle and to await the return of normal conditions rather than sell coal at distress figures. The output remained below 50 per cent of capacity, and contract orders were not sufficiently large to insure any regularity of operations. Railroad fuel orders were reduced and the continued idleness of steel mills and factories throughout the Wheeling district tended to keep production at a minimum.

UNIONTOWN

Industrial Resumption Causes Feeling of Optimism — Spot Quotations Unchanged.

Outwardly there is no apparent change in either the industrial situation or the curtailment policy of coal operators. But beneath the surface there is a more distinct feeling of optimism than at any time since the depression commenced. That feeling is more pronounced in the coke trade than among coal operators.

The optimistic attitude is the result of various industrial plants resuming operation on a small scale, most of them at reduced wages. While that resumption has not yet influenced the fuel markets there can be no doubt that the need of coal will soon be felt, taking into consideration even the fact that many plants still have surplus supplies bought during last summer.

Quotations for all grades of coal and coke remain stationary with not sufficient tonnage moving to establish a market. Spot furnace coke is quoted $5 by practically all jobbers and brokers but sales have been recorded at $4.50, ovens. Foundry coke is quoted at a dollar additional over furnace, as is customary. Steam coal is $2.25@$2.50 and byproduct $2.50@$2.75. Quotations, however, are more or less theoretical, as buying is exceedingly slim.

CENTRAL PENNSYLVANIA

Better Industrial Conditions — Market Improvement Seen — Interest in Rate Hearing.

"Listless," is the word applied to the market for some time and the price has kept going down until it has reached $2.50@$2.65 for Pool 10. Very few Pools 11 and 18 mines are in operation as there is no demand for this grade. In the Clearfield and Punxsutawney districts, the greater portion of the mines are closed. Larger operators are running four days a week on contract orders.

Central Pennsylvania operators are much interested in the hearing held in New York on the question of railroad rates to the New England coastwise trade. Operators cannot compete with West Virginia mines unless the railroads make some concessions in rates to equalize with the ocean rates from Baltimore for the Southern operators.

Middle Appalachian

LOW-VOLATILE FIELDS

Dullness Continues—Operations Being Cut to Offset Sluggish Markets—Contracts Being Reduced—Forced Sales at Low Figures

Pocahontas and Tug River

Despite highly unfavorable conditions Tug River mines produced about 75 per cent of capacity tonnage during the week ended Jan. 29. There were no apparent indications of anything stimulating to the industry, the most optimistic view being that present conditions may be improved shortly before the advent of the new coal year. The most potent factor in reducing production was the action of the N. & W. in cutting fuel receipts 10 per cent. At the same time it was indicated that another 20 per cent reduction would be made in the very near future.

Pocahontas production showed a decided downward trend, having been reduced to a point below 300,000 tons. Contract coal was the only tonnage moved to any extent. Inasmuch as shipments ever since the period of dullness set in have been heavy, it was becoming apparent that markets were well stocked with Pocahontas and that the saturation point had been reached.

With contract orders being cut to the bone and with no spot business in sight operators were continuing to close their mines. Tide movement was light.

New River and the Gulf

In common with the other smokeless fields New River production declined during the week ended Jan. 29, owing to additional contract cancellations and the inactive spot market.

Most mines were not working more than half the week at best and what little contract business was in force required only part-time operations to fill. There was no improvement in the spot market, and in view of general conditions operators declined to force their product on the market.

Despite heavy contract cancellations two months in advance in the beginning of the contract year further contracts for New River coal were being negotiated, one agreement having been placed at $5 a ton.

There was no recovery in the Gulf region from the dullness of the preceding week which kept production at a low mark. It is doubtful if the output exceeded more than a third of normal capacity.

Very little spot coal was sold. Mines had nothing to keep them going but a few contract orders and this class of business was easily cleaned up early in the week.

HIGH-VOLATILE FIELDS

"No Market" Greatly Curtailing Production — Few Acceptances of Buyers' Spot Prices—Mine Idleness Grows.

KANAWHA

Not more than 100,000 tons were produced in the last week of January, the output fluctuating around 30 per cent daily. Contract orders were well filled early in the week, when the output slumped to about 13,000 tons per day. Additional mines closed during the week.

No special effort was being made to sell steam coal under the existing market conditions. The call for domestic sizes was a little stronger, owing to colder weather, but there was no demand for resultant slack. The distress price on mine run was $2.25 a ton, although few sales were applied at that figure.

LOGAN AND THACKER

Market conditions drove production down several more pegs in the Logan region during the week ended Jan. 29. Production was estimated at 120,000 tons or about 30 per cent, a decline when compared with the preceding week of about 10 per cent. Not only was there an inactive spot market but contract requirements had undergone a downward revision which further curtailed production, and the few remaining contracts were practically all that kept the limited number of mines going. Producers as a rule had withdrawn from the market to await more normal conditions before attempting to operate.

Gas coal was in best demand or at least was not as sluggish as other grades. Buyers were offering around $2.50 for mine run which was regarded as a ruinous price by most operators. Prices of $3.50 for domestic failed to elicit much interest among producers. Cars were at all times plentiful, not less than 3,000 being available throughout the week, so that many empties were left over at the close of each day.

Notwithstanding the general dull market Thacker production was maintained at about 60 per cent of potential capacity, apparently being less affected by "no markets" than neighboring high-volatile districts.

Neither a car shortage nor strike figured to any great extent in the total production loss, 40,000 tons of the total loss of 55,000 tons being attributed to lack of market. A minimum of contract cancellations and suspensions made it possible to keep up production in the face of a sluggish market.

NORTHEASTERN KENTUCKY

With only about nine mines in operation on an average, production of only 51,000 tons or 21 per cent was not surprising. "No market" conditions were responsible for the loss of 77 per cent. Steam business was absolutely at a standstill.

Spot quotations are difficult to give in view of the limited business; mine run ranged $2.50@$3, with prepared sizes $4.25@$5.25, and screenings anywhere from $1.50 up. Many instances of distress coal going at figures lower than these were observed.

VIRGINIA

All small mines in the field were closed down because of lack of orders. Larger operations were being worked on an average of about four days a week. Such mines were mainly taking care of the demand for domestic coal. "No market" losses were the only bar to production.

Despite the dullness of the market production was well over 50 per cent of normal, mainly due to the fact that larger producers had only a few contract cancellations.

Middle West

WESTERN KENTUCKY

Demand Quiet and Many Mines Down —Operators Are Holding Prices More Firmly—Domestic in Better Call.

Overproduction and distress coals have made it a hard matter to sell profitably and maintain prices, but most operators are making no effort to see how much they can lose and are not forcing production. Competition for steam business is keen, as the consumer is buying the cheapest coal he can right now.

Operators in some sections have been filling orders for prepared sizes and throwing the screenings on the market for almost anything they can get, the price being below the freight haul to the Louisville market. This holds lump prices rather high, and hurts mine run.

Prices for the past week ranged as follows: Prepared $3.80, mine run $2.75, screenings $2. Some quotations have been made with lump $3@$3.50; mine run $2.15@$2.40; nut and slack $2@$2.25; pea and slack $1.40@$1.60.

INDIANA

All Markets Lifeless — Mine Idleness Grows—Prices at Lower Levels.

Prices are much lower than those which were offered by buyers prior to Dec. 1, 1920. Adequate car supply and the industrial slump are the prime reasons for the reverse of conditions in the coal market.

Industries that were working full time are either closed down or running on a greatly reduced basis. A great falling-off in railroad traffic has resulted in reduced consumption of fuel. Mild weather also has been a contributing factor in causing the general slump in demand.

This depression did not result in any noticeable reduction in the amount of coal produced until the latter part of December as operators were able to move their product at reduced prices. But with each succeeding week of January the condition of "no market" has increased and mines with a high cost of production have been forced to shut down.

DUQUOIN

Production Being Cut—Prices Firm—Miners Restive.

There was no great change noticed in this district during the past week, and many of the mines are still continuing to operate two and three days a week. Some mines in Perry and Franklin counties which had held their own so far fell back with the rest, and it would be safe to say that there was not a plant in the southern part of the state which worked the full week out.

What little demand for southern Illinois coal still remains is mostly from the northern industrial centers and Chicago, the Standard field having long ago ruined the St. Louis market for this territory.

Miners in the district seem to see a long period of idle time ahead of them, and many are moving, or preparing to do so, in an effort to find some location where even 50 or 60 per cent steady time this spring and summer is promised.

Prices were unchanged last week, lump being sold locally, $4@$4.75 with strong demand; screenings, $1.25@$2.50; mine run, $2.75@$4.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Distress Coal Shades Spot Prices — Mine Idleness General — All Markets Listless.

Prices continue to shade off with buyers showing no disposition to take much tonnage. Mine operations not fortified with contract orders are resuming on very short time or have closed down altogether, awaiting a return to better conditions. What little spot coal is being forced on an unwilling taker goes at low figures. Mine quotations range $4.75@$5 for domestic, $2.75 for mine run and $1.50 for slack.

Industrial plants have heavy stocks on hand which will last for a considerable period with the present low rate of consumption. Continued unseasonable weather makes the domestic demand very slack.

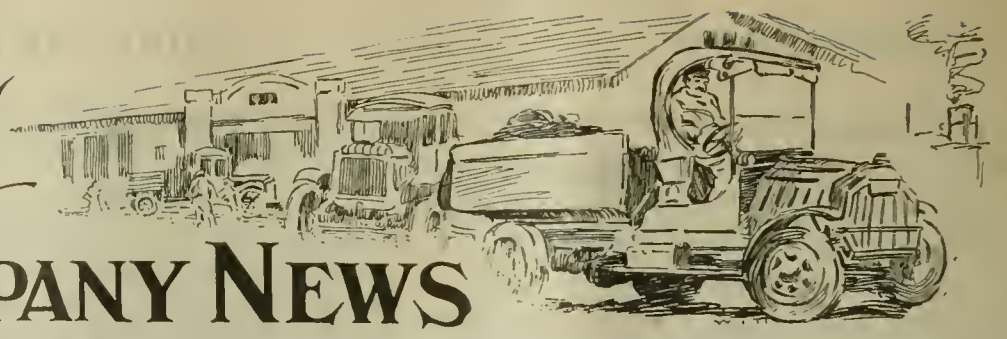
West

UTAH

Business Is Quiet — Unseasonable Weather Continues—Operating Conditions Good.

Retailers report business as quiet, but somewhat better than it was a few weeks ago. The springlike weather continues, with the exception of a chilly day now and then. Coal is getting low in the bins of many families, but in the opinion of dealers they are holding out in the hope of a reduction in prices. It is unlikely, according to producing companies, that there will be any change in prices before spring.

MINE And COMPANY NEWS



ALABAMA

The Crestview Mining Co. has plans under way for the development of about 1,500 acres of coal property near Oneonta. W. G. Alexander, Birmingham, is engineer for the project. W. H. Young is president of the company.

Incorporation papers have been filed by the **Rogers-Talty Coal Co.** with an authorized capital stock of $100,000, and will begin business with $86,250 paid in. C. P. Rogers, Jr., of Morris, Ala., is president; G. F. Talty, vice-president; W. A. Rogers, treasurer, and R. A. Nason, secretary.

The Alabama Fuel & Iron Co. is planning the development of some of its coal properties in St. Clair County, and the Central of Georgia Ry. will construct a branch from its main line at McCoomb's Station to the site of the proposed new work, a distance of about seven miles. This company now operates the Margaret and New Acton Mines in the same field.

COLORADO

Notice has been given to the state industrial commission by the **Hawkeye Coal Co.** of Coalview, of its intention to reduce the wages of its miners. The amount of proposed reduction will be reached at a conference to be held with the employees. Thirty days' notice of the proposed change will be given to the commission.

ILLINOIS

The new mine which has been under way for several months near Carterville, Williamson County, is almost completed, and the work of cutting out the bottom works is now in progress. The mine was sunk by the **Madison Coal Corporation** and is known as Madison No. 12. The corporation has a large number of operating mines at the present time in southern Illinois.

A land transaction recently filed in St. Clair County covering 1,200 acres of coal land to **John Henderson** of the **West Virginia Coal Co.**, of St. Louis, has been announced, together with plans of the sinking of another mine on the land which is located near Collinsville. The mine will be equipped to produce 3,000 tons daily. The sinking of this mine and of many others recently has been contributed in part to the fact that St. Louis is rapidly becoming a coke and steel center and many operators and men with capital are sinking mines with such expectations in sight.

Franklin County has claimed the record production for the calendar year 1920. During that year the twenty-six mines in the county hoisted a total of 11,299,280 tons of coal. This amount was handled by 12,261 miners.

A deal recently consummated makes the **Peabody Coal Co.**, of St. Louis, owners of the No. 2 mine of the Deering Coal Co., near Harrisburg. The mine has been operated for a number of years and employs over 300 men. The deal adds one more mine to the long list of plants now owned by the Peabody Coal Co. in southern Illinois.

The Clark Coal & Coke Co. has purchased the Crescent mine near Rocky Glen on the C. B. & Q. for the sum of $60,000. The purchase of the mine will give the Clark company 500 acres more land and will add eight years to the life of the Empire mine, through which the Crescent mine will be worked. It is planned to extend the Peoria, Hanna City and Western R.R. two miles farther up the valley and open another mine at the end of the road. **Newsum Bros.** will open a new mine on their property opposite, making four good mines on the road. The Empire mine is now working 325 men.

The Perry County Coal Corporation of Illinois and the **West Virginia Coal Co.** have filed suit for $125,000 in the Federal Court, East St. Louis, against the B. & O. S. W., charging the railroad with violation of the Transportation Act. The suit alleges the railroad discriminated in alloting cars to the Taylor and Carbon mines of the Perry County operators, causing large financial losses to both plaintiffs. The mine operators ask for $100,000 and the West Virginia Coal Co. for the remainder.

INDIANA

Numerous title-clearing actions are being filed in the circuit court in Vermillion County in the process of the coal operators acquiring a good part of the land in Vermillion township, adjacent to Newport, the county seat. It is said there is an excellent vein of coal underlying the territory and the roof is solid rock. Two shafts have been sunk and the railroad tracks laid to two of the mine sites. It is said that before the spring is over this new field will be yielding an enormous amount of coal. For years the old residents of Newport refused to sell or lease land for mines.

Edward M. White has been appointed by the attorney-general of Indiana, to represent the state in the appeal of the case of the **Lower Vein Coal Co.** against the Industrial Board of Indiana, which will come before the U. S. supreme court soon. The case concerns the legality of the Indiana Workmen's Compensation Law passed in 1915 by the legislature and made applicable to all Indiana coal companies by the legislature in 1919.

PENNSYLVANIA

The boiler and engine house at the Patrick mine of the **Nicholson Coal Co.**, near Masontown, was wrecked by an explosion recently. Two weeks before the fifty miners employed by the company were informed that powder would no longer be furnished free and the men struck. Damage caused by the explosion was placed by mine officials at $20,000.

A deal involving 1,685 acres of coal lands and 300 acres of surface lands, has been practically consummated in Cambria township, near Ebensburg at a purchase price of approximately $375,000, the purchaser being **C. Law Watkins**, son of T. H. Watkins, president of the Pennsylvania Coal and Coke Co. The tract embraces what is commonly known as the Davis brothers farm, in Cambria township, and adjacent tracts. An extension of the Pennsylvania line will be made to tap the coal field, and a town will spring up within the early future.

The supply house of Colonial No. 3 mine of the **H. C. Frick Coke Co.** at Grindstone, Fayette County, was destroyed by fire recently. The origin of the fire is unknown. The loss was about $8,000.

The Atlantic Coal and Iron Co., Philadelphia, has purchased from the **Maryland Coal Mining Co.**, the developed leasehold, located on New River, Fayette County, W. Va., of approximately 3,350 acres. It is the intention of the purchasers to increase the output 1,000 tons daily, by the operation of additional mines.

At the annual meeting of the **Bostaph Coal Co.**, the following officers were elected: Adam W. Tritsch, president and business manager, James G. Armstrong, secretary-treasurer, Joseph Mulligan, vice-president and mine manager.

OKLAHOMA

The Grove Coal Co. of Kansas City, which has been operating in the fields about Henryetta, for the last twenty years, has just closed a deal whereby it takes over the **Creek Coal and Mining Co.** and the **Victoria Coal Co.**, both of which art among the largest coal mining companies in Oklahoma. The deal includes several mines now being worked, including the Whitehead Mines 1, 2, 3 and 4 and the Alko-Nak strip pits, and other productive mines. The consideration was not announced, but is said to have been in excess of $1,000,000. The company will soon erect a large office building in Henryetta.

TEXAS

Nearly 2,000 acres of land, estimated to contain 50,000,000 tons of lignite coal in Freestone County, are to be developed by the **American Fuel Corporation**, organized with $2,000,000 capital. E. B. Neiswanger is president, Harry L. Seay and J. S. Pulliam are vice-presidents, and E. W. Blumenthal is secretary.

The lignite mines of Rockdale, are in operation at full time and are working about 2,000 operatives. These lignite mines are declared to be the largest in the world. Lignite is finding a ready market in Texas Companies operating are: **International Coal Co., Ira Perry Coal Co., Rockdale Lignite Co., Texas Coal Co., Big Lump Lignite Co., Hicks Coal Co., Rockdale Consolidated Coal Co. and Federal Fuel Co.**

Texas lignite operators, in a special meeting at Dallas took action toward securing the Federal lignite testing plant for central Texas near the lignite beds. About twenty members of the Texas Lignite Operators' Association were present at the meeting. J. C. McKay, president of the association, presided.

UTAH

Extensive coal mining operations are being planned in Sevier County by a new company to be known as the **Sevier Valley Coal Co.**. The company already owns a quarter section of what is claimed to be very good coal land. In the main office will be J. C. Sumner as president, and Sterling K. Heppler, secretary.

WEST VIRGINIA

Incorporation of the **New River, Raleigh & Pocahontas Coal Co.** with an authorized capital of $7,500,000 signalizes the consummation of a deal of considerable magnitude in New River coal, approximately 25,000 acres of coal land on Grade Creek in Raleigh and Summers counties having been acquired by New York people who are largely interested in the new concern. Those behind the new company have organized the New River & Pocahontas R.R. Co., capitalized at $1,000,000. It will be necessary not only to build a railroad bridge across New River in order to connect with the Chesapeake & Ohio but a standard gage road will also be constructed into the territory acquired and later through Raleigh and Mercer counties to connect with the Norfolk & Western. Officers of both the railroad and coal companies will be elected at a meeting to be held in Charleston in the near future. Incorporators of the coal company are Robert F. Bopes, of New York, William G. Conley, James T. Lightner, Lee Ott and Ernest A. Simmons, of Charleston, who are also incorporators of the railroad company. General headquarters of both companies will be at No. 11 Stone Street, New York.

E. C. Minter has launched the **Minter Fuel Co.**, which will buy and sell smokeless coal, this company being capitalized at $50,000. The general offices of the company are at Beckley. Identified with the new company are: E. C. Minter, Clay T. McDonald, T. J. McGinnis, G. C. Hedrick of Beckley; A. K. Minter of Rhodell, W Va.

Authority has been granted by the secretary of state for an **increase in the capital stock** of many West Virginia coal companies. In the list are the following: Gem Pocahontas Coal Co., of Welch, of which

James P. Flanagan is president, from $25,000 to $100,000; Century Coal Co., of Baltimore, operating in Barbour County, headed by John K. Shaw, from $1,150,000 to $2,300,000; Flanagan Coal Co., of Pottsville, Pa., a West Virginia corporation, from $100,000 to $200,000; Pine Bluff Coal Co., of Fairmont, headed by E. T. Kelly, from $100,000 to $200,000; Ingram Branch Coal Co., of Beckley, headed by C. H. Mead, from $400,000 to $1,000,000; West Virginia Eagle Coal Co., Boomer, headed by W. G. Conley, from $150,000 to $200,000; Peck's Run Coal Co., of Fairmont, headed by F. J. Foy, from $25,000 to $200,000; the Chesapeake Coal Co., of Wheeling, of which T. H. Johnson is president, from $150,000 to $200,000; P. C. Lynch Coal Co., Blue Jay, from $200,000 to $300,000; Milams Fork Smokeless Coal Co., Beckley, C. H. Mead, president, from $140,000 to $500,000; Mead-Tolliver Coal Co., headed by C. H. Mead, Beckley, from $150,000 to $1,000,000; Donald Coal Company, Logan, Fred Haislip, president, from $50,000 to $100,000; Pittsburgh-Summit Coal Co., of Sutton, headed by C. C. Davis, from $75,000 to $100,000; Carver Fork Colliery Co., Hartland, headed by Porter E. Hyre, from $25,000 to $50,000; Kirkland Coal Co., headed by S. H. Goodloe, Jr., from $10,000 to $50,000.

The largest producer of coal in West Virginia—**the United States Coal & Coke Co.**—is not only engaged in extending the scope of its operations by opening new mines in Barbour County but also proposes to open eighteen more mines in the neighborhood of Gary. That became known through an announcement made by General Edward O'Toole, general manager, when the annual safety-first banquet of the company was held at Gary on Jan. 15. The banquet was the eleventh of its kind held, Judge G. E. Cassell, of the Norfolk & Western, delivering the principal address. The banquet was attended by about 300 officers and employees of the company and a number of invited guests, including officials of the Norfolk & Western.

BRITISH COLUMBIA

It may not appeal to the average individual as being of much importance to convert a fleet of steamers from oil to coal burners because the world's supply of oil is getting short, but to Vancouver Island, however, the move of the **Canadian Pacific Ry.** in respect to its coastwise vessels is of considerable significance. An order already has been placed with one of the local companies to supply 25,000 tons per month for the various services in question. This means that the normal production of coal per month will have to be increased by nearly 17 per cent.

The improvement in coal production, shown by the figures of 1920 over those of 1919, amounts roughly to 500,000 tons. The coal mining industry of the Canadian West is recovering from the comparative slackness which resulted when fuel oil became firmly established as a formidable competitor both in the industrial and the domestic fields. The year 1920, it is believed, marked the turn of the tide in British Columbia. With all the old collieries working pretty well to capacity, and attention being turned to an even greater extent to coal because of the evidences that America's stock of oil is not inexhaustible, and with new foreign markets developing, it is confidently predicted that the output of 1921 will show a further advance. Following are statistics showing the coal production by districts in 1920:

VANCOUVER ISLAND	
Canadian Western Fuel Co.	686,756
Canadian Collieries—	
Comox	459,204
South Wellington	91,469
Extension	199,297
Pacific Coast Coal Co.	94,776
Nanoose-Wellington Co.	11,879
Granby Company	201,679
Vancouver-Nanaimo Co.	1,441
	1,776,500
KOOTENAY DISTRICT	
Crow's Nest Pass Co.	707,507
Corbin Coal Company	154,858
	862,365
NICOLA-PRINCETON	
Middlesboro Collieries	93,617
Fleming Coal Co.	32,418
Coalmont Collieries	9,022
Princeton Collieries	19,068
Telkwa Coal Co.	1,279
	155,404
Total	2,794,269

ALBERTA

Checks for a 3 per cent dividend have been received by stockholders in the **International Coal & Coke Co.** of Coleman. This was formerly a Spokane corporation but was incorporated under the laws of Canada to avoid double corporation obligations. This is the second dividend for 1920, and the twenty-ninth which it has paid.

Personals

John Marland, formerly superintendent for the Chicago, Wilmington & Franklin Co., at their Thayer, Ill., mine is now with the Wagner Mining Co., of Cambridge, Ohio, and the King-Harlan Co., Inc., mine, located at Kilday, Ky., with offices in the Ingalls Bldg., Cincinnati, Ohio.

L. G. E. Drewitt, mining engineer, who has just completed a survey on the Cuban mining industries, has accepted the position of manager of the Federal Coals, Ltd., Lethbridge, Canada.

John L. Markham, of St. Louis, has been appointed to represent the Monroe-Warrior Coal & Coke Co., in the St. Louis territory. He was formerly connected with the transportation department of the Missouri Pacific and is experienced in the coal business.

F. W. J. Sextro, of Chicago, president of Rutledge & Taylor Coal Co. with a party of salesmen from the company's Chicago and St. Louis offices, recently returned from a tour through southern Illinois. While in the southern part of the state, the party visited and inspected two mines operated by the company, one at Livingston and one at Duquoin.

J. J. Fletcher, of Collinsville, Ill., has been named for county inspector of Madison County for the year 1921.

J. F. Jones, for nearly twelve years superintendent of the Williamson Coal Co., has resigned to accept a similar position with the Knox Creek Coal Co.

Effective Feb. 1, **W. F. Aldenderfer** retires as Northwestern sales agent for the Lehigh Valley Sales Co., in Minneapolis, going to Chicago, where he becomes vice president and general sales agent for the Waubun Coal Co. Succeeding to the office of Northwestern sales agent is **Clinton B. Cox**, heretofore assistant under Mr. Aldenderfer.

George C. Martin, geologist, has resigned from the staff of the Geological Survey to become technical assistant to the chief geologist of the Standard Oil Co. Mr. Martin has been with the Division of Alaskan Mineral Resources since 1903.

The newly appointed secretary of the American Constitutional Association, with headquarters at Charleston, W. Va., is **P. M. Conley** who has been the director of the educational department of the Elkhorn Division of the Consolidated Coal Co. at Jenkins, Ky.

T. O. Meredith, of Elkins, has been admitted to the firm of Straight & McClure, mining engineers of Fairmont.

Due to the advancement of Fred M. Chase to president of the Lehigh Valley Coal Co., other promotions of Wilkes-Barre men, all who have been with it for many years, were announced recently. **P. F. O'Neill, W. H. Fregans, W. C. Sterling and Edgar E. George** are those who have gone up another round. Mr. O'Neill becomes general solicitor; Mr. Fregans is assistant to the president; Mr. Sterling moves to special assistant of the president; Mr. George is made assistant secretary of the company.

Traffic News

The I. C. C. has suspended until May 20 proposed elimination of the **East St. Louis Connecting Ry. Co., St. Louis Merchants Bridge Terminal Ry. Co., St. Louis Transfer Ry. Co., Terminal Railroad Assn. of St. Louis and Wiggins Ferry Co.**, as participating carriers in the tariff on coal and coal briquettes from mines in Illinois and Kentucky to East St. Louis, Ill., St. Louis, and points taking the same rates.

In the complaint of the **Fairfield Lumber and Coal Co.**, an I. C. C. examiner recommends that the rates on coal from Bankhead, Ala., to Fairfield, Ala., and from Dora and Carbon Hill, Ala., to Pratt City, Ala., during Federal control, be declared unreasonable and that the company be awarded reparation.

The Ohio Utilities Commission has authorized the Hocking Valley Ry. to issue $2,037,000 general mortgage bonds and to pledge them with $163,000 which the road has and $1,665,000 which the company hopes to receive from the government under provision of the Transportation Act. The money from the sale of the bonds is to be used for extensions and improvements.

Twenty-six coal mining companies in Gibson, Pike and Warrick counties, Ind., have asked the public service commission to reduce freight rates for shipments to Indianapolis and the gas belt territory from 23 to 28c. a ton. All railroads serving the mines were named as parties to the coal operators' petition. Until the last advance in freight rates in October, the southern Indiana mines paid seven to ten cents more a ton on shipments than those in the Linton and Clinton fields, including mines in Vigo, Knock, Vermillion, Clay, Sullivan, Owen and Greene counties, according to the petition. The difference now, they say, is 31 to 35c. a ton.

The Utah Terminal Railway Co.'s application for a certificate of convenience under which it had proposed building a branch to Standardville has been denied. The Interstate Commerce Commission is of the opinion that the necessity for the construction of the line is not sufficiently apparent to warrant the granting of the petition. This road is controlled by the Standard, Spring, Canyon and Peerless coal companies.

The West Kentucky Coal Bureau in a complaint to the I.C.C. seeks the establishment of joint through rates from mines of its members on lines of the Illinois Central to the southern peninsula of Michigan, which shall not exceed the rates from southern Illinois mines to this territory by more than 25c. per ton, as of Aug. 25, 1920, plus increases thereafter authorized.

In the complaint of the **National Fireproofing Co.**, the I.C.C. decides that through rates on coal from Aultman, Ohio, to Perth Amboy, N. J., were not unreasonable or discriminatory, but that through charges on coal from Haydenville, Ohio, to Perth Amboy were unreasonable to the extent that the factor of $1.70 per net ton from Newark, Ohio, to Collier, W. Va., exceeded a factor of $1.40 a ton, and awards reparation.

In the complaint of the **Little Cahaba Coal Co.**, an I.C.C. examiner recommends that the rate on coal from Piper, Ala., to Fairfield, Ala., during Federal control was unreasonable and that reparation be awarded.

In the complaint of the **Ridge Coal Mining Co.**, an examiner recommends that the practices of the railroads with respect to furnishing coal cars and transportation facilities are not shown to be unduly prejudicial to complainant served only by the Missouri Pacific or unduly preferential to competing mines served by the Missouri Pacific and Burlington under a joint trackage arrangement.

Attention is directed by the Wholesale Coal Trade Association to the fact that the time limit within which all **claims against the Railroad Administration** for overcharges or reparation for unjust or discriminatory rates, expires on Feb. 28, after which date all such matters are outlawed. It is necessary that these matters be presented to the I. C. C. upon formal or informal complaints prior to the above date. The I. C. C. has called on carriers for detailed information regarding reconsignment of coal and other freight. The returns are to be under oath and must be filed not later than Feb. 28, the information to be given for the months of September, 1917, October, 1918 and November, 1919. The request covers information on the number of cars of coal, etc., held on rails beyond free time for reconsignment, the number of days the cars for each commodity were held for reconsignment, and the number of "order notify" shipments of commodities, held at principal destinations on rails beyond free time, and the number of cars of all classes of freight

held on tracks beyond free time by or for consignee or consignor, except reconsignment and "order notify" shipments, etc.

By an order entered in Investigation and Suspension Docket 1283 the I. C. C. suspended from Jan. 20 until May 20, 1921, the operation of certain schedules published in **Virginian Railway Co. tariff I.C.C. 1119.** The suspended schedules provide that in the calculation of debit and credit days and assessment of demurrage charges under the average agreement each car loaded with coal or coke at Sewalls Point, Va., for trans-shipment by vessel, having a marked capacity of 200,000 lb. or over shall be counted as two cars.

The first lot of the new 60,000 capacity coal cars ordered last September from the General American Car Co. of East Chicago, Ind., by the **Chicago & Alton** has been completed. Delivery will be made soon. The order consisted of 500 cars, all of steel underframing and wooden boxes. The car company also has the contract for 350 additional coal cars, utilizing the trucks and brake rigging left after the old boxes had been scrapped.

The **freight rate on coke in Minnesota** has been ordered not to exceed the rate of hard coal hereafter.

Publications Received

Final Report of the Business Manager of the United States Fuel Administration 1917-1919. Edited by Lawrence Mitchell. Pp. 250. An accounting of administrative expenses, and complete list of personnel. Limited number available on application to the Director, United States Geological Survey, or Division of Publications, Interior Department, Washington, D. C.

Reports of the Bureau of State Organizations and of the Federal Fuel Administrators for the Various States and Districts. Edited by George William Howes, Government Printing Office, Washington, D. C. Pp. 428. Copy on request to the Director, United States Geological Survey, Washington, D. C.

Coal in Eastern Idaho. Bulletin 716-F. By G. R. Mansfield. Pp. 31; 2 plates; 3 text figures; 1 insert. Results of an examination made after the coal shortage of 1916-17. Contains several geologic maps, showing structure and coal beds. United States Geological Survey, Washington, D. C.

Preliminary Investigations of Storage Battery Locomotives, Technical Paper 264. By L. C. Ilsley and H. B. Brunot. Interior Department; Bureau of Mines. Pp. 35; tables and illustrations.. Government Printing Office, Washington, D. C.

Stenches for Detecting Leakage of Blue Water Gas and Nature Gas, Technical Paper 267. By L. H. Katz and V. C. Allison. Interior Department, Bureau of Mines. Pp. 22. Diagrams and tables. Government Printing Office, Washington, D. C.

Causes and Prevention of Fires and Explosions in Bituminous Coal Mines. Mines Circular 27. By Edward Steidle. Interior Department, Bureau of Mines. Pp. 75; illustrated. Government Printing office, Washington, D. C.

State Mining Laws on the Use of Electricity In and about Coal Mines. Technical Paper 271. By L. C. Ilsley. Interior Department, Bureau of Mines. Pp. 53; tables and diagrams. Government Printing office, Washington, D. C.

Association Activities

New River Operators' Association

Looking forward to a year of good business despite unfavorable conditions now prevailing, members of the association gathered at New York on Jan. 11 in annual meeting and elected an executive committee and officers for 1921.

The roster of the executive as chosen is as follows: G. H. Caperton, Charleston, W. Va.; S. A. Scott, Macdonald, W. Va.; C. C. Beury, Charleston, W. Va.; Ernest Chilson, Charleston, W. Va.; Garner Fletcher, Huntington, W. Va.; M. L. Garvey, Winona, W. Va.

All old officers were re-elected, by the executive committee as follows: G. H. Caperton, president; S. A. Scott, vice-president; C. C. Beury, treasurer; T. L. Lewis, secretary.

Members of the joint board were continued in that capacity the hold-overs being G. H. Caperton, S. A. Scott and R. H. Morris. An important action taken by the association was the authority given to employ a traffic manager. S. C. Higgins was selected to fill that post. Mr. Higgin. has been located at Allentown, Pa. and is said to be a well known figure in the traffic world.

Northern West Virginia Coal Operators' Association

Meetings of various bodies subsidiary to the Northern West Virginia Coal Operators' Association were held in Fairmont on Jan. 3. It was considered an appropriate time to call the meetings, in view of the fact that a joint committee of operators and miners were in session endeavoring to work out a rate mutually satisfactory to govern the operation of the new and large type of cutting machine.

The first of the three meetings, held in the morning, was that of the advisory board. This was followed by a meeting of the executive committee, but aside from routine matters there was nothing of much importance considered. The last meeting of the day was that of the board of directors.

The directors and members in attendance devoted much time to a discussion of contracts and contract cancellations which was deplored as a practice seriously inimical to the best interests of the industry, inasmuch as it begot distrust as between producers and buyers. Many operators were inclined to view it as a part of the reaction from the war and as a part of a general moral decadence in business as well as in other lines of activity.

Michigan-Ohio-Indiana Coal Association

Secretary B. F. Nigh of the association has made the following report for the last six months of 1920:

To the officers, board of directors and members of the assocation.

As Secretary of your Association, I have the pleasure of submitting for your approval a review of the work accomplished since the annual convention held last June.

Increased Freight Rate and Car Supply: At the annual meeting the association went on record as favoring an increase in freight rates in the hopes that if the railroads were given additional revenue it would have a tendency to better their rolling stock and terminal facilities.

Protests Twenty-Four Hour Unloading Order: At the time Service Order 7 was issued we filed protest objecting to that part of the order which required the unloading of cars within 24 hours. Our objection was filed with the commission June 30, 1920. Later this order was amended so that the embargo was not placed against dealers when carriers were at fault.

Confiscation: On June 30, due to numerous complaints which were being received daily from our members, the assocation made protest to the commission against the practice of some railroads indiscriminately confiscating coal. In answer to our protest, we received a request from Mr. Robbins, director of the Bureau of Car Service, to report such cases, which we did, thereby, receiving some relief, but by no means stopping this practice. We, however, informed our members as to their rights in the matter of confiscation and requested them to send their claims to us for handling. The results of this work will be shown in our report covering the work of the claim department.

We have had filed through this department 1,387 claims, of this number 912 have been paid, amounting to $134,099.55. Of these claims 207 were from Michigan, 184 from Indiana and 521 from Ohio. This work needs no comment, it speaks for itself. All that we ask or expect is that you give a moment's thought to the efforts that have necessarily been put forth to secure these results.

Membership: We now have a membership larger, perhaps, than that of any other organization of our kind. We have secured 173 new members the past year, of which 36 were from Michigan, 11 from Indiana and 126 from Ohio. We have had only twelve withdrawals the past six months.

Tug River Coal Operators' Association

The annual meeting of the association was held at Bluefield, W. Va., on Jan. 10 with 90 per cent of the tonnage of the field represented. After routine matters had been disposed of the following executive committee was elected: A. B. Rawn, Huntington; Andrew Leckie, Welch; John T. Wilson, Bluefield; C. C. Marfit, Huntington; H. E. Harman, War; S. E. Harman, Yukon; L. Epperly, Davy; Harry McCoy, Twin Branch; George Wolfe, Davy. After the general meeting was over the new executive committee met and selected the following officers for the year 1921: A. B. Rawn, president; Andrew Leckie, vice-president; John T. Wilson, treasurer. Permanent headquarters have been secured in the city of Welch and hereafter the meetings will be held in that city. The association has grown to such an extent that it was thought best to secure the services of a paid secretary and within a few days one will be selected to have his headquarters at Welch.

West Kentucky Coal Bureau

The bureau met in Louisville at the Seelbach Hotel on Jan. 11, re-electing the former officers, and handling traffic and other matters. The officers of the organization are Frank D. Rash, of the St. Bernard Coal Co., Earlington, Ky., president; C. W. Taylor, of the W. C. Duncan Coal Co., Greenville, vice-president; C. E. Reed, Louisville, secretary-treasurer. About thirty operators were present at the banquet. The Grapevine Coal Co., of Madisonville, was reinstated on aplication, and two new members elected. These were the Old Hickory Coal Co., of Providence, and Pontiac Coal Co., of Madisonville. J. Van Norman, attorney for the organization, went over three rate cases now before the Interstate Commerce Commission for better through rates to Western, Southern and Central competitive points. An effort is also being made for a new tariff on rates between Ohio, Indiana and Michigan.

Iowa Coal Operators' Association

All officials of the Iowa Coal Operators' Association have been re-elected. The officers are D. F. Cushing, president; Jay Norwood, vice-president; George Heaps, Jr., secretary, and J. B. Ryan, treasurer. One change was made on the executive committee. Frank V. White, vice-president of the Norwood-White Coal Company, succeeds E. M. Gray. Other members of the executive committee and one member from each district are Robert Hunter of Jerome, C. A. Williams, of Oskaloosa and C. Carney of Des Moines.

Coming Meetings

Northwestern Pennsylvania Coal Operators' Association will hold its annual meeting Tuesday, March 1, at the Old Colony Club, Pittsburgh, Pa. Secretary, T. E. Iffenderfer, Butler, Pa.

The Rocky Mountain Coal Mining Institute will hold its annual winter meeting Feb. 25 and 26 at the Albany Hotel, Denver, Col. Secretary, F. W. Whiteside 307 Ernst & Crammer Building, Denver.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

American Institute of Electrical Engineers' midwinter convention will be held on Feb. 16, 17 and 18 at the United Engineering Socities Building, 33 West 39th St., New York City. Secretary, F. L. Hutchinson, 33 West 39th St., New York City.

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York, Feb. 14 to 17. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

Pittsburgh Vein Operators' Association of Ohio will hold its annual meeting, May 14, 1921, at Cleveland, Ohio. Secretary, D. F. Hurd, 415 Marion Building, Cleveland.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Ottawa, Ontario, Canada. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Canada.

American Engineering Council of the Federated American Engineering Societies. Executive Board, will meet on Feb. , at Syracuse, N. Y. On Feb. 15 the National Council of the **American Society of Mechanical Engineers** will convene at the same place, with the society's new president, Edwin S. Carman, presiding. Herbert Hoover is to address the meeting.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

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The Ever-Running Anthracite Mines

IN THESE days of closed works and short time in all kinds of industry, north, south, east and west, with a lack of interest and no orders even for farm products, it is refreshing to look at the ever-running anthracite mines working every day regardless of the mild winter and industrial shutdowns.

The good fortune of the anthracite region being so fully assured makes the coal industry as a whole quite noticeably more fortunate than any other. The anthracite output is only about one-sixth of the whole coal production of the United States but as the cost of mining and preparation is roughly three times as expensive the ratio of importance is rather as three to eight than one to six.

The Rocky Road of Reform

PRESENT indications are that the Calder bill for regulating the coal industry is dead. The hearings before the La Follette committee have not only developed unexpected opposition within this presupposed friendly group but have been prolonged to such an extent that it is not conceivable that the measure in whatever form reported out by the Committee on Manufactures can be considered and passed in the House even should it get through the Senate. The number of days before March 4 are too few to permit of any such possibility.

Interest centers now on the form of measure the La Follette committee will report out after they have digested the evidence they are now taking. It is forecast that this committee will report out a bill quite different from the Calder bill originally placed before it. The provisions requiring reports from coal companies and railroads will be retained in some form but that is about the only resemblence the new bill is expected to bear to Senator Calder's proposal. It has been pointed out that those who have appeared in opposition to the regulation have not registered much complaint about having the coal industry give information to the government.

Whenever this has been discussed the point has been made that the objection is not to giving data but to having the form of the figures supplied so rigidly prescribed as to amount to regulation of business bookkeeping. It was just such a point as caused the original split between the National Coal Association and the Federal Trade Commission, which was followed by the Maynard suit.

The Calder committee has been discredited in Washington. No one conceives that the incoming administration will follow the lead of Senator Calder, and many are of the opinion that when Mr. Harding takes up the Presidency he will let this be known. Senator Calder had a chance with his bill just as long as he could keep the excitement up and have a fresh victim to offer the daily press each day. Just as soon as consideration was given the matter by the Committee on Manufactures and they found that there was much more to the story than had previously been brought out, hope of justice and fair play was had by the coal industry. From open hostility to an attitude severely but sensibly critical, best describes the apparent change that has taken place in the La Follette committee since it began its hearings.

All that remains now to be done before the Committee on Manufactures is to keep the "record" straight. The real work is to be done in preparation for the next Congress and its successor. We expect Senator Frelinghuysen to announce the new administration's program for coal, and he may do it soon. It is certain to be advanced in such a friendly manner that the coal industry can begin by co-operating to make it better. There is a large element in the coal industry who today see the wisdom of meeting the government and the public more than half way in the desire for protection, real and fancied, in the matter of coal supply. These men are not saying much now but before the next Congress reaches the point of action on the subject they will have been heard. A constructive program on which the coal men can meet the government is in the making. At present it is coming from at least two different parts of the industry—producers and wholesalers. It is not necessary that these two views be amalgamated before they go before the public, but it would be much better were it so. The important thing is that, having been on the defensive for years, coal men are developing sufficient courage to discuss within their ranks a program that recognizes the public nature of their industry.

Effect of Criticism on Shipping Board Bids

SHIPPING BOARD officials are having difficulty in coming to a decision regarding the prices they will pay for coal in the next twelve months. The failure of general response on the part of the trade to their first tenders for bids caused the Shipping Board to reject those first offered and to put out a second offer. Between the first and second bids the market had fallen and the prices named in the middle of January were generally lower than those previously made. Only one bid, however, was accepted of the many that were made.

It does not appear that the prices named in the second lot of bids were other than generally fair, although for the most part well above the current spot market. That not more of the tonnage was closed under these bids probably was due to the intense scrutiny that is being given to all matters relating to the Shipping Board. To enter into contracts for coal at the present time, at prices above the current spot quotations, would direct criticism to the Board. We can only suppose that the Shipping Board, prompted to caution by some of its

past mistakes in the purchase of coal, is earnestly endeavoring to make connections with thoroughly responsible shippers at prices that can be defended before any possible future "Calder committee." On this assumption its action in rejecting the greater part of the second lot of bids is not to be wondered at.

The continuous rejection of bids in a weak market is, of course, obviously intended to obtain lower figures. Just how far this can be pursued remains to be seen, but the Shipping Board may yet find itself without contracts. Many of those who bid on these requirements in January will not bid again, for the very obvious reason that they are obliged to figure so much closer. If the figures are not satisfactory in the bids that are to be opened the last day of this month, it probably will be necessary for the Shipping Board to depend upon the open market. It will help the general situation to have the Shipping Board fully covered by contracts, and we are, therefore, hopeful that the trade will take one more chance and that the Shipping Board will cover its needs in every respect with this last call.

Own Your Home or Rent?

IN A SERIES of articles relative to the Mingo County troubles, Winthrop D. Lane of the *New York Evening Post* questions the equity of the so-called feudalistic conditions in the Williamson-Thacker and other coal fields of West Virginia, avoiding, however, giving any solution of the problems involved. Mr. Lane is puzzled. He wants a normal solution for an abnormal situation. He admits that the operator's ubiquity as employer, merchant, landlord, etc., has arisen out of the early mining conditions and that those conditions have not changed. But still he wants the miner to live as if a new situation had arisen.

Is Mr. Lane in this a "foreward-looking man" or is he a retrogressive? Is it better for the miner to be the lord of his residence and so compelled to work for one man or forfeit his property, or is it better for him to be a footloose tenant, perfectly free to move if he does not like his working conditions or if the mines close down? It would seem better for the employer that his employee give bond for good behavior in the ownership of a house, but surely it is better for the worker that he bind himself in no such manner to a plant that may not work steadily, to an employer who may not favor him or to a company that may not be successful.

Mr. Lane says rightly that the operator can and often does thrust an employee out of his home if he will not work. On the other hand, if the man owned his house he and his wife and family would have to leave it if the work given him were not desirable. In that case he would have to buy another residence, and the one he would leave he might be unable to sell. If the employer in his home town was not fair there would be no influx of miners to that town to purchase his abandoned property.

It would seem that the tenant in this case is the freer man. The freeholders of England, of whom so much has been written, said and sung in prose and in verse, were not independent because they owned their homes but because they possessed the land on which their living was made. The miner would have to own his little mine if he were desirous of a like freedom.

It is true that with a commuting and trolleying system such as it found in parts of Pennsylvania, Illinois and Indiana it is possible for workmen to live wher they will and travel to the mines on the railroads. Tha traveling, however, is not a light burden on the mine especially where, as in the Middle West, he pays a altogether inadequate commuting rate and receives a cordingly poor service, even though in general the rai road sustains a loss on the running of miners' train To travel in cold, drafty cars for an hour, night ar morning, and at scheduled times is no small afflicti from which the West Virginia miner living almost the job may well be grateful that he is delivered. E pecially should he remember that advantage on da when the working hours are shortened unduly by la of cars.

Furthermore, the rents which the mine worker h to pay are abnormally low. If he would spend the mon that building would cost him in buying government state bonds or high-grade securities he would find wh taxes and repair bills were paid that in almost eve case these securities would net him as much as t ownership of a house. A man around the mines ow his home more for what it "means to him" than f what it will save him. He buys a house like a piano graphophone because he would like to have one. He willing to lose more interest than he saves rent. Th is why he will often buy despite the low rent offered the operator landlord. But in this he is quite ill-advis l. In most cases an old house in a small town is as hard o sell as a piano, and for the employee working for n ungenerous employer or one likely to go bankrupt or close down it is a parlous investment.

Furthermore, the owner of a town often times g es thought to making his homes sanitary and attract e. The homes which the men build for themselves, ex pt in the Middle West, are rarely as good as those ere ed by the operator. The Colorado Fuel & Iron Co. as condemned far and wide for the shacks in which s me of its men lived. The dwellings—is it just to use hat word?—were built by tenants of the company whic the Fuel & Iron Co. bought out. The men leased the and for a low rental. The houses were a disgrace to olo-rado, and the United Mine Workers made much ado about them. The company ultimately bought the at more than a fair price, paying what the tenants asked for them. They were torn down, and houses with pretty gardens replaced them.

Would Mr. Lane have the miners live in house like those which the public condemned; would he have hem exist in huts such as the "sagers" of West Vi inia formerly used for the rearing of their families or ould he have model houses such as men like the deceased Colonel Leckie used to build and such as the Smet-Solvay people construct for their employees? Mr. Lane is a fair man, as his articles attest, and he is puzzled and has no answer ready.

No wonder! it is a hard query to puzzle over. West Virginia, like all mining sections, coal, metal an non-metal, has its problems, but it is not right to co demn what perhaps measures up more equitably in th long run than any other condition. It is too bad, r instance, that the sailor cannot have his wife and children with him; too bad that he even sleeps by night n the bed and sits by day at the board that his employer provides. His every hour is on his employer' ship. Yet surely this is a necessary condition; he cann have an airship to take him to his work night and n rning and to his lunch at noon. His life is not even eudal. If the mine worker is a villein, the sailor is a serf

FIG. 1. CRANBERRY CREEK BREAKER, SHOWING CAR PLANE ON LEFT AND DRAG-SCRAPER LINE ON RIGHT

Breaker-Operation Economies as Illustrated By Cranberry Creek Preparation Plant

Culm-Bank and Mine Coal Not Mixed—Large Coal Kept Traveling on the Finer Material—Rice and Barley from Mine Coal Is Not Jigged—Culm Is Run to the Dump—Dragline Will Save Dump Breakage—Tests Determine How To Set Rolls

By Dever C. Ashmead
Wilkes-Barre, Pa.

As THERE are two kinds of coal which are separately treated at the Cranberry Creek Coal Co's. plant, near Hazleton, Pa., there are ractically two independent operations under the same of. The Cranberry Creek plant illustrates many of e cardinal principles of successful breaker operation. shows in particular the care that is being taken to crease the quantity of prepared sizes and to reduce e amount of boiler coal and culm.

Fig. 1 depicts the breaker, showing the loaded mine rs being hauled up the plane, to be discharged at the p of the structure and on one track, the empties scending. The two tracks to the left of the plane tend directly down the slope into the mine, and the e at the right handles cars coming from several drift nes. This latter track will be displaced soon, as it is e intention to install a dragline conveyor to handle hat in this case might be called "surface coal." In a ort while this coal will enter a Heyl & Patterson tary dump at the foot of the incline and be discharged, d thence be conveyed to the top of the breaker by eans of a scraper line.

Alteration of that part of the plane that extends into the mine also is being considered. As will be shown later in this article, a change to a dragline scraper would almost pay for itself in one year. To the left in Fig. 1 may be seen one end of the old boiler house, now in process of demolition. The mine is completely electrified and steam is now used only for heating.

To the right, extending from near the ground to the top of the breaker, may be seen the dragline which raises the culm-bank coal from the point where it is dumped by the bank cars. Under this dragline may be seen another extending horizontally. Mention of this conveyor will be made later in this article.

Culm-Bank and Mine Coal Are Not Mixed

The breaker is divided into two distinct parts, one handling freshly-mined coal and the other preparing bank coal. At no point during the preparation process is the freshly-mined product mixed with material coming from the culm bank. Thus when a customer orders coal from this plant, he may be assured of receiving exactly what he has ordered and not a mixture of the two fuels.

In case of a breakdown, the design of the breaker is

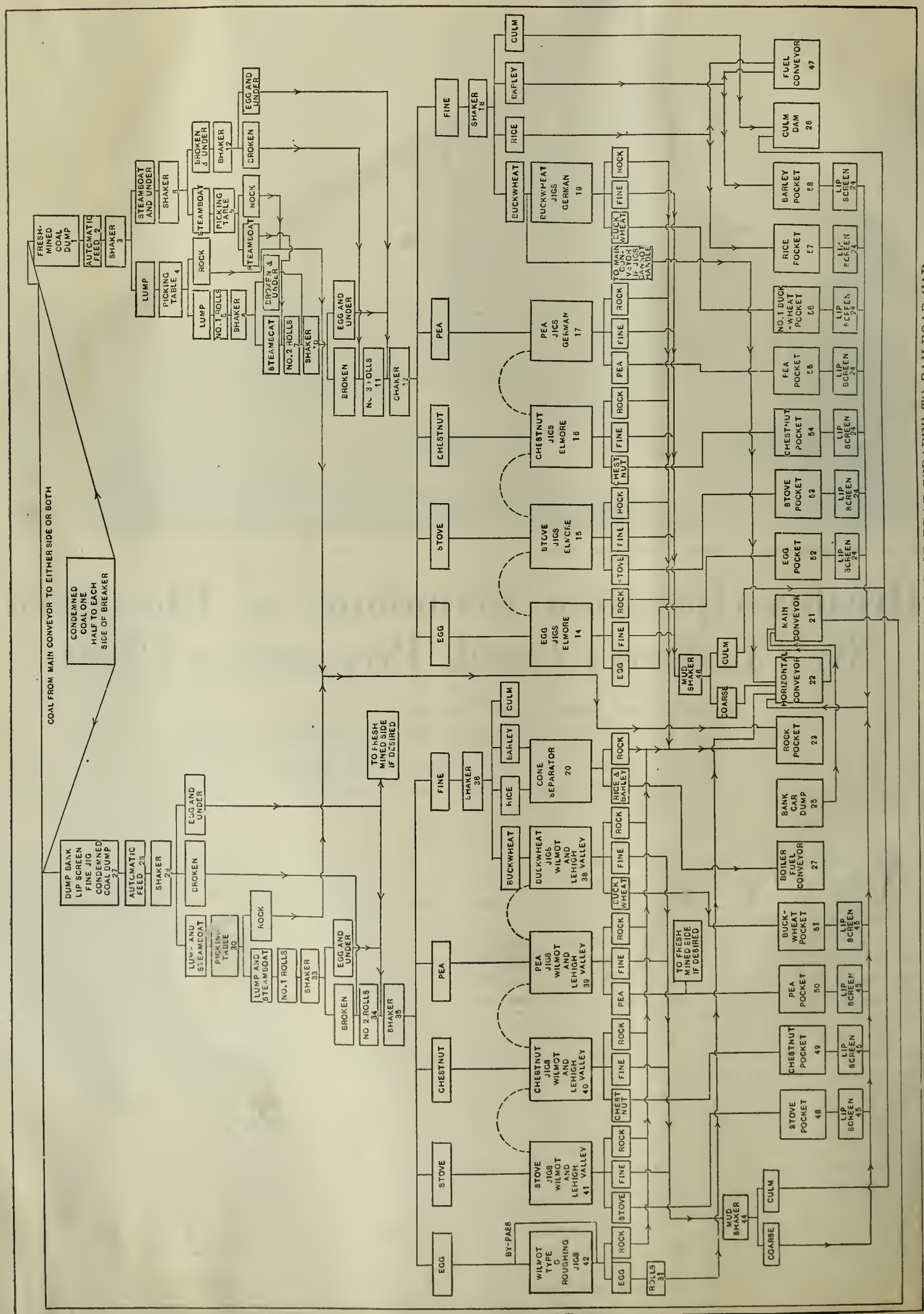
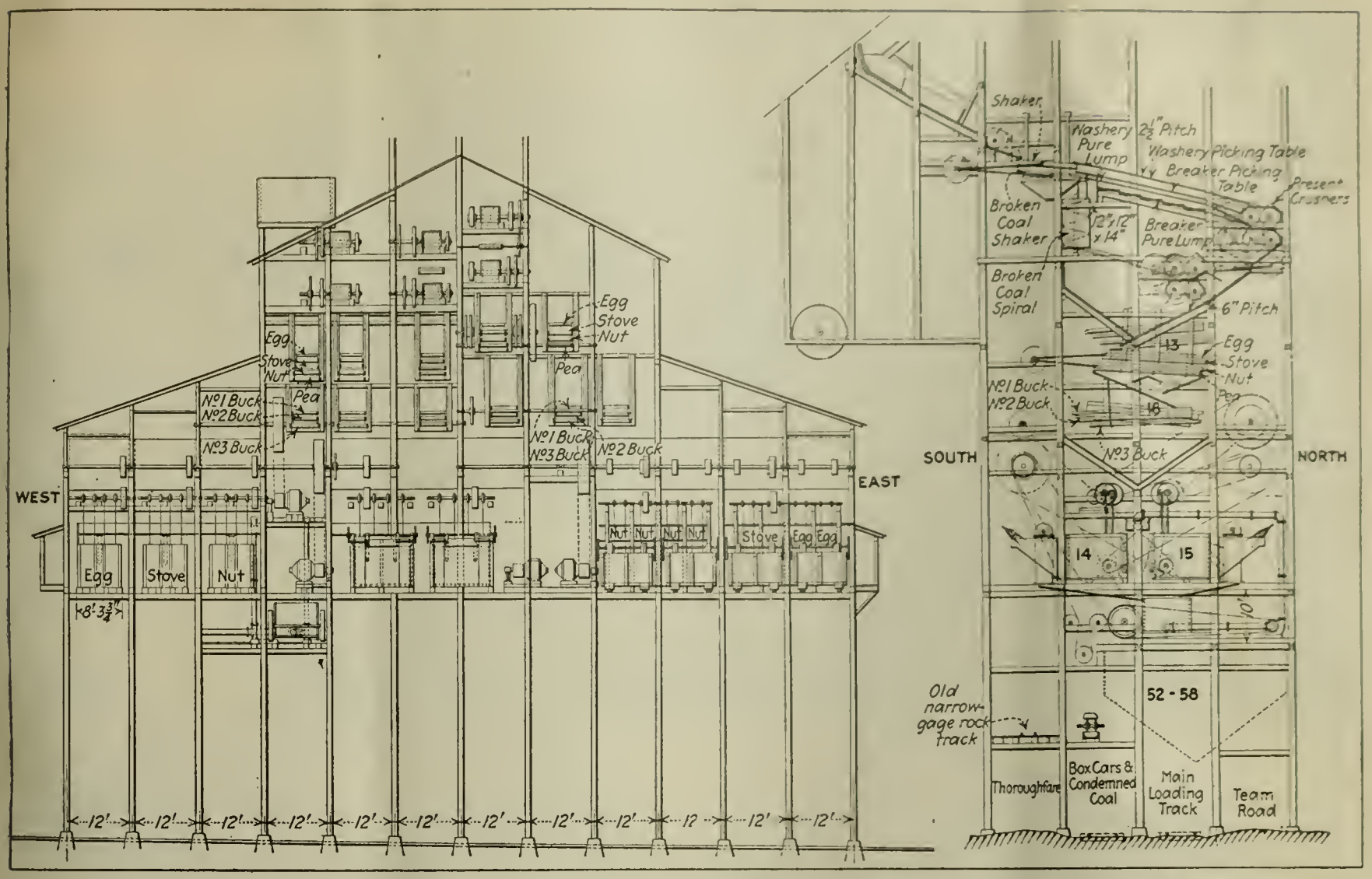


FIG. 2. FLOW SHEET SHOWS PROGRESS OF COAL FROM MINE CAR OR DRAG SCRAPER TO RAILROAD CAR



FIGS. 3 AND 4. TWO ELEVATIONS OF CRANBERRY CREEK BREAKER BEFORE ROLLS WERE CHANGED TO THE ARRANGEMENT SHOWN IN FIG. 5

Here are practically two breakers in one. On one side is the preparation machinery for coal from the culm banks. With this is treated the lip screenings of the railroad-car chutes and one-half of such coal as has been returned to the breaker for retreatment because it has not proved on inspection to be in accord with the standards. The coal thus treated contains little of the lump and steamboat sizes. It is possible therefore, without appreciable loss, to combine both when running them through the rolls. On the opposite side the lump and steamboat are separated, and the lump is first broken down before it goes to the rolls in which the steamboat is crushed. This complicates matters on the right side considerably. As will be noted, there are only two sets of rolls on the left side, whereas on the fresh-mined coal side there are three. Washing takes place as soon as the coal is reduced to egg-and-under. The domestic sizes with the buckwheat go to jigs. The rice and barley go to a cone separator. The culm goes to a culm dam to be handled at some later time. The other side of breaker handles the fresh-mined coal and half the condemned coal in a manner quite similar, but the rice and barley, being cleaner, are not washed.

such that either side can handle the coal normally prepared by the other. Arrangements are made at a number of points to permit this change to be made readily. Of course, in such a case it would be necessary to stop the preparation of one kind of coal and concentrate all efforts upon the preparation of the other. Thus there would be no possibility of the two varieties mixing.

In this article, in order that the process of preparation may be readily followed by the reader, index numbers are placed in the text, on the flow sheet, Fig. 2 and on the cross-sections, Figs. 3 and 4. The preparation accorded the freshly-mined coal will be considered first, to be followed later by a description of the treatment administered in the other parts of the breaker.

Where Possible Cushion Large by Fine Coal

Coal from the mine is dumped from the mine cars into a hopper (1) at the top of the breaker. From that point it is discharged by an automatic feeder (2) onto a shaker (3). This separates the lump from the remainder of the coal, the lump passing over the screen while the steamboat-and-under passes through. The superintendent of preparation believes in keeping the large coal cushioned as far as possible with the smaller sizes, so as to reduce the amount of breakage incurred. For this reason the coal is not separated at this point into all its different sizes. The lump next goes over a picking table (4), where the rock is separated from it and sent to the rock pocket (23) at the foot of the breaker.

Referring to Fig. 5 it will be noted that, wherever possible, coal chutes are curved so that breakage may be reduced to a minimum. The cleaned lump is fed to a set of No. 7 rolls (5), where it is crushed to steamboat-and-smaller. Coal from these rolls goes over a shaker (6), where the steamboat is separated from the broken-and-under.

The steamboat-and-smaller made on shaker 3 passes over another shaker (8), where the steamboat size is separated from the broken-and-under, and next passes over a picking table (9), where the rock is removed and sent to rock pocket (23).

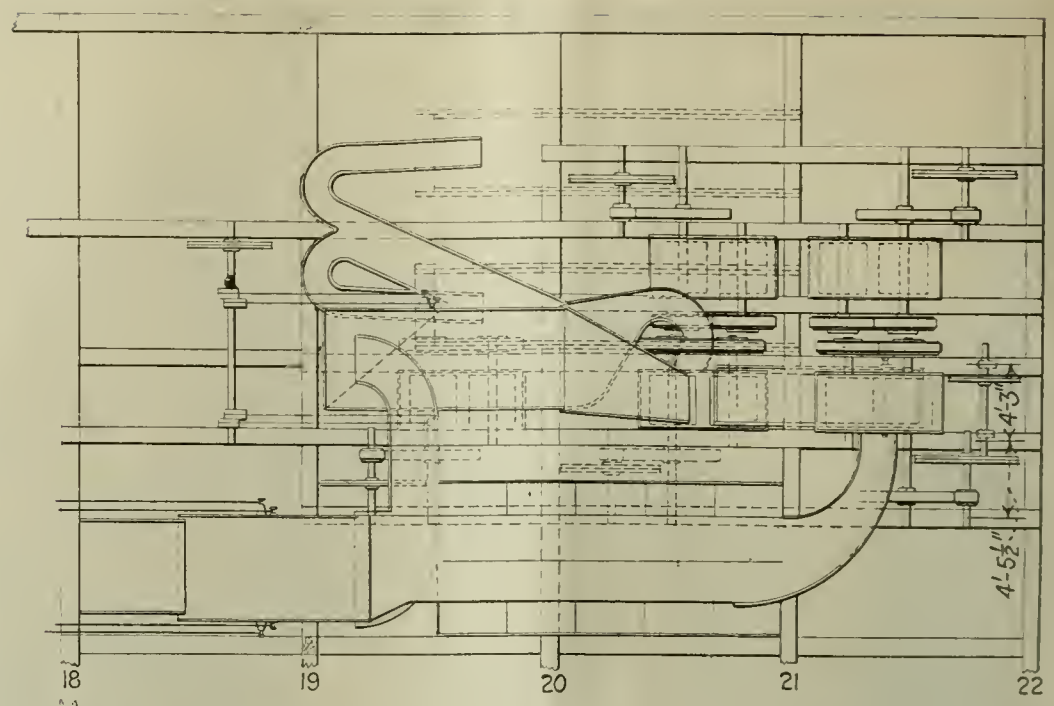
This steamboat coal, mixing with that from shaker 6, goes to a set of No. 2 rolls (7), and thence to a shaker (10), where it is separated into broken and egg-and-under. Now going back to the broken-and-under from shaker 8, this passes over another shaker (12), where the broken is separated from the egg-and-smaller. The broken from this shaker then unites with the same size of coal from shaker 10 and passes through a set of No. 3 rolls (11). The broken-and-under from shaker 6 is discharged onto shaker 10 and is there treated at the same time as the rest of the broken from rolls 7 is sized.

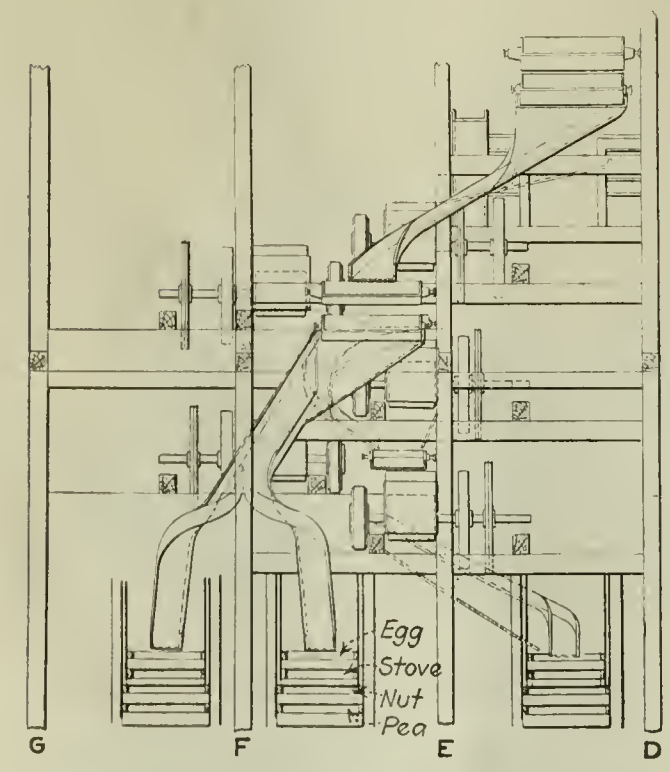
Thus all the coal has been reduced to egg-and-under and is ready for the final sizing and treatment. Consequently the coal from the set of No. 3 rolls (11) and

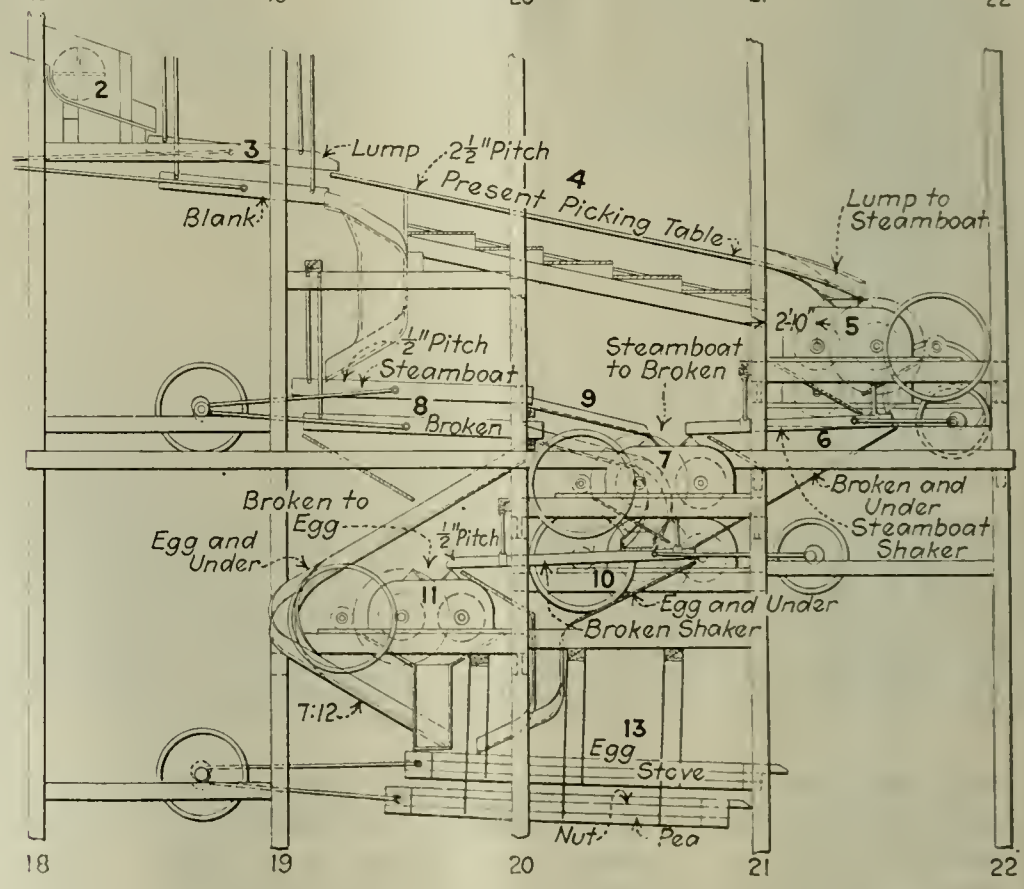
FIG. 5

Rolls After Rearrangement

Coal is lowered by curved chutes, thus reducing breakage. As a result of the operations here illustrated the coal is converted into egg-and-under, no coal larger than this being prepared for the market. In shaker 13 the various domestic sizes are made: egg, stove, chestnut and pea, and also finer material, which, after going to a further shaker, is sized into buckwheat, rice, barley and culm.







the egg-and-under from shakers 10 and 12 then pass to shaker 13, where five sizes are made: The egg coal from this shaker goes to Elmore jigs 14. The stove and chestnut coal from this shaker also go to Elmore jigs 15 and 16 respectively, while the pea coal passes to German jigs 17. The cleaned product from each of these jigs then passes to its proper pocket, and the fine and under-sized material goes to a mud shaker (46), where the coarse particles are removed from the culm. The coarse material then goes to the horizontal conveyor (2), while the fine stuff is discharged to the culm bank (26). This disposes of the domestic sizes, if pea can be included in that category.

Fine coal from shaker 13 goes to another shaker (18), which separates the buckwheat, rice barley and culm. The buckwheat passes to German buckwheat jigs (19) and thence to its pocket (56), while the fine material from this jig receives the same treatment as that from the other jigs already mentioned. The rock unites with the rock from the rest of the jigs and goes to its pocket (23).

Rice and barley from shaker 18 receive no further treatment and pass to their respective pockets (57 and 58) or to the fuel conveyor (47), to be loaded into small cars and hauled to the Harwood electric plant. Fine coal or culm that passes through the lower deck of shaker 18 goes to the culm dam (26). In case more buckwheat should be made than the jigs for this size can handle, arrangements are made to deliver this material to the horizontal conveyor (22). By this it is discharged to the main conveyor (21), which takes it back into the breaker on the bank-coal side for treatment.

Where Culm-Bank Coal Is Cleaned and Sized

Bank coal, lip-screen coal and the fine jig coal, are taken by the main conveyor (21) to the top of the breaker on the bank-coal side and discharged into a hopper (27). From that point it is fed by an automatic feeder (28) to a shaker (29), which separates the coal into lump-and-steamboat, broken, and egg-and-under. The lump-and-steamboat goes over a picking table (30), where the rock is removed and sent to the rock pocket (23). Coal from this picking table (30) passes through a set of No. 1 rolls and thence to a shaker (33), where the broken is separated from the egg-and-under. The broken coal sized on shaker 29 unites with that from shaker 33 and passes through a set of No. 2 rolls (34), the crushed product of which unites with that from shakers 33 and 29 and passes to shaker 35. At this

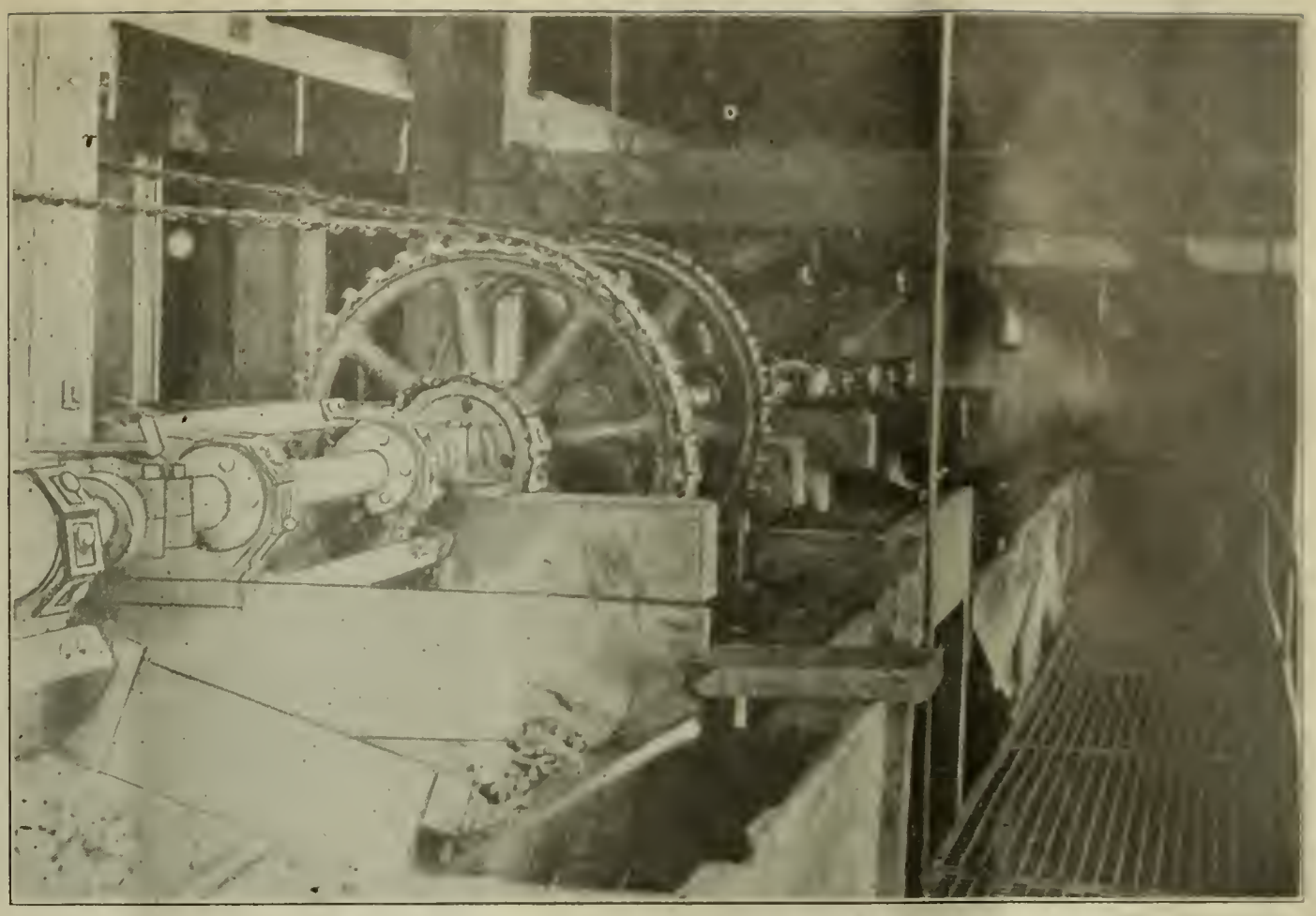


FIG. 6

Lehigh Valley Jig

On the culm-bank side of the breaker a steel floor with perforations is used, so that the jig attendant may watch the coal that passes from the jig, without having to descend to the lower deck.

point arrangements are made so that if necessary this coal can be sent to the freshly-mined side of the breaker for treatment.

Egg from Bank Often Runs Through Crusher

Shaker 35 makes five sizes. The egg coal goes to a set of Wilmot type D roughing jigs (42) or is bypassed around them, going to a set of rolls (31), to be crushed to smaller sizes, as this size of coal from the bank makes a poor appearance on a car. From the rolls the coal goes to the horizontal conveyor (22), thence to the main conveyor (21) and back to the top of the breaker for retreatment.

Stove coal from shaker 35 goes to Wilmot and Lehigh Valley jigs (41). In order to reduce the number of men necessary to operate the jigs a walkway made of perforated sheet iron is installed, as may be seen in Fig. 6. This permits the men to watch the chutes as coal passes from the jigs and observe whether it is sufficiently clean. Fig. 7 shows the arrangement of the Wilmot jigs, where a raised platform permits the men to observe at close range the discharge from these machines.

Chestnut and pea likewise are jigged (39 and 40). Fine coal from shaker 35 goes to another shaker (36). The buckwheat from this screen is treated in Wilmot and Lehigh Valley jigs (38). The rice and barley unite and go to cone separator (20), whence they pass to the boiler-

FIG. 7

Wilmot Jigs

A raised platform enables the men to view the discharge of the machines at close range. These jigs are used interchangeably with Lehigh Valley jigs for stove, chestnut, pea and buckwheat.

fuel conveyor (27) to be eventually sent to the Harwood Electric Co. plant.

Fine coal from the jigs unites and goes to a mud shaker (44), where the coarse material is separated, going to the horizontal conveyor (22), while the culm passes to the culm dam (26). Arrangements are such that the pea coal, if it is so desired, can be sent to the freshly-mined side for treatment there instead of on the bank-coal side of the breaker. Undersized material from the lip screens on both sides of the breaker is delivered to the horizontal conveyor (22) and starts backward through the building for resizing.

Jigs Made Interchangeable as to Coal Size

As far as possible the jigs are so arranged as to be interchangeable; thus in case there should be too much coal of one size and a shortage of coal of another size some of the material of which there is too much can be sent for treatment to another jig, which ordinarily would be idle because of the dearth of coal of its grade.

Fig. 8 shows the main conveyor taking coal to the top of the breaker from the bank bin seen in the left foreground. The horizontal conveyor, the end of which may be seen in the illustration, brings the undersized material from the breaker and discharges it into this bin, so that the main conveyor may transfer it to the top of the building.

When a carload of coal is condemned and returned to the breaker, it is dumped into one side of this bin and taken by the main conveyor to the top of the breaker for retreatment. Such coal is dumped only during the noon hour or after the day's run. When it reaches the top of the breaker one-half is sent down the freshly-mined side and the other down the bank-coal side. This saves much time in retreatment.

Prepared coal is loaded into railroad cars and weighed on a Fairbanks scale, the building in which the weighing is done being shown in Fig. 9. The scale is of ample size to handle the largest of coal cars, being capable of accommodating a car with a wheelbase of 50 ft. It has been found that it does not pay to accept the tare weights stenciled on the cars, as these may be incorrect as much as a whole ton. Accordingly all cars are now weighed empty. In the immediate rear of the scale is the coal inspector's office, while in the distance at the extreme left in Fig. 8 may be seen the miners' washhouse.

FIG. 8. MAIN DRAGLINE SCRAPER
Carries the culm-bank coal from the bin in the right foreground to the top of the breaker.

Would Reduce Breakage at Breaker Dump

As was mentioned in the early part of this article, mine cars are dumped at the head of the breaker. In this operation they are pulled up the plane, and when they reach the top the doors are opened and the coal allowed to run out into a pocket—really a chute—the bottom of which is about 4 ft. below the rail (see Fig. 10). This drop causes appreciable breakage. A test for the purpose of determining the amount of this breakage was conducted some time ago, with the results shown below.

A mine car of Wharton coal from No. 6 opening was sized over standard mesh and weighed. The material was then replaced in the car, care being taken to avoid breakage and to mix the large and small sizes as intimately as they were combined when they came from the mine. The chutes at the dump were thoroughly cleaned and swept. The car was hoisted and discharged by the regular crew and in the ordinary manner. The chutes were then again cleaned and the material sized and weighed as before. Table I shows the results obtained:

TABLE I. SIZE OF COAL BEFORE AND AFTER DUMPING

	Before Dumping			After Dumping		
Size	Weight Lb.		Percentage	Weight Lb.		Percentage
Lump	2,659		34.5	1,965		25.5
Steamboat	1,570		20.4	1,564		20.3
Broken	938		12.1	964		12.5
Egg	523		6.8	604		7.8
Stove	390		5.1	410		5.3
Chestnut	427		5.5	508		6.6
Total Prepared Sizes		6,507	84.4		6,015	78.1
Pea, No. 1 Buckwheat, Rice, Barley	884		11.5	1,126		14.6
Slush	315		4.1	550		7.1
		1,199	15.6		1,676	
Grand total		7,706	100.0			
Loss down the plane					15	0.2
					7,706	100.0

From this it will be seen that the loss in the prepared sizes was about 6.3 per cent. The total number of cars dumped during 1918 was 157,779 containing 549,071 tons. The average amount of refuse for the year was 12.28 per cent. According to the above data, the tons reduced from prepared sizes to smaller during this period was 34,041.4, and allowing for the refuse there was a total of 29,906 tons of marketable coal reduced in size.

During the year in question the average price of prepared sizes from egg to chestnut inclusive was $6.80 per ton, while the average price of the smaller sizes was $4.18, making a difference of $2.62 between the prepared and the smaller sizes. This, therefore, makes a loss of

FIG. 9

Weigh Scale

Scale and coal inspector's house at Cranberry breaker. Empty cars are carefully weighed, as the tare weight is often much as one ton incorrect. The scale will accommodate cars with a 50 ft. wheelbase.

$78,353.72 arising from the reduction in domestic sizes of the coal in a year's time.

Besides this there is another and even greater loss due to the increase in the amount of culm produced. This increased 3.3 per cent, which amounts to 18,119 tons in a year's time. As the average price of all sizes of coal was $5.49, this loss amounted to $99,473.31 for the year. In addition to these losses there was another loss due to coal running down the plane. This amounted to 0.2 per cent, or 315.6 cars per year, at a cost of 75c. per ton for reloading, which is equivalent to $237.70 for the year.

From these data the following statement is prepared:

Loss due to breakage of larger to smaller sizes	$78,353.72
Loss due to breakage of all sizes to culm	99,473.31
Loss down the plane	237.70
Total	$178,064.73

The entire test was made under conditions as nearly standard as possible. This test made it clearly apparent what advantages might be expected from the introduction of a dragline scraper for transporting the coal from the surface to the top of the breaker. The company accordingly has decided to install one, and it will handle all the coal that now moves up the right-hand tracks shown in Fig. 1.

Experiment on Preferable Roll Adjustment

The original breaker had an entirely different arrangement inside; in fact the preparation was wholly different. It was of the dry type and used ninety-six anthracite spiral pickers. These have been entirely done away with and the preparation is now strictly a wet one. The last main change that the Cranberry Creek Coal Co. made was to alter the arrangement of the rolls at the top. Figs. 3 and 4 show the arrangement previous to the last change, while Fig. 5 shows the present layout.

In order to determine the proper setting or adjustment of the rolls, tests are frequently conducted, so that if the rolls are not set properly this defect can be corrected and the maximum percentage of prepared sizes be obtained. I have been fortunate in obtaining a record of one of these tests, and a description of it follows.

The object of the test was to determine the setting of rolls necessary to give the largest percentage of prepared sizes as well as to divide the work of crushing equally between the three sets of rolls. A sample of 1,000 lb. of average quality and size of lump coal was treated. The chutes and rolls were cleaned before and after making the test. The sample was fed into the rolls at ordinary speed, being put, as usual through No. 1 rolls first.

These rolls had a speed of 33 r.p.m. Their setting was 42¾ in. from center to center. The height of tooth was 4 in. and the diameter of the rolls 33 in. The teeth were Johnson hollow ground, and were fairly sharp. They were staggered in both directions. The results,

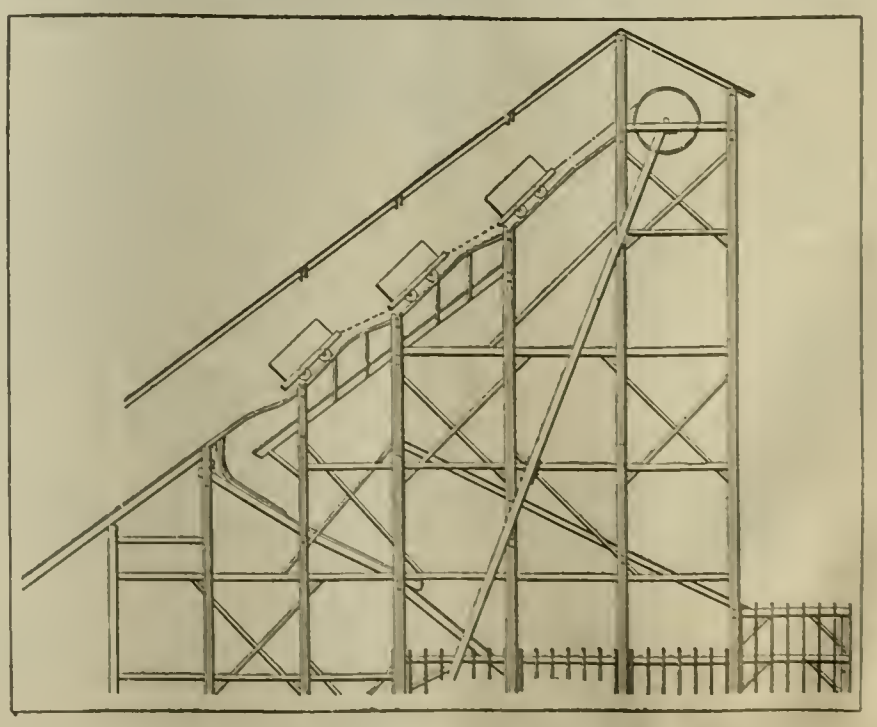


FIG. 10. THIS METHOD OF DUMPING CAUSES MUCH DEGRADATION

To cut out this loss a dragline scraper is to be installed. As it is, the coal drops 4 ft. to the chute. The loss on this small item is about $180,000 a year. This suggests what a profit can be made by eliminating this and other like rough handling of coal.

after running the coal through the first roll, were as in Table II.

TABLE II. SIZES OBTAINED AFTER PASSING LUMP THROUGH NO. 1 ROLLS

Size	Weight, Lb.	Percentage	Mesh Used
Steamboat	548	54.8	4½ in. round
Broken	185	18.5	3¼ in. round
Egg	79	7.9	2 5/16 in. round
Stove	50	5.0	1⅝ in. round
Chestnut	49	4.9	⅞ in. round
Total domestic size	911	91.1	
Pea	29	2.9	9/16 in. round
Buckwheat	22	2.2	5/16 in. round
Rice	16	1.6	3/16 in. round
Barley	13	1.3	1/16 in. round
Smaller	7	0.7	
Lost	2	0.2	
Total below domestic sizes	89	8.9	

The 548 lb. of steamboat coal that was made on the No. 1 rolls was then run through the No. 2 rolls. The same method was used as in testing the other machine. The speed of these rolls was the same as in the first case, but the teeth were only 2¼ in. high. The rolls were set on 4¼-in. centers. Otherwise they were like the No. 1 rolls. The results obtained from running this coal through the rolls and screening it on the same kind of screens were as in Table III.

TABLE III. SIZES OBTAINED AFTER PASSING STEAMBOAT FROM NO. 1 ROLLS THROUGH NO. 2 ROLLS

Size	Weight, Lb.	Percentage	Mesh Used
Steamboat	10	1.8	4⅛ in. round
Broken	258	47.0	3¼ in. round
Egg	150	27.4	2 3/16 in. round
Stove	48	8.7	1⅝ in. round
Chestnut	35	6.4	⅞ in. round
Total domestic sizes	501	91.3	Former result 82 per cent
Pea	15	2.7	9/16 in. round
Buckwheat	14	2.6	5/16 in. round
Rice	9	1.6	3/16 in. round
Barley	5	1.0	1/16 in. round
Smaller	2	0.4	
Lost	2	0.4	
Total below domestic sizes	47	8.7	

Through the No. 3 rolls the 10 lb. of steamboat and the 443 lb. of broken was passed, making a total of 453 lb. This was the same material that was put through the No. 1 and 2 rolls. The same method was followed as has been described. The teeth were the same height as those on the No. 2 rolls, but the setting was on 40¾ in. centers. The results obtained on screening over the same kind of screens were as in Table IV.

TABLE IV. SIZES OBTAINED AFTER PASSING STEAMBOAT AND BROKEN FROM NO. 2 ROLLS THROUGH NO. 3 ROLLS

Size	Weight, Lb.	Percentage	Mesh Used
Broken	101	22 3	4½ in. round
Egg	184	40 6	3¼ in. round
Stove	91	20.1	2 5/16 in. round
Chestnut	39	8.6	⅞ in. round
Total domestic sizes	415	91.6	Former result 91.1 per cent
Pea	12	2 6	9/16 in. round
Buckwheat	9	2 0	5/16 in. round
Rice	6	1.3	3/16 in. round
Barley	4½	1.0	1/16 in. round
Smaller	4½	1.0	
Lost	2	5	
Total below domestic sizes	38	8 4	

As will be noted in Tables III and IV, proper adjustment had increased the percentage of prepared sizes in the case from 82 to 91.3 and in another case from 91.1 to 91.6.

Previous to resetting the rolls for this test a similar trial has shown a percentage of 79.3 per cent for the domestic sizes, so that an increase in the amount of these grades amounting to 3.3 per cent was made by the change. This gain in a year's time would amount to an appreciable sum in dollars and cents. This shows how carefully the conditions under which coal is prepared should be watched and tested. Continual experimentation is required in order that the best results shall be obtained.

This company has a superintendent of preparation who is continually trying out new devices in order to determine what will give the best results. At his request a Deister-Overstrom coal-washing table has just been purchased, so that experiment with it may be conducted in order to determine whether or not the best possible results are being obtained.

TABLE V. SIZES OBTAINED FROM THE THREE OPERATIONS

Size	Weight, Lb.	Percentage	Mesh Used
Broken	101	10.1	4½ in. round
Egg	413	41.3	3¼ in. round
Stove	189	18.9	2 5/16 in. round
Chestnut	123	12.3	⅞ in. round
Total domestic sizes	826	82.6	Former results 79 3 per cent
Pea	56	5 6	9/16 in. round
Buckwheat	45	4.5	5/16 in. round
Rice	31	3.1	3/16 in. round
Barley	22½	2.3	1/16 in. round
Smaller	13½	1.3	
Lost	6	0.6	
Total below domestic sizes	174	17.4	

The drive at this breaker is exclusively electrical and is controlled from a central point, as at the No. 11 breaker of the Lehigh Coal & Navigation Co. and the Kaska breaker of the Alliance Coal Mining Co., already described. The advantages procured by this arrangement, particularly in respect to safety, are obvious.

Cuts a Thousand Tons in Eight Hours

BY ANDREW LECORCHICK*
Uniontown, Pa.

A RATHER interesting chain-machine performance was recently noted at the Leckrone No. 1 mine of the H. C. Frick Coke Co. In starting to draw the ribs in a certain section of this mine, according to the system usually followed in the Frick field, it was found advisable to make a long slabbing cut on a barrier pillar, the length of the slab to be cut being 504 face feet. One of the CE-7 Sullivan "Ironclad" machines used in this mine was selected for the work.

This machine reached the section and started the sumping cut at 4 p.m., in charge of Frank Gearing, assistant mine foreman, two machine men and a crew of five timbermen. This timber crew was necessary as ninety-one posts had to be removed, one at a time, and reset after the machine had passed. I was present during the entire cut, took observations and made the measurements and calculations.

The machine was equipped with a 7 ft. 6 in. cutter bar and it was necessary to stop the cutting nine times in order to reset cutters, a total of 278 bits being used on the slab. Owing to the fact that the Sullivan machine employs a feed chain that passes through the machine continuously, it was possible to use a chain 115 ft. in length, so that it was necessary to reset chain only four times in making the entire cut. Four spars or clay veins were encountered and cut. The data covering the cut are as follows:

Machine started sumping at	4 00 p m.
Machine finished slab cut at	11 40 p.m.
Total over-all time	7 hr., 40 min.
Total length of cut	504 ft.
Average depth of cut	6 84 ft.
Average height of coal	6 08 ft
Area of undercut	3,447 sq.ft
Area of undercut per minute, based on over all time	7 49 sq.ft

The above cut yielded 587 standard Frick cars of 45 bu. capacity, making a total of 26,415 bu., which is equivalent to approximately 1,003 short tons.

*Mining machine inspector, H. C. Frick Coke Co.

Rebuilding Burned Tipple with a Minimum Loss of Plant-Operating Time

A Steel Headframe and a Temporary Wood Tipple with Bar Screens Were Erected and Operated Within Sixty Days After Signing of Contract—Permanent Modern Fireproof Tipple Was Then Constructed with but Slight Delay to Operation

By R. T. Middleton,
Chicago, Ill.

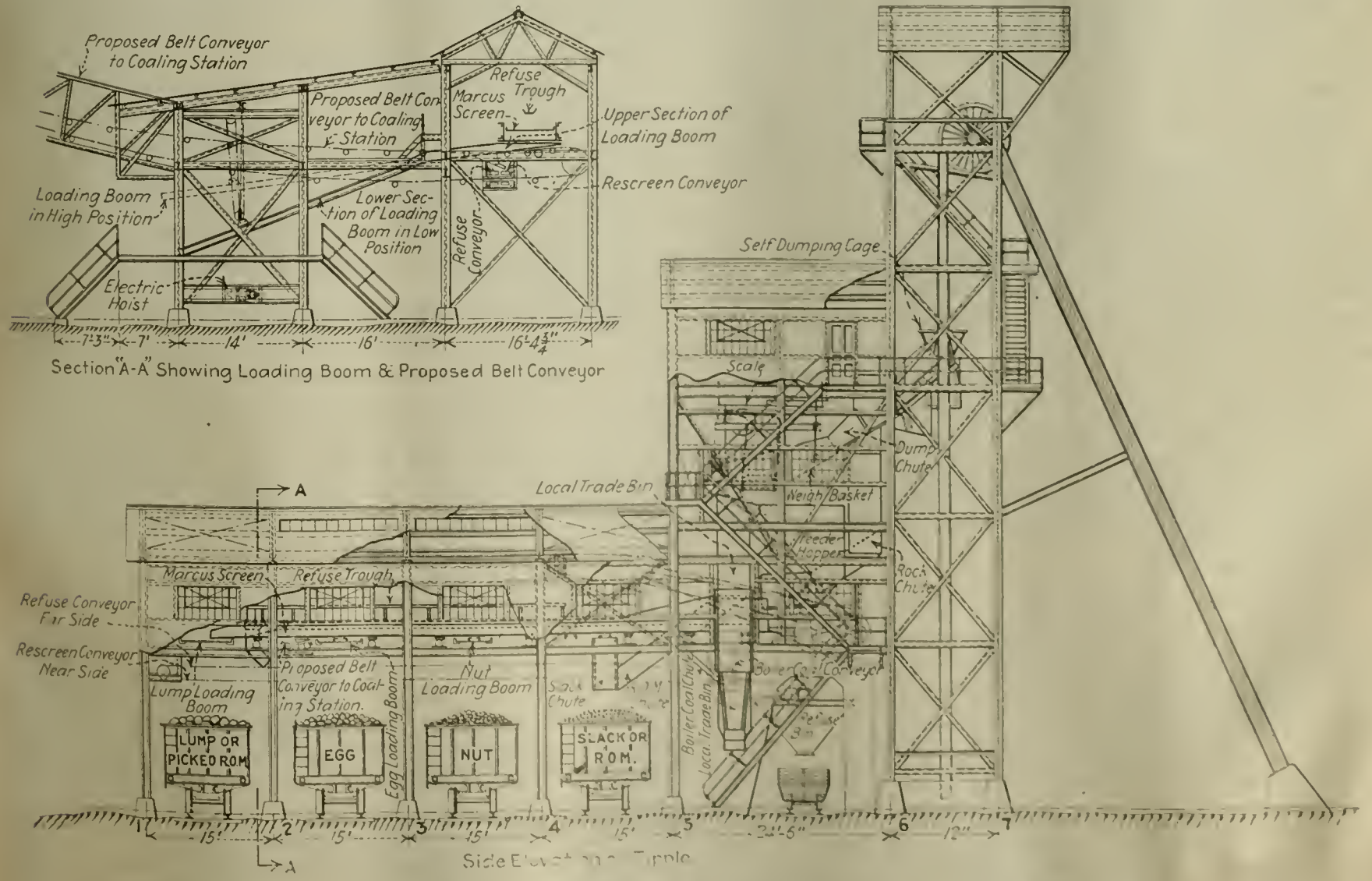
At the mine of the Jackson Coal Co. at Hallidayboro, Ill., about fifteen miles due north of Carbondale on the main line of the Illinois Central R.R., can be found one of the most modern and efficient coal tipples in the Central Coal Field. The original shaft equipment at this mine, which is undoubtedly one of the oldest in the state, consisted of an old wooden headframe, a shaker-screen tipple, platform cages and turnover dump. Solid-body mine cars were employed.

This wooden structure, with its accompanying shops, storehouses and equipment, was totally destroyed by a fire of unknown origin on the night of April 1, 1920, causing a loss of approximately $60,000. It was the desire of the coal company to rebuild as quickly as possible in order to participate as far as possible in the season's business. At the same time the company desired to replace the combustible tipple and relatively antiquated equipment with a tipple of fireproof construction and with equipment which would permit of economical and efficient preparation of the coal.

In consequence a permanent steel headframe, with self-dumping cages, scales and a weigh basket, was planned, a wooden structure with a temporary gravity bar screen, permitting of the preparation of 1¼-in. lump and slack, being meanwhile erected to make possible the immediate operation of the mine.

Dumping Coal in Less Than Sixty Days

On April 7, one week after the fire occurred, the contract for the new tipple was signed, and two days later orders were placed with the various shops for the hoisting rope, hoist sheaves, self-dumping cages, weigh basket, scales, etc., and work on the fabrication of a 45-ton structural steel headframe was begun. While



TIPPLE OF JACKSON COAL CO. AT HALLIDAYBORO, ILL., IS ELECTPICALLY OPERATED THROUGHOUT

Two-ton cars are hoisted in a steel headframe. They dump automatically into a weigh basket, which dumps forward or backward, as desired. Dumped forward the coal goes to a local-trade chute or to a special chute which is used only when, in an emergency, the screens have to be shut down. Dumped backward the coal goes to a double-decked shaking screen, by which the coal is screened into slack, nut, egg and lump and is passed by way of shaker loading booms to the appropriate railroad cars. Arrangements are made also for rescreening.

Tipple on July 1

Contract was let April 7. On May 14 the structural steel arrived. The temporary screening and loading plant was completed on the first week in June. When the photo from which this illustration was made was taken much progress had been made toward completion of the permanent plant.

this work was rapidly progressing in the shops the débris caused by the fire was being cleared away and the site prepared for the new foundations.

On April 25 the concrete shaft collar and tower foundations were completed, and while awaiting the arrival of the structural steel the temporary wooden structure for supporting the gravity bar screen was framed. About three weeks later—on May 14, just thirty-four days from the placing of the order—the structural steel arrived on the job. This in itself was an achievement worth noting, for it was accomplished at a time when the stock piles of almost every structural steel shop were greatly depleted and the country's shipping facilities were gravely handicapped by the switchmen's strike. With the steel on the ground no time was lost in the erection of the headframe, the placing of the head sheaves, cages, dump chute, scales, weigh basket and temporary gravity bar screen.

With this work completed the temporary plant was put in operation during the first week in June—less than sixty days from the signing of the contract. Thus the coal company in a remarkably short time was enabled to prepare 1¼-in. lump and slack, and thereby fulfill some of its many contracts, while the remainder of the plant was under construction. When the new steel tipple had been built it was necessary to shut down the mine while the power-driven screen which was to prepare lump, egg, nut and slack was substituted for the temporary gravity bar screen. But this delay was one of only a few days.

Building as Constructed Is Non-Combustible

As stated, the entire tipple as finally constructed is absolutely fireproof, being built of steel on concrete foundations and covered with corrugated iron. It is well lighted with top-hung ventilator, steel-sash windows and corrugated wire-glass skylights.

Automatic self-dumping safety cages of the Herzler & Henninger type are used to hoist the 2-ton pit cars which discharge run-of-mine coal into a pair of chutes at the dumping point. These chutes are designed with a minimum slope, permitting an easy flow of coal to a two-way bottom-dump weigh basket which is hung from a 15-ton standard suspension scale provided with a quick-reading dial and a beam box conveniently arranged in the weigh room for recording the weight of each dump. The door of this weigh basket is operated by two sets of gravity brake bands, allowing it to open either forward or backward at the will of the operator stationed in the weigh room.

Can Deliver Mine-Run Direct to Tracks

When dumping forward the coal is delivered to a steel transfer chute provided with a centrally-pivoted flap gate operated from the weigh-room floor by means of levers and ropes. This delivers the coal either to a local-trade chute on one side of the building or to an emergency chute on the other side. The latter chute makes it possible to load run-of-mine coal on the slack track, should a shutdown of the screening and other loading equipment make such an expedient necessary. The local-trade chute is conveniently arranged with a set of bar screens which remove the finer sizes to the Marcus screen and allow the larger lumps to go into a 20-ton local-trade bin provided with undercut gate for loading wagons.

When dumping backward the coal is delivered to a feeder hopper of sufficient capacity to hold two or more mine-car loads. This storage provision makes it possible to operate the cages when the screen and loading equipment are momentarily shut down for docking purposes. From the feeder hopper the coal is discharged by a reciprocating feeder to a double-decked Marcus screen 7 ft. wide. The rate of feed is uniform at 360 tons per hour, permitting a total daily capacity of 2,500 tons.

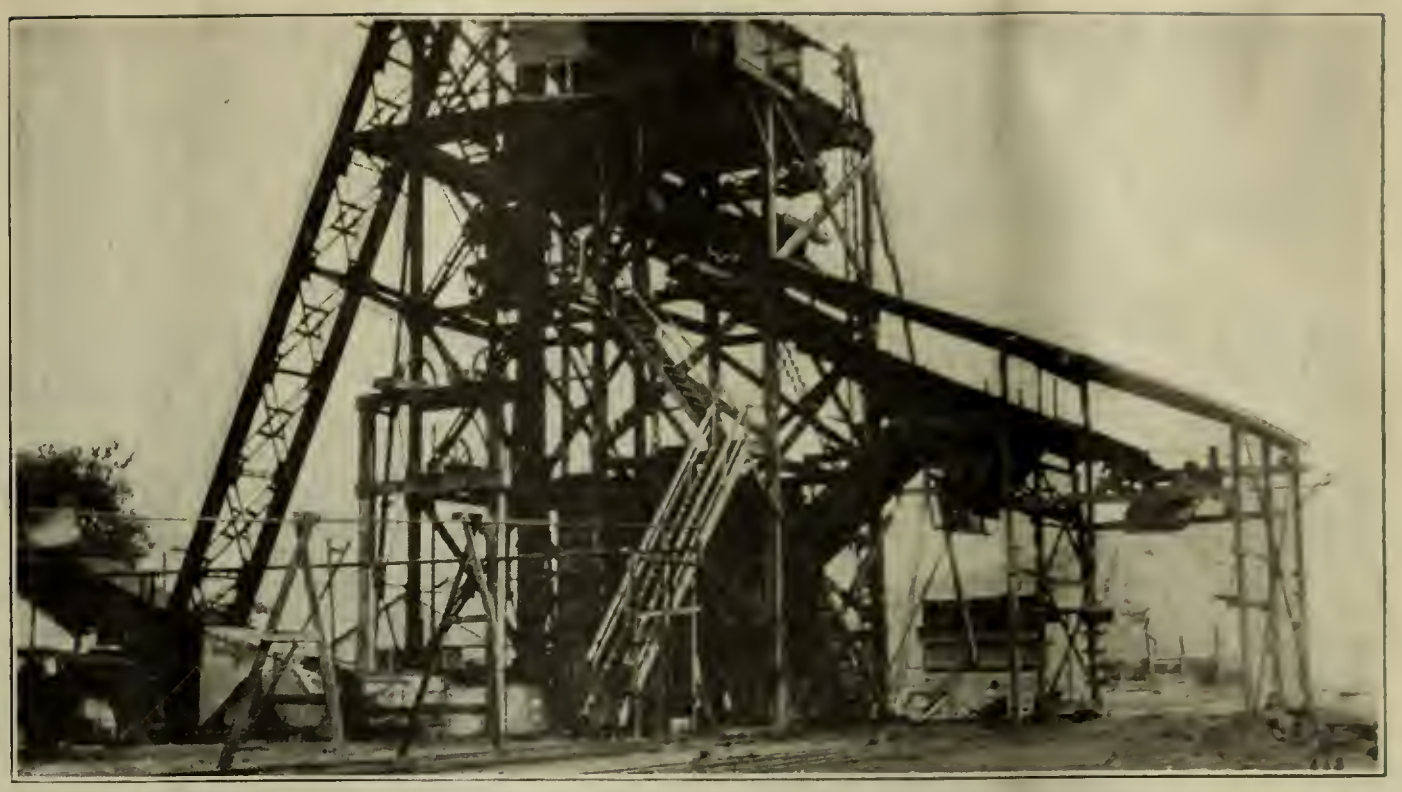
As impurities exist in this coal, chiefly in the smaller sizes, it was necessary to provide a more efficient means of screening than the ordinary type of shaker provides.

For this reason a two-deck Marcus screen was installed. At the feeder delivery end just above the upper deck a set of bar screens is provided, which remove the slack from the larger sizes before the slack perforations are reached. The upper deck of the screen is provided with 2-in. round perforations for the passing of the slack coal, 3-in. round perforations for the removal of the nut, and a 6-in. bar screen for the removal of the egg. Between the slack and nut and the nut and egg perforations blank areas are provided for inspecting and picking the coal.

Slack, removed through the slack perforations, passes

Temporary Plant

Gravity bar screens were used to size the coal while the new structure was built around the temporary one. No temporary shaft structure was erected. This part of the equipment had to be constructed permanently before any coal could be loaded.



along the bottom deck to its gate opening and thence by means of an end-loading chute goes to the railroad cars. Likewise the picked nut, egg and lump pass through their respective perforations and along the bottom deck through their gate openings to shaker loading booms, by which they are carefully loaded into railroad cars. The booms are raised and lowered by means of electric hoists. In case picked run of mine is desired all the gates of the screen are closed, and the slack, nut and egg, after passing through their perforations, move along the bottom deck to the front of the screen, where the mixture unites with the lump and is loaded as picked run of mine over the lump boom.

In addition to providing an easy descent and perfect trimming of the car, this type of boom assures a high-class product because of its ability to rescreen what little degradation may be caused by the slight fall from the screen to the boom, and also by its ability to permit of picking on the upper section. The rescreenings from the booms are delivered by shaking chutes attached to them to one compartment of a double drag conveyor hung under the screen-house floor.

Boilers Are Fed With Rescreen Slack

This in turn conveys them to a boiler conveyor, delivering them for use as fuel under the boilers. When the rescreenings from the booms are insufficient in quantity to supply the boilers, slack may be obtained direct from the screen by opening a slide gate in the screen bottom and diverting the coal by means of a steel chute to the boiler-fuel conveyor.

Above the Marcus screen and attached thereto is a refuse trough on which are thrown the pickings from the screen. This trough has the same motion as the screen, and the pickings are carried forward on it and to the side of the screen to a refuse chute, which delivers them to the other compartment of the above-mentioned double drag conveyor. This in turn conveys them, together with the pickings from the booms, back beyond the slack track to a refuse bin under the Marcus pier, from which they are carried away by means of a rock car.

During a day's run a dozen or so cars of mine rock are brought to the surface, and provision is made for disposing of them by means of a set of flap gates in the dump chutes. When these gates are opened the mine rock is diverted to a steel chute, which delivers it to a reinforced-concrete rock bin located on one side of the tipple. From this point the material is removed to the rock dump by means of the car that serves the refuse or pickings bin.

Provision has been made for the rescreening of the smaller sizes of coal. To this end a set of slide gates is provided in the bottom of the Marcus screen just beyond the slack track for the purpose of removing the slack to a belt conveyor which will deliver this material to a rescreening plant located over the slack track. Likewise, as shown in the illustration, provision has been made for

New Shops

Corrugated sheet-iron siding shops replace the old wooden structures. The Jackson Coal Co. has decided that one fire is enough and to spare, and that only an all-steel building gives complete insurance.

the removal of the egg coal to a belt conveyor which will deliver it to a 300-ton coaling station located over the main-line tracks of the Illinois Central.

As a whole this installation represents the most modern practice in tipple and plant construction. It and the temporary tipple erected after the fire were constructed by Roberts & Schaefer, of Chicago. All equipment is electrically operated and easily maintained, and all units are arranged with a view to economy in design as well as to ease of accessibility. James Scott is general manager of the property and W. D. George is superintendent of the mines.

Mining and Electrical Men Discuss Power Rates and Gathering Problems

Demand Charges Versus Differential Rates—Motor Overload Causes Expensive Repairs but Is Preferable to Loss Sustained by Continuous Underload—Kingsland Advocates Private Power Plants—Big Cars Cut Gathering Costs.

THE first combined meeting of the Pittsburgh Sections of the American Institute of Electrical Engineers and the American Institute of Mining and Metallurgical Engineers was held in the Bureau of Mines Auditorium in the afternoon and evening of Jan. 21. Approximately one hundred members of both societies were in attendance at the double session and attended the dinner which also was held in the Bureau Building. The program has been arranged by Graham Bright, of the Westinghouse Electric & Manufacturing Co.

The paper of F. W. C. Bailey, consulting engineer, of Columbus, Ohio, on "Rates for Electrical Energy and Service," was read by A. B. Kiser, of the Pittsburgh Coal Co. As the electrical members present were already more or less familiar with power schedules, Mr. Bailey's paper perhaps was more interesting to the mining men than to the electricians.

"It is almost as impossible," contended Mr. Bailey, "to frame a power rate that is fair for each consumer, as it is for a life-insurance company to name a fair rate—based on cost—for each risk that it assumes. Rates are necessarily based upon classifications, diversity factors and averages as well as costs of production. When the entire output is taken by one consumer, a fair rate is a simple matter, but when thousands of consumers, distributed over a hundred or more square miles of territory, are served under all sorts of conditions, then the preparation of equitable rate schedules is quite another matter.

Complicated Schedules Breed Distrust

"An ideal schedule, especially for small consumers, would be one so simple that the service could be purchased as easily as groceries. Unfortunately most power schedules, even those available to small users, are so bewildering to the layman that they frequently breed a distrust of their fairness, and it is among the smaller users that 'conscientious objectors' are most generally found.

"Most large power-company rate schedules specify both a demand and an energy charge, but the same gross receipts can be assured at various load factors without the levying of a separate demand charge, for a relatively high rate may be assessed for the primary block of energy used and a low rate for the secondary or tertiary blocks. An example of this method is afforded by 'Schedule J' of the West Penn Power Co. This schedule provides a charge of 6c. gross per kilowatt-hour for the first seventy hours of use and 1¼c. gross per kilowatt-hour for all energy in excess of the first seventy hours use, with block discounts of from 2½ to 43 per cent."

Purchased Power Cheapest of Commodities

I. W. Jenks, of the West Penn Power Co., declared that the cost of purchased power has risen less than that of any other commodity that could be named, and asserted that the service of the power companies had much improved in the last few years. In his opinion, many who complained of the costs had never operated power plants themselves and so had no idea as to what was a proper charge for such a service. He then cited a case where an operator decided to make his own power by utilizing the coal in the culm piles that had accumulated at his mine. By the time the operator had installed the machinery necessary for the salvaging of the high-ash coal he learned that his product was costing him $5.50 a ton, whereas he was receiving but $3.50 for the coal that he was loading at the tipple. Yet this operator could not be induced to purchase his power or use his own product, so firm was he in the mistaken conviction that by using a waste product he was effecting large economies.

Better Risk Overload Than Pay Big Bills

Mr. Jenks then stated that he believed real worthwhile economies at the mine could be realized by utilizing motors of appropriate horsepower. Few operators employ motors of the correct size. The common practice is to install a motor of much greater capacity than the need actually demands.

Even though, as a result of installing equipment of smaller capacities, the motors may be overloaded occasionally and burn out, it will be found much cheaper in the end to meet the repair bills resulting from that practice than to use habitually more energy than is required. More than passing interest attaches to Mr. Jenks' remarks. The tipple, perhaps more frequently than any other mine-plant building, houses motors are too large for the work they have to perform.

A. D. Dreyfus, consulting engineer, of Pittsburgh urged the power companies to make an agreement as to the methods of rating. E. C. Stone, of the Duquesne Light Co., advocated that the "demand charge" be

adopted by all power companies as part of their rating system.

R. L. Kingsland, of the Consolidation Coal Co., then gave some figures to show that large companies could not afford to purchase their power if they had facilities at hand to manufacture it themselves. The Consolidation Coal Co. uses cleanings from the haulageways as fuel for the furnaces of its power plant, and it has learned that the cost of coal is two-thirds of the cost of power.

Savings in Power Cost Readily Made

At some operations the cost is 2½c. per kilowatt-hour while at others it is as high as 12c. The load factor when the mines were idle was, of course, low. During slow mine runs this factor was often as low as 34 per cent, but by running the pumping machinery at night it has been raised to 43 per cent on a 15-min. peak. When the mines are idle many methods of economy in operation can be adopted to reduce power cost, and these are open to all operators if they will adopt them.

At the close of the discussion of Mr. Bailey's paper the visitors were shown through the Bureau of Mines laboratories, where numerous demonstrations had been arranged. At 6:30 p.m. the members assembled for dinner in the cafeteria of the bureau. Mr. Dennison acted as toastmaster and called upon Charles Robbins, of the Westinghouse company, vice-president of the A. I. E. E., for extemporaneous remarks. Mr. Robbins responded by sketching the growth in the organization of the various engineering societies and describing how these had finally all been merged into a single organization known as the Federated Engineering Societies.

R. L. Kingsland then read the paper of the evening, "Gathering in Coal Mines." Mr. Kingsland's paper was a recital of what the Consolidation Coal Co. had learned about three general types of gathering locomotives—namely, crab-reel, cable-reel and combination—and how each fitted into the mining methods employed by that concern.

Another engineer who was in the audience supplemented Mr. Kingsland's remarks at the conclusion of the reading of the paper. This member maintained that storage-battery locomotives were not being operated as efficiently as they should be. For instance, in his region it had been learned that only locomotives of three main specifications could be utilized, by reason of the mining methods employed.

The thickness of the coal worked made it necessary that the over-all height of the locomotive should not exceed 30 in. The reel must be of simple and rugged construction, as the locomotives must traverse rooms 20 ft wide turned off on 40-ft. centers. Further, the wheelbase cannot be greater than 6 ft., because these machines must negotiate short-radius room-neck curves. He contended that his firm was today paying $25 for every seventy-five tons of coal gathered at the butt entry. Roughly, therefore, it was costing 33c. per ton to place the cars where the main haulageway locomotives could pick them up.

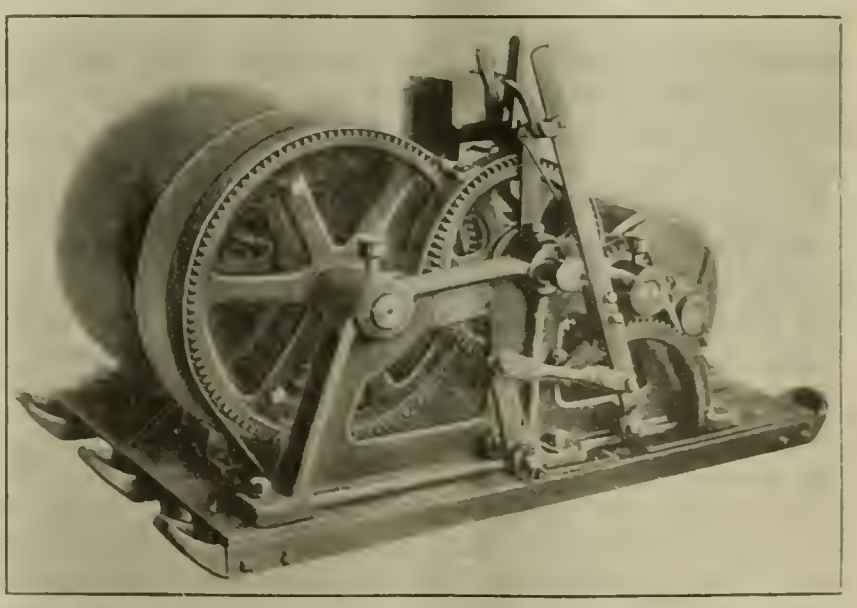
Mine Cars of Large Capacity Lower Cost

The engineer admitted that his company had recently changed its designs so as to employ only mine cars of large capacity. In this way it hoped to lower the gathering cost, but he believed that the installation of gathering locomotives would not be justified economically unless they could gather a sufficient number of cars in a day to place the cost at a figure not exceeding 10c. per ton. The manufacturers are not entirely to blame for the prevalence of high gathering costs. In many instances the operator could reduce these if he would adopt a suitable system of mining when laying out the operation. At the conclusion of the discussion the members were shown the new Bureau film, "The Story of Petroleum."

Hoist for Heavy Duty on Mine Inclines

TO ELIMINATE in large measure the injury that is caused to hoisting machinery by inexperienced men a hoist should be not only simple and foolproof but rugged, with ample power and with adequate means of controlling overloads. Only in this manner can full service be obtained with a minimum of interruption. These principles have been followed in the design of the heavy-duty portable hoist shown in the accompanying illustration. This machine, which supersedes a former model and is manufactured by the Mining Machine Co., of Mountville, Pa., attains by means of a compound ratchet brake approximately 40 per cent greater braking effect than could be obtained by the use of a simple lever device. This gives such perfect control of the cars upon inclines that they may be held in a fixed position at any point.

The steel base upon which the machine is mounted is especially designed to afford portability. It permits the rapid and easy movement of the machine from place to place within the mine. All gears are built of semi-steel



HOIST HAS COMPOUND RATCHET BRAKE

By use of this form of brake a greater effect can be obtained, so that it is possible to hold the cars at any point on the incline. The hoist is not geared for a high speed, as it has been found that on starting such a hoist or at a curve the rope is apt to jerk the cars off the track.

and the three-bearing construction facilitates uniformity of gear ratio and permits an increase of gear strength. A medium rope speed insures that the cars will not leave the track either in starting or upon curves. Such accidents often result in a broken cable or gear or possibly a burned-out motor.

Direct-current motors have been especially designed for these heavy-duty hoists. These are totally inclosed, making them moisture- and dust-proof. They are designed to operate directly across the line, independent of external resistance. A double-pole inclosed fuse switch is mounted above the motor within easy reach of the hoist driver. The complete unit, which is built in two sizes, is highly compact and requires only a limited space for its operation.

Derail for Incline

This device is permanently set to throw cars off the track except when the weighmaster by the pressure of his foot puts in operation the levers by which the derail is displaced. Cars coming up the incline can throw the derail over, but the action of a counterweight replaces it as soon as the cars have gone by.

Simple Derailing Device Affords Safety and Lessens Damage from "Wild Cars"

AT MANY mines where retarding conveyors are not in use, cars are lowered down steep inclined planes. Many examples of such inclines can be found east of Pittsburgh, where the Pittsburgh bed at places is located in the hilltops. At the No. 4 mines of the Irwin Gas Coal Co., at Elrico, in Westmoreland County, the Pittsburgh bed is being operated through drift openings lying at considerable elevations above the Turtle Creek branch of the Pennsylvania R.R., to which the mines are tributary.

At this operation the locomotives bring the loaded trips to a headhouse near the top of the mountain, where the cars are dropped down an inclined plane to the tipple by a balanced electric hoist engine. After being dumped they are elevated by the same means to the headhouse.

Provision must be made at both the head and foot of the plane to guard the men on the tipple from cars that may accidently break loose from trips of loads or empties—"wild cars" they are termed. In many such cases a spring switch is laid in the tracks, to be thrown when cars are seen to get free of the trip, but when the emergency comes the switch may be frozen or stiff or even broken or it may fail to close properly, and the protection expected is not realized and the cars go down the plane to the tipple, destroying almost everything in their line of travel.

At this incline no cars can enter the tipple unless the man in that building in control of the switch holds it in place until the cars have passed by it. The switch is normally in the protective position and is open only when thrown open by the man who has charge of it. Therefore, should a car break loose from the trip by reason of a faulty hitching or the trip itself run "wild" owing to the breaking of the rope or some similar accident, the derail switch does not have to be put in operation; it is ready for service without any dependence on human intervention.

At the head of the incline a device—one can scarcely term it a switch—is installed to serve a purpose similar to that performed by the switch at the foot of the plane. It is desirable to derail a wild car at the start of its journey before it has gained excessive momentum. It is not well to allow it to plunge to the bottom of the plane, where it would, of course, exact a heavy toll in wreckage. Even though it is almost certain to be deflected from the tipple and though it is not likely to endanger the lives of the men in that structure, it is well to stop it before it gains the speed of an express train.

A single bent rail is laid in each track, as shown in the foreground of the illustration, so as to serve as a derail. The point of the switch rail rests on an iron plate and is counterweighted so that it normally rests against the rail in position ready to throw the cars off the track. The counterweight, which is an old mine-car wheel, is suspended beneath the track at a point midway between the inside rails and serves to hold the switch points snugly but not inflexibly against the inside rail of each track. The flanges of the car wheels of an upcoming trip exert sufficient pressure against the switch points to force them to one side for the passage of the car.

Weighmaster Controls Derail from Desk

Both switch points are connected by rods to a lever between the tracks, the one on the right in the illustration being connected also to a bell crank placed well outside the rails. This bell crank in turn is actuated by a cable extending to the weigh house. Both derails are thus opened and closed simultaneously by the weighman, whose office overlooks the plane.

A pedal lever arrangement in his office allows him to open the track for the passage of a trip down the incline. He is signaled by the hoist engineer, when a trip is to be lowered. He then places his foot on the pedal and holds it in that position until the last car has cleared the switch points, when by removing his foot the derail arrangement is again put into effect.

The device is simple in principle, as well as highly effective. It can be built at any ordinary blacksmith shop, as was, in fact, the switch illustrated. Although cars infrequently break loose, yet it is best to be prepared against that eventuality. The arrangement described will deflect a car before it has had an opportunity to gather excessive speed and, consequently, the damage that might be done is reduced to a minimum.

Problems of Operating Men

Edited by James T. Beard

Improved Equipment vs. Conditions in Mines

The Question of Whether Improved Mining Equipment Should Conform to Present-Day Conditions in Mining, or Whether Methods and Systems Now Employed in Mines Should Be Changed and Adapted to the Use of the New Equipment Would Seem to Have But One Answer, Which We Fear Would Not Accord with the Opinions Expressed by This Writer

TWO articles in the issue of *Coal Age* for December 30 have attracted my attention. They are, first, the editorial entitled "Desultory Coal Loading," page 1316, and second, the article of N. D. Levin, who writes under the caption "Nothing Lacking in Loading Machines but Co-operation of Mine Executives," page 1321.

Some of the statements made in the editorial were, to my mind, at least remarkable. For instance, the editor remarks, "The waste of time in the average coal mine is appalling." I take it that he would have the miner who loads a ton of coal in five minutes—and many of the men can do it—keep up this gait for the full eight-hour day.

At that rate a man would load 96 tons in an eight-hour shift, and twelve men would load the entire output of a thousand-ton mine. Perhaps, my assumed meaning of this expression "appalling waste of time" is misapplied. The reference may not be to the loading of coal, exclusively, as the heading of the article would seem to imply.

Assuming the Impossible

However, take the case of a shortwall machine runner, who may cut, say 30 in. a minute, in a six-foot vein. With a good machine and an expert runner, this is not out of the question. But, could the failure to keep up this gait during the day warrant the statement that the runner is guilty of an "appalling waste of time"? By working a little overtime, such a runner could cut all the coal that twelve men could load.

Again, were it possible to run all the cars continuously in one direction along the face, a single motor would be sufficient to haul the coal. This and other instances could be given in support of the claim of an "appalling waste of time in the mine." Shades of Gilbreth and Gillette! Here, indeed, we have efficiency in engineering.

Turning to the second article, allow me to suggest that a little inquiry on the part of Mr. Levin would have convinced him that no coal operator, large or small, could take the several months that would be required to fix up his mine and adapt it to the use of a coal-loading machine. He is about right where he seems to emphasize the fact that, while the machine is on trial it is important to keep up the tonnage of the mine.

In my way of thinking, the machine must demonstrate its superiority under average working conditions, before it can form a part of the regular equipment of a mine in continuous operation. Without doubt, almost any machine could be made to show results if the mine management made it the chief business of the day to serve the machine.

Mining Methods Developed by Years of Practice

Practical men, however, know that all the efforts of the mine organization cannot be concentrated in one place. Were that possible, success would be assured whether the coal was loaded by hand or by machine; but other sections of the mine would be neglected by such a concentration of effort and would suffer.

Let me say, here, that the methods and systems employed in mines today, have been worked out by centuries of practice; and if a machine cannot go into a mine worked under these conditions and demonstrate its superiority it is not the machine that is wanted and will not prove a success. The operation of a mine is governed by conditions imposed by nature and which cannot be changed.

Speaking of moving the cars continuously in one direction along the face, probably every mine manager has thought of this and at least made the attempt to put it in practice. Unfortunately, however, the laws of man must conform and be subservient to the laws of nature. At the working face in a mine, the top has a most discouraging way of twisting the cribs sidewise and splintering them like matches, which destroys the best calculations.

After Mr. Levin has invested, say a million dollars in the development of a mine and the training of men to use the machine he describes, he will realize that the coal operator is a slave both to labor and to conditions in the mine and the market. Operators have been up against these conditions long enough to know that they must handle them in a way to make money for their stockholders and keep out of trouble with the land owner.

Pardon me, but I cannot refrain from quoting a little couplet of which I am reminded. It runs as follows:

> "Mother, may I go out to swim?
> Yes, my darling daughter;
> Hang your clothes on a hickory limb
> But don't go near the water."

The coal operator is always interested in improved mine equipment; but, at the same time, while regarding these improvements with deep interest, he must wait for their adaptation to his conditions. In other words, he must hang his clothes on a hickory limb but not go near the water. C. R. Stahl.

Stotesbury, W. Va.

Americanizing Work Among Miners

In the work of Americanizing the foreign element employed in our coal mines, there is no doubt but that the influence exerted by kindred societies is a strong factor. Of equal importance, however, are the examples and encouraging words of the officials in charge.

AMONG the excellent papers discussed, in the recent meeting of the Coal Mining Institute, held at Pittsburgh, Pa., none seemed to stand forth with greater prominence than that of E. E. Bach, regarding Americanization work among miners in Pennsylvania, the past year, reported in *Coal Age*, Dec. 23, p. 1284.

Judging from this abstract of the paper, nothing has been left undone by the coal companies that would improve the condition and elevate the standard of living among their miners and make them better citizens. When I observe the ingratitude manifested by some miners who are prone to think that every move made by the company has a selfish purpose, I think it must be quite discouraging to the large official army who are making these efforts in behalf of the men they employ.

To my knowledge, one company in this valley has never failed to do anything that would increase the safety of the miner and make his living conditions more sanitary. A great deal of money has been spent in providing the men with medical advice, supplying nurses in case of sickness and furnish-

ing instructors to teach what would make better citizens and more efficient workers. But, it is hard to make the average miner believe that these efforts are solely for his benefit and, to a considerable extent, this idea prevails among outsiders.

It is clear to all that the greatest efficiency is attained when there is co-operation, and employer and employee work hand in hand. The radical element that is always present among miners to a greater or less extent works against the co-operation that would otherwise exist among the men, and they are led to suspicion everything that is done.

Influence of Example

However, example goes farther than precept; and, in order to secure real co-operation on the part of the miners, there must be the same hearty co-operation of every member of the official staff of a colliery. Superintending a mine, today, is not unlike running a large store. The man behind the counter must know both the goods he offers and his customer, or his efforts will be in vain.

Let us get the idea into our minds that the rank and file of our men are well-meaning, law-abiding American citizens. My observation inclines me to think that they are as a class generous with their pocketbooks, upon every appeal for the support of American institutions. They must be met half-way by the same generosity of feeling if we are to gain their confidence.

Close observation leads me to believe that the standard of our miners is measured by the character and reputation of those charged with their supervision and instruction. I have often noted how quickly a miner will convey to his buddy some little thought or idea he has conceived of their foreman or his assistant. On this account, any one in charge of men must be careful lest some little act of his shall be misjudged and discredit him with his men.

Work of Kindred Societies Good But Fair Treatment Better

There is no doubt but that a large amount of good can be and is done by kindred societies to elevate their men. But more important, in my opinion, is the close touch of the man in charge of workers underground. His example and treatment of his men will either draw them toward him and make them friends or repel them as enemies.

Cursing and swearing only hardens men and makes them reckless. Far better is a word of encouragement together with a little instructive criticism. But, above all, is the strict keeping of a promise made to a man. Nothing will destroy his confidence quicker than the breaking or not keeping of a promise. It is better to be frank and tell him why his request cannot be granted than to attempt to deceive him and put him off with a promise that cannot be kept.

Before closing, let me say one word in reference to imparting a spirit of enthusiasm to workers so that they will have the same interest in making a good record for the mine as the foreman himself. Let me ask, how many men in charge of mines are approached by miners at the end of a shift to know the number of cars hoisted that day. My belief is that a very small percentage of our miners are interested in knowing what the day's record of the mine has been. It would be grand if every man had the desire to make yesterday's hoist look like a piker, and there would be no question as to the results.

Not long ago, I am glad to say, I observed this spirit of friendly competition between the workers in two shafts but a short distance apart and employing about the same number of miners. The spirit among the men grew to such an extent that numbers of them would wait at the head of the shaft, at night, to hear the official count. The loyalty was such that I have witnessed many a fist fight between drivers, one of whom would resent a remark that discredited his boss.

The opportunities of foreman and assistant foreman to bring about these conditions and develop a true spirit of loyalty and enthusiasm among their men are manifold. Their close touch with the men makes this possible and always within their grasp. Nothing is more instrumental in Americanizing the foreign element than bringing them to have this spirit of loyalty.

Plains, Pa. RICHARD BOWEN.

Geology of the Coal Miner

The geology of the coal miner does not consist in long names with which he is unfamiliar, but in what he has observed as the characteristic formation of the coal measures in his locality.

MOST practical miners have read considerable on the geology of coal and were no doubt interested in the article of John Rose, treating on the origin and development of coal, *Coal Age*, Dec. 16, p. 1241.

As Mr. Rose has suggested, the average miner, though familiar with the different kinds of roof and floor enfolding seams of coal, seldom stops to think of their formation. Many like myself, hold their own theories in regard to the origin and development of the coal measures; but these are very largely conjecture and based on one's observation in the mine and such reading as he has been able to understand.

The experienced prospector who has long operated a diamond drill in any given section or locality, has come to know the general succession of the rocks and coal seams forming the measures in that district. It is his business and he is expected to know and be able to give information regarding the depth and character of the coal seams and other strata. But, like the miner, few coal drillers are more than practical men and many of the long names applied to the coal formations, in geology, are unfamiliar to them. They are apt to consider them as out of their line altogether.

Regarding the origin of coal, my own reading on the subject leads me to believe that coal was formed from the growth and decay of vegetable matter at the very place where it now lies. I do not think much of the drift theory. I believe that it took ages for this vegetable matter to be deposited and then overlaid with sediment, which settled from the waters that swept over the area. My idea is that it is practically impossible to measure these ages in years.

Changes Observed in a Lifetime Almost Imperceptible

The same is true in respect to other changes that are described in geology as having taken place. A man may live a hundred years and be able to see but little, if any, change in the streams with which he has been familiar since boyhood. Then, to be able to estimate the number of years required for a stream to cut out the Grand Canyon of Colorado is beyond our conception.

I spent several years in a mine where there were seven seams of workable coal. What perplexed me, however, was the fact that the adjoining mine had only five seams. Later, I came to understand that there was an upthrow fault running between the two mines, and the two seams had been lifted above the surface and were eventually eroded and lost.

Another strange feature was observed in the bottom seam, which averaged about ten feet in thickness and was practically clean coal till it started to rise on a 25 or 30 per cent grade and thinned out to 8 ft. in a distance of 200 ft. where it leveled off and contained dirt bands that were 2 ft. apart. The entire thickness of this portion of the seam varied from 12 to 14 ft. including the coal and dirt bands. I have never been able to account for the change in that seam.

Characteristics of "B Seam"

In this particular locality, a characteristic of the "B" or "Miller seam" is the rolls that occur in the bottom, which is always soft. The "D seam," in this locality, has many clay veins, which seems to indicate that the coal once has been broken by an upthrust and the crevices filled later with clay.

One thing that is remarkable is the observed absence of sandrock above the "D seam," as compared with the great thickness of sandstone below the "D" and above the "B" or lower Kittanning. In my opinion, this is the cause of the many creeps or squeezes that occur commonly in the latter seam. The breaking of the roof leaves the sandrock hanging and throws a great weight on the coal pillars. These and other items connected with the geology of coal mining are of great interest to the student in daily practice.

Indiana, Pa. THOMAS HOGARTH.

Mining Experience Required of Mine Superintendents

The blame for mine accidents is often laid on the shoulders of the mine foreman when, in reality, he has been forced to do the impossible, by an exacting superintendent who lacks practical mining experience.

COMMENTING on the responsibility for the explosion that occurred some time since, in No. 3 mine of the Union Collieries Co., at Renton, Pa., Superintendent John G. Bart remarks, *Coal Age*, Dec. 9, p. 1192, that it is his "firm belief that had this foreman been less anxious to get the work started the accident would not have occurred."

This statement makes me wonder if its author has ever gotten after his foremen, at a time when the report of the day previous showed a shortage in the output of the mine, and told him to "brush up," when he, the super, knew down deep in his heart that the man was doing everything humanly possible to put coal on the tipple. It is this crowding of a good foreman who is working under difficult conditions and, perhaps, short of supplies and material or men, that is responsible for many avoidable mine accidents.

Incompetence of Superintendent Handicaps the Foreman

Consider for a moment the case of a superintendent who has never done any work himself in the mine and given charge of a large colliery, Anxious to make the best showing possible, he scrutinizes carefully all requisitions for supplies, and examines closely the daily cost-sheet, comparing these with tonnage and market conditions. As a result, the foreman is lucky if he gets the half of what he needs.

Thus handicapped, many a foreman has faced the daily problems in the mine. Short of both supplies and men and knowing what is expected of him, he takes chances that would make the superintendent's hair stand on end were he down in the mine himself instead of sitting safe at his office desk. At times, the plan succeeds but more often something happens, and the poor foreman gets the blame.

Speaking from an experience of 25 years underground, performing all classes of work, yet never having given up my habit of reading and studying after securing my certificate, I am inclined to say that it is often necessary for a foreman to use his own judgment, on receiving orders from a superintendent who lacks a practical knowledge and experience in mines. He must do this for his own protection and there will be fewer accidents.

In my opinion, no superintendent is fit for the job or should be given charge of a mine who has not worked in the mine and gained a thorough knowledge of the difficulties confronting the mine foreman. In the appointment of a superintendent it should not be a question of *who* the man is, but *what he is* and *what he has done*. The man's record should determine his fitness.

I may be pardoned for referring to a man who is young as a superintendent and now in charge of the Oliphant plant of the H. C. Frick Coke Co. Though working in the mine but three months where he has charge, I have seen that superintendent looking after matters underground, at all hours of the day and night. I have found him at the lamphouse mornings, before the man-trip went into the mine.

It goes without saying that such a superintendent will keep in touch with everything that is done. He knows what is needed and does not have to unnecessarily cut down the requisitions of his foreman for supplies. He knows from his own observation what is required. He is also a better judge of the daily expense and tonnage sheets.

JOHN H. WILEY.

Oliphant Furnace, Pa.

Inquiries Of General Interest

Mine-Locomotive-Haulage Proposition

Estimating the Number of Ten-Ton Locomotives Required To Handle an Output of 2,000 Tons, in an 8-hr. Day, Over Three Miles of Track, Having a Maximum Grade of One Per Cent Against the Loads

WILL *Coal Age* kindly advise how many 10-ton locomotives will be required to handle a daily output of 2,000 tons of coal in eight hours, under the following conditions: The distance between terminals is three miles. The road has a maximum grade of one per cent against the loads. The track is laid with 50-lb. rails and is in first-class condition. The mine cars have a capacity of 2-tons, and, like the track, are in excellent condition. It is assumed that the loads and empties are assembled at the terminals and there will be no delay in making up the trips at those points. I am anxious to secure this information at as early a day as possible. J. E. BUTLER, Gen. Mgr.,

Stearns Coal & Lumber Co.

Stearns, Ky.

In estimating on this haulage proposition, we will assume that the tractive effort of a locomotive is one-fifth of the weight resting on the drivers, or 400-lb. per ton. This is the force exerted at the circumference of the drivers, which cannot exceed the adhesion of the wheels to the rails. Sanding the rails will increase the tractive effort of a properly designed locomotive to 500-lb. or more, while wet or greasy rails may reduce it to 300 or possibly 250 lb. per ton.

Both the track and rolling stock being in good condition, the track resistance may be taken as 20 lb. per ton of moving load. If the cars are mounted on flexible-roller bearings and kept properly greased, however, the track resistance may fall as low as 15, 12, or even 10 lb. per ton of load.

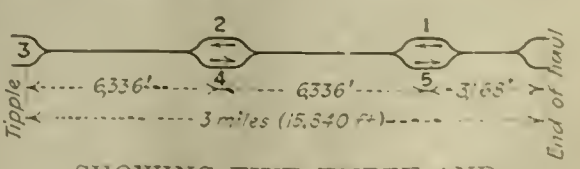
On moderate grades not exceeding 8 or 10 per cent, a grade resistance of 20 lb. per ton for each per cent of grade is allowed. On this one per cent grade, the grade resistance like the track resistance is 20 lb. per ton. The sum of the track and grade resistances in this case is, therefore, 40 lb. per ton of moving load.

Now, calling the weight of the loaded cars in a single trip hauled W, the weight of the total moving load is $W + 10$, expressed in tons. But the tractive effort of a 10-ton locomotive, on the assumed basis, is $10 \times 400 = 4{,}000$ lb., and the total resistance of the moving load is $40(W + 10)$. Equating these values we find for the weight of the loaded trip:

$$40(W + 10) = 4{,}000$$

$$W = \frac{4{,}000 - 400}{40} = 90 \text{ tons}$$

The weight of an empty car not being given, it may be taken as 4/5 of the capacity; or, for a 2-ton car, the weight would be $4/5(4{,}000) = 3{,}200$ lb., which makes the weight of a single loaded car 7,200 lb., or 3.6 tons. But



SHOWING FIVE EMPTY AND LOADED TRIPS

the weight of a loaded trip being 90 tons, the number of cars in a single trip is $90 \div 3.6 = 25$ cars. The total weight of coal hauled per trip is then $25 \times 2 = 50$ tons. This will require the making of $2{,}000 \div 50 = 40$ trips in an 8-hr. day.

Again, estimating on a speed of hauling of, say six miles per hour, one locomotive will make a round trip each hour of the day, or eight trips a day. On this basis there will be required $40 \div 8 = 5$ locomotives. The total length of haul per round trip is six miles, or $6 \times 5{,}280 = 31{,}680$ ft.

In order to avoid delay due to the several trips having to wait for each

other, two partings or passing tracks should be arranged to divide this haul into five stretches, which makes the length of each stretch 31,680 ÷ 5 = 6,336 ft. As indicated in the accompanying diagram, from the tipple to the first parting and from that parting to the second would then be two full stretches, while the distance from the second parting to the inside terminal would be a half-stretch.

For example, while trip No. 3 is at the tipple, trips Nos. 2 and 4 will be passing each other at the first parting. At the same time, trips Nos. 1 and 5 will be passing each other at the second parting. Trip No. 5 will go to the inside terminal and return to that parting in time to pass trip No. 4. And trip No. 1 will then be passing trip No. 3 at the first parting, while trip No. 2 will be at the tipple.

Examination Questions Answered

Examination for Mine Foremen, Fifteenth Anthracite District

(Selected Questions)

QUESTION—*The law requires that there shall be a medical room or emergency hospital at every mine. Where should these medical rooms be and what supplies should always be kept on hand in them?*

ANSWER—An Act approved May 29, 1901, of the anthracite law, requires every mine employing ten persons or more to establish medical rooms at convenient places on the surface and in the mines, for the treatment of injured employees. The law requires that there shall be provided a sufficient quantity of linseed oil, olive oil, bandages, linens, splints, woolen and waterproof blankets, besides other furnishings sufficient to accommodate two or more persons in a reclining or a comfortable sitting posture. (Sec. 1).

QUESTION—*What would be the result of a mixture of 90½ parts of air with 9½ parts of marsh gas?*

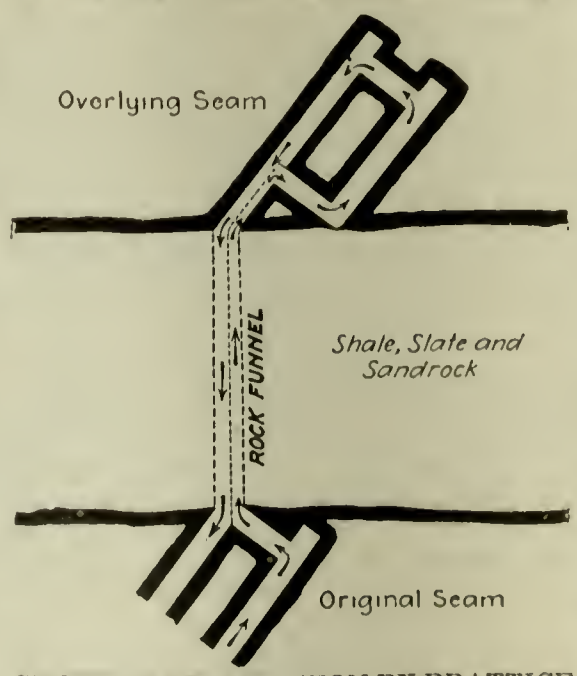
ANSWER—This mixture will contain 9.5 per cent of gas and constitute firedamp at its maximum explosive point. Its presence in the mine would be extremely dangerous and, if ignited, a violent explosion will take place.

QUESTION—*What extra precaution should be taken when two parties are driving toward each other in a mine?*

ANSWER—Care must be taken to check, from time to time, the distance of the two faces apart. No shots must be fired in either place without first signaling to the parties in the place approaching, informing them of the readiness to fire, and receiving from them a return signal to go ahead. These signals must be of such a character that it is not possible to misunderstand their meaning. In no case must a fuse or squib be ignited before a satisfactory return signal is received. When the two faces have approached to within, say eight or ten yards of each other, work should cease in one of the places, the men withdrawn and the place barricaded to prevent any one from entering. The remaining coal should then be taken out by the men in the other place.

QUESTION—*A tunnel has cut a new seam of coal. Show by rough sketch how you would ventilate the workings in this seam until you obtained a second opening. How many men are allowed by law to work in a section of a mine before the second opening is made?*

ANSWER—If the tunnel is driven as a single opening, which is common practice in the anthracite region, a line of brattice must be carried through



SHOWING VENTILATION BY BRATTICE THROUGH ROCK TUNNEL

the tunnel and extended to the face in the new seam, as shown in the accompanying figure, to provide the necessary ventilation up to the point where double entries are driven and it is possible to discontinue extending the brattice.

The Anthracite Mine Law (Art. 4, Sec. 1) forbids the employment of more than twenty persons at one time in a mine, until a second opening is provided and made available as an escapeway.

QUESTION—*A certain mine has been abandoned and allowed to fill with water. An adjoining mine is working toward these submerged workings. Explain fully what you, as foreman, would do to safeguard the men under your charge.*

ANSWER—A single heading only should be driven toward the submerged workings of the old mine. The Anthracite Mine Law (Art. 12, Rule 15) requires that "the working approaching such place shall not exceed 12 ft. in width and there shall be constantly kept, at a distance of not less than 20 ft. in advance, at least one borehole near the center of the working and sufficient flank boreholes on each side." Only safety lamps should be used in the place and a careful watch must be kept for the first appearance of water seeping through the strata. Wooden plugs must be kept on hand at the face ready to stop any hole that might tap the water. Only experienced men must be employed in the work. When a cut is made in the coal the test holes must be advanced an equal amount.

QUESTION—*An airway 7 ft. high is 12 ft. wide at the bottom and 8 ft. wide at the top. The anemometer reading per minute is 450 revolutions. What is the sectional area of the airway and what quantity of air is passing?*

ANSWER—The average width of this airway is ½ (8 + 12) = 10 ft. and the sectional area 7 × 10 = 70 sq. ft.

Assuming the reading taken with the instrument is a fair average velocity of the air current, the quantity of air in circulation is 450 × 70 = 31,500 cu. ft. per min.

QUESTION—*It is desired to get a hole through from a lower level to the level above for ventilation. The seam is 8 ft. thick and the pitch 40 deg. How would you make this connection without allowing the water to run down to the lower level?*

ANSWER—Drive the hole in the top coal, say four or five feet above the floor and make the hole wide enough to carry the quantity of air desired. Leave the bottom coal undisturbed.

QUESTION—*At a certain slope mine it was found that the chains and couplings used for hoisting in the slope broke frequently, causing wrecks that involved great expense to the company and danger to the workmen engaged at the bottom. Can you suggest a cause for these frequent breaks and a remedy to prevent them? It was not considered that the attachments were overloaded.*

ANSWER—Assuming the chains and couplings are of sufficient size for the load to be hoisted, as the question suggests, the frequent breaks may be caused by the engineer starting the trip too suddenly from the bottom. He should be cautioned in this regard and watched. All the chains and couplings must be examined at regular frequent intervals to ascertain their condition. If flaws are found in them or they seem to be corroding, by reason of the acid mine water eating away the surface of the metal, the attachments must be replaced with new ones frequently and no chances taken on their supposed strength. In order to avoid the results due to possible crystallization of the iron, tests should be made from time to time to determine whether such crystallization is taking place. Where chains or couplings are subject to corrosion in acid mine water, the application of tar or oil will be a benefit and retard these effects.

Two Closed-Shop Fights and Strikes Against Industrial Relations Court Outstanding Features of 1920

Neither of the Closed-Shop Fights Was Successful and at the Close of the Year Both Regions Were Working Almost Normally, Though the Union Hung on Dourly Despite Its Losing Struggle

By R. Dawson Hall*

NO report of real progress can be made by the union for 1920. It gained a few members, it is true, but it practically lost two big strikes for recognition. Nevertheless, it continued doggedly but hopelessly to fight on in a faint hope of gaining its point, which is, of course, to completely unionize the coal industry, which, it well knows, lives constantly from hand to mouth. The union believes, not without reason, that if it could unionize all the mines it could at will put a sprag in all industry and close down all manufacturing plants and blacken every domestic hearth in the country. The account which follows endeavors to show how the attempt to approach two further important steps in that direction were completely foiled by the resolution of the operators.

Attempts were made during 1920 to unionize the Pocahontas region and on Jan. 30 John L. Lewis, then acting president of the United Mine Workers, went down to Bluefield, W. Va., for the purpose of laying plans to that end. Nothing came of it, but in the early part of the year much activity was shown, the force of which was switched latter to the Williamson, Mingo County or Thacker district, which, while far distant and mining a different class of coal, is at the other end of the same large non-union area, an area, by the way, which made much trouble for the union by working throughout the big strike at the close of 1919.

Trouble in the Thacker district of Mingo County started in May with attempts at unionization of that field. This resulted on May 19 in a fight at the village of Matewan, in which seven detectives, the mayor of the village, a union organizer, a miner and a boy—11 persons—were killed. The detectives who had been evicting tenants at a mining village were fired on, it is alleged, by citizens of Matewan as they were preparing to leave by train, having broken their guns and put them in cases.

On June 29 a strike order was issued by the union calling out all the mine workers in Mingo County, West Virginia, and in Pike County, Kentucky. In July 80 per cent of the men in the field were alleged to have affiliated with the union. A tent colony had already been provided for at Pond Creek. Attacks were made almost daily on non-union men, several being killed.

Governor Appeals for Troops

At length the Governor of West Virginia appealed for troops, and on Aug. 29 an infantry battalion arrived to maintain order. Judge Damron on Sept. 6 displaced forty-two deputy sheriffs and replaced them by twenty professional and business men of Williamson. Seventy men who had been allowed to bear arms were deprived of them by the same authority.

A general strike in West Virginia was threatened should the troops aid strike breaking, but the action of the soldiers was such that even the mine workers could not condemn them. On Nov. 5 the troops were withdrawn, but as disorder followed Governor Cornwell on Nov. 26 called for their return. The troops arrived Nov. 28, and martial law was declared on the following day, and a house-to-house canvass for arms was made. This year ended with the troops still in control and the strike becoming a more and more difficult proposition for the United Mine Workers.

Another strike was that in Alabama. In that state recognition was only one of the issues whereas in the Mingo district it was the only issue. Alabama's year began with a big strike to procure reinstatement of about one thousand men who were alleged to have been dropped because they gave leading co-operation in the big strike. The Attorney General tried to have the mine workers and operators appoint six men on each side with an umpire to be appointed by Judge W. J. Grubb, but the operators refused to comply with the Attorney General's request.

Flat or Percentage Increase

The big Alabama strike commenced on May 19, when nearly 3,000 men quit work, and it grew till it became a serious menace to the industries and homes of the Southland. The union was, of course, interested in recognition, but the men were mainly cognizant of the wage question. The operators of Alabama, as non-union producers, believed themselves free to fix their own wages and refused to present their case to the Bituminous Coal Commission.

When the daymen in the Central Competitive Region were conceded $1 per day, or 20 per cent, the Alabama operators granted a 20-per cent advance, which with them, as they were paying $3.44 a day was 69c. The strike commenced in the domestic-coal fields and spread to those mining for coke production.

After the strike had run along for some time the district union managed to get the support of the international union, which had sent a commission of inquiry into the field. On Sept. 1 a general strike in the coal fields of Alabama was called by John L. Lewis, international president. Soon 12,000 out of 26,000 men were on strike. About 5,000 who were working in union mines were not included in the strike call.

Governor Kilby appointed a commission of three—George H. Denny, James L. Mayfield and C. E. Thomas—to investigate. This commission on Sept. 18 held both sides at fault. The strike resulted in much disorder and some deaths and, at the close of the year, was still continuing but with spent force. As industry and farming slackened, men entered the mines in numbers from the mills and farms.

Another bitterly waged strike but far less extensive occurred in the northern district of West Virginia along the Morgantown & Kingwood Ry., the Penn-Mary Coal Co. and the Connellsville Basin Coal Co. being the principal figures. It lasted for several months without attaining the ends sought.

Union Successful in New River

In the New River field—District 29—a dispute early arose as to the check-off, which had been granted by most of the operators to date from Sept. 1 of the year 1919. It was given with the understanding that it was conditional on the terms of the agreement being kept. The strike of Nov. 1 was a clear violation of a basal matter in that agreement and the operators, in consequence, refused to continue the check-off, which was granted solely with the expectation that if there were a strike the New River region would work uninterruptedly.

The mine workers decided to present their contention to the adjudication of the Bituminous Coal Commission. The Attorney General on Dec. 24 had requested the New River Coal Operators Association to re-establish the check-off now that the men were returning to work, but the association did not feel that the mine workers had any right to demand it. To force its restoration many of the mines went on strike and finally on Feb. 4 at a meeting at Charleston, the check-off was re-established, no fines for idleness being collected.

The year in Kansas was one of progress from disorder to order. Some will attribute this desirable advance to the passage of the Industrial Relations Court; other will regard that court as merely a means to the elimination of Alexander Howat, who for years has been a disturber in the labor affairs of Kansas. The United Mine Workers of America as a whole will be disposed to credit the latter cause. It does not like the court, but far less does it like Mr. Howat, for many years district president of the United Mine Workers in Kansas, but constantly an advocate of the breaking of union contracts and always at variance with the international headquarters of the union.

On Jan. 26 four hundred Kansas miners went on strike because the Industrial Relations Court was established. A mine of the Western Coal &

*Editor, *Coal Age*.

Mining Co. at Franklin and one of the Wear Coal Co. at Dunkirk were shut down by the strike. Governor Allen immediately ordered action in conformity with the new law in regard to this strike activity. The men declared that they were not on strike. It was no conspiracy. They "just didn't feel like working" and accordingly quit, but later went back to work.

On April 5 as many as two thousand men went on strike. When Howat and members of his staff were summoned on April 6 to appear before the Industrial Relations Court they refused and were arrested and sent to jail. This resulted in a new manifestation of strike activity which increased the number of strikers from two thousand to eleven thousand and for a while Governor Allen threatened to take over the mines of the state. Ninety per cent of the mine workers were now included in the strike. Governor Allen believed, however, that 40 to 50 per cent of them would mine coal for the state if called on to do so.

Howat Made To Call Off Strike

On April 15 Judge Curran of the Crawford County District Court overruled a motion for a retrial of Howat and his friends. On April 17 the court ordered that Howat direct the miners to return to work. Howat and his friends were bailed that same day, and on April 19 Howat ordered the mine workers to return to work and all but thirty complied. On April 30 Judge Curran declared the Kansas Industrial Court constitutional and enjoined Howat from calling a strike.

On June 16 six officials of the United Mine Workers refused to testify before the Industrial Relations Court as to the strike in the Kansas coal fields and were sentenced to jail till they consented to give testimony. Bonds were offered, however, and a stay of execution was granted. A strike followson thereafter and on July 28 two thousand four hundred men were idle. This strike was investigated by the Industrial Relations Court beginning July 31. On Aug. 4 John L. Lewis, president of the United Mine Workers, sent telegrams to the thirty-three locals ordering them back to work. Commencing Aug. 7 all the mines gradually resumed work and on Aug. 15 the last mine idle was returned as being in operation.

Mr. Howat and three officials of the union appealed to the Supreme Court and on Sept. 2 got a ten-day stay of execution. But the law is not meant to support troublemakers like Mr. Howat and he was eventually sent to jail and apparently shorn of the power to disturb the peace of Kansas, deprive its industries of coal or impoverish its mine workers.

The anthracite mines have not been troubled as much with small strikes during the past year as in former times. One company, the Pennsylvania Coal Co., has had an immense amount of misfortune. On July 1 it was having trouble about a check-weighman and check-docking boss, who the company declared were not properly elected and whom it would not permit to serve. No. 6 colliery was the plant in question. Trouble has broken out at that colliery more persistently than in any other of the Pennsylvania Coal Co.

Later a strike broke out against subcontracting; the men did not want parts of the mine farmed out to contractors who in turn would hire day laborers. About eight thousand men went out and the Anthracite Strike Commission threatened them with a loss of their back pay if they did not return at once. The union opposed the strike but the men for the most part were insurgents and opposed the union, at one time having a button strike and refusing to continue at work so long as men who had only the United Mine Workers button remained on the job. The union tried, according to the insurgents, to bar men from voting at the general union election by preventing them from joining the union till after the election had occurred.

Agreed To Discharge Contractors

Charges were made that the company's payrolls were padded and that contractors paid men to draw money that had ben improperly placed to their credit. After eleven weeks the strike ended by the companies—the Pennsylvania Coal Co. and the Hillside Coal & Iron Co.—agreeing on Oct. 7 to abolish the contracting system and discharge all contractors absolutely except in cases where the grievance committee allowed them to work in other positions.

Later there were threats to strike if three company superintendents and General Superintendent W. P. Jennings were not discharged. One of the three was given leave of absence, and the strike was not declared. At the end of the year the unreasonable attitude of the mine workers still continued. They had hatched up another grievance.

They had been paid on the basis of an extremely long ton, 2,700 lb., in order that the companies might reap therefrom a standard long ton of salable coal. Judgment might question the use of such a method of payment, but the men were not agitating so much for its termination as for the $10,000,000 of back pay which was predicated on the proposition that if the contract had ben different and based on the smaller ton $10,000,000 more would have been received by the employees.

Commercial Shipment of Kanawha Coal Upset By Embargoes and Priority Orders

Estimate of Production of Kanawha and Coal River District During 1920 Is 10,000,000 Tons—Railroads Early Buyers—Lake and New England Orders Disturbing Factors—Late Evidence of Labor Unrest

COMMERCIAL shipments of coal from the Kanawha and Coal River districts of West Virginia from January to November, 1920, were 7,901,900 net tons, not including operations on the north side of the Kanawha River. It is estimated that production of the whole field for the year was 10,000,000 tons. Capacity production was not reached at any time, however, because there was a chronic car shortage throughout the year.

Early in the year, with railroad fuel scarce, railroads were heavy buyers. Those from whom they were obtaining coal, of course, received a preferential supply of empties, and protests against the practice were unavailing. Priority orders of the Interstate Commerce Commission were a factor in preventing producers from meeting the commercial demand for coal. The Lake service order and to some extent the New England service order deprived the general market of a large tonnage from Kanawha and Coal River mines, as is shown by the fact that for a time 20 per cent of the output of the field was required for the Lakes.

Export shipments from the Kanawha field were greatly reduced by repeated and protracted embargoes imposed either wilfully to keep Kanawha coal in domestic markets or else because of the physical inability of the Chesapeake & Ohio to handle the coal at Tidewater. For a time there was an embargo every Monday and later in the season there was a continuous embargo, no coal from points west of Handley being permitted to move eastward unless loaded in 70-ton cars, which were difficult to obtain.

The small, newly established concerns in the Kanawha field sold most of their output, it is believed, on the spot market, but the older and larger companies, having due regard for the amenities and ethics of the business and with a view to discouraging high prices and a runaway market, stuck to contracts very closely. In fact at a time when coal was bringing as high as $10 to $15 a ton on the open market, many Kanawha and Coal River producers were handling their output under contract at from $4 to $4.50 a ton. Contract cancellations by consumers became quite general toward the end of 1920, and there was no market for coal from the field at the end of the year and little coal was being shipped either on contract or otherwise.

There was, on the surface at least, less unrest among the miners during 1920 than there had been during 1919 and there were no strikes of any consequence in the field during the year. Kanawha mine leaders took an active part in a political movement for the election to the governorship of a man who was generally regarded as the particular candidate of the United Mine Workers. Not only was an increase granted to miners as such in the spring but in the autumn an advance of $1.50 a day was granted to day and monthly men. The only strike in connection with the demand for an increase for daymen was on the part of drivers at one operation. Strikes, such as they were, were of minor importance.

Bill Proposing Socialization of German Coal Mines to Be Submitted at Opening of Next Parliament

Apparent Abatement of Interest Due to Temporary Overshadowing by Coming Plebiscite in Upper Silesia—Fate of Famous Coal Province Will Have Important Bearing on Teuton Fuel Situation —Despite Unsettled Conditions, New Shafts Are Being Sunk

By H. O. Herzog
Berlin, Germany

After several months of heated discussion public excitement surrounding the problem of the socialization of the German coal mines has somewhat abated, but only temporarily. The powers behind the scenes, which are making every effort to bring this matter to an issue, are vigorously at work and are urging the government to go ahead. The socialization bill will be submitted to the Parliament at the opening of the coming session, although the impression prevails that the matter is not sufficiently prepared yet for legislation. In fact the many and diverging proposals and suggestions which have come forward during the preparatory stages have so confused the whole problem that the Parliament is subdivided into a bewildering number of opinions, not one party being quite unanimous on the subject.

Lively times are sure to come when the first reading of the bill takes place. Close observers are gaining the conviction that socialization has become an object of party warfare, with the ultimate purpose of upsetting the present government. The responsibility of forming such momentous decisions during the present unsettled state of affairs in Germany is weighing heavily on all responsible legislators, and at present there seems little chance for a clear majority on any bill which would cause a radical alteration of conditions.

Socialization of coal mining as a center of public interest has been superseded by the coming plebiscite in Upper Silesia, by which it will be decided whether the province shall fall to Poland or remain German. Upper Silesia is one of the richest German provinces, and political strife for it is running high between Germans and Poles. The population is kept in great excitement by the propaganda carried on by both sides. As the fate of Upper Silesia is a source of unrest in the center of Europe, it seems a matter of the utmost expediency to settle it without delay. Half of the population is armed and bloodshed is expected during the polling, but as no steps are being taken to alter conditions, it is difficult to see how matters can be improved by further procrastination.

Upper Silesia Contains Vast Mineral Wealth

Upper Silesia, which in 1871 had only 131,000 inhabitants, has now 2,200,000, of which 356,000 are employed in mining and other industries. The province contains in a narrow space probably more mineral wealth than any other part of the Continent. The area of the coal deposits is stated to be 1,200 square miles, and the quantity worth mining 113,000,000,000 tons. The production of coal in 1914 was 43,000,000 tons, valued at 400,000,000 gold marks. It is the second largest in Germany, and was nearly double the production of the whole Russian Empire and one and a half times that of the Austro-Hungarian Empire.

In spite of the unsettled situation in the Upper Silesian district several mines have begun extensions. The Hohenlohe mine has been put into operation again and is sinking a new shaft. The State mine of Königsgrube has completed a new shaft. In Lower Silesia, which in November, 1920, produced 423,000 tons of coal, production has very nearly reached that of 1913. A further increase of production is expected from the conclusion of an agreement with the miners for longer shifts. An improvement is noticeable also in Saxony, where the production in November was larger than in October in spite of shorter working time.

Coal production in Bavaria also is on the upward grade. There is an increase of 22.5 per cent in the comparison even to the year 1913, which has so far shown the highest production figures. This rise is due to a large increase in miners, the number of which from 1913 to 1918 increased from 5,800 to 13,000; for the current year the figures are not available yet.

Total German production of coal and brown coal in November showed a slight improvement compared with October, which would be even more marked if both months had had an equal number of working days.

German Coal Situation Has Favorable Outlook

The figures show that Germany's coal situation, although still precarious in comparison to the years of affluence before the war, is on a fair road to improvement. The 24,000,000 tons per year which Germany has to supply to the allied countries under the Spa treaty are nearly made up by the increase since last year. Present production would just cover Germany's own needs on the basis of consumption of the last pre-war years. Fuel consumption in 1911 was 137,000,000 tons; 1912, 145,000,000 tons; 1913, 156,000,000 tons; 1914, 134,000,000 tons.

The supply under the Spa treaty and for export would therefore roughly represent the country's coal shortage, not taking into account the consumption of parts detached from Germany under the peace treaty (an item not to be neglected in the case of Alsace-Lorraine and the Sarre district, with their extensive industries), the savings effected by strictest economy, and the relief afforded by increased brown-coal production. The country would make up the shortage by imports if the low rate of exchange did not prohibit. Small quantities of foreign coal, however, find their way to Germany. The first cargo of English coal recently arrived in Hamburg. The coal was Durham gas coal, for which a price of 75s. f.o.b. Tyne was paid.

Such coal imports demonstrate the shortage in Germany and evidently are meant to do that. They are given broad publicity, which somewhat enhances the quantity imported. This is surely the impression received when considering that the free exports of coal Germany is making to Holland, Switzerland and other countries by far exceeds the few imports. During October, 1920, exports from Germany to Holland included 83,000 tons of coal, 14,000 tons of coke, and 3,000 tons of brown coal briquets. German imports to Holland are 38 per cent of the total, at an average price of 59 florins per ton. These imports are second only to those of the United States, which are 44 per cent of the total, at an average price of 70 florins per ton.

Operators, Paying Bonuses, Seek Higher Prices

The efforts to increase German output in the majority of cases are going in the same direction—*i.e.*, to put on additional labor and to raise the individual output by giving premiums to the miners. This, of course, adds heavily to the expenses of the mines, and the mine owners are constantly endeavoring to raise the prices of coal. The government has so far opposed such attempts, and in this is backed by the industry and by the whole population. Judging from financial results the mines are in a strong position and their demand of higher coal prices meets with no sympathy. Matters will no doubt be somewhat altered when the increased expenses of this year appear on the

balance sheets. It may be said, however, that until the financial position of the mining companies shows weakening, the chances are that coal prices will not be increased.

The following figures show the average wages of the miners for 1920 in comparison to last year. The wages in marks per man per day were as follows:

	June, 1920	June, 1919
Upper Silesia	49.00	20.00
Lower Silesia	42.00	15.50
Lower Rhine district	53.00	24.00
Ruhr district	49.50	22.50

Since June, 1920, wages have been increased in the Ruhr district from 49.50 to 60 marks per shift. From the above figures it appears that the wages have since last year more than doubled. The total of miners' wages in Prussia in the second quarter of 1920 was 1,991,000,000 marks, compared with 1,472,000,000 marks in the first quarter of the same year. From these figures it may be taken that the situation of the mines is indeed not as rosy as it was last year.

The number of miners employed is constantly being increased as far as housing facilities will permit. As the limit will sooner or later be reached, the government is making preparations to open up new mines. The Prussian Diet has a bill in preparation for removing ancient rights, of which there exists a great number, for undeveloped mining fields of small and medium size. On the strength of this bill the Prussian State assumes title to the mining rights. It is purposed to exploit these by granting leases.

A new development which almost amounts to socialization is in progress in Jugo-Slavia. The Jugoslavian government has recently formulated the following decision: (1) To establish a central office in Belgrade for the control of the country's coal production. (2) The prices of coal produced in private mines will be regulated in such a way that the owner will receive a share in the profits and a fair return on his investment, but he will be compelled to appropriate part of his profits to increased production.

An arrangement has lately been made between Germany and Czechoslavakia with regard to the exchange of German coal and coke for Bohemian brown coal. Germany undertakes to supply monthly 105,000 tons of coal and coke, mostly from Silesia, whereas Czechoslavakia will supply to Germany 202,000 tons of Bohemian brown coal and 4,000 tons of coal from the Pilsen district.

While the German mine owners are clamoring for an increase in coal prices, the coal situation in neighboring countries seems to be undergoing a radical change. In Switzerland reductions have been made for certain classes of fuel. It seems that Switzerland is now getting more coal than she wants from Germany as well as from America. In consequence Swiss dealers are trying to cancel contracts, but find themselves faced by demands of high indemnities.

In France the prices of coal have lately been considerably reduced, for instance, for German coal from 180 to 150 francs per ton.

A sharp decline in demand for coal is reported from Sweden. English importers in that country have been pushed to the wall by American competition, but they seem to have made up their mind now to underbid American prices. Recent quotations show a reduction of from 30 to 40 per cent, evidently caused by the business depression in Sweden. The country seems to be saturated with coal. The 4,800-ton cargo of the American coal steamer Dicto was sold at the exchange auction in Stockholm at prices varying from 39 to 60 kronen per ton. The auction was held because of the failure of the importer, who paid 160 kronen per ton.

COAL PRODUCTION IN HUNGARY at present is 19,000 tons a day compared with 9,000 tons during the reign of the Hungarian Soviet Government. The country's own requirements are eight million tons per year.

COAL PRODUCTION OF THE Sarre district under French administration was in October 846,000 tons, which is above the average of the previous years since 1914, but behind the production of the preceding six or seven years, when the annual production was more than 11,000,000 tons and in 1913 even reached 12,000,000 tons.

Coal Miners Take 15.8 Per Cent Time Off Observing Holidays

HOLIDAYS which are more or less observed by the workmen in coal mines numbered 58 in 1920. This is 15.8 per cent of the number of the days in the year. When Sundays are added it can be seen that the percentage of days in which no work or a reduced amount of work is done in coal mines is large. As a large number of mine workers belong to the Greek orthodox church the Julian calendar is brought into use. Thus there are always two Easters, two Christmases, two New Year's Days, etc.

The holidays and the holy days in 1921 are as follows:

January

1 New Year's Day
6 Epiphany (Roman)
7 Christmas (Greek)
9 St. Stephen's Day (Greek)
14 Circumcision (Greek)
19 Epiphany (Greek)

February

2 Candlemas (Roman)
8 Shrove Tuesday (Roman)
9 Ash Wednesday (Roman)
12 Lincoln's Birthday
15 Purification (Greek)
16 Ash Wednesday (Greek)
22 Washington's Birthday

March

17 St. Patrick's Day (Roman)
19 St. Joseph's Day (Roman)
24 Maundy Thursday (Roman)
25 Good and Great Friday (Roman) (Greek)

April

1 Eight-Hour Day
7 Annunciation (Greek)

May

5 Ascension (Roman) (Greek)
6 St. George's Day (Greek)
16 Whit Monday (Roman)
27 Coronation of the Emperor (Russ.)
30 Memorial Day

June

8 Pentacost (Roman)
9 Holy Ghost (Greek)
19 Corpus Christi (Roman)
24 Nativity of John the Baptist (Roman)

July

4 Independence Day
12 Peter and Paul's Day (Greek)

August

14 First Day of Fast of Theotokos (Greek)
15 Assumption (Roman)
19 Transfiguration (Greek)
28 Repose of Theotokos (Greek)
28 St. Augustine (Roman)

September

5 Labor Day
7 St. Felix' Day
12 St. Alexander Nevsky (Russian)
21 Nativity of Theotokos (Greek)
27 Exultation of the Cross (Greek)
29 Michaelmas (Roman)

October

12 Columbus Day (Italian)
14 Patronage of Theotokos (Greek)
29 Mitchell Day (Anthracite)

November

1 All Saints Day (Roman)
2 All Souls Day (Roman)
8 Election Day
11 Armistice Day
21 St. Michael's Day (Roman)
24 Thanksgiving
28 First Day of Fast of Theotokos (Greek)

December

4 Entrance of Theotokos (Greek)
8 Immaculate Conception (Roman)
19 St. Michael's Day (Greek)
22 Conception of Theotokos (Greek)
25 Christmas

The degree in which holidays may or may not be celebrated is largely dependent on the religion and nationality of the labor employed at each of the various mines.

The mine workers who celebrate the Greek Catholic holidays are principally Russians, Greeks, Bulgarians and Serbians. Approximately 20 per cent of the Hungarians and Slovaks also celebrate the Greek Church holidays. The remaining 80 per cent celebrate only the Roman Catholic holidays.

Industrial Depression Causes Decrease in Winter Power Production

PUBLIC utilities and central power stations in the United States consumed 3,164,054 net tons of coal in the production of power in November, 1920, according to a report recently issued by the U. S. Geological Survey. This quantity was almost identical with that consumed in October, but about 150,000 tons more than in August and September. The same report gives the total production of power from coal, oil, gas and water, and states that the average daily production of electricity in the last quarter of 1920 was little, if any, greater than in the summer period, whereas in previous years the production of power regularly showed increases in the winter season over the summer.

To the decrease in industrial activity in the last quarter of 1920 is attributed the lack of normal winter demand for power. It is estimated that the total output of electric power for 1920 was 44,100,000,000 kw.-hrs., an increase of about 13 to 14 per cent over 1919. The proportion of the total power produced which comes from hydro-electric plants ranged from 33 to 42 per cent in 1920 and was 37 per cent in November. In addition to the coal used 1,855,845,000 cu.ft. of natural gas and 962,368 barrels of oil were used as fuel in the production of power in November, 1920.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

IF one should begin to think of normal times in terms of last year, then business will never be normal "within our lifetime," declared Salmon P. Halle, president of the National Retail Dry Goods Association, in his opening address Feb. 9 at the convention of that organization in New York City. He added, "But if you will set some place between the low of 1912 and 1913 and the high of 1919, and make plans accordingly, you will very soon find things looking normal and improving daily."

Discussing the situation further, Mr. Halle said: "We have all prided ourselves on our wonderful ability to manage business during this period, but the test is here and it will be the 'survival of the fittest' from now on.

"Study the conditions of your neighborhood, study them in your city. Make your plans and try to build to them. Study your merchandise conditions, study your outlets, and most important of all, be sure that you are financially able to go through with the plans that you have made.

"Remember that in making contacts that will acquaint you with world conditions, you are making yourself a better merchant and a more successful merchant in the largest sense of the word."

L. & N. Orders 2,700 Freight Cars

Orders for 2,700 freight cars have been placed by the Louisville & Nashville Railroad Co., according to *Railway Age*. The contracts have been awarded as follows: 1,500 box cars and 100 40-ton stock cars from American Car & Foundry; 500 box cars from Mount Vernon Car Manufacturing Co.; 300 40-ton coke cars and 300 55-ton gondola cars from the Chickasaw Shipbuilding Co. The Tientsin-Pukow is in the market for 200 box cars in addition to inquiries for 300 gondola cars previously reported. Advices received here from abroad indicate that this system will soon purchase eleven all-steel passenger trains of five cars each. Under arrangements whereby a credit with American firms amounting to $5,000,000 has been established, it is expected that the Mexican railways will soon enter this market for railroad equipment.

Ingot Production Low in January

Steel ingot production in the United States during the month of January, according to a compilation of the American Iron and Steel Institute, amounted to 2,201,866 tons, compared with 2,340,365 tons in December and 2,968,102 tons in November. Excluding the strike months of 1919, the total for January is the lowest since May of 1919. The above figures are compiled from reports received from companies responsible for about 85 per cent. of the ingot production in the country.

Cotton Mill Runs Night Shift

The Naumkeag Steam Cotton Mills, Salem, Mass., on Monday, Feb. 14, began a night shift which will be run five nights a week. Agent J. Foster Smith explained that the extra operations were intended to take care of surplus yarn produced by additional spinning machinery.

Cotton Goods Orders Exceed Supply

Marshall Field & Co., in a weekly review of the wholesale drygoods trade as of Feb. 5, says: "Current wholesale distribution of drygoods has again shown a steady increase during the week. The substantial volume of orders for spring merchandise which is being received clearly indicates that most retailers now have their stocks in a healthy condition and are preparing to do business with a renewed confidence in the general situation. Our mills are running at full capacity, and the demand at the present time for certain lines of cotton goods, particularly ginghams, bedspreads and sheetings, is actually in excess of the supply."

Thread Mill Runs at Night

J. & P. Coats, thread manufacturers, Pawtucket, R. I., announced Feb. 9 that all departments would thereafter be operated 48 hours a week, and that a night shift would be started in the spinning department. For some weeks several of the departments have been operated only two or three days a week. The plant employs 2,500 on day work. The Weypoyset Company of Central Falls also announced that a night shift would be run in its carding and spinning departments, employing 350.

Glass Plant Resumes Operations

The Flacous Glass plant at Tarentum, near Pittsburgh, Pa., resumed operations Feb. 9 after a shutdown since the first of the year. Two hundred workers returned to their places in the plant.

Ford New England Plant Running

All departments of the Ford Motor Co.'s assembling plant at Cambridge, Mass., resumed work Thursday, Feb. 10, according to an announcement by the New England manager, R. E. Jones. The plant had been closed nearly a month.

Atlas Cement Co. Closes Two Plants

The Atlas Portland Cement Company announced Feb. 9 that it had closed its plants at Northampton, Pa., and Hudson, N. Y., and had reduced wages at its Hannibal, Mo., plant, because of conditions in the industry.

McKeesport Tin Plate Mills Reopen

Twenty of the McKeesport Tin Plate Co. mills at McKeesport, Pa., resumed operations Feb. 7 after a shutdown since Dec. 23. The men who returned to work accepted a 20 per cent wage reduction. Officials of the concern said they were hopeful that conditions will warrant continuous operations with gradual additions. Twenty-four other mills of the company are still shut down.

Paper Mill for Louisiana

A modern paper mill estimated to cost $2,000,000 is to be built at Monroe, La. The location was selected because of the abundance of wood from sawmills and nearness to the Monroe gas fields for cheap fuel. The Louisiana State Forestry Department will co-operate with the projectors of the mill, who plan an extensive reforestation development in connection with the mill's supply of raw material.

Plan $1,000,000 Factory

Plans and specifications have been prepared for the construction of a $1,000,000 fertilizer factory at Baltimore, Md., the annual output to be 125,000 tons of material.

Foreign Markets and Export News

France Practically Embargoes American Coal

France has fixed a new maximum price of $9 per ton c.i.f. French-Atlantic ports for all American coal. This is the lowest level American coal has reached since it began declining last October.

Coal dealers of France, meeting in Paris in a national convention, declare that this action is in effect an embargo on American coal as no American company could possibly afford to sell at the new price. The French dealers approved the fixing of the new price as a temporary measure. The chief purpose of the present meeting of the dealers, however, is to protest against the arbitrary action of the Government in fixing purchase and sale prices for all coal in France.

The new price for American coal was made necessary through the fear that France would be glutted with American coal to the detriment of her mining industry. There is now more than six months' coal supply in France with poor prospects of an industrial revival sufficient to absorb the surplus stocks.

Port of New York Export Shipments Increased Rapidly in 1920

Complete reports for 1920 show there were shipped from the Port of New York 219,212 tons of anthracite; 253,049 tons of bituminous and 34,718 tons of coke, which is more than in any two years previously.

Last summer and fall it was claimed that Canada was being well taken care of to the detriment of domestic trade. Custom House reports show that during the year just closed Canada received through this port less coal than in any of the three preceding years, the shipments being as follows: 1917, 98,402 tons; 1918, 68,763 tons; 1919, 46,570 tons, and 1920, 41,125 tons. France was shipped 57,048 tons; Italy, 4,882; Sweden, 6,910; Netherlands, 23,824; Denmark, 14,433; Portugal, 1,373; Egypt, 446, and Brazil, 6,307 tons.

Exports from the Port of New York were:

ANTHRACITE

	Tons	Value
1917	134,252	$987,178.00
1918	82,447	584,087.00
1919	70,984	624,809.00
1920	219,212	2,995,282.00

BITUMINOUS

	Tons	Value
1917	14,348	$91,534.00
1918	48,717	349,369.00
1919	29,277	210,746.00
1920	253,049	3,630,089.00

COKE

	Tons	Value
1917	21,908	$283,735.00
1918	10,937	174,114.00
1919	14,411	185,966.00
1920	34,718	702,379.00

ACCORDING TO CONSUL GENERAL ANDERSON at Rotterdam the prospect for American coal in northern European markets in the near future will assume a pre-war nature, except it is likely to be in much larger volume. Demand will be mostly for special grades for technical uses, particularly for the manufacture of gas. At present a fair quantity of American gas coal is being received and contracts for 1921 are being made for these special grades. All authorities seem to agree that northern Europe is now able to take care of itself so far as ordinary grades are concerned.

A GERMAN COMBINATION OF INTERESTS has been closed between the Rheinische Stahlwerke (steel works), which for the purpose increases its capital stock from 65,000,000 marks to 120,000,000 marks, and the Arenberg coal mines.

United States Is Largest Swiss Coal Supplier

Imports of coal into Switzerland during the last two years were as follows:

Country of origin	1919	1920
United States	508,632 tons	1,227,259 tons
England	121,241 tons	638,497 tons
Belgium	419,333 tons	105,078 tons
Saar District	322,728 tons	245,890 tons
Ruhr District	182,668 tons	250,079 tons
Rhenanian brown coal	65,356 tons	70,575 tons
France	69,818 tons	50,656 tons
Austria	4,312 tons	.....
Total tons	1,694,088 tons	2,588,034 tons

From these figures it will be seen that during the last two years the United States has been the largest coal supplier to Switzerland. In December last the figures were: United States, 137,862; England, 87,337; Saar, 17,050; Ruhr, 9,270; Belgium, 2,834, and France, 1,967; total, 256,330 tons.

Britain Frees Inland Coal

The British Department of Mines announces that all controlled prices on the distribution of inland coal will be removed March 1.

The only restriction which will remain on export coal is where it is probable there will be a deficiency at home.

South Wales colliers are resisting buyers' efforts to secure lower prices, but the pressure of excessive stocks is difficult to resist. Admiralty steamless is being quoted at £2 17s. 6d. to £3, smalls £1 5s. to £1 10s., cargo £1 to £1 2s. 6d. and inferior 15s. to £1. Coke for export is quoted at £3 15s.

GERMANY WOULD CUT DOWN coal deliveries to France. Charles Bergmann, head of the German delegation in Paris, has delivered to the Allies a memorandum pointing out that it is impossible for Germany to continue coal deliveries on the scale provided for in the Spa agreement after Feb. 1. It says Germany's industries are suffering from a shortage, while the French are sufficiently supplied. Germany, adds the memorandum, has not received her expected coal quota from Silesia, and proposes that after Feb. 1 France agree to accept 1,800,000 tons monthly. Germany further requests a continuation of payment of the five gold marks per ton premium and an additional cash compensation to adjust the difference between inland and world market prices.

POLAND INTENDS TO CONTINUE in Upper Silesia, after the plebiscite, the same system of the exploitation of the coal resources that exists today and will not make them subject to the direction of the coal office. This is to insure the rapid and normal development of the coal industry which has been customary in the past.

BRITISH COAL OUTPUT for the year 1920 approximated 231,000,000 tons, as compared to 229,000,000 tons in 1919, according to a recent report. From Nov. 13 to Dec. 18, the test period of output to determine miners' right to higher wages, the weekly production averaged 5,215,160 tons, or at the rate of 260,758,000 tons per year. The output is steadily gaining; that for the week ended Jan. 15 was 4,898,000 tons.

CONTINUED LACK OF COAL in Lodz has recently closed a number of big factories. If supplies of coal are not received in the near future, the activity of the entire industry of the Lodz district will cease.

GERMANY HAS AGAIN WITHHELD authorization for an advance in coal prices of 25 marks, proposed by the Rhenan Westphalian mines.

Quotations on Bunker Coal in Foreign Ports as of January 19, 1921

WILLARD, SUTHERLAND & CO., INC., bunkering contractors for coal and oil, issues the following compilation of recent quotations on bunker coal in foreign ports as an indication of current prices and showing the downward trend of practically all quotations. The figures are subject to change or withdrawal without notice.

Adelaide	44s. to 49s., according to point of delivery.
Aden	130s. Indian or South African from Feb. 1. 155s. American Coal from Feb. 1.
Albany, Australia	54s.
Algiers	75s. from Feb. 1.
Amsterdam	43.50 guilders.
Antwerp	75s. to 80s., according to quality.
Azores	100s., from Feb. 1.
Bahia	197s. 6d.
Bahia Blanca	140s.
Barbados	110s. from Feb. 7.
Batavia	35.50 to 66 fl. according to quality and point of delivery.
Bermuda	$18 from Feb. 1.
Bombay	37.4 rupees.
Bordeaux	No coal available.
Brisbane, Australia	17s., 11d. to 24s., 1d., according to quality and point of delivery.
Brixham	90s. Welsh coal.
Buenos Aires	135s.
Cairns, Australia	64s.
Cape Town	75s., to 82s., 6d., according to quality.
Cardiff	50s. to 55s., according to quality
Colombo	85s. 3d., to 92s., 9d., according to quality.
Constantinople	125s., Welsh or American coal. 85s., Turkish coal.
Curacoa, D. W. I.	$20.75.
Dakar	122s., 6d.
Dartmouth-Portland	77s., 6d., Welsh coal.
Delagoa Bay	67s., 6d.
Dover	70s., Kent coal.
Fowey	77s., 6d.
Fremantle	50s.
Gibraltar	75s.
Glasgow	55s., to 56s.
Gothenborg	86 kr.
Grimsby	52s., 6d.
Hamburg	85s., Durham coal. $17, American coal.
Havre	No coal available.
Holtenau	85 fl.
Hook of Holland	43.50 guilders.
Hull	52s., 6d.
Karachi	24 rupees.
La Plata	135s.
Las Palmas	95s.
Leith	54s. to 56s., 6d.
Liverpool	55s. to 57s., 6d., Welsh coal.
London-Gravesend	75s., North Country coal. 91s., 3d., Welsh coal.
Madeira	111s.
Malta	110s.
Mauritius	140s.
Melbourne	39s. to 42s., according to point of delivery.
Montlvideo	135s.
Newcastle, Australia	26s.
Newcastle, U. K.	42s., 6d. to 50s.
North of Scotland	No coal available.
Oran	85s.
Padang	40.64 fl.
Pernambuco	197s., 6d.
Plymouth	75s.
Port Kembla	30s.
Port Natal	71s. to 72s., 6d., according to quality.
Port Pirie	39s., 6d. to 41s.
Port Said	100s. net.
Pulo Laut, S. E. Borneo	35.56 fl.
Richboro	72s., 6d., Kent coal.
Rio de Janeiro	180s.
Rosario	140s.
Rotterdam	42 guilders.
St. Lucia	110s.
St. Thomas, V. I.	109s.
St. Vincent, C. V. I.	97s. 6d.
Santos	182s. 6d.
Singapore	110s., Japanese coal. 130s. Australian coal.
Sourabaya	Fl. 35.56 to 66 fl., according to quality and point of delivery.
Southampton	77s. 6d.
Swansea	50s. to 55s.
Sydney, Australia	32s.
Sydney Harbor, Australia	25s., 3d.
Teneriffe	95s.
Townsville, Australia	54s. to 64s., according to point of delivery.
Trinidad	109s.

Canada's Pacific Ports to Install Bunkers

THE value of coal bunkers to a seaport is a subject prominently before the three chief Canadian Pacific coast cities at present. Prince Rupert, the most northerly railway terminal, has taken the lead. Bunkers are to be constructed at that port and the enterprising citizens are being backed by both the Dominion Government and the Canadian National Railways. Victoria has extensive docking facilities, recently completed, which thus far have been used scarcely at all. The Board of Trade of the city believes that coal bunkers at the ocean docks would bring mercantile business, and Victoria, therefore, is stepping in behind Prince Rupert. Public opinion is strongly behind the enterprise.

To Prince Rupert, situated hundreds of miles from the coal mines of Vancouver Island and Alberta, extensive and modern fuel-storage accommodation will be invaluable. For Victoria, almost within a stone's throw of both the Island mines and the channel of North Pacific Oriental shipping, bunkers would be a business getter, Vancouver, always a trade rival of the provincial capital and likewise a port and in point of volume of business the most important Canadian centre of the coast, also is in line for bunkers, so that it may be said that western Canadians are awakening to the vital importance of coal, not only in a strictly limited industrial sense but as the propelling force in trade.

Canadian Steamships to Use Coal for Fuel; Boom Likely in Vancouver Coal Field

IT IS difficult to conceive of a more important announcement in point of its effect on the coal mining industry of Vancouver Island, B. C., than that made recently by J. M. Savage, general manager of the Canadian Collieries (D), Ltd., that a contract has been entered into by his company to supply the Canadian Pacific Railway Co. with 25,000 tons of coal per month for use on the company's transpacific and coast steamships. The coal is required almost immediately, as many of the vessels already have been converted from oil burners to coal burners and the bunkering will be carried out either at Ladysmith or Union Bay, at both of which places are facilities for the shipment of the fuel.

If the predictions of those in touch with the situation may be relied upon, a condition has arisen that assures a market for much more island coal than is involved in the contract referred to. The statement is made that at least 70,000 tons per month will be wanted in addition to that which the colliers have been supplying in the last few years. In support of this it is pointed out that the Canadian National Steamships and the Canadian National Railways both will require fuel and that the steaming coal of the British Columbia coast fields has been found to be most suitable to their needs.

Some conception of what this means may be gained when it is known that the Canadian National Steamships soon will have five or six vessels plying the Pacific Ocean and that it is likely that the Canadian National Railways will use the product of the island on their locomotives. The latter assertion is founded on the knowledge that the coal of the Herewood Mine, Canadian Western Fuel Co., Nanaimo, has been tested on the railroad from Prince Rupert to the British Columbia boundary, with splendid results. Having these facts in mind it would appear safe to say that much more island coal will be sold in 1921 and that the fields have before them a period of unprecedented development.

After all, however, this improvement in market conditions has been gradually coming for some time. It is manifest in the returns as to output from the various collieries of Vancouver Island covering the last four or five months. When the official statistics are available it will be found that production from the fields in question has been better in 1920 than in any previous year since 1912. And yet there is at present the anomaly of one of the island collieries, the Pacific Coast Coal Mines, Ltd., practically closing down. This company, however, has been depending on the domestic market and the mild weather experienced on the coast thus far this winter perhaps explains why the demand from this source has not been better maintained. The company also is handicapped because of lack of tidewater facilities for the bunkering of large vessels. No doubt its difficulties will be overcome because it possesses some fine coal-bearing lands, a producing mine, and with coal again about to assume undisputed sway as king, may be depended on soon to be on a producing basis.

Minority Report Says Calder Committee's Conclusions Are Founded on Hasty and Incomplete Survey

THAT there is division in the Calder committee itself in the matter of regulating the coal industry is evidenced by a minority report submitted by Senator Edward J. Gay, of Louisiana, one of the members of the Committee on Reconstruction and Production. The minority report was delayed because of the rapidity with which the inquiry into the coal industry kept changing. Senator Gay's report, as presented to the Senate Feb. 17, follows:

"It seems necessary that a minority report be submitted from the Committee on Reconstruction and Production with respect to its recommendations regarding the coal industry. So as to treat the question more comprehensively I have taken the liberty to dwell somewhat on developments since the appearance of the majority report.

"I understand that the committee has not attempted to make a complete and thorough study of coal production, distribution and sale, but has arrived at its conclusions from a necessarily hasty and partial survey of the subject. Since the committee, nevertheless, has made certain definite recommendations with regard to the coal industry, based upon this incomplete record, I am constrained to make a brief statement of the facts in this matter as I understand them. My information is based in part upon the record of the committee's hearings, upon the thirty-fourth annual report of the Interstate Commerce Commission, submitted to Congress under date of Dec. 1, 1920, and upon various official reports of the U. S. Geological Survey and the U. S. Bureau of the Census.

"I find that the Interstate Commerce Commission in the report just referred to, pages 13 to 23, gives a brief and convincing statement respecting coal production and shipments during the past year and the reasons for the special service orders of the commission issued to relieve the emergency. From this report and from the reports of the U. S. Geological Survey it is apparent that in the spring of 1920 there was a severe shortage in the stocks of bituminous coal and in current shipments, due principally to the bituminous coal miners' strike of November, 1919, and to the switchmen's strike which began in April, 1920.

Lack of Stocks Made Large Production Necessary

"The Interstate Commerce Commission's report on page 16, says: 'The year 1920 began with no substantial coal stocks, and the demand for bituminous coal could be met only by large production. Moreover, coal production this year has been considerably retarded by strikes and by the wide dispersion of coal-carrying equipment. Not only was there an urgent call for unusually large amounts of coal on the part of the railroads, public utilities and industries generally, but it soon became apparent that unless we took special measures to insure the movement of coal to certain sections the coal which must go into those sections would be forced through unusual routes, with loss of efficiency of equipment and further congestion of already clogged gateways. We felt it to be our duty to avoid such effects by adopting appropriate means within our emergency powers to insure a prompt, steady, and economical use of transportation facilities in the movement of coal.'

"The commission then goes on to explain the various service orders which were issued and which were effective in increasing the current weekly shipments of bituminous coal from 9,000,000 tons per week to 12,000,000 tons per week and which brought about the necessary shipments to Lake Erie ports for transshipment on the Great Lakes to the Northwest during the period of open navigation in the summer and early fall, and by water to New England, at the same time that the general increase in shipments permitted the upbuilding of necessary reserves of coal against winter demands as well as the current demand. The commission further reports that these special service orders were suspended one by one as quickly as conditions permitted until they have finally all been suspended with one exception. The cancellation of these orders became effective as soon as the commission was convinced that the emergency had passed and that the movement and supply of coal was sufficient for the public need.

"It is clear to my mind from the evidence submitted to the committee that the bituminous coal industry is peculiarly dependent upon a current, regular and adequate transportation service from the mines to the consumer. At the beginning of 1920 the coal industry was in peculiar need of the services of the railroads because the mines were called on to supply a deficit of some 20,000,000 tons in the country's stock pile. This deficit was created by the bituminous coal strike. Distribution then was hampered by the switchmen's strike in April, May and June and July of 1920. It seems evident that insufficiencies in the service or interruptions in transportation are the chief causes of the difficulties which consumers have had during the past summer in rebuilding stocks.

"The provisions of the Esch-Cummins law provide a practicable means of meeting such emergencies through action of the Interstate Commerce Commission. It is apparent that a very severe test of the ability of the commission to deal with such emergencies in coal supply, due to transportation failures, has occurred during the past summer. The results are adequate proof of the wisdom of that legislation. Therefore, in my judgment, little further legislation for that purpose seems necessary at this time. Moreover, if that emergency power in the hands of the Interstate Commerce Commission is used to prevent the recurrence of serious shortages, I am satisfied that consumers may confidently expect to obtain sufficient supplies of bituminous coal without serious difficulty and without the necessity of paying exorbitant prices, especially if steps are taken to insure equity in distribution.

No Combination to Boost Prices or Limit Output

"I reach this conclusion in view of the fact that the evidence before the committee shows without question that the bituminous mines of the United States now in operation are equipped and prepared to mine and produce a total tonnage largely in excess of total requirements and that the committee appears to have found no evidence which to my mind is proof of any combination among the producers of bituminous coal either to maintain prices or restrict production. It seems evident that with the large number of such producers and the numerous areas in which such coal is produced very active competition prevails in the marketing of bituminous coal, and if sufficient transportation is available to keep current shipments up to current needs this competition in the open market will keep prices at a reasonable level.

"I am not defending or excusing the high prices which many consumers paid for bituminous coal during the summer and fall. There were sales at the mines at prices as high as $10 or $15 a ton. But the great bulk of the coal continued to move under contract at much lower prices, so that, as the evidence developed by the committee showed, the average price of coal at the mine for the first nine months of the year was $3.47.

"Without question a serious shortage of coal such as existed would afford opportunities for speculative buying and selling of coal, with consequent high prices, just as such a situation would present similar conditions in respect to building materials, agricultural products or any other commodities which are bought and sold in the open market. An occasional occurence of that kind, however, in my view does not justify any far-reaching plan of governmental regulation or control of the production, sale and distribution of coal or of any other commodity produced and sold generally in interstate commerce.

"I am now advised, and the evidence submitted to the committee shows, that with the satisfaction of demand

and the return of production and shipments of coal to normal conditions, prices have rapidly dropped to, and are now steady, at normal levels, in fact in many instances at figures below costs of production.

"As to anthracite, the general household fuel of the East, I understand that the deposits of anthracite are limited; that mining at greater depths and the extraction of coal from thinner deposits are attended with continuing increases in cost. It seems to me, therefore, that anthracite is becoming more and more a luxury fuel. The capacity of the mines is limited and it is not probable that production in the near future will be increased greatly. During the past year the output of anthracite was curtailed first on account of the switchmen's strike and later by the anthracite miners' 'vacation' in September. It is practically impossible for the anthracite operators to make up the loss in tonnage resulting from those two strikes. The high prices on much of the anthracite sold this year have been felt by the householder, who has in consequence derived his whole impression of the shortage from the anthracite situation, confusing it with that in the bituminous industry.

Questions Authority to Regulate Coal Industry

"With respect to the committee's findings, I very much favor the procurement of full statistics as to production and consumption of coal, but I do not believe that a Federal bureau should be given such powers that individual firms are required at any time to spread their books before them and acquaint them with all of their business secrets.

"With respect to the recommendations embodied in Senate Bill 4828, introduced by the committee, I cannot agree to the provisions for sweeping and drastic Federal regulation of the coal industry and interference with the ordinary process of business in connection with that industry. I do not believe that anything in the present or prospective condition of the coal industry warrants any such measures, and I doubt seriously whether Congress has any such authority to control and regulate business as is here attempted. I certainly am not aware of any peace-time authority which Congress has to determine prices of commodities or to authorize the executive department to fix and regulate prices of commodities or margins of profit whenever an emergency shall be declared to exist.

"There is no telling what interpretation will be placed upon the term 'emergency.' There would be a great temptation for consumers—particularly large consumers—to interpret the term very liberally, perhaps at any time that the price did not suit them. If adopted, I believe it would prove the entering wedge for a widespread system of attempted Federal regulation of the lumber, wheat, cotton, oil, metal mining, iron and steel manufacturing and other industries, which is repugnant to every principle of American institutions since the foundation of our government.

"The bill is seriously in error in exempting from any of its provisions the smaller operator and jobber. It has been conclusively shown by the experiences of last year that it is the newcomer in the business, without reputation to protect or business future to guard—he who in large numbers is attracted by the possibility of temporary gain—who is largely responsible for the spectacularly high prices and for the juggling of shipments. I am convinced that any measure that does not penalize heavily the so-called 'snowbird' has no possibility of benefiting the ultimate consumer of coal.

"I recognize that one of the difficulties in the coal situation is lack of proper distribution. I believe we can legislate in an entirely safe manner so as to provide for proper distribution when it becomes necessary to give priority to coal in the matter of transportation. The Interstate Commerce Commission did this as far as it could in an indirect manner. I see no reason why we cannot confer power to deal with distribution in a direct way when it becomes necessary to give coal transportation priorities. The very object of this priority is to protect the consuming public. We should see that they get this coal rather than allow the producer to sell it for the high dollar.

"I do not agree with some theorists who regard it as necessary that we shall perpetuate regulations made necessary by the greatest war in history. Regulation of price is so intricate and so ramified that an effort at its control undertakes a task of unparalleled magnitude. The wisest of administrators cannot prevent widespread inequities.

"I oppose the licensing feature of the bill which is one of the outgrowths of the committee's activities. This legislation will establish a precedent. I do not want the business men of America to be forced to come to Washington, hat in hand, to prove to some bureau employee or official that he has been carrying out the technical and voluminous regulations which likely will be promulgated if this legislation should be placed upon our statute books.

"In the present state of the public mind there would be few tears shed if every coal operator and dealer in coal were forced to take out a license and be compelled to wrestle with departmental red tape for the rest of his life, but soon this precedent will be followed and the legislation extended to include other commodities. Just because coal happens to be in disfavor with the public at this time and because there is a demand for reprisals, we should not take this long stride toward the nationalization of the coal industry just because it would bring forth some applause from the consumers. Not all consumers have the advantages that we have of obtaining a bird's-eye view of this situation. We must not inflict on the vast majority of coal operators and dealers, who are honest, the blight of Federal regulation because some of those engaged in this industry took advantage of an economic situation to profiteer. If the Congress will take steps to make it possible for the railroads to provide cars to handle reasonable peaks of shipments or take steps to influence a more equalized movement of coal throughout the twelve months of the year, shortages will be few and far between.

"Here we have the spectacle of an effort to put through hurriedly a great departure in industrial control—a matter as important as the Sherman law and entirely comparable with railroad regulations, since the annual output of coal is worth billions of dollars—with the most superficial investigation on the part of Congress."

P. B. Heilner Dead; Was Vice-President of Lehigh & Wilkes-Barre Coal Co.

PERCIVAL BUTLER HEILNER, for twenty-eight years general agent and vice-president of the Lehigh & Wilkes-Barre Coal Co., with offices in New York City, died at the Garden City Hotel, Garden City, Long Island, on Feb. 7. He was the son of the late M. G. and Sylvina Butler Heilner; a great-grandson of Colonel Zebulon Butler, of the Revolutionary Army, and a descendant from Elder Brewster, a Pilgrim of the Mayflower. In the early seventies Mr. Heilner was associated with his father, they doing business under the firm name of Heilner & Son, which firm still survives. Many coal men from New York and other cities including Philadelphia, Baltimore, Scranton and Wilkes-Barre attended the funeral services at the Church of the Incarnation, New York City, on Feb. 9.

New England Rate Hearing on March 3

FURTHER hearing will be held on Thursday, March 3, 1921, in Room 401-C, 143 Liberty Street, New York City, in compliance with the request of interested parties for additional time to make investigation in connection with the carriers' proposals covering readjustments of rates on anthracite and bituminous coal to points on the Boston & Albany R.R., Boston & Maine R.R., New York, New Haven & Hartford R.R., Maine Central R.R., Bangor & Aroostook R.R. and Central Vermont Ry., originally heard on Feb. 3, 1921.

Production of coal at 189 mines in Indiana during the week ended Feb. 5 is reported as 405,358 net tons, as compared with 453,115 tons the week preceding. These mines operated 44.91 per cent of the full time, with lack of market responsible for 46.93 per cent of time lost. Of the remaining causes of lost time mine disability was responsible for 6.33 per cent and labor troubles and railroad disability for 1.83 per cent.

Changes in Coal Control Bill Leave Little of Original; Adoption at This Session Now Doubtful

THERE is no indication, as this is written, when the coal hearing before the Senate Committee on Manufactures will be terminated. Senator La Follette, the chairman, indicated Feb. 11 that it still might be possible to obtain legislation at this session. He also stated that the hearings would not be cut off until a well-rounded record has been made. He pointed out that the committee is interested in making a permanent record of the situation during the recent coal shortage, not alone for its own use but for use at any time that the question may come up in the future.

There are some who believe that all hope has been given up of obtaining legislation at this session. They rather expect to see the hearings go on until nearly the close of the session. It is understood that the original Calder bill has been made over almost daily since the hearings began, in the hope that the hearings could be terminated and a bill reported without delay. Nearly every day has seen something brought out which has suggested a change in the bill. It is believed now that there is little left of the original bill, except the fact-finding power. Dr. Harry A. Garfield made such an impression with his statement that it is fundamentally wrong to have the same agency which finds the facts draw the conclusions that some believe the idea will be reflected in any bill that may be reported.

Most of last week was devoted to discussion of the retail coal situation in Washington. Charges were made that Washington retailers attempted to maintain higher prices than were justified by market conditions and that pressure was brought on retailers who cut prices. Only one side of the story was told, however, as the representatives of the Washington retailers are still to be heard.

Samuel Gompers Strongly Opposed to Regulation

Samuel Gompers, president of the American Federation of Labor, expressed his unequivocal opposition to the Calder bill and to any other type of regulatory legislation. He expressed much apprehension as to the interpretation of what constitutes an emergency. If the bill is to be presented at all, he insisted that it contain a provision distinctly specifying that it shall in no way interfere with the rights of labor. Mr. Gompers made a lengthy presentation of the present labor situation, much of which had no direct relationship to the bill under consideration. His views, however, were received with the greatest deference, not only by members of the committee but by the large attendance of spectators, who filled all available space in the committee room.

Representative Huddleston, of Alabama, who has lost no opportunity in recent years to berate the coal operators, appeared before the committee and began with the charge that the National Coal Association had been engaging in price fixing. Under a severe cross-examination by Senator Reed, modifications of that and other statements repeatedly were made by the witness until there was little left of the original charge. It developed that his conclusion in regard to price fixing was based largely on the fact that the various meetings under the auspices of the National Coal Association brought the operators together and tended to harmonize prices. Mr. Huddleston did convince the committee that he has a very intimate knowledge of the situation in the Alabama field. He advocated a price differential so as to offer an inducement for the movement of coal during the months that cars are available. He stated that he favors government ownership of railroads, under which he believes there would be less juggling of car supply.

Senator Gronna objected to the practice which makes it difficult, if not impossible, for consumers to club together and buy a carload of coal direct from the producer. In the Northwest, he declared, coal can be bought only through a retail dealer. Senator Reed's suggestion that it is impossible for ultimate consumers to buy shoes direct from the manufacturer and Senator Fernald's explanation of the necessity of a sales agent ended any further discussion of that phase of the subject.

In looking back over the list of the witnesses who have appeared in favor of the Calder bill or of some of its provisions, the point is made that its support has come from those who have only a theoretical knowledge of the coal business. Senator Calder himself is a contractor. Most of his knowledge of the coal situation has been acquired since he undertook an investigation of the housing situation. Chariman Thompson, of the Federal Trade Commission, until recently was an assistant Attorney General. George W. Elliott, who evidenced some friendliness for the bill, is the representative of the public utilities and naturally sees in the bill an asset to these utilities. Dr. Garfield and Dr. George Otis Smith, who made the best witnesses for the Calder bill, gave it only qualified endorsement. Their deductions are open to the criticism of being theoretical and academic, as neither has had any first-hand experience in the coal business and in fact neither has laid any claims to being a coal specialist.

Senator Reed Objects to Hearsay Evidence

Edgar Wallace, of the American Federation of Labor, created a racket by bringing in the name of Charles Keith of Kansas City in connection with Alex Howatt and the Kansas mine strike. Senator Reed objected to hearsay evidence reflecting on Mr. Keith and insisted that all parties to the case be heard by the committee. "The committee will decide that," said Senator La Follette, chairman. "Of course," said Senator Reed, "but I object to hearsay evidence and insist that the parties to the case all be called instead of reflections being made by one witness who was not in that region and has no first-hand knowledge of the case." Chairman La Follette said the committee would later decide whether it would go into this question.

Mr. Wallace sought to refute the charges of inefficiency of labor made by Harry N. Taylor of Kansas City, but Senator Reed insisted he was not qualified to discuss the matter, as he had not, on his own admission, been in Kansas since 1892. Mr. Wallace made a defiant challenge to Congress to pass anti-strike legislation, declaring that labor would strike in defiance of the government if such legislation was enacted.

Mr. Wallace said the mine workers' union had no objection to the Calder bill if the rights of the men to meet the operators and settle upon wage scales were preserved. Otherwise some third party who was not acquainted with the industry might juggle the market and make such a division of cost of coal and wages as would be disastrous.

L. S. Trigg, economist, associated with W. Jett Lauck, of Washington, D. C., gave statistics on profits of 23 bituminous companies, saying their profits per ton had advanced from 15c. to 48c. in the periods between 1912-15 and 1916-19. He reviewed the arguments of Mr. Lauck before the Anthracite Coal Commission of last Summer. He was forced to admit under questioning by Senator Reed that the independent anthracite coal companies must have a higher price than the railroad coal companies, and also that the anthracite market is pretty generally stabilized.

Mr. Trigg insisted that anthracite miners' wages had not kept pace with war prices. He charged that overcapitalization in the anthracite industry resulted in high prices but low wages, and that losses of the coal companies were written into high transportation costs. He charged that the enormous fixed charges in anthracite resulted in high rates and enabled the anthracite roads to pay higher dividends than other railroads, and that these fixed charges were concealed from the public. He insisted that the anthracite industry could pay higher wages without increasing the cost of coal to the public. He asserted that the anthracite industry was knitted into a monopoly, caused by

agreements, conferences and interlocking directorates under control of a New York banking combine centering around J. P. Morgan and the National City Bank, and that dividends were reaped on watered stock. He concluded that anthracite profits must not be looked for in the coal companies but in the railroad companies, sales companies and the controlling banking combination.

Calls Raid on Association Office Coarse Work

There was a tense moment in the hearing before the La Follette committee when Senator Calder stepped in the room, during the discussion of the raid on the National Coal Association's offices, and Senator Reed said to him, "I have no hesitation in saying that if statements which have been made to me are true, somebody did some pretty coarse work down there; but I do not charge that to you, Senator."

To this Senator Calder replied: "There was no coarse work done. It is possible that this committee or the country would not have known that this association had been collecting $500,000 a year for the purpose of advising the country on the coal situation; that it paid $100,000 a year for counsel or that the president of the association had sold coal to the Government at prices from $7 to $15 a ton that cost only $3 at the mine. These facts came out only because we got their papers."

Prior to that Senator Calder in referring to the raid had stated that "Perhaps some of our men may have been overzealous." The reference to the transaction between Colonel Wentz and the War Department led Senator Reed to state that "It looks to me like a very nasty piece of business, from what I have heard."

This caused Mr. Morrow to say "The prices at which Colonel Wentz bought that coal for the War Department were published by the National Coal Association in its paper in September or October." This was after Senator Calder had stated "We got the first information concerning that from examining Colonel Wentz's private letter file in the National Coal Association office."

The inquiry into the raid of the National Coal Association's offices did not meet with the entire approval of the chairman of the committee, Senator La Follette. In that connection he said: "I do not think it is material to the inquiry before this committee what the Calder committee did in procuring the records, which have not been presented to this committee and are not in evidence before it. I do not believe it is within the province of this committee to put the Calder committee on trial here."

Senator Reed expressed himself in this connection as follows: "So far as I am concerned, it is not a matter of trying the Calder committee or of trying their agents for overzealousness, but the witnesses of the National Coal Association have been challenged constantly to say whether there are in their possession certain documents. They have answered repeatedly that their files were gone through, papers were taken away, that they have no check on those papers and that they, therefore, cannot answer positively. The sole point that interests me today is the question of the inability of these gentlemen to say what papers were taken. If they had been permitted to be there and check out the papers that were taken they could answer, but they had no list of them."

Senator Reed, in discussing the subpoena which was served on the National Coal Association when its offices were visited by representatives of the Calder committee, said: "As I understand it, there was no subpoena describing books and papers; it simply read, 'All books and papers,' or something of that kind. We all know that that kind of subpœna is void."

At another point Senator Reed said: "We must start with the presumption that attends everybody in America. A man is presumed to be acting innocently and within the law until the contrary is shown. However a violent strain it may be upon that principle, I am inclined to indulge it even in regard to a coal man, as I am required to indulge it in regard to a man charged with murder. It is in evidence here that the Coal Association had some meetings. The directors also had some meetings. The minutes of those meetings were kept, but the query came 'Are those full minutes? Are they stenographic reports?' The innuendo was very broad and inescapable that if they were not the full stenographic reports, there were sinister reasons for suppressing those parts that did not appear.

"There was innuendo again because the minutes were sent to the attorney and he corrected them, that that indicated they were sent to him for the purpose of revision and striking out anything that might appear to be bad or wicked. I do not hold a brief for these coal men. If they have been engaged in any combinations, I will go as far as will anyone to discover it. I will go just as far to insist on their prosecution. But they are entitled to put in their evidence. I am going to proceed on evidence and not on suspicion. The sole evidence introduced thus far about these executive meetings of the National Coal Association is that they dealt with nothing except such questions as related to their internal concerns, such as the salaries of officers and matters of that kind."

Purchasing Agents' Fuel Committee to Meet: Seek Standardized Coal Contract

W. L. CHANDLER, of the Dodge Sales & Engineering Co., Mishawaka, Ind., president of the National Association of Purchasing Agents, has called a meeting of the Fuel Committee of that organization to be held at the William Penn Hotel at Pittsburgh on Feb. 18 and 19.

The purpose of this meeting is discussion in order, if possible, to adopt a fair, equitable and inviolate form of contract governing the purchase and delivery of coal. There will be about thirty-seven members of the Fuel Committee present, each representing a local association. Ernest H. Hawkins, of E. I. duPont de Nemours Co., Wilmington, Del., will act as chairman of the committee and of an advisory council of five members of the Fuel Committee.

The Fuel Committee is desirous of arranging some form of contract which may be standardized, and at a later meeting the Advisory Council will meet with representative coal operators, distributors and purchasers to receive their advice and co-operation relative to the provisions of the contract as worked out at this meeting.

Will Make No Check-Off in Indiana for Alabama and Mingo Strike

COAL operators of the Indiana bituminous fields will not check off on the mine workers' payrolls the assessment ordered by the United Mine Workers of America for the striking mine workers in West Virginia and Alabama, according to an announcement made by William Blakely of the Indiana Bituminous Coal Operators Association. Mr. Blakely said the operators were under contract with the miners to check off only the dues of the organization and the wages of the checkweighman, and therefore would not check off this additional assessment. It is understood that the United Mine Workers of America called on the operators to make the collection for the union, checking the sums demanded off their employees' pay. No trouble is expected from the mine workers.

U. S. Shipping Board Makes Third Call for Coal Bids

HAVING rejected in their entirety the first bids submitted for bunker requirements for the next twelve months and having accepted one bid of the second lot, opened on Jan. 14, the Shipping Board has now advertised for bids for its remaining requirements, calling for tenders to be opened Feb. 28. The requirements with respect to these bids are understood to be essentially the same as those previously called for, with the exception that the total quantity has been reduced, because of the one bid accepted of Dexter & Carpenter, of New York, for 300,000 tons.

Navy Department Asks Bids on Coal Needs; To Be Opened March 8

SCHEDULES asking for bids for between 1,506,000 and 1,883,000 gross tons of coal for the navy for the ensuing year have been distributed among the trade, requesting bids, to be opened on March 8, 1921. The Bureau of Supplies and Accounts of the Navy Department states that the quantities of coal named in the schedules for the various points of delivery are merely estimates based on the past experience of the navy, and a stipulation is made that no contractor will be obliged to furnish in excess of these quantities, although he may have opportunity for so doing, and further that the navy will take at least 80 per cent of the amounts named in each schedule. For coal delivered at Hampton Roads, Baltimore, Philadelphia and New York the contractor will be relieved of all responsibility in the matter of payment for terminal charges.

Bids are called for on two schedules: one covering bunker coal at Charleston, New York, Brooklyn, Philadelphia, Baltimore, Washington, Alexandria, Indian Head and Hampton Roads, representing a total of more than one and a half million gross tons of high-grade semi-bituminous coal; the other schedule names twenty-nine stations of the navy scattered over the country for which requirements range from 200 tons for the naval air base at Rockaway Beach, N. Y., to 140,000 tons at the Great Lakes Naval Training Station, the needs of all twenty-nine aggregating 327,600 gross tons.

Bituminous coal having an analysis indicating quality lower than 3 per cent of moisture on delivered coal; 9 per cent of ash "dry coal"; 22 per cent volatile matter "dry coal"; 1.75 per cent sulphur "dry coal," and 14,300 B.t.u. "dry coal" will not be considered. Attention is directed to the fact that specifications are for analysis on the "dry coal" basis instead of "as received" basis. Coal for the naval training station at the Great Lakes is excepted from these requirements.

In order to compare bids as to the quality of the coal offered the navy will reduce the proposals to a common basis by merging all four variables—ash, moisture, heating value and bid price per ton—into one figure, the cost of 1,000,000 B.t.u. The adjusted price will thereby be arrived at and the navy will determine the cost of 1,000,000 B.t.u. It is interesting to note that the total requirements of the navy are for 72,377,768 million B.t.u.

Separate bids are asked on each item for 25 per cent of the quantity delivered between April 1 and June 30, 1921; 50 per cent of the quantity between April 1 and Sept. 30, 1921, and on the entire quantity between April 1, 1921, and March 31, 1922. Bids will be accepted on all or any part of each item.

Three forms of proposals are invited: one specifying that payment will be made on the basis of the price named in the proposals for the specified coal, corrected for variations in heating value, ash, and moisture from the standard specified in the contract, in accordance with a formula; the alternate method differing from the first only in that the determination of price by calculation from analysis will not apply, in which case payment will be made on the bid price per ton without deductions or premiums on account of chemical analysis.

All coal will be sampled at the time it is being unloaded from railroad cars, ships or barges, and the navy specifies in precise detail the method of sampling that will be followed.

Rule 33 of Tidewater Exchange Attacked By Members

PROTESTING against penalties assessed under Rule 33, which authorizes the Commissioner of the Tidewater Coal Exchange to impose a penalty of 10c. per ton a day upon all credits which were not dumped within forty-eight hours after notice to dump, a special committee representing members of the exchange appeared before the Executive Committee of that body on Feb. 10. The special committee was headed by W. R. Richardson, of the Philadelphia Export Co., who told the members of the Executive Committee that a number of the members of the exchange had organized for the purpose of having Rule 33 rescinded and had formed a committee because personal appeals apparently had no effect.

Mr. Richardson said the Executive Committee had exceeded its authority in promulgating Rule 33 in the first place. He said his company would resist payment of charges under the rule and that if the rule was not rescinded, he wanted it thoroughly understood that if any of the members of the Executive Committee by their acts forced him to lose money or embarrassed him, he would, if he had any legal claim in them individually, exercise that right. During his remarks Mr. Richardson read a brief prepared setting forth the committee's arguments against the rule. In the brief the committee says that the fundamental evil in the new rule, which cuts far deeper than the immediate pecuniary loss to the members affected, is that it destroys the confidence which members were entitled to repose in the governing authority of an association formed for the purposes enumerated. It stated that penalties assessed against some members have exceeded $45,000.

Charles A. Owen, chairman of the Executive Committee of the exchange, told the members of the special committee of members that the Executive Committee had discussed the rule many times in the effort to avoid unfair treatment of those who dumped their coal promptly. He said those protesting had forgotten the other members who have dumped their coal promptly and many of whom had told the committee that the rule was necessary if the exchange was to survive. He stated that the rule was established in a dire emergency.

Another speaker was G. N. Snider, chairman of the Advisory Committee of the exchange, who told what led up to the development of the rule and why it was considered fair, not only by whose who were in consultation in Washington, including railroad men, coal men and government men, but by the members of the Executive Committee of the exchange.

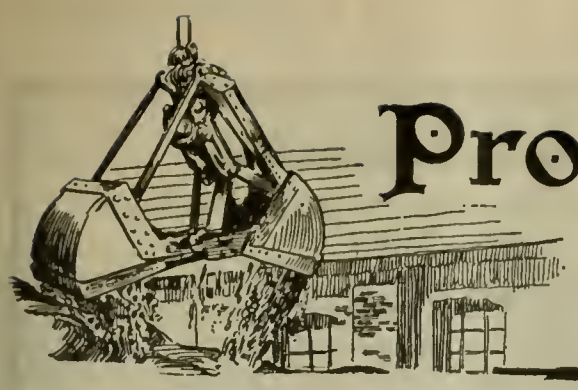
During the subsequent discussion Mr. Owen said that Rule 33 was adopted with the purpose of eliminating all speculation from the coal business at Tidewater. The reason behind that was the emergency demanded in the quick movement of cars, which if it could be brought about meant no more speculation or less speculation in coal.

At the conclusion of the hearing the Executive Committee met and adopted a resolution providing that a committee consisting of "the chairman of the Executive Committee, chairman of the Railroad Advisory Committee and the chairman of the Committee of Members protesting against the enforcement of the penalties and continuance of Rule 33," be appointed for the purpose of laying the whole situation as to Rule 33 before the Interstate Commerce Commission and obtaining its opinion as to the time when the national emergency which compelled the adoption of Rule 33 ceased to exist and that the committee report its recommendations to the next regular meeting of the Executive Committee.

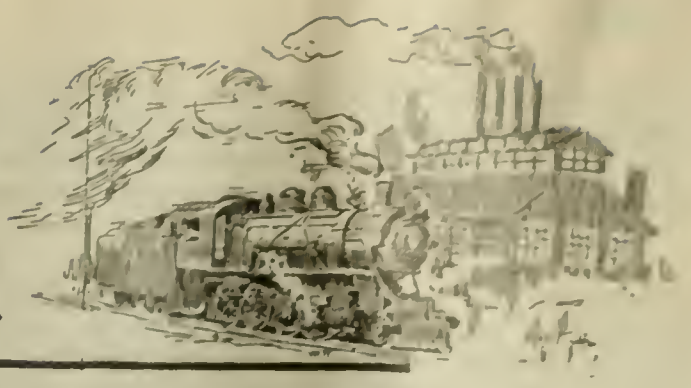
Allen and Baker Deny Allegations of Grand Jury Indictment

THE Federal Grand Jury of New York on Feb. 14 indicted Gibbs L. Baker, a lawyer of Washington, D. C., and Charles S. Allen on a charge of using the mails to defraud coal merchants by promising for payments of money to protect them from threatened indictments for violations of the Lever Act. Both defendants are accused of having defrauded, or of attempting to defraud, certain coal companies by the pretense of being able to influence officials of the Department of Justice.

Allen and Baker, in denying the allegations in the indictment, made the following statement: "Certain coal dealers under indictment have apparently induced Mr. Riley to befriend them and call them before the Grand Jury to aid them with a backfire. Obviously the men who have been indicted for their evil practices are only too glad to find a Special Assistant Attorney General to take their part and indict us as a smoke screen."



Production and the Market



Weekly Review

ROCK bottom has been reached within the past week both in the matter of soft coal production and prices. Production may in the next sixty days drop as low as 7,000,000 tons, but from now until May the average per week is not expected to go below 7,500,000 tons. Anthracite output is holding up to the best war records at nearly 2,000,000 net tons per week. We are still more than a million tons behind last year, figuring from April 1. The hole in the supply created by the hard-coal miners' vacation strike of last September has not yet been filled, despite the savings made possible by the warm winter weather. Every indication points to a repetition of the conditions obtaining in the early spring of 1919, when anthracite demand suddenly broke in February and was not resumed until April and May.

Trade Advised to Lay in Coal Supply

General surprise was created in the trade last week by a telegram sent broadcast by George H. Cushing, managing director of the American Wholesale Coal Association, practically announcing a general strike of railroad men in the near future and urging shippers of coal to warn the trade to lay in supplies at once. There is a general feeling that whatever basis Mr. Cushing may have for the forecast of such a railroad strike, his cry of alarm is too likely to be considered by consumers as a measure to stir up business.

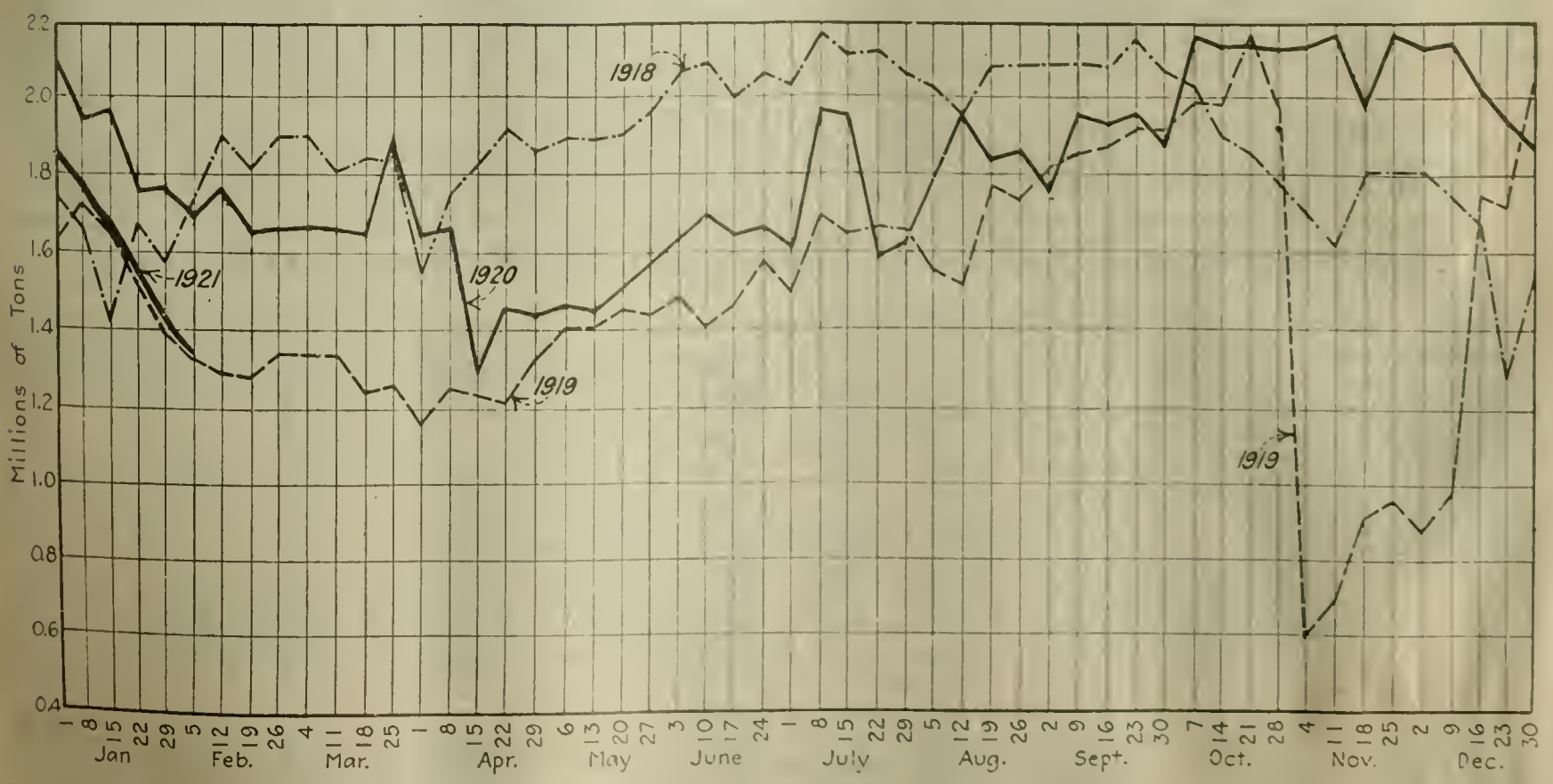
Beehive coke production continues to slump and is now but little more than half what it was a year ago. The independent steel interests, who buy most of this coke, are adopting strenuous methods to start business and are expecting coke producers to follow them in price cutting in their efforts to start things moving. Some coke producers are doing this; others are not and have closed down.

Conditions Presage Dull Coal Market

The immediate future holds nothing of excitement for the shipper of coal. It is generally conceded that recovery will be slow. Every circumstance makes for a dull coal market—mild winter weather, apathetic condition of industry, lack of railroad fuel demand and for foreign exports. Speculation is rife, of course, regarding what the year holds for the trade. Surmises range from that of those who declare that next winter will see recorded the "worst car shortage in history" to those who can see no permanent change for the better inside of eighteen months.

Consumers are registering disappointment because prices named to them on future business are above the present spot market as quoted in *Coal Age*. They must

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

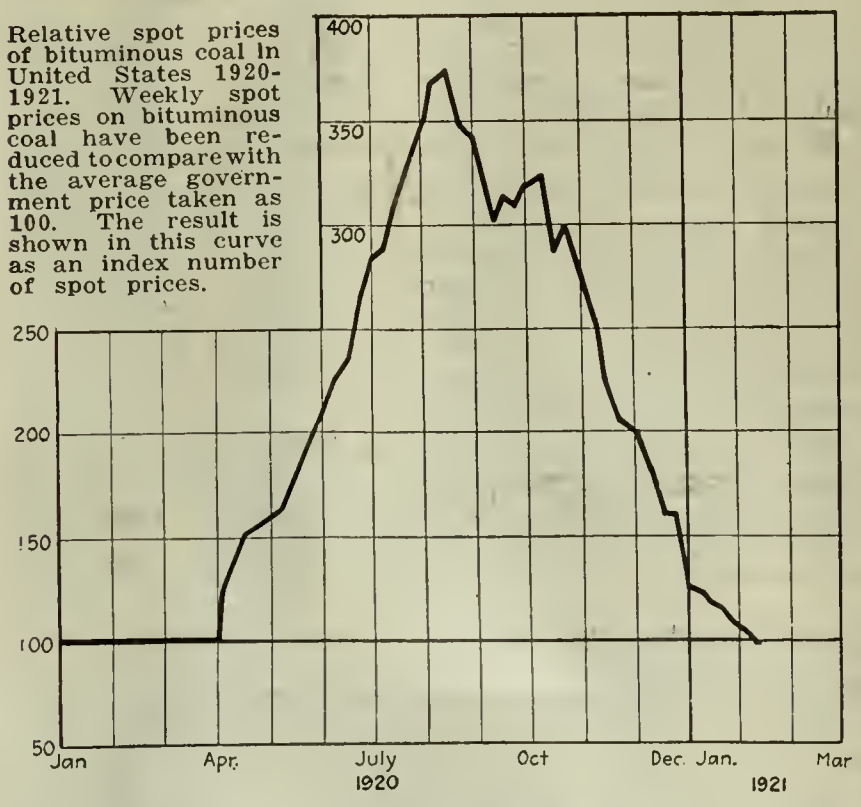
recognize the difference between day-to-day sales when there is almost no free coal moving and the simple business requirement of a coal producer to get at least cost out of his product on any business of consequence.

BITUMINOUS

Production of bituminous coal in the week of Feb. 5 dropped to 8,045,000 tons. The average decline for the past five weeks has been around 500,000 tons, but indications are that although the second week in February will show less than 8,000,000 tons of soft coal, bottom has been sounded. Production from April 1, 1920, to Feb. 5, 1921, was 467,700,000 tons, compared with an average of 455,000,000 tons for the same period in the three preceding years, which included the abnormal demand of two war years.

Fields operating on less than one-half full time are at present confined to Ohio and central Pennsylvania, all of West Virginia except Pocahontas, Northeastern and western Kentucky, and the extreme West. For the country as a whole "no market" losses represented 43.4 per cent of full time. Some fields, as Alabama and Colorado, lost less than 20 per cent on this account, and the Middle West, Illinois and Indiana, although working less than half time, reported to the Geological Survey around 40 per cent time lost because of no orders.

Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.



COAL AGE INDEX OF SPOT BITUMINOUS PRICES DECLINED FROM 102 FOR THE WEEK ENDED FEB. 8, TO 99 DURING THE SECOND WEEK IN FEBRUARY

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total bituminous, including coal coked

	1921 Week	1921 Coal Year to Date	1920 *a* Week	1920 *a* Coal Year to Date
Jan. 22 *b*	9,184,000	451,123,000	10,464,000	386,875,000
Daily average	1,531,000	1,809,000	1,744,000	1,545,000
Jan. 29 *b*	8,566,000	459,689,000	10,594,000	397,469,000
Daily average	1,428,000	1,800,000	1,766,000	1,550,000
Feb. 5 *c*	8,045,000	467,734,000	10,010,000	407,480,000
Daily average	1,341,000	1,790,000	1,668,000	1,553,000

(*a*) Less 2 days' production during first week in April to equalize number of days covered for the two years. (') Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date *a*
Jan. 22	1,819,000	73,633,000	1,757,000	75,670,000
Jan. 29 *b*	1,999,000	75,632,000	1,839,000	77,509,000
Feb. 5	1,985,000	77,617,000	1,451,000	78,960,000

(*a*) Less 2 days' production during first week of April, to equalize number of working days covered for the two years. (*b*) Revised since last report.

BEEHIVE COKE

Week Ended Feb. 5 *a* 1921	Week Ended Jan. 29 *b* 1921	Week Ended Feb. 7 1920	1921 to Date	1920 *c* to Date
231,000	248,000	432,000	1,274,000	2,409,000

(*a*) Subject to revision. (') Revised from last report. (*c*) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

In the Appalachian region production in the last week of January was but 4,878,000 tons, a decrease of 300,000 tons from the previous week and 1,600,000 tons less when compared with the weekly average in 1920. This important producing territory is now on a lower rate of operation than any other, for the reason that it depends on exports and industrial demand—both less now than the call for household fuel, which in the West and South shows the only life in the market.

PRICES

There is little point in discussing prices under present conditions. Slight upturns and general stiffening of spot prices in the South and middle Eastern territory did not serve to overcome the general decreases elsewhere. *Coal Age* index of soft coal prices declined to 99 in the week of Feb. 14 from 102 the week before. This means only that little coal is being purchased. Small orders at varying prices are reported, but no movement toward contracting has yet gotten under way. Producers have con-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Coal	Market Quoted	Gov't Price	Jan. 13 1921	Feb. 8 1921	Feb. 15 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$4.50	$4.00	*$3.75@4.00*
Pocahontas lump	Columbus	2.60	7.75	6.00	6.00
Pocahontas mine run	Chicago	2.35	4.25	2.75	2.75
Pocahontas lump	Chicago	2.60	5.70	3.90	3.90
Pocahontas mine run	Boston*	....	7.50	6.50	*6.00@6.25*
Pool 1	New York	2.35	....	3.50	3.50
Pool 1	Philadelphia	2.35	4.50	3.50	3.50
Pool 1	Baltimore	2.35	....	3.25	*3.00*
Clearfields mine run	Boston	2.95	3.00	2.75	*2.15@3.00*
Somersets mine run	Boston	2.95	3.60	3.40	*2.50@3.75*
Pools 10, 11	New York	2.95	3.00	2.50	2.50
Pools 10, 11	Baltimore	2.95	....	2.50	2.50
Pools 10, 11	Philadelphia	2.95	3.00	2.45	**2.50**
Pool 18	New York	2.95	2.25	2.10	**2.15**
Pool 18	Philadelphia	2.95	2.35	....	2.00
Pool 18	Baltimore	2.95	....	2.00	2.00
High-Volatile, Eastern					
Pittsburgh mine run	Pittsburgh	2.35	2.50	2.50	*2.25@2.50*
Pittsburgh sc'd. gas	Pittsburgh	2.35	3.15	2.85	2.75@3.00
Kanawha mine run	Columbus	2.70	2.70	2.40	**2.50**
Kanawha lump	Columbus	2.95	4.65	4.40	3.85@4.00
Hocking mine run	Columbus	2.50	2.50	2.35	2.25@2.50
Hocking lump	Columbus	2.75	4.50	3.85	3.75@4.00
Pitts. No. 8 mine run	Cleveland	2.35	2.75	2.50	2.25@2.75
Pitts. No. 8 lump	Cleveland	$2.60	$3.85	$3.75	$3.50@4.00
Pool 34 (54, 64)	Philadelphia	2.50	2.50	2.25	*2.10*
Pool 34 (54, 64)	New York	2.50	2.50	2.15	2.15
Pool 34 (54, 64)	Baltimore	2.50	....	2.15	2.15
Midwest					
Franklin, Ill., mine run	Chicago	2.35	3.00	2.75	2.25@3.25
Franklin, Ill., lump	Chicago	2.55	3.90	3.85	3.50@4.15
Central Ill., mine run	Chicago	2.35	2.50	2.15	*1.50@2.25*
Central Ill., lump	Chicago	2.55	3.75	3.15	*2.00@3.25*
Ind. 4th Vein, mine run	Chicago	2.35	2.75	2.20	1.85@2.50
Ind. 4th Vein, lump	Chicago	2.55	4.15	3.30	2.50@4.15
Ind. 5th Vein, mine run	Chicago	2.35	2.50	2.15	1.80@2.50
Ind. 5th Vein, lump	Chicago	2.55	3.85	2.80	**2.40@3.75**
Standard mine run	St. Louis	2.35	2.00	2.00	*1.90@2.00*
Standard lump	St. Louis	2.55	3.00	2.50	2.50
West Ky., mine run	Louisville	2.35	2.60	2.55	*2.10@2.50*
West Ky., lump	Louisville	2.60	3.90	3.65	*3.25@3.50*
South					
Big Seam mine run	Birmingham	2.45	3.10	2.95	**2.95@3.25**
Big Seam lump	Birmingham	2.75	3.45	3.50	**3.50@4.00**
S. E. Ky. mine run	Louisville	3.00	2.80	2.70	*2.50@2.75*
S. E. Ky. lump	Louisville	3.25	5.50	4.65	*4.00@4.75*

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

tinued to curtail output to meet the lessened demand. Were coal to be moved and loaded regardless of orders, it could not be sold without serious loss because of demurrage.

TIDEWATER

The only bright spot in the Tidewater market last week was scattered inquiries from South America. Several sales were reported to Greece also. Dumping at Hampton Roads held fairly steady at less than 400,000 gross tons per week. In January there was dumped at this port 1,625,000 net tons, of which half went as export cargo.

The total dumped over the Tidewater piers during January, as reported by the Geological Survey, was 3,745,000 net tons. Compared with December, this was a decrease of 566,000 tons, or 13 per cent, and was the smallest amount dumped since February, 1920. Shipments to New England were 639,000 tons, while exports were 1,138,000 tons, decreases, respectively, of 208,000 and 291,000 tons. Coal for bunkering increased 3,000 tons. Tonnage dumped was destined as follows:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England	183,000	51,000	73,000	332,000	.....	639,000
Exports..	.....	77,000	170,000	867,000	24,000	1,138,000
Bunker..	439,000	44,000	55,000	305,000	4,000	847,000
Inside Capes..	.....	199,000	82,000	31,000	.....	312,000
Other tonnage	706,000	.....	3,000	90,000	10,000	809,000
Total.	1,328,000	371,000	383,000	1,625,000	38,000	3,745,000

Movement to New England via all-rail gateways continued to decline from the high levels of the past six months. In the week of Feb. 5 shipments of 3,219 cars were reported, compared with 3,928 in the previous week and 2,572 a year ago. One of the striking features of the year 1920 was the unprecedentedly large all-rail movement of soft coal into New England of 12,200,000 tons, compared with 11,114,000 tons in 1918, the highest previous record.

ANTHRACITE

Hard-coal production continues heavy. The output during the week ended Feb. 5 was 1,985,000 net tons, or within 14,000 tons of the week preceding. Demand is holding remarkably well but buying is now confined to small lots to piece out the coal year. Because of good domestic distribution of the company product independent quotations are softer, although it looks as if the steady demand might enable them to maintain their 75c. margin over the company prices. Steam coals are fast becoming a drug on the market and prices are being lowered to push sales. Barley and rice continue to go into the storage yards and it will be many months before current consumption will again take up all the sizes. Buckwheat is quoted $2.75@$3; rice, $2@$2.25, and barley, 75c.@$1.

COKE

Beehive coke production continues to decline steadily. The output for the week ended Feb. 5 was 231,000 net tons. Spot prices are firm but there are indications that adjustments will be made on present contracts to encourage heavier coke consumption. No interest is shown in the new contract market, where offerings range: Foundry, $6.50, and furnace, $5@$6. The spot market is quotable at $6@$6.50 for foundry and $5@$5,50 for furnace.

Reports From the Market Centers

New England

BOSTON

Spot Prices Easier—A Few Purchases on Lookout for "Distress Coal"—Contract Prices Marking Time—Hampton Roads Market Uneven—Anthracite Deliveries Much Easier.

Bituminous—The week has developed no significant change in the spot market. Certain operating interests are still making strong efforts to place current output, but the volume of coal disposed of is light and varies little from week to week. Receipts at the Hudson gateways are remarkably well maintained, even though large users are cutting down what they are willing to receive on contract. Deliveries seem to be spread over a wider area than during January, due in part to pressure by shippers who have coal sold on last spring's basis.

Spot prices continue on about the same level as for the past fortnight. So-called "Pool 10" grades are easy purchases at $2.50@2.75 per net ton at the mines, the medium to inferior grades in proportion.

Here and there are mills and other steam-users who in spite of large reserve stocks are making sparing purchases on the market. "Distress coal" is sought by such buyers and the number of forced sales is rather surprising. It might be supposed operators would not take the chance now of mining coal without consignment, but the inducement is so great to keep the mines in operation that sacrifices are made willingly.

Contract market is hanging fire until there is real buying on the basis of twelve months' delivery. So long as industries are on 30@40 per cent time and reserves are kept at 60@90 days, there is little likelihood of any broad contract market, except in special cases.

Visible supplies at Tidewater piers have diminished since our last report. Coal running to the terminals has dropped to a marked degree. Mining has been curtailed in all districts and Tide shipments have suffered more in proportion than those by the all-rail route.

The Pocahontas and New River situation is even more irregular than a week ago. While slack coal has been quoted as low as $5, we have yet to hear of an actual sale of mine run at less than $6. There have been intimations, to be sure, that a somewhat lower figures would be expected, but the agencies realize that in trying to force coal on reluctant buyers they are but spoiling their own market. A few active buyers here have things in their own hands, however, and prices will continue soft until the large volume of coal on cars at Norfolk and Newport News and in transit is absorbed.

Current prices on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, per net ton.....	$2.15@$3 00	$2.50@$3.75
F.o.b. Philadelphia, per gross ton.....	5.10@ 6.05	5.47@ 6.87
F.o.b. New York, per gross ton.....	5.60@ 6.55	5.95@ 7.37

Anthracite—Signs of better deliveries are multiplying. Both egg and stove are available in better volume, and those shippers who have "independent" coal to place are most anxious to please possible customers, both as to price and delivery.

Tidewater—East

NEW YORK

Lower Independent Quotations—Buyer Anticipate Spring Reduction — Bituminous Quotations Firm—Slight Improvement in Demand.

Anthracite — Increased receipts and lower quotations for independent domestic were the two features of last week's market. Increased production and moderate consumption, controlled by open weather conditions, have placed this market on a fair basis.

The dominant query nowadays is as to whether there will be a spring reduction in wholesale prices. Because of the nearness of April 1 buyers are holding off. It is expected that consumers will place early orders for next winter's fuel supply and ask that the coal be delivered as soon as possible, regardless of what operators and wholesalers may do.

Company coal is moving rapidly, most of the large operating companies being heavily booked for the balance of the coal year. Because of the continued demand there are those in the trade who believe independent coals will be a big factor in the spring trade.

Quotations for independent domestic eased off toward the end of the week. The average price for stove and chestnut seemed to be around $9.50. One lot of egg was offered at a trifle below $12 f.o.b. this harbor.

There has been no improvement in the steam situation. Demand was practically suspended and the coals are accumulating everywhere. Independents are trying to move their stocks at any cost with the result that company coals are not being moved rapidly.

Independent steam coals, f.o.b. mine, ranged about as follows: Buckwheat, $2.75@$3; rice, $2@$2.25, and barley, 75c.@$1.

Bituminous — While quotations remained practically stationary some optimists saw a slight stiffening in demand. There was apparently less coal on the docks, but this was accounted for by the refusal of shippers to send coal forward unless it was already sold. This condition was also noticeable in the small number of loaded boats in the harbor.

The movement to close contracts has not gained. Manufacturers and other large consumers fail to show any anxiety in this direction, apparently preferring to take a chance with lower quotations or else feeling that unless conditions suddenly improve they will be able to buy in the open market at lower prices than they could get on contract.

Commercial business was quiet, but there was a slight improvement in the demand for bunker fuels. Owners of manufacturing plants have not yet reentered the buyers' field. The improvement in industrial conditions reported from other sections of the country has not yet struck this section to such an extent as to affect the coal market.

Changes from last week's mine quotations are comparatively slight. Prices are shown in the Weekly Review.

Quotations f.o.b. this harbor ranged about as follows: Pool 1, $6.75@$7; Pool 9, $6@$6.50; Pool 10, $5.75@$6; Pool 11, $5@$5.25, and Pool 71, $6.40 @$6.85.

PHILADELPHIA

Anthracite Holding Despite Mild Weather—Pea Accumulates—Consumer Inquires for Spring Prices—Bituminous Inactive—Price Growing Firm—Chief Demand for Good Grades.

Anthracite—Demand keeps up remarkably, considering the mild weather that is prevailing. Shippers continue to make moderate deliveries of the most wanted sizes—stove and nut. Dealers report their trade is merely what comes in from day to day and the consumer is not particularly urgent about this, yet it is of sufficient volume to keep delivery equipment occupied. Pea coal is not particularly wanted by the trade and some dealers have especially large piles and a few of them are becoming a little anxious about running into the spring with too much of this on hand.

Inasmuch as the expected break has not as yet come to pass, the feeling grows that while coal may become more plentiful, there will not be a complete shading down in prices by the independents, as it looks now that the demand will be kept up right into spring. Of course the independents with top-notch figures will come down, but it looks as though even they might be able to maintain their 75c. margin over company prices.

The steam coal situation is causing producers the greatest amount of concern. Companies closely affiliated with rail lines are able to dispose of a good deal of their surplus and it is a fact that considerable bituminous is being displaced in this manner. Barley and rice continue to go into the storage yards and it will be many months before current consumption will again take up all these sizes.

Bituminous—So far as prices are concerned it would appear as though the soft coal trade was becoming stabilized. Most producers who have tried to stay on the market by reducing prices below cost have at last become convinced that cut prices will not find a market for the coal so long as consumption by industry is so light. For almost three weeks, at least among the more conservative houses, prices have been kept unchanged. The consumers are becoming more inclined to limit purchases to Pools 1 and 9. They are more concerned in quality than ever before and for this reason Pools 1 and 9 are frequently not so easy to get. Pool 10 is selling fairly well, considering the limited amount of spot business offering. Shippers complain that concerns with contracts expiring April 1 are shutting them off and buying the same grade of coal on the spot market at a much lower figure.

Pool 44 is offered at $1.85. In the illuminating gas coals, such as Pool 60 and 61, recent quotations have been $2.50@$2.75 for mine run, with ¾-in. lump at $3.25. The price on Greensburg gas has been $2 recently.

Coke—Foundry coke is quoted at $6 and furnace $5, net ton ovens. On sized coke, egg and stove are being offered around $6.50 and small stove and nut $6, with business still light.

BALTIMORE

Low-Priced Market Still Prevails—Demand Not Yet Improved—Export Movement Lighter — Hard Coal in Good Supply.

Bituminous—Prices are still below the reasonable level for many producers and the result is that not only has there been a failure to re-open suspended operations but additional mines have closed. Best steam coals are offering $2.75@$2.85, while high-class coal is offered in many cases at $2.50, net ton f.o.b. mines. Under such circumstances the call has lightened for intermediate coals, which had held at about the same price, and which did not go below 25c. off in any case. Poorest steam coals coming here are freely proffered $1.90@$2.

Local demand is very light. Most plants in this section seem pretty well stocked. Export movement continues to grow lighter. Only 21,230 tons cargo and 3,030 tons bunker coal were loaded for the first week of February. It is interesting to note that the final 1920 figures compiled by the Custom House for all coal loaded at Baltimore on foreign-bound carriers, including bunker coal, reached the figure of 4,396,772 tons. While prospects may not be as good, the actual total loading for the first five weeks of this year is slightly in excess of the figures for the same weeks of 1920.

Export handlers feel that a big revival is due some time after April 1. The Western Maryland tested out its new coal pier this week and is planning to put it in operation about the middle of March. It will be able to load 20,000 tons in a ten-hour day with a plan to later adjust loading on another side so as to double this figure.

Anthracite—Hard coal men are just now putting in their time filling small orders. The remarkably warm winter still continuing has cut this late demand greatly. Most dealers now have ample supplies and are buying carefully. They have not been able to figure definitely just what conditions in buying and selling will be next spring, to which they are looking forward cautiously. All want to be in best strategical position and not be caught with high-priced coal if there is any decided cut in freight rates or in sales basis at the mines which would force re-adjustment of selling prices here.

BUFFALO

Prospect of Railroad Strike Increases Buying — Prices Firmer — Anthracite Weakens with Light Demand.

Bituminous—About the only improvement noted is that some consumers are laying in a supply against the possible railroad strike. As a rule this strike talk has been regarded as a mere sellers' scheme for moving more coal. The suspicion on the part of consumers may be warranted or not. It has hurt the trade seriously anyhow.

It is still the small amount of coal selling that hurts the trade worst. Production continues to run down and it will have to decrease considerably more before the price will show much strength. The roads are moving freight at a rapid rate and idle cars are numerous. The consumer appreciates this, the shipper tries to, but does not succeed very well.

Some local industries are now starting up on half time, so that the number of idle men is not so great as it was, but there is no assurance that this pace can be kept till buying is good

again. The consuming public shut down on the high prices and it has not resumed yet, for a good many articles are still held up to pretty nearly war prices. As soon as they come down too the factories can start up safely.

Local opposition to the Calder bill has been active and it is believed that there is not much chance of its passing, certainly not this session. The bituminous market can perhaps be best shown by the quotation of Youghiogheny gas at $3.50, Pittsburgh and No. 8 at $3, all mine run at $2.75 and slack at $2.50.

Anthracite—Unseasonable weather is having its effect on the trade. No longer is there any consumer who fears that he will be unable to get a supply. All comers are promptly accommodated, so the people who commonly buy in small amounts are not asking for a cellar full of coal.

Jobbers who have been handling independent anthracite are not able to pay much more than a dollar premium and the prospect is that this will have to be dropped before long. Some of the standard anthracite companies are shading their prices a little, so the entire outlook is easy again.

Coke—Demand is light and is bound to continue so. This section is now making so much byproduct coke that the old beehive plants may soon be driven out of the market. The local capacity for byproduct is far beyond present consumption and quite an amount of it has not yet been used. The utilization of the gas, ammonia and tar products is easy near a city and it reduces the cost of the coke proper materially. Quotations are again lower, being $6.50 for 72-hour Connellsville foundry, $5.50 for 48-hour furnace, $4.75 for off-grades and stock and $6.30 for domestic sizes.

HAMPTON ROADS

French Price Restrictions—Dumpings Increase—Prices Unchanged.

Local shippers are not agitated over the recently effective regulation here of the French government that $9 per ton c.i.f. France shall be the maximum price of coal. Charter rates to France are now $4.50@$5, and this would leave consequently only $4.50@$5 for the price per ton here. This is considerably below the current price, but as no new contracts are now being made for shipments to France the order is not expected to result seriously.

Coal dumpings at the three local piers aggregated during the week ended Feb. 5 360,000 tons, an increase over the week before, and a gradual increase since the last of December. Pools 1 and 2 were selling $7@$8, and other pools about $6@$7. The price has remained practically the same for several weeks, with little activity in the market.

Only twenty-two cargoes cleared from this port during the week. No coal was shipped to France, Egypt, Cuba or Porto Rico. Cargoes cleared during the week were as follows:

Br. SS Rathwaite, for Denmark, 4,197 tons; Am. SS Virginian, for Alexandria, 8,942 tons; Br. SS Australind, for Wellington, 4,938 tons; Jap. SS Yayoi Maru, for San Antonio, Chile, 6,821 tons; Swed. SS Arcturus, for Sweden, 3,737 tons; Am. SS Minnesotan, for Alexandria, 7,530 tons; Br. SS Anglesea, for Argentina, 6,157 tons; Br. SS Swinburne, for Argentina, 1, 18 tons; Nor. SS Cibao, for Kingston, 1,119 tons; Grk. SS Dionyssios Stathos, for Italy, 6,606 tons; Am. SS Masuda, for Valencia, 5,538 tons; Dan. SS Orneborg, for Havana, 2,520 tons; Am. SS Glen White, for Cristobal, 8,086 tons; Br. SS Delambre, for Buenos Aires, 4,313 tons; Nor. SS Erholm, for St. Georges, 1,616 tons; Br. SS Canadian Volunteer, for St. Thomas, 3,373 tons; Am. SS Plainfield, for Barbados 3,280 tons; Jap. SS Scotland Maru, for Naples, 7,463 tons; Am. SS Ancon, for Cristobal, 10,099 tons; Br. SS Ventura de Larrinaga, for Rio de Janeiro, 6,760 tons.

Northwest

MINNEAPOLIS

Weather a Temporary Aid—All Coals in Keen Competition—Price-Cutting a Feature—Early Lakes Rush Seen.

February has had a little zero weather, which a few weeks ago, would have been most welcome to the coal trade. As it now stands it simply means a little extra rush of orders for a day or so, generally confined to fractional quantities, and does not hold out any hope of helping matters much. Temporarily, it will help clean up accumulations, so that there will be a little less pressure to dispose of demurrage coal.

But the market for the season of 1920-21 is practically gone beyond help. There may be a little aid now and then that will ease the situation, but there can hardly be anything sufficient to put any life into the market. The patient is simply dragging on until the end of the season with no hope of any real change.

A scramble to get from under is to be seen in the price situation on soft coal in particular. All-rail coal has been slipping a little at a time for some time past. Screenings have been almost given away, selling as low as $1.25 at the mine. Dock screenings have also gone down and have sold at a price at which they cannot be replaced—$5.50 at the dock. Hocking has been quoted as low as $8.25 at the dock and has sold at $8.

Of course, in the long run, no amount of price-cutting is going to develop any business. It may switch a little around from one source to another, but this usually washes out in the end, since the company losing tonnage makes extra efforts to get it back somewhere else. Sometimes it works like the dance called "Everybody change," but does not result in any more tonnage to anyone because of the general change.

Early preparations are probable to get coal forward to the docks before any great rush can set in on the mines from other centers. It seems unlikely that there will be any great rush this spring so that the docks will be able to commend all the early tonnage that they can get vessels to handle. There are those who fear that the Eastern mines desire to cut off their business to the Northwest. This seems quite unlikely. It is natural that they favor the trade nearest home, and which furnishes the greatest tonnage. But when tonnage is needed, the outlet to the Northwest will look very alluring if there is a slack run of business in the nearer markets.

As to opening prices for spring, the theory is that they ought to be based on present mine costs, which will hardly make much lower prices than are today being quoted, if as low.

MILWAUKEE

Market Extremely Dull—Anthracite Now Being Received by Rail—Coke Follows the Downward Trend.

With soft, spring-like weather, and the month of February half gone, the coal market could not be expected to be anything but dull and uninteresting. Dock supplies, which looked inadequate at the beginning of the winter season, now bulk formidably, and dealers are doing their best to reduce stocks before another Lake season opens.

Following the drop of $1@$2 in soft coal on Feb. 1 comes a cut of $1.25 in coke. All things considered, coke has been the highest priced fuel during the winter, having been firmly held at $17.25 per ton. After piling up about 40,000 tons in its storage yards, the byproduct company concluded that it was time to stimulate a demand by lowering prices. Solvay coke now sells at $16 per ton for egg and nut and $13 for pea size. Gas coke is marketed at $15 for nut and $13.50 for small nut.

Following are the current prices at the present time: Pittsburgh and Youghiogheny screened $9.50, pile run $9, screenings $8.50; West Virginia screened $9.50, pile run $8.75, screenings $8.50; Pocahontas screened $13.50, mine run $11.75, screenings $9.50, smithing $12.50; Kanawha Gas mine run $9; Illinois and Indiana screened $9, pile run $8.50, screenings $8; Anthracite egg $15.95, stove $16.20, nut $16.20, pea $14.35, buckwheat $12.65.

Inland West

CHICAGO

No Activity in Coal Market—Retail Price Cutting—Low-Price Coal Only Is Moved.

There is practically no activity in the Chicago market. A few operators and jobbers who have friends that they have taken care of during the past year are shipping a little coal, but as a general thing, only a few cars of coal are being sold in Chicago, either to the factories or the domestic trade.

Some of our largest retail dealers have published quotations in the daily press, cutting prices on practically all grades of coal burned in Chicago. We understand that in spite of these price revisions but few orders have been placed, as the buying public is not

purchasing fuel unless absolutely forced to do so.

Eastern coals, strange to say, are unpopular in the Chicago market. Dealers quite naturally want something to handle that the people will buy and the public demand is now for inexpensive coal, for instance coal that can be purchased at cut rate prices, in the first place, and moved to Chicago cheaply, in the second place. For the time being, quality is not so much a talking point, as low prices.

CINCINNATI

Spot Demand Unimproved—Some Industrial Resumption—Retail Prices Off.

Conditions show practically no change. While reopening of a number of plants, after several months of idleness, has tended to increase the demand for steam coals, very little trading is being done.

Despite the present business depression, however, operators and dealers are optimistic regarding future conditions of the Cincinnati market. Belief is expressed that with the coming of the new administration next month, business will gradually pick up again. It is the hope of dealers and operators that with the resumption of business in the manufacturing end, a normal output of coal will be assured.

Quotations on bituminous lump at the mines during the week ranged $3.50@$4.25. Bituminous mine run was quoted $2.25@$2.75. Smokeless lump was $5.75@$6 while mine run ranged $4@$4.50.

Continued warm weather has tended to make the demand for domestic fuels very easy. The first reduction on domestic coals this winter is noted in prices quoted by dealers.

The following prices on coal delivered to the consumer were quoted during the week; bituminous lump, $9.25@$9.50; mine run, $8.50@$8.75; smokeless lump, $10.50@$11; mine run, $9@$9.50; anthracite, chestnut and egg, $15@$16.25; domestic egg coke, $14.50@$16.

CLEVELAND

Coal Prices Unchanged—Buyers Urged to Fill Wants Now—Demand Is Lifeless.

Bituminous—The promised industrial revival has not yet put in an appearance. Some mills are gradually increasing their activities, but others are curtailing and the vast majority are without sufficient demand to justify anything like full-time production. This situation goes a long way in explaining why the coal market is a dead affair.

In an effort to stimulate purchasing of coal and to point out to consumers the wisdom of covering their coal requirements now, northern Ohio coal operators, wholesalers, and retailers, and Wheeling & Lake Erie railroad officials have launched a concerted campaign. A committee of four is touring the northern part of the state in an effort to get the coal men's message to buyers.

Bituminous coal receipts at Cleveland are running along at about the same minimum figures—for the week ended Jan. 29, industrial, 1,168 cars, domestic, 399; week ended Feb. 5, industrial, 1,050 cars, domestic, 440.

Anthracite and Pocahontas—Better supplies are available at retail than for many months. The continued mild weather has kept demand at a minimum. No change in the retail prices are reported, however.

Lake—The season is making marked headway and more docks are being put into operation every week. The Wheeling & Lake Erie coal docks at Huron have just been started with full force. Much coal is being sent to the lower docks by operators, in readiness for the opening of the season, which will not be for some weeks yet. Vessel tonnage is being freely offered shippers by boat owners.

Retail prices of coal delivered are: Anthracite—all grades, $14.90. Pocahontas—shoveled lump, $11.90; mine run, $10.50. Domestic bituminous—West Virginia splint, $10; No. 8 Pittsburgh, $8.15; cannel lump, $12.15. Steam coal—No. 6 and No. 8 slack, $6.60; No. 6 and No. 8 mine run, $9, and No. 8¾-in. lump, $7.50.

DETROIT

Buyers Indifferent to All Offerings—Quotations Stabilize—Little Attempt to Force Sales — Weather Conditions Unfavorable.

Wholesalers and jobbers report there is very little inquiry for either domestic or steam sizes. The small amount of business transacted is described as "forcing coal on the buyers." Making full allowance for the effect on the coal trade of the general depression in business, some of the jobbers express the belief that continuance of the present conditions is almost certain to bring about a situation similar to that last summer when consumers were striving in every way to obtain coal which the mines were unable to supply.

While there are signs of a gradual improvement in industrial conditions, no apparent increase in business is coming to the wholesalers and jobbers. Users of steam coal are operating on a low production basis and require very little fuel. Withdrawals from reserves are meeting the coal requirements of the greater proportion of the factories.

Though not very much coal is arriving, there are occasional reports of shipments that brokers are experiencing much difficulty in getting off the tracks. Very substantial reductions have been made in some prices quoted.

Weather conditions continue unfavorable to stimulating demand in the domestic trade and extensive unemployment is also a factor curtailing the sales of dealers. They show no disposition to increase stocks until a more active demand develops.

Smokeless mine run is quoted $4.50 at the mines. Lump brings about $6.-50. West Virginia lump is held at $4, mine run $2.75@$3 and nut and slack at $2. Lump from Ohio mines is $4, mine run $2.75 and nut and slack $1.75 The quotations, however, are altogether nominal and cannot be regarded as accurately reflecting the market.

COLUMBUS

Better Tone to Steam Grades—Domestic Business Still Slow—Prices Firmer.

Buying is slightly more active which coupled with reduced production, brought about by curtailment in the output, has caused a stronger tone to develop. The extreme low prices which have been prevalent have disappeared to a large degree and in their place is a more stable market. Quotations appear in the Weekly Review, pp. 335-6.

Some concerns are resuming with reduced forces and are in the market for stocks. There is a considerable tonnage of small sizes moving. Reserve stocks in the hands of steam users are still rather large and this accounts for the slowness in some localities.

With mild weather still prevailing there is no snap to the domestic demand as dealers' stocks are sufficient for the present. Householders are buying in small loads only. Retail prices are firm. Hocking lump sells $7.50@$8, while West Virginia splints are $8.50@$9.25. Pocahontas is one of the strongest points in the market with retailers asking $10.50@$11.

Lake trade is attracting some attention and indications point to a slow starting. Dock men who have their own mines will probably start shipments as soon as navigation opens, which will be rather early. Other shippers will not buy early except what odds and ends that can be picked up easily.

Production is slow in all fields in the Buckeye State. Reports from the Southern Ohio Coal Exchange show that for the week ended Jan. 29 out of a capacity of 581,893 tons only 162,-748 tons were produced. Of the shortage 322,635 tons were from no market.

ST. LOUIS

No Markets for Either Steam or Domestic — Price Cutting Continues — Mine Idleness Grows — Railroads Consume Storage Coal.

There is very little change excepting that conditions are a trifle worse. Warm weather continues. There is no domestic demand either locally or in the country and the industrial situation has not changed so as to warrant an increase in the steam demand. Added to this the railroads are picking up their storage coal, so the situation of the Illinois mines is beginning to border on the critical.

Several mines in the Standard district have not worked for more than two weeks and the miners are getting uneasy. Commercial mines work from 1 to 3 days a week. Some mines on railroad coal get as many as 4 days. Screenings are as low as 75c., with the

top at about $1, lump, 2-in. is $2.50 with 6-in. at about $3, nut and egg $2.50@$2.75, and mine run at about $2.

Mt. Olive district shows domestic sizes at $3.50 and steam sizes going pretty well on contract. Commercial mines get 2 to 3 days a week, with a fairly good tonnage moving North and West.

In the Carterville field the demand is easing up and giving trouble to the operators to move their coal. Some mines have been forced to suspend over 60 per cent on account of no business. Some railroad coal moving out is helping the situation. Steam sizes are hardest to move. The association mines are getting around $4 for domestic sizes and better than $2 for screenings, with mine run $2.75@$3. Independents are getting as low as $3.25 on domestic sizes, with screenings $1.25, and mine run around $2.50, with few takers.

South

BIRMINGHAM

Steam Market Stagnant—Domestic Demand Very Easy—Production Further Curtailed.

There were no evidences of improvement in local market conditions the past week. Spot trade in steam coal is extremely dull, offerings being confined to small lots here and there, which in the aggregate do not amount to any considerable tonnage. Deliveries against contracts continue on a minimum basis in most cases, with occasional temporary suspensions being called for. Prices remain stable around quotations which have been in effect for the past several weeks. The situation as regards surplus coal is being taken care of by the closing down of mines and reduced operations to meet "No Market" conditions. Spot prices are as follows, per net ton mines:

	Mine Run	Washed	Lump
Big Seam	$2 95@$3.25	$3.50	$3.50@$4.00
Black Creek and Cahaba	4.00@ 4.50	5.00	5.00@ 7.00
Carbon Hill	3.35@ 3.50	....	5.50
Corona	3.50	....	6.00
Pratt	3.50@ 3.75	....	.....

Domestic conditions are easy due to the protracted unseasonable weather, but the demand is of sufficient strength to take the output of the mines and enable steady operations, as retailers are without any stock accumulations and need coal to meet current needs.

Mines throughout the Alabama coal fields as a whole are not averaging over 50 per cent working time, a number of operations without any contract protection being closed down for the present.

LOUISVILLE

Industrial Demand Improving Very Slowly—Sluggish Market Seen for Some Time—Prices Shade Off.

Some operators say that conditions do not warrant a belief that there will be any material improvement in business for a period of four or five months, or until summer or fall stocking sets in. It is believed that such business will come late this year on account of tight money, and uncertainty on the part of the buying public.

Industrial demand is improving very slowly, although a number of the larger local consumers are on an increased production basis. Many have high-priced fuel still on hand, and will not be in the market for some time.

"One-car" business continues strong, there being no big orders or contracts just now. Retailers, in view of mild weather continue buying lightly, and this is easing the market on prepared sizes. As a result screenings are a little stronger.

Straight Creek and Harlan prices are fairly well together, with the higher grades of Jellico with them. Hazard quotations are as low as $3.40@$3.75 for lump, $2@$2.50 for mine run, $1.30 @$1.75 for screenings. Elkhorn prices are about the same as Hazard. Other quotations appear in the Weekly Review.

Southwest

KANSAS CITY

Spot Market Quiet — Prices Lower — Production Declines.

Spring weather continues throughout the territory and demand for domestic is practically nil. Industries have not resumed full-time operations and very little spot coal is moving.

Present quotations are: Missouri lump $4.50, mine run $3.50@$4, slack $1 up; Kansas lump $5.50, nut $5, mine run $4.50, mill $4@4.25, slack $3.75@$4; Arkansas lump $6, mine run $4.50, slack $3.50@$4.

Mines in Kansas are running about 60 per cent of capacity, Arkansas 25 per cent and Missouri about 70 per cent, indicating the declining production rate.

West

DENVER

Cold Weather Stimulates the Market—Price Bottom Apparently Reached.

The market is a little better at present, due to cold weather. There has been a demand for quick shipments for bituminous and some lignite. The general impression that prices will remain firm is having a tendency to still further push the somewhat lagging buyer to fill his wants for the remainder of the winter.

Lignite lump retails at prices varying $6.95@$8.15, the latest drop of 25c. coming Feb. 1. Louisville lignite is $5.75 f.o.b. mine and $9.90 retail. Lignite steam is $2.40 mine, and $5.30 in wagon lots.

Bituminous in Routt and Southern fields generally is bringing $6.50 for lump at the mine, and $6 for nut, while Routt retails $12.50 and Southern for $11.50. Bituminous steam is $3@$3.50 at the mine and $6.75 in wagon lots, while coking steam is bringing $8.05 retail.

January proved a precarious month for operators, the possible tonnage showing a decided weakening from week to week, hitting the low level of 61 per cent production Jan. 29. The previous week showed 70 per cent production, a loss of 34,404 tons representing "no-market" conditions. The last week in January showed an inactivity of the market equivalent to 55,531 tons.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Demand Still Lighter — Less Distress Coal but Lower Prices on Production—Output Further Decreased.

There has been a further decrease in coal requirements. Demand from retail dealers is extremely light owing to mild weather and stocks laid in by householders before winter, and little movement in that direction is expected for the remainder of the season. The requirements of the steel industry as a whole have decreased. Independent steel mills have been taking little coal for many weeks, while the Steel Corporation, which gets coal from the leading Pittsburgh producer, has just been forced to reduce its operations somewhat and is likely to be on a much lower operating rate in a few weeks.

While the "distress" coal that pressed on the market so much for several weeks is now very largely out of the way, making a steadier market in that respect, some operators are willing to name closer prices than they formerly considered, and on the whole the spot market is easier. Some of the prices made do not cover cost, properly computed, but save the operator from paying his overhead from reserve, with his mines idle.

There is no interest in contract coal and the price is not a definite issue. The Pittsburgh Coal Co. has a schedule of prices, as noted in recent reports, on the basis of $3.25 for steam mine run and $3.50 for gas mine run. Pro-

duction in the Pittsburgh district continues to decline, being now at 45 per cent or less of rated capacity.

We quote spot coal as follows: steam, slack, $2@$2.10; mine run, $2.25@$2.50; screened, $2.50@$2.75; gas, mine run, $2.50@$2.75; screened, $2.75@$3; byproduct, $2.50@$3, per net ton at mine.

CONNELLSVILLE

Production Decreases Further — Operators Encourage Consumption by Making Price Concessions.

Merchant coke production is tending to decline from a rate already only one-third that of last summer, the sole exception being that one operator with a particularly favorite brand of foundry has made such sales through reducing prices as to have occasion to blow in a few additional ovens. Instead of there being no buying of spot furnace coke, as formerly, there has been a little in the past week, and this may perhaps be traced to one or two furnaces that had contracts at $6 for January and were unwilling to continue the contracts at that price. For the best coke as high as $5.50 has been paid, but some can be secured at $5.

While most operators take no live interest in the situation, being still committed to the policy of keeping their ovens idle until demand develops at their price, others have grown impatient and desire to create demand by reducing prices. One operator offers to sell on contract to July 1 at $5, the common quotations previously having been $6. Two or three operators having contracts that are inoperative on account of the furnaces being idle are prepared to revise prices provided the furnaceman can thereby operate and take coke. On account of the decline in pig iron ratio contracts that have a $5.75 minimum are down to that minimum now.

Some very good grades of foundry are now available at $6.50 for spot or contract, while $6 remains the price on ordinary brands. The market as a whole is quotable as follows: spot furnace, $5@$5.50; contract furnace, $5@$6; spot foundry, $6@$6.50; contract foundry, $6.50.

The *Courier* reports production in the week ended Feb. 5 at 137,180 tons by the furnace ovens, a decrease of 2,220 tons, and 19,900 tons by the merchant ovens, a decrease of 7,330 tons, making a total of 157,080 tons, a decrease of 9,550 tons. Last August the merchant production was averaging 85,000 tons a week.

UNIONTOWN

Competition Is Keen—Independents in Quandary Over Production Costs.

Competition is increasing daily in the selling end. The few consumers that are in the market are talking price and get the quotations of a number of operators and jobbers before placing orders. In one instance locally a sale for five cars had been virtually completed for $2 per ton when the buyer was offered the same grade of coal for $1.95 and bought at the lower figure.

The announcement of Judge E. H. Gary that the Steel Corporation was not even considering a wage reduction will have a far-reaching effect in the Connellsville region. With the H. C. Frick Coke Co. fixing the wage scale for the region, the Gary announcement ends the uncertainty of adjusted wages and places independent coal and coke operators in a quandary.

Their claim is that no independent coal can be produced or coke manufactured until the market reaches a point equal to cost of production. Two solutions are available. One is an increased market price and the other is reduced wages. The latter is now removed from the lists and there is not sufficient demand to increase the market price. It would appear that the only thing for the independent operators to do is to continue their present suspension of operations and wait for the demand to come.

EASTERN OHIO

Production Reflects Better Industrial Tone — Prices Unchanged — Lakes Activity.

While there is some recovery in industry and reports of plants resuming are on the increase, it was but slightly reflected in coal production during the week ended Feb. 5. Tonnage produced was estimated at 307,000 tons or about 47 per cent of rated capacity.

Railroads continue to take over 50 per cent of the weekly output. However, a little improvement is being felt in industrial demand and operators express the opinion that there will be a gradual betterment. It is expected that some mines will resume production within the next few weeks.

Notwithstanding the loading of some cargoes at lower Lake docks during the past ten days, very little of this tonnage has come out of the No. 8 field, although such shipments are expected to be increased in the very near future. This coal represents shipments only on the part of operators having dock interests in the Northwest. Some difficulty is being experienced in getting boats, many of which expect to go into drydock for repairs before the season opens. Aside from this, many boats are unable to secure berths of sufficient depth to carry full cargoes until the opening. Lake coal that is now being forwarded to the docks serves a two-fold purpose; first, that of keeping the mines going, and second, that of permitting the railroads to transport this tonnage before facilities become taxed by a recuperated industry.

While there have been reports of some contracting on Lake coal at $3.50 f.o.b. mines, it is generally felt that much of this is mere rumor and that nothing of any consequence has been done up to this time.

The market remains stationary, with no real improvement in the trade. Mine prices on spot coal range somewhat as follows: Slack, $1.75@$2.25; mine run, $2.25@$2.75; ¾-in. lump, $3@$3.50; 1¼-in. lump, $3.25@$3.75; domestic lump, $3.75@$4.25.

CENTRAL PENNSYLVANIA

Increased Demand Anticipated—Operators Oppose State Coal Tax Bill.

No improvement was noted in the coal situation during the second week of February and production is likely to fall even below that of January. Larger operations are running from two to four days a week and throughout the field many loaded cars are stored awaiting orders for shipment. In the Johnstown district, the state employment service reports some demand for miners, but only for part time. The feeling of operators, however, is that the peak of the depression has been passed, and they are preparing for an increased production.

Central Pennsylvania operators will oppose the bill which has been introduced into the legislature at Harrisburg to impose a tax on coal. They must compete with the untaxed coal of West Virginia and the tax would be an unjust imposition on one of the biggest Pennsylvania industries. Operators contend that they are already taxed heavily by the state revenue as corporations and the coal tax would not only increase their burden but put them out of the class with other untaxed states.

FAIRMONT AND PANHANDLE

Some Removal of Contract Shipments —Outlook Slightly Better but Not Yet Reflected in Current Markets.

Fairmont

Renewal of some northern West Virginia contract shipments reflected an improved industrial condition. Business even picked up during the week ended Feb. 5, although spot sales were decidedly few, as it was mostly a restoration of suspended contracts.

Interest is centered in the coming Lake season. Western calls were sluggish, the bulk of the output going East. Railroad fuel production declined slightly while shipments to Tide were well maintained. Some distress coal appeared at low figures, but as a rule producers refused to cultivate the market.

Northern Panhandle

More numerous inquiries of late have afforded a ray of hope for the future. However, very little new business has as yet been negotiated.

Virtually all commercial contracts are under suspension or vigorous curtailment, including rail fuel business. Producers are refusing the low spot market offers and the output has declined to less than 30 per cent of normal. Another important factor in holding back production is the general idleness prevailing in the Wheeling manufacturing distric..

Middle Appalachian

LOW-VOLATILE FIELDS

No Markets, Either Domestic or Export, Cuts Production—Rejections and Accumulations at Tide—Contract Orders Declining.

New River and the Gulf

New River production was greatly curtailed during the week ended Feb. 5. A tendency on the part of the smaller producers to consign coal unsold proved a costly experiment and resulted in a discontinuance of such a practice, not, however, before there was a large tonnage at Tide, much too large for immediate absorption.

The necessity of sacrificing coal at Tidewater had a depressing effect on all prices. The Western market was very weak, even for prepared sizes and screenings were not easily moved.

Loadings in the Winding Gulf region were lighter than ever, operations being limited to about two days. Many mines were shut down entirely. Open-market prices were no incentive to operators, being too low to hold any profit.

Pocahontas and Tug River

Pocahontas mines were not producing more than 60 per cent, total losses aggregating 200,000 tons, of which "no markets" were the heaviest, although poor placements hindered some mines.

Early in the week the N. & W. embargoed all Tidewater shipments, due to an accumulation at their piers. Resumption was soon permitted but foreign demand was almost entirely lacking.

Standard spot prices were unchanged, although much coal was sold at shaded figures, due to rejections and consignments.

Reduced railroad purchases and contract shipments curtailed Tug River production, the output not being much in excess of 60 per cent of capacity. However, a larger percentage of potential production than in other smokeless fields was still being loaded.

HIGH-VOLATILE FIELDS

Production Still Declining—Railroad Fuel Cut—Distress Coal Lowers Spot Range.

Kanawha

Although but little coal changed hands during the first week in February the wide range of $1.75@$3 on sales closed indicated the varying attempts to push production. Southern markets for domestic at $4 offered a better outlet than the Western price of $3.75.

Operations were maintained about two days out of the week. Complete stagnation of export demand continued. Loadings did not average more than 15,000 tons per day.

Logan and Thacker

Logan output continued to decline, while the supply of empties grew larger. The bulk of orders on hand went out early in the week and thereafter mine idleness was general. Extremely low prices ruled the few spot sales made.

Contract orders were light, while inactivity in railroad and Tide markets further restricted production. In some cases spot mine run was moved at less than $2.

Mine idleness grew in the Williamson field during the week ended Feb. 5, with operations placed at 50 per cent of capacity. All markets were apparently well-stocked. The N. & W. cut its fuel purchases 10 per cent, which materially affected the output.

Neither strike nor labor shortage losses were any longer factors in the total loss of production. Conditions in the field were quieter, probably because of the trial under way at Williamson.

Northeastern Kentucky

Under the pressure of a falling market, production took another downward turn. Only 19 per cent of capacity, or 47,000 tons were produced. "No markets" caused a loss of 80 per cent. Both contract and spot orders were practically nil.

Virginia

"No-market" losses were the heaviest of any time in the last three years. Mines running standard grades were operated about four days. The total production was estimated at about 50 per cent of capacity. Smaller mines were generally out of commission.

Middle West

MIDWEST REVIEW

Prices Fairly Stable—Demand Weak—Production Sharply Curtailed—Industrial Situation Unimproved.

Practically all of the newspapers in the Middle West are doing their level best to convince the public that the industrial situation is showing some signs of improvement. An impartial observer, who has access to the true situation, finds it just as unsatisfactory as before Christmas. A number of factories that were started in a half-hearted way after the first of the year, have reconsidered the matter and have closed their doors once more. Very little coal is moving in the Middle West for industrial purposes.

The weather continues to be uniformly mild and unseasonable. A few weeks of this under ordinary circumstances, would not depress the market, but when a mild season comes on top of an industrial situation like we are facing at the present time, the results are very unfortunate for those engaged in the coal business.

Practically all of the retailers in the North and Middle West have more coal on hand than they want and still more rolling to them on contract. The situation in the Northwest is perhaps worthy of mention. This territory did not receive its full share of coal, in some respects, during the summer months and it was confidently considered that the Northwest could be counted upon to absorb a large tonnage during the fall and winter months. This, however, has proved to be far from the actual case. The farmers in the Northwest are shipping their grain into market and being paid for it, but they are not getting anywhere near the prices for it that they expected to. This situation is true all over the territory and while the farmers have some ready cash on hand, they are very careful, indeed, how they spend it and are buying only in a hand-to-mouth manner.

There is a decided drop in the tonnage produced. It is confidently predicted by operators in the Middle West that there will be still further decreases in production, as one hears of more mines closing nearly every day. Those mines still remaining in operation are forced to meet conditions and sell their coal at an actually below cost figure. This can, perhaps, keep up a little while longer, but not indefinitely. We, therefore, have no hesitancy in saying, in our opinion there will be more mines idle before the spring season comes in.

DUQUOIN

"No Bills" Accumulate—Prices a Trifle Softer—Contract Interest Shown.

The slump has reached its lowest point in the belief of mine operators who are now beginning to figure on contract prices as it is more nearly possible to see a few months ahead of the game now than a few weeks ago. Prices are somewhat steadier although very low and the output is equalizing itself with the demand. Some few plants are re-opening, while others are remaining closed until a more opportune time.

With mines operating on an average of three days per week and weather conditions in favor, the car supply is still uncomplainable. The most difficult proposition the roads are now having is handling "no bills."

WESTERN KENTUCKY

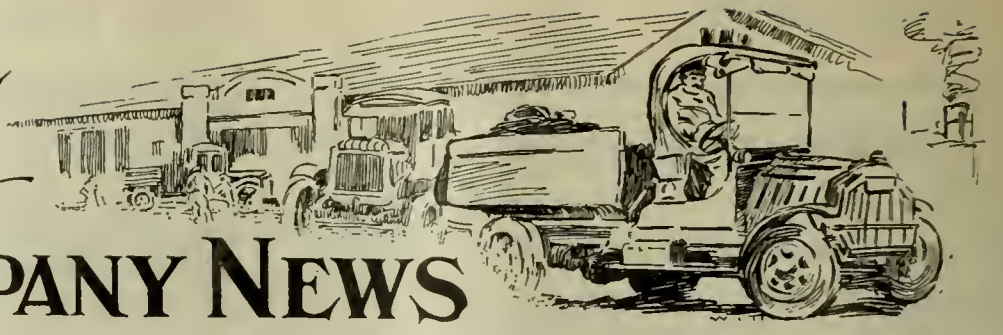
Mines Operating Two or Three Days a Week—Slightly Stiffer Price on Steam.

Mines are maintaining prices very well, all things considered, and are even getting a slightly better price for screenings. The best demand is for lump, with some little demand for mine run.

Ruling quotations this week show: Lump, $3.25@$3.50; nut, $2.25@$2.50; mine run, $2.10@$2.50; nut and slack, $1.40@$1.70; pea and slack, $1.40@$1.70.

Nut and slack is slightly up over last week's quotations, due to a little better demand from industrial concerns using fine coal in automatic stokers. Railroad buying continues very light, with some of the mines still down which have been depending on this class of business.

MINE And COMPANY NEWS



ALABAMA

At the recent semi-annual session of the State Board of Examiners, thirty-three certificates of competency were granted to applicants as first class mine foremen. Eleven received certificates to hold positions as second class mine foremen, and ten passed the examination on qualifications as fire bosses.

R. H. Eggleston, of Birmingham, has been appointed receiver for the **Inland Coal and Iron Co.**, with operations at Inland, Blount County, following the filing of a petition of voluntary bankruptcy by the corporation. Liabilities are listed at $111,000, with estimated assets of $53,953.

The securities division of the Alabama public service commission has authorized the **Shelby-Cahaba Coal Co.**, of Birmingham, to issue $35,000 of 8 per cent cumulative preferred stock in the state.

COLORADO

Protesting the Calder Federal Coal Act, Colorado coal men are demanding of the state's congressional delegation opposition that will tend to kill the proposed legislation. The wires to Washington are being kept busy with a storm of telegrams. Among those most active are: The Oakdale Coal Co., Victor-American Fuel Co., The Denver Civic & Commercial Association, Colorado Retail Coal Dealers' Association, and many others.

The Colorado Retail Coal Dealers' Association, scheduled to meet in annual convention at Fort Collins June 14-15-16, has advanced the dates to May 16-17-18, on account of pending congressional legislation and because of the general unsettled conditions in the coal industry.

ILLINOIS

The Springfield District Coal Mining Co. has filed notice of increase in capital from $100,000 to $1,000,000 for proposed expansion.

The miners employed at Mine No. 2 of the **Saline County Coal Co.** near Harrisburg, have been ordered to clean up their coal as the mine is to close down for an indefinite period. About 240 men are affected.

The new mine No. 4 of the **Saline County Coal Co.**, recently sunk on the Saline and Williamson county line, is now holsting coal. However, the Big Four has not yet completed its switch to the mine.

INDIANA

An apt illustration of "blue sky" stock selling was given at Columbia City recently when a number of Illinois persons visited the place and asked to be directed to the **Merriman coal mine.** It was learned that each of them had invested in stock at $500 a share in a corporation supposed to own a mine in Whitley County. A year ago a young man from Terre Haute obtained a number of leases in Washington township, Whitley County and started to drill for coal. When he had drilled to a sufficient depth to establish the fact that there was no coal in his property drilling was stopped. No stock was sold by him or any one connected with the proposition, but an enterprising salesman heard of the abandoned shaft and organized a company. This mine is presumed to be the one in which Illinois residents invested.

A million dollar company has been formed at Spurgeon, for the purpose of sinking and operating coal mines. The company will be known as the **Vulcan Coal Co.** The directors are L. C. Julian, T. W. Dakins and J. H. Inglehart.

Judge A. B. Anderson in Federal court at Indianapolis, has overruled the motion of the state special coal and food commission to dismiss the suit for injunction brought by **E. E. Heller & Co.** Arrangements on the motion to dismiss were heard some time ago.. The plaintiff company, retail coal dealers, denies the right of the state to regulate the retail coal business by the methods used by the coal and food commission.

The coal interests of John, Stewart and Edward Shirkie have been consolidated in a $1,000,000 corporation at Terre Haute. The company will be known as the **Bickett-Shirkie Consolidated Coal Co.** The personnel of the company includes John Shirkie, president; Stewart Shirkie, first vice-president and general manager; Edward Shirkie, treasurer and chairman of the board of directors: C. A. Bickett, Chicago, second vice-president; Bryan C. Tighe, Chicago, director. The firm now has a consolidation of the West Clinton Coal Co., the Busseron Coal Co., the Bickett-Shirkie Coal Co., and the Tighe Coal Co. The mines have a producing capacity of 5,000 tons a day. The plan of consolidation came as an effort to centralize the management of the coal interests of the company giving a better organization promoting greater efficiency.

KENTUCKY

The Peter Mining Co., Ashland, has increased its capital stock from $150,000 to $175,000.

The Bolinger Coal Co., Hazard, has been chartered with a capital stock of $90,000, by J. N. Bolinger, J. E. Jones, W. R. Vance and Bert Buell.

The Pittsburgh Fuel Co. which has the best river coal handling plant in Louisville, is now putting its rail coal handling on the same basis. A 100-ton dumping pit is being installed, and a locomotive crane, which will lift this coal to 600 ton hoppers. **The James Coal Co.** is putting in a $50,000 coal handling plant at its retail coal yard, using a conveyor system from pit to hoppers. **The St. Bernard Mining Co.** has put in a twenty-ton truck scale at its Logan Street yards. **The Charles Buddeke Coal Co.** is planning to put in power equipment for handing at its Logan Street yard.

The Number Four Superior Coal Co. will soon commence the construction of a tipple at its local properties. A number of new mines will be opened at an early date and equipment installed.

OHIO

The Bellaire Mining Co. with holdings in Adena, has elected the following directors and officers for the ensuing year: James Stewart, Pres. and Treas., Donald Ward, Vice-Pres., and A. J. Harbagh.

At the annual stockholders meeting of the **Hocking Valley Products** which has offices in Columbus and a number of mines in the Hocking Valley, a five per cent dividend was declared. Net earnings for the year were $114,000. The same corps of officers were re-elected. S. L. Chamberlaine is president; Robert H. Taylor, Jr., resident manager, and F. J. Shaffer, secretary-treasurer.

The annual meetings of the **Maher Collieries Co.** and **Marcoll Coal Co.** were held in Bridgeport recently and the following officers were re-elected: Maher Collieries Co., T. K. Maher, pres.; J. C. Heinlein, vice-president and general counsel; K. G. Perry sec'y, and J. V. Maher, treas. The Marcoll Coal Co., John A. Maher, pres.; J. C. Heinlein, vice-president and general counsel; K. G. Perry, sec'y. and J. V. Maher, treas.

Probably the first co-operative coal company ever organized has been formed in Cincinnati. **The People's Co-operative Coal Company** has been incorporated with a capital of $300,000, divided into 30,000 shares of stock at a value of $10 per share.

PENNSYLVANIA

Colonel Lloyd G. McCrum, of Somerset, who is associated with the W. H. Bradford interests, has again taken over the **Brandenburg Coal Co.** at Rockwood. The former lease had expired on Dec. 31, 1920. The mines will be operated under the firm name of **Ivy Ridge Coal Mining Co.** The new lease is for four years. The mines have been closed down for some time owing to the ending of the lease and the slump in the market but operations will be started as soon as conditions warrant.

Secretary Charles O'Neill of the Central Pennsylvania Coal Producers' Association has returned after appearing before the senate committee in Washington which is considering the Calder bill. Mr. O'Neill told the committee that the 1916 cost in the district for mining was $1.14 as compared with $3.17 in 1920. He said labor in 1916 was 92c. a ton while in 1920 it was $2.19 while supplies went from 10c. a ton to 46c. and overhead charges from 12c. to 52c. Mr. O'Neill pointed out to the committee that the 1920 statistics from the district were not very complete because of a general invitation from the department of justice for everybody to quit collecting cost statistics.

WEST VIRGINIA

The Robinson & Phillips Coal Co. has acquired about 1,500 acres of coal property in the Flemington district, Taylor County, and plans for extensive development work. A consideration of $750,000 was given for the lands. It is proposed to install equipment at an early date.

Indian Creek in Monongalia county is to be the scene of operations of the newly organized **Fort Grand Coal Co.**, of Fairmont, which has a capital stock of $80,000. Heavily interested in this company are W. D. Reed, S. McIntire, J. M. Poling, W. F. McKan, Bruce Hite, all of Fairmont; F. S. Suttoth of Grafton, W. Va.; W. F Hughes, of Morgantown, W. Va.

The Eight-Mile Coal Co. just organized expects to produce coal in the Kanawha field, being capitalized at $25,000 and having offices at Charleston. Active in organizing this company were J. R. Cunningham, E. H. Jones, C. E. Parks, D. P Reid, W. W. Venable and R. E. Whitteker, all of Charleston, W. Va.

Preliminary plans of the **Barbour Lewis Coal Co.**, call for development in both Lewis and Barbour Counties, this company being capitalized at $200,000. General offices are to be maintained at Clarksburg. Organizers of this concern include C. M Barnes, J. D. Stark, of Bridgeport, W. Va.; M. M. Murphy, M. S. Gaines and Karl B. Kyle of Clarksburg, W. Va.

With a view to producing coal in Union district of Barbour County, the **Bush-Bar Coal Co.**, has been organized, with a capital stock of $25,000. Offices of the company temporarily will be in this city. Principal figures in the new company are: W. C. Dunnington, E. L. Winchell, C. J Rathburn, W. L. Camden and H. M. Wenks, all of Mountain Lake Park, Md.

Coal territory in Preston County will be developed by the newly organized **Pleasantdale Coal Co.** which has a capital stock of $100,000. Those behind the new company are: Nick Pall, Salvatore Masseoll, Domenclo Lepneci, Angelo Guargila, John Chafini, Antonio Masseoll, all of Morgantown.

Charleston captialists have launched the **Fernwood Coal Co.** which will operate in the Kanawha County field, this concern being capitalized at $100,000. Active stockholders in this concern are: C. T. Smith, J. D. Wygol.

E. W. Lewis, J. E. Lewis, A. B. Atkinson, all of Charleston, W. Va.; W. P. Mankin of Ashton, W. Va.

Organization of the **Oakland Coal Co.** with a capital stock of $1,000,000 presages operations on a very large scale in Fayette County. For the time being this company will have its principal office in Fairmont, local people as follows being largely interested in the new concern: J. V. Abbott, W. F. Foster, Charles Hodges, J. F. Coll and T. E. Johnson.

The New England Fuel & Transportation Co. has plans under way for the opening of coal properties in the vicinity of Fairmont, and will install considerable equipment for mining and operation.

The West Virginia Eagle Coal Co., Bonear, has plans under way for the development of an extensive tract of coal property, comprising over 1,200 acres of land. Operating machinery will be installed at an early date. J. R. Charlton is treasurer and manager.

The Deegans Eagle Coal Co. is planning for the rebuilding of its tipple and power house, recently destroyed by fire, with loss estimated at close to $25,000.

During the legislative session of 1919 at the instance of the operators of McDowell County, a bill was introduced in the West Virginia legislature and passed, providing a special levy for the establishment of a dental clinic for the children of the county. **Colonel James Elwood Jones** of the Pocahontas Fuel Co. not only originated the idea but for a time personally defrayed the expenses of a dental clinic for the children at the operations of his company. The idea has proved so successful it is to be tried out in Mingo Fayette and Marion counties, bills having been introduced in the legislature making that possible if they are passed.

BRITISH COLUMBIA

The Modern mine of the **Pacific Coast Coal Mines, Ltd.,** Vancouver Island, still is non-productive. It is understood that some form of company reorganization is in progress and that there is a prospect that not only will the mine be reopened, but extensive development of the company's island holdings will be inaugurated in the near future. Meanwhile there are quite a number of miners in the Nanaimo section out of employment.

Stockholders of the **Old Dominion Coal Corporation** having authorized an increase in the capital stock of the company from $100,000 to $300,000, the secretary of state has granted the necessary sanction.

Due to the fact that a large number of oil-burning vessels plying in and out of Vancouver are being changed to coal-burners on account of the shortage of fuel oil, there will be a considerably greater demand for coal during 1921. In this connection it is very interesting to note just how much coal was bunkered at Vancouver and Vancouver Island in 1920, which is shown as follows.

	Vancouver tons	Vancouver Island tons
January	4,500	200
February	6,300	3 800
March	200	200
April	7,700	300
May	7,600	4,300
June	5,900	100
July	4,500	200
August	4,800	200
September	4,200	300
October	7,300	900
November	6,400	1,100
December	*4,200	*800
Totals	*64,500	*12,500

*Approximate.

The British Columbia Coal & Land Co. has purchased the holdings of the **Cassiar Coal Co.,** situated on the Telkwa River, consisting of 20,480 acres.

Association Activities

Logan Coal Operators' Association

The annual meeting of the association held in Huntington brought to the front some of the political problems with which the coal industry is confronted and elicited a warning on the part of speakers that unless producers took a more active part in politics for the public good the picayune politicians would continue to suggest legislation resulting from the fit of hysteria from which incompetent politicians are suffering.

A large part of the tonnage of the field was represented at the meeting, there being between 75 and 100 operators present. The election of officers for the annual period resulted as follows:

Walter R. Thurmond, president; A. R. Beisel, R. R. Smith, vice-presidents; John A. Kelly, secretary; C. W. Jones, treasurer. Members of the executive committee: George M. Jones, A. R. Beisel, W. T. Jones, J. J. Ross, A. J. King and T. F. Downing.

Acting for the association, J. J. Ross, its president, conveyed to the representatives of West Virginia in the Senate and House of Representatives a protest against any resolution for the investigation of the non-union fields of West Virginia which might be in contemplation as the result of representations made about living conditions, etc., as being uncalled for and unfair.

Information was conveyed to the members that the extension of both the Virginian and the Norfolk & Western into the Logan coal field was under serious contemplation and that probably $50,000,000 would be expended in connection with such extensions and improvements, it being proposed by the Virginian to build a branch from Elmore to Gilbert and by the N. & W. to build a branch from Dingess to Logan.

Montana Coal Operators' Association

The annual meeting of the association was held in Billings. Officers elected were F. W. C. Whyte, Anaconda president; H. S. Hopka, Roundup, vice president; M. F. Purcell, Billings, secretary and treasurer. Board members chosen were C. C. Andersen, James Needham, R. W. Wilson and G. M. Freeman.

Operators' Association of Williamson Field

The association was represented by a committee of three in a hearing before the Public Service Commission of West Virginia on Feb. 9 on the question of an increase in rates for the Kentucky & West Virginia Power Co., which supplies power to some of the mines in the Thacker region. The company is asking for an increase of 25 per cent. It was to protest against such an increase that the following committee appeared before the commission: A. B. Rawn, A. F. Leckie and N. H. Franklin. In protesting against the increase the committee set up the argument that with prices on fuel and materials going down, the power company's application should be denied.

Trade Catalogs

Imperial Headlight Projectors and Reflectors. Crouse-Hinds Co., Syracuse, N. Y., Bulletin 304-A. Pp. 15; 8 x 11 in.; illustrated.—Advertiser.

Thomas Meter and Calorimeter. The Cutler-Hammer Mfg. Co., Milwaukee, Wis., Publications 875 and 876; 8½ x 11 in.; illustrated.—Advertiser.

C. H. Electric Space Heaters. The Cutler-Hammer Mfg. Co., Milwaukee, Wis. Publication 880; 8½ x 11 in.; illustrated.—Advertiser.

Small Capacity Industrial Oil Circuit Breakers. Type FP-10. General Electric Co., Schenectady, N. Y. Bulletin 47419A; 8 x 11 in.; illustrated.—Advertiser.

Jeffrey Mine Fans. The Jeffrey Mfg. Co., Columbus, Ohio. Catalog 280. Pp. 71; 7½ x 11 in.; illustrated.—Advertiser.

Automatic Station Control Equipment. General Electric Co., Schenectady, N. Y. Bulletin 47730. Pp. 20; 8 x 11 in.; illustrated.—Advertiser.

Wodack Portable Electric Drills and Grinders. Wodack Electric Tool Corpn., Chicago, Ill. Booklet, pocket size, illustrated.

Obituary

W. C. Reynolds, aged 60, mining engineer, and general manager of the Davidson Coal Co., near Point Marion, Pa., died Jan. 25 at the Mercy hospital, Pittsburgh. Mr. Reynolds had long been identified with the coal and coke business. He resided at Connellsville.

Morris Albaugh, general manager of the Meeker Run Coal Co., of Nelsonville died from the effects of sleeping sickness at a hospital in Columbus, Ohio, recently.

William Penn Snyder, aged 60, iron and steel manufacturer, and coal and coke magnate, died recently. Mr. Snyder was associated with many of the essential interests of Pittsburg.

Edward T. Bent, president of the Oglesby Coal Co., and former president of the Illinois Coal Operators' association, died recently in Chicago.

Traffic News

In the complaint of the **Perry County Coal Corporation,** the I. C. C. holds that the rates on bituminous coal from Coulterville, Ill., to destinations in Missouri on the Illinois Southern and Mississippi River and Bonne Terre Railways violate the long and short haul clause.

A reply brief has been filed with the Utah Public Utilites Commission in the case of the **Jeremy Fuel and Grain Co.** and others against the Denver & Rio Grande. The case has to do with coal freight rates between Castlegate—an important coal mining district in Utah—and Salt Lake City. It is stated that for some time the railroad had charged a blanket rate on coal of $1.60 a ton, and the complaining companies seek to obtain the difference between the charges paid and that which they feel should have been paid.

In a complaint to the I. C. C. the **Sloss Sheffield Steel & Iron Co.** of Birmingham, Ala., attacks the double increase on coal from Alabama mines to blast furnaces in Alabama, due to misapplication of General Order No. 28.

The West Kentucky Coal Co. complains against the rate of $3.45 a ton on coal from Wheatcroft, Ky. to Clinton, Iowa, on the ground that it is unreasonable because of a rate of $1.95 via another route.

The Corona Coal Co. of Birmingham, Ala. in a complaint condemns the practice of the government barge service in making rates on rail and water coal to New Orleans and Mobile the same as all-rail rates on coal, on the ground that it discriminates against coal.

In the complaint of the **Cedar Rapids (Iowa) Chamber of Commerce** the I. C. C. finds the rates on bituminous coal from Illinois and Indiana mines and from Chicago to Cedar Rapids are not unreasonable, unjustly discriminatory, or unduly prejudicial, and complaint is dismissed.

Oral arguments in the following coal cases have been assigned for Washington by the I. C. C.: March 2, **Chicago Coal Merchants Association** vs. Director General. March 11, **Gillespie Coal Co.** vs. I. T. S. March 17, **Ridge Coal Mining Co.** vs. Missouri Pacific.

In the case of the **Consolidation Coal Co.** vs. the Director General, the Commission decides that the rate on bituminous coal from mines near Gray and Bell, Pa., to Washington, D. C., Uniontown, D. C., and Alexandria, Va., is unreasonable.

The I. C. C. in a decision on the complaint of the **Little Fork Coal Co.** holds that the rates on coal from mines on the Eastern Kentucky Ry. south of Hitchins, Ky., to Cincinnati and other destinations are unreasonable and prejudicial because they exceed rates contemporaneously maintained from the eastern Kentucky districts and the Kanawha districts in West Virginia. Reasonable and non-prejudical rates are prescribed for the future.

In the complaint of the **Empress Coal Co.** the Commission decides that the rates on coal from Empress mine, Washington, to Portland, Ore., and certain other Oregon points are unduly prejudicial, and prescribes a reasonable relationship for the future.

In the case of the **Peerless Coal Co.** of Illinois, an I. C. C. examiner recommends that the rates on coal from points on the Springfield Terminal Ry. to various destinations be held reasonable.

The commission has suspended until June 1 proposed switching charge of 35c. per ton for switching coal from points of connection with the **Chesapeake Western Ry.** to private sidings on the Valley Railroad

Co., and also to connection with the **Southern Ry.**

The commission has suspended until April 2 the proposed cancellation of joint through rates on bituminous coal from mines on the **Minneapolis & St. Louis R.R.** in Illinois to destinations in Michigan and Alexis, Ohio.

In the complaint of the **Foster Lumber Co.**, an I. C. C. examiner recommends that the rates on soft coal from Walsenburg, Col., to Billings, Okla., are unreasonable.

The I. C. C. has decided that the proposed increased rates on coal from points on the **Louisville & Nashville R.R.** in eastern Kentucky and Tennessee and southwestern Virginia to points in central territory are justified with the exception of those to St. Louis, Mo. and certain intermediate points, to Jeffersonville and New Albany, Ind. and to certain other points.

The commission has assigned for oral argument Feb. 24 the case of the **Harlan County Coal Operators Association** vs. the L. and N. R.R.

Recent Patents

Mine-Car Wheel. Peter Taylor, Ottumwa, Iowa, 1,360,816. Nov. 30, 1920. Filed April 15, 1920. Serial No. 374,052.

Coke-Oven Door Machine. Louis A. Sanford, Chicago, Ill., assignor to American Coke & Chemical Co., Chicago, Ill., 1,361,186. Dec. 7, 1920. Filed Feb. 2, 1920. Serial No. 355,817.

Door-Operating Device for Self-Dumping Mine Cars. Archibald Cross, Bicknell, Ind., assignor to Allen & Garcia Co., Chicago, Ill., 1,361,230. Dec. 7, 1920. Filed May 28, 1919. Serial No. 300,376.

Loading Machine. O. Wilkins and Wm. E. Moody, Columbus, Ohio, assignors to James E. Jones, Switchback, W. Va., 1,361,053. Dec. 7, 1920. Filed June 16, 1919. Serial No. 304,478.

Coal-Loading Device. Richard T. McKeen, Chicago, Ill., 1,362,716. Dec. 21, 1920. Filed Aug. 8, 1919. Serial No. 318,172.

Coal-Loading Machine. Norton A. Newdick, Columbus, Ohio, 1,362,889. Dec. 21, 1920. Filed May 10, 1916. Serial No. 96,723.

Mine-Car Cager. James A. Nolan, Bowerston, Ohio, 1,362,598. Dec. 21, 1920. Filed Sept. 1, 1920. Serial No. 407,459.

Coal Lorry. Louis Wilputte, New Rochelle, N. Y., 1,362,977. Dec. 21, 1920. Filed Jan. 20, 1919. Serial No. 272,033.

Coal-Handling Plant. C. P. Wilson, Chicago, Ill., assignor to Roberts & Schaefer Co., Chicago, Ill., 1,363,029. Dec. 21, 1920. Filed May 21, 1918. Serial No. 235,783.

(U. S. Patent Specifications may be obtained from the Patent Office, Washington, D. C., at 10c. each.)

Personals

Charles E. Maurer, formerly president of the Glens Run Coal Co., Cleveland, is spending the winter months at Sea Breeze, Fla.

Thos. K. Maher, president of the Maher Collieries Co., Cleveland, and the Pittsburgh Vein Operators' Association, left on Feb. 1 for a pleasure trip to Canal Zone, Panama.

Attorney J. C. Heinlein, Bridgeport, vice-president and general counsel of the Maher Collieries Co. and the Marcoll Coal Co., was the guest of honor at the annual banquet of the Belmont County Bar Association held at Martins Ferry. Mr. Heinlein has been actively interested in the mining industry of eastern Ohio for many years.

Charles N. Mortimer, of Pottsville, who was engineer in charge of the Blackwood colliery up to the time of its suspension, and who has since been a consulting engineer for the Lehigh Valley Coal Co., has been appointed chief mining engineer for that company, with headquarters in Wilkes-Barre.

Edward S. Brooks, of Denver, has been elected to the presidency of the Union Pacific Coal Co., with offices at Omaha according to a recent announcement.

A recent visitor among the coal trade of Philadelphia was **J. M. MacDonald**, of the MacDonald Coal Co., Cincinnati.

John McKay has been appointed assistant superintendent of the Connellsville Basin Coke Co. with headquarters at Morgantown. He was, during the war, connected with the district representative of the Fuel Administration at Fairmont.

R. R. McFall, general manager of the Southern Fuel Co. with headquarters in Morgantown, was a visitor in Buffalo, N. Y., recently.

Everhart Bierer, general manager of the Preston County Coke Co., has left Morgantown for a trip to Colorado.

J. S. Fiedler, of Morgantown, head of the Fiedler-Davis Fuel Co., is in Florida for a few weeks.

Colonel Thomas F. Downing, general manager of the Monitor Coal & Coke Co. with headquarters at Huntington, has been able to return home after having undergone treatment at a Huntington hospital.

The new district manager of the Huntington office of the West Virginia Coal Co. is **H. R. Freeman**, the appointment to be effective from Feb. 1.

Until the successor of the late N. J. Wood, president of the Central West Virginia Coal Co., is elected, **H. C. Rogers**, closely associated in business with Mr. Wood, is acting as president of the company.

Alba B. Johnson, president of the Baldwin Locomotive Works, in his capacity as president of the Philadelphia Chamber of Commerce, has honored **Daniel Whitney**, of Whitney & Kemmerer, as chairman of the transportation committee. His many years in the coal trade have peculiarly fitted Mr. Whitney for this work, and associated with him in the work is another coal man, **Samuel B. Crowell**, of the Geo. B. Newton Coal Co.

A recent visitor in the New York market was **C. E. Dodd**, of the Dodd-Shaw Fuel Co. of Morgantown, coal brokers.

R. S. Townsend, of the E. B. Townsend Coal Co., Boston, stopped off in Philadelphia recently. Mr. Townsend was on his way to Bermuda for the balance of the winter, where he hopes to forget the troubles of the coal man for a while.

P. C. Madeira, president of the Madeira-Hill Co., North American Building, Philadelphia, is another prominent coal man to seek the southern clime for a brief season. Mr. Madeira is spending the time among the coast resorts of Florida.

Colonel Daniel B. Wentz, head of the various Wentz coal interests, recently left for an extended trip to India and Africa. He expects to be gone about three months, and one of the objects of the trip is to indulge in some big game hunting in Africa.

W. W. Odell, who has been conducting fuels carbonization investigation at the Urbana Station of the U. S. Bureau of Mines, has been transferred to the Washington offices where he will assist **O. P. Hood**, chief mechanical engineer of the Bureau in the further prosecution of the lignite carbonization studies of the Bureau.

Lyle D. Flavel, formerly with the Paradise Coal & Coke Co., and for the past two years in the offices of the Jewel Coal & Mining Co., has been promoted to the position of assistant-superintendent and will have under his control two mines at Duquoin now operated by the company. **Ray S. Linzee** is now at the head of the Duquoin offices.

G. W. Santall, superintendent of the Crossland Mine of the H. C. Frick Coke Co., has been promoted to superintendent of Colonial No. 4 of the same company.

W. A. Dunkley, who has been a gas engineer on the staff of the Illinois State Geological Survey, has accepted a position with the U. S. Bureau of Mines and will be acting in charge of the Urbana Station of the Bureau. Mr. Dunkley will continue there to work on fuels processing with which he has been associated for some years past.

John Deering has severed his connection with the Chesapeake & Ohio at Logan, W. Va., to become a field representative of Jewett, Bigelow and Brooks of Cincinnati.

Announcement is made of the appointment of **Arthur C. Frey**, of Fairmont, as manager of the Monongah Co., succeeding his father, G. A. Frey, who for many years prior to his death recently had been the company's manager.

L. A. Maust, who for a number of years has been in charge of the freight business of the Morgantown & Kingwood R.R. at Sabraton has resigned to become secretary and treasurer of the Le Mar Coal Co. of Morgantown, W. Va.

B. C. Tucker, president of the Brilliant and Jean Coal Mining Companies, Cleveland, Ohio, left on Jan. 15 for Los Angeles and southern California where he will sojourn for six weeks.

F. A. Elmore who has represented the Houston Coal Co. in Indiana and Ohio, has been appointed western manager in charge of the Chicago office. **Robert W. Gruesser** will succeed Mr. Elmore in the Indiana and Ohio territory.

Frank O. Sandstrom, former traffic manager of the Denver Union Stock Yards, is the new secretary and traffic manager of the Colorado and New Mexico Coal Operators' Association, with headquarters at Denver. **George Williams**, who was to have succeeded **John G. Kerr**, resigned, did not enter upon his new duties for the reason that he accepted the place as general freight agent of the Rio Grande R.R., in Denver. The vacancy was caused through the death of William Lampton. Mr. Sandstrom in former years was traveling freight agent for the Colorado & Southern.

Industrial News

Pottsville, Pa.—The Coal Washing Equipment Co. has been formed to conduct the manufacture and sale of all James machinery for use in the coal industry, which equipment heretofore has been sold by James Ore Concentrator Co. The products of the company include the James Automatic Balanced Jig and James Coal Table. Noel Cunningham, H. A. Riley and H. O. Knapp are the leading officials.

Philadelphia, Pa.—J. Ray Quinn, recently appointed Eastern manager for Daniel Howard & Co., Clarkesburg, W. Va., coal operators, has established headquarters in the Land Title Bldg.

Pittsburgh, Pa.—The Locomotive Superheater Co. with general offices in New York City, announces the opening of their office at 382-388 Union Arcade Bldg., Pittsburgh. John R. LeVally, formerly sales engineer in the Chicago office of the company, has been appointed district manager.

Philadelphia, Pa.—The Eyre Fuel Co., of New York City, announces the opening of an office at 1103 Widener Building. It has appointed George J. Schonter as manager.

Bethlehem, Pa.—The Penn-Mary Coal Co. has sold or leased its entire properties to Bethlehem Mines Corporation. The entire business will be carried on by Bethlehem Mines Corporation, which has taken over and will perform all contracts, and is prepared to meet all outstanding obligations. All checks for accounts due Penn-Mary Coal Co. should be drawn to the order of Bethlehem Mines Corporation, and mailed to Bethlehem, Pa.

New Orleans, La.—The Austin Machinery Corporation of Louisiana, Inc., announces its incorporation as sole distributors for Louisiana, Arkansas, Mississippi, Tennessee, of the products of the Austin Machinery Corporation, manufacturers of contractors' equipment.

Coming Meetings

New England Coal Dealers Association will hold its annual meeting March 23 and 24 at Boston, Mass. President, W. A. Clark, Boston, Mass.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Northwestern Pennsylvania Coal Operators' Association will hold its annual meeting Tuesday, March 1, at the Old Colony Club, Pittsburgh, Pa. Secretary, T. E. Diefenderfer, Butler, Pa.

The Rocky Mountain Coal Mining Institute will hold its annual winter meeting Feb. 25 and 26 at the Albany Hotel, Denver, Col. Secretary, F. W. Whiteside 307 Ernest & Crammer Building, Denver

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Ottawa, Ontario, Canada. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Canada.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 19 NEW YORK, THURSDAY, FEBRUARY 24, 1921 Number 8

Protection and Politics

THOSE in Congress who have the interests of the coal industry at heart have been asleep on the job. The new emergency tariff bill, said to be at once the pest and pet of stand-pat Republicans, should contain protection for the coal industry. We suggest at least $5 a ton as the proper tariff on coal imports necessary to put this industry on a parity with field corn and hens' eggs. How anyone could have overlooked this crowning climax to the season's farce is more than we can understand. Maybe the votes of those who mine coal are not among those sought.

Where Coal Mining is Booming

GERMANY'S obligation under the Spa treaty to supply 2,000,000 tons of coal a month to France, Italy and other European countries requires overtime operation of the Ruhr collieries two days each week. While the coal industry of Germany thus is being run under forced draft, the pits in Great Britain and the mines in the United States are hobbling along on half time. The Economic Council advising the French Government with regard to external trade reports that, in view of the gradual improvement in the home supplies and the large deliveries from Germany under the treaty, France can see her way to dispensing with British and American coal at an early date. It is asserted that the reserves at present are high enough to make France secure against very high prices for at least two years, by which time the domestic output will have increased considerably.

Deliveries to France, Belgium and Italy from the Armistice to October, 1920, are reported as exceeding 13,000,000 tons, and by this time have exceeded 20,000,000,000 tons of German coal.

Germany is making a great fuss about the burden of the Spa agreement—the tenor of the news from that country is well expressed in our foreign correspondence (*Coal Age*, Feb. 10, p. 279), but if having a market for more than can be produced is hardship, producers here and in Great Britain would willingly take their share today.

The Central Committee of the Miners' International Federation, sitting recently in London, with delegates from France, Belgium, Germany and Czecho-Slovakia, had a practical discussion of the condition of the industry in the several countries. It is stated that with the single exception of Germany, the reports were of exceedingly gloomy character. Trade depression is general, short time is common, stocks are being accumulated everywhere except in Germany.

Forced on Germany as a part of the reparation program, the Spa agreement on coal deliveries is thus seen to have become a boomerang, maintaining mining activity at a high rate in Germany while business lags elsewhere. Prosperity follows on production and, in turn, production depends on having an outlet and market for the product. Economists, especially those from this side of the water, have pointed out from the beginning of the peace negotiations the fallacy of endeavoring to make Germany pay the cost of the war by forcing her industry and increasing her exports at the expense of the trade of the Allies.

Recent developments showing the working of such a scheme in the case of coal give point to the theory that the losers in the war can be winners in the end only if compelled by industry and thrift to pay any large portion of the cost of the conflict. France, of course, will pay for the coal that comes from Germany, although no agreement has been reached on the rate. The Germans are reported to expect 50 gold marks per ton (about $12 at normal exchange).

Danger of Deferring Payment to Roads

FOR several months the railroads have been short of cash with which to meet current obligations. Some are reported as being in the precarious position of not having sufficient incoming receipts to meet payrolls. Coal has not been paid for to the extent of millions of dollars, and the coal industry is now helping finance the roads, according to one authority, to the tune of a million dollars a day. No question of the validity of the coal bills is involved, merely the lack of cash. This has been true for several months, and it has been estimated that the railroads now owe more than $120,000,000 for coal. It is asserted that there is no prospect of meeting these bills until Congress authorizes partial payments under the guaranty provision of the Transportation Act of 1920.

The matter of authorizing and directing these payments by the Interstate Commerce Commission has been before Congress for weeks, if not months, but the exigencies of fake "emergency tariff" legislation to win farmer votes has so occupied the time and attention of our national legislators that they have passed up consideration of this essential measure.

There is a limit beyond which the coal industry cannot carry the burden of financing the fuel expenses of the railroads. Banks must next be called upon to carry the load, but the banks are already helping the roads. It was demonstrated during the coal miners' strike of 1919 that the coal industry can "live off its fat" for a long time, when coal by millions of tons was diverted to the four winds and payment deferred for months. Some solution must be reached before the point is reached where the operators supplying railroad fuel become insolvent, unable to meet their payrolls. The next step would be confiscation by the railroads of commercial shipments, for they must have coal to operate. The only practicable solution is to give the railroads the money that is their due.

An Economic Problem

IT IS REFRESHING to turn from a discussion of the coal question by politicians to a statement of "The Fuel Problem," by Arthur D. Little in the *Atlantic Monthly* for February. Dr. Little is a chemical engineer who has gained an international reputation in applying science to industry. Contemplating the situation as regards coal and other national resources into which opportunist development has brought us, he concludes that most of the wastes, delays and difficulties that characterize the situation are due simply to lack of national planning and our failure to recognize the necessity of co-ordination in industry. He says the situation that confronts us now as well as that of last year, is due to the converging influence of many factors. He appraises these factors and save that he stresses labor shortage at the bituminous coal mines—where that is not and has not been a fact—Dr. Little has correctly diagnosed the malady.

It is to his remedies that we therefore turn with interest, not only because of the prestige of the author but because of the character of the reading public reached by his article in the *Atlantic Monthly*. Pointing out "the shocking proportion of the values in our fuel now lost through preventable wastes" he predicts a forced return to coal gas and forecasts an impending revolution in our use of fuel which he thinks will involve not only gas but powdered coal and colloidal fuel. Ultimate electrification of transportation and industry, he believes, is an obvious necessity of the situation, and he cites the concept of the super-power survey as one of the great steps in this direction.

Popular realization of the fact that our coal problem is economical and technologic and not political is helped by such discussion. We would welcome more.

Not New but Better Methods

CO-OPERATIVE engineering effort in the study and solution of problems of industry is the big task set for the engineers of this country by Herbert Hoover, president of the American Engineering Council. Waste in production is measured by unemployment, strikes, losses in labor turnover and individual inefficiency, and beyond these, Mr. Hoover pointed out in his address to the council at Syracuse, N. Y., Feb. 14, are poor co-ordination of great industries, failures in transportation, coal and power, and lack of standardization.

Comparing present industrial operation, at from 60 to 70 per cent of capacity, with 1918, when, with 20 per cent of man power withdrawn, production was 20 per cent greater than today, he said that while no one will suppose that it is ever possible to bring national productivity up to full 100 per cent, the whole basis of national progress, of an increased standard of living, of better human relations, indeed, of the advancement of civilization, depends upon continuous improvement in productivity. Elimination of waste, he says, offers a greater field for increasing the standards of living than basic invention.

The great waste of intermittent employment in certain industries, bituminous coal being selected as a striking example—industries now operating on unnecessarily wide seasonal fluctuations—is cited as one of the important questions the engineers are going to study, and Mr. Hoover very properly states that no engineering report is worth the paper it is written upon without constructive suggestions for remedies. He says that the bituminous-coal industry today is one of our worst functioning industries.

The mines are operating seasonally and erratically. They proceed from gluts to famine, from profiteering to bankruptcy. There is 30 per cent more equipment and men engaged in the production of bituminous coal than would be necessary if it were stabilized to continuous operation. Storage and railway differentials are the two principal directions in which the remedy lies, according to Mr. Hoover, and he contends that through constructive action an army of men can be released from the bituminous-coal industry to convert some luxury into necessity of tomorrow, without any control of prices or profits, but with the producer and consumer of coal placed upon a sounder basis than today. He puts relief for the worker from intermittent employment and unemployment above the interests of the producer and the consumer.

Strikingly Hoover says there is no limit to consumption except the total capacity to produce, provided the surplus of productive power is constantly shifted to new articles from those that have reached the saturation point of demand. He says, for instance, that the productive capacity wasted today is sufficient to improve the housing conditions of our entire people to the level that perhaps only fifty per cent of them enjoy, and at the same time not encroach upon our established necessities. The direct application to the coal industry of this would mean that whereas this industry is carrying about 750,000 men on its payrolls, but could by continuous operation, satisfy the demand with 600,000 men or less, the practical thing to do is to direct the forces of production and distribution so as to eliminate the lost motion and then to depend upon the normal processes of business and human desires to absorb the superfluous labor. Certainly a better program than decreasing the workday from eight to six hours, which is labor's shortsighted but announced solution.

So broad and deep is the thinking of Mr. Hoover, so well laid is the foundation of his plan and so potent is the force of engineering genius he has enlisted in the cause that results are certain.

The coal industry—both bituminous and anthracite, and producers and distributors—must by this time realize that in the public mind there is a coal question, and that question must be answered. There is as much misdirected, loose thinking about coal as there is about the relations of capital and labor. Among the engineers who are called upon to work with the Engineering Council in its study of waste in industry as applied to bituminous coal none is better qualified than the engineers within the industry. Electrical, civil, mechanical and chemical as well as mining engineers, they have no common meeting ground save this new medium except as their work and ideas find expression in their respective individual national engineering societies, where coal is but one of the many subjects considered. It is strictly up to each of these engineers to contribute his ideas.

OUR ATTENTION HAS BEEN DIRECTED by Mr. Mack, Comptroller of Weston Dodson & Co., Inc., to the fact that in our issue of Feb. 3, 1921, p. 236, the title on a news item from Washington represented Francis Walker, economist of the Federal Trade Commission as having said that anthracite "profits" are 89c. per ton, whereas Mr. Walker said that the "margin" between the cost and sales realization was that amount.

BATHHOUSE AT MAXWELL MINE OF H. C. FRICK COKE CO.; MOST RECENT OF THE MANY BUILDINGS OF THIS KIND IT HAS CONSTRUCTED

What H. C. Frick Coke Co's. Experience Shows To Be the Best Type of Bathhouse

Illustrated by Type of Building Erected at Maxwell—Clothes Are Hoisted Into Bottomless Lockerettes Keeping Clothes Apart—Water Kept Thermostatically at 110 Deg. F.—Separation of Rooms Prevents Splashing of Water on Men Dressing—No Locks Used on Clothes Chains

By D. J. Baker
Wilkinsburg, Pa.

FOR the last six years the H. C. Frick Coke Co., a subsidiary of the United States Steel Corporation, has consistently followed out a program leading up to the construction of bathhouses at all its important mines. It has not, however, plunged into the matter headlong, but has proceeded about it in a way that may well serve as a suggestion to other large corporations whose mines are not already equipped with such facilities.

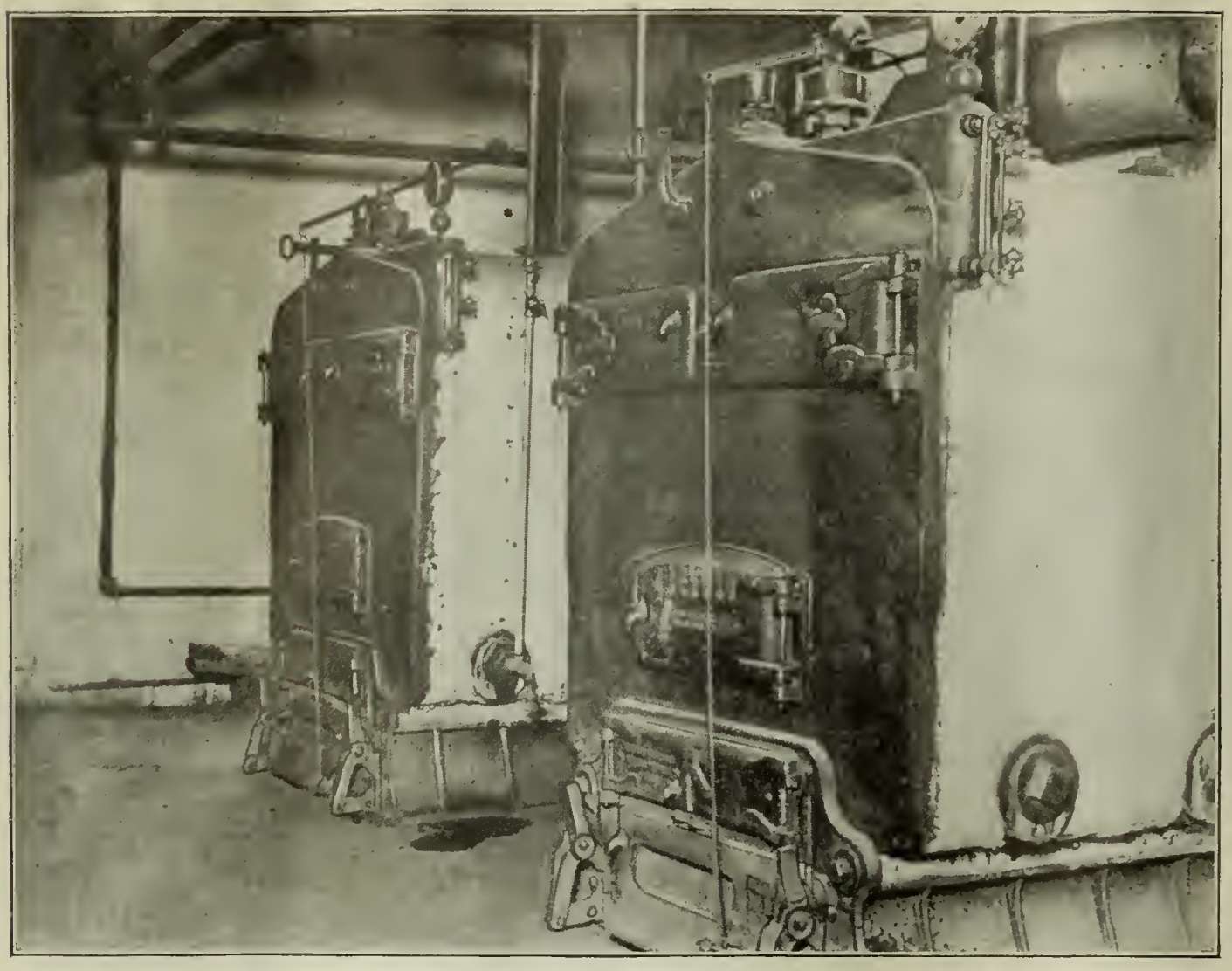
Bathhouses can be designed in a somewhat more methodical way than mining plants. When larger production is needed and a plant has to be built, the engineer must venture a decision based on previous experimentation and long years of thought. Usually he cannot wait until he has tested out some new arrangement or device. He must build the structures at once with the information available. When constructing a bathhouse he frequently may have an opportunity to wait till he has seen the effect of certain changes he has introduced in one of the buildings which at an earlier date his program of construction has called on him to build, and from this earlier structure and its operation he can draw ideas for the next building on the list. This method has been followed by the Frick company.

The building of bathhouses is not merely a mechanical problem to be determined solely by known laws of mechanics, physics or machine design. To fit the building to the men demands a knowledge of the employees and their preferences, about which there is less certainty.

Heretofore mine buildings have been constructed primarily to house machinery. In the design of such structures the man who was to operate the equipment was not considered except so far as to assure his safety. Certainly no attempt was made to build the structure around him, as it were. With the bathhouse, however, the design centers around the men themselves. The building and equipment within it must satisfy the needs and wishes of the employees.

As a result of following the rule to build one structure at a time, the progress made from the first to the most recent bathhouse exhibits an interesting series of steps in design and installation. Each succeeding bathhouse constructed was slightly different from its predecessor, and, incidentally, is believed to be better, from the standpoint of both efficiency and economy in construction. The H. C. Frick Coke Co. has perhaps learned more about bathhouse construction and installation than any other western Pennsylvania operator. It has acquired this knowledge solely through experience.

In Pennsylvania the law requires the construction



Boiler Room

These boilers, which supply steam to heat the hot-water tank, are cross-connected to each other. Steam is not permitted to rise in them to a pressure above 15 lb. per square inch. A double thermostat system is employed to keep the water delivered to the bathhouse down to a temperature of 110 deg. Fahr.

of bathhouses wherever a demand is made for them by any ten men whose work is done in wet places. In some other states the requirement is mandatory that bathhouses be constructed at all mines. Yet in the Pittsburgh district, where the law is thus flexible, some of the best-equipped bathhouses in the bituminous fields are to be found. Possibly the fact that they usually have been erected to satisfy the desire of the operator to provide a real service to his men is a reason why Pennsylvania bathhouses have in many ways a pre-eminence over those in other states. Furthermore, the fact that the initiative in general comes from the operator saves him from the necessity of throwing a building together in a hurry without being able to give its design proper thought. It affords him opportunity to weigh carefully and deliberately the various factors that enter into efficient and economical construction before he goes ahead with his plans.

Certain it is that, whatever may be the reason for the superiority of the bathhouses in the Pittsburgh region, only a bathhouse that will be put to good use will ever avoid being almost a total loss to the company building it. It must be skillfully planned, or the purpose for which it was erected will be defeated.

Bathhouse Laws Somewhat Lacking in Detail

In those commonwealths where bathhouses must be erected to satisfy a statute it is not uncommon for some operators to erect and equip a building merely because they are forced to do so. The equipment installed is often not of the best, operation is faulty, and the men in a short time do not care to exercise their bath privilege at all. When this is the case, it would be better if the building had not been constructed.

In the states that require bathhouses at the mines, certain fundamental specifications might well be incorporated in the statutes. It is safe to prophesy that the time is not far distant when Pennsylvania also will demand the invariable erection of such buildings. At present the progressive companies are erecting them largely without the compulsion which the law makes possible. The operators are quick to realize that all labor controversies are not the direct result of wage scales. Firms that are subsidiary to large corporations and whose mine product is never thrown onto the open market are perhaps more anxious to attract and retain skilled workmen than others without such affiliations. At least this would appear to be the case, judging from the greater variety and amount of community and welfare work undertaken by them.

The small additional expense in producing a ton of coal due to the investment of capital necessary to build a bathhouse, is not a factor of great importance economically. Of far greater value is freedom from labor troubles at the mines and the retention of a large number of contented workmen. All things considered, community and welfare work is economically justifiable, no matter whether the firm that is undertaking the program is a corporation or not. Small concerns that have nothing in the way of inducements to offer the miners will in the future find competition growing keener from day to day, if this is not already the case. It will not be long before every company will be forced to inaugurate a broad program of improvement if it hopes to procure labor.

Outcome of Six Years of Experiment

At the Maxwell Mine of the H. C. Frick Coke Co., about six miles above Brownsville on the Monongahela Division of the Pennsylvania R.R., a bathhouse recently was completed. This structure ranks with the best to be found anywhere in the state. It is the newest building of its kind constructed by this company and is the final outcome of an extensive series of experiments. It will not long retain its present distinction, however, for this company is proceeding

with the erection of other buildings of the same character. Eventually all its important mines will be similarly equipped.

The plans are the result of over six years of study and in a sense have been developed by the men who use the bathhouse. The numerous little "kicks" that have been registered—sometimes apparently over trifles—have not fallen upon deaf ears, but have been noted for later consideration. When objectionable features were discovered they were eliminated in the next bathhouse constructed. Easy and efficient sanitation is the main consideration in the construction and equipment of such a building, and this quality the present bathhouse embodies in a high degree.

The outside dimensions of the building at Maxwell are 66 ft. 6 in. x 42 ft. It rests on 16-in. walls of concrete and is constructed of brick with a slate roof, ventilators being provided at suitable points. The building is a single-story structure with a small basement lying beneath a portion of the locker room. A section of the basement is utilized for storing fuel for the boilers, which are situated in an adjoining room. These latter both heat the building and furnish hot water for the showers and "wash-up" stand.

Tank and Shower Water Both Regulated

In the boiler room, which is 23 ft. 6 in. x 18 ft. in dimensions, two low-pressure Ideal boilers, manufactured by the American Radiator Co., are installed. Each operates on a working steam pressure of 15 lb. and is of sufficient capacity to carry alone the heating and hot-water supply load for the entire building. As a result only one boiler is in active service, the other being held as a spare.

These units are cross-connected, so that steam from either may pass through a single pipe line to the coils in the heating tank, which has a 1,000-gal. capacity. By means of a thermostat on the incoming steam line, the water in the tank is never heated above 180 deg. F.

A SECTION OF THE WASH-UP ROOM

Here men who do not desire complete ablutions may be accommodated. Speakman gooseneck wash-up cocks are used as spigots. The washstand is simply a drain, as running water is used at all times. This is infinitely more sanitary than where separate bowls are provided, and the men prefer this type of stand to the other. Note the extension rods on the windows for raising and lowering the sashes. In the winter the steam is carried out through ventilators in the roof.

LOOKING DOWN THE SHOWER ROOM

A brick partition separates the locker room from the showers, so that the men who are dressing will not be inadvertently splashed. This room is separately ventilated from the others, and steam does not pass out of it and into the locker room. A drain runs longitudinally through the floor and the room may be kept sanitary by simply turning a hose on it.

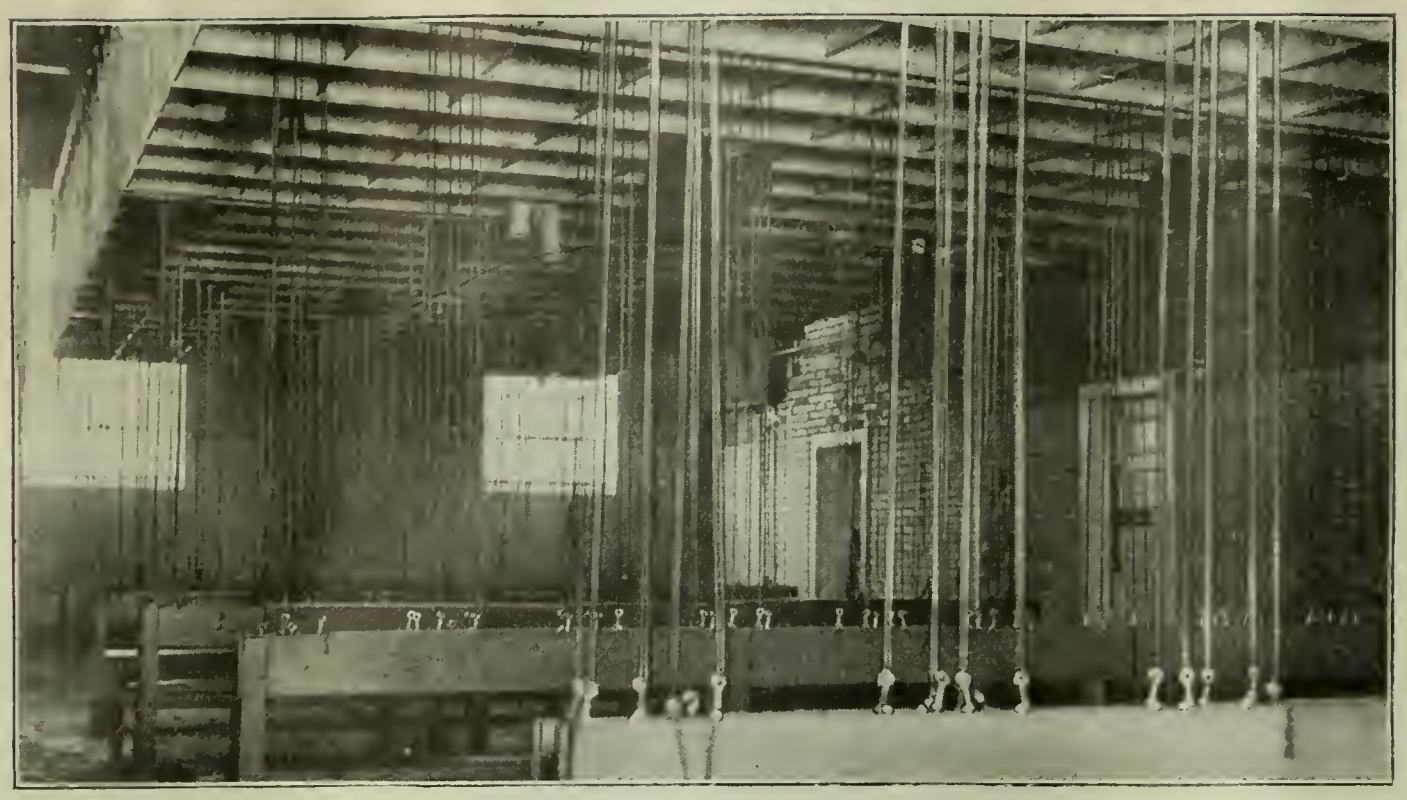
When this temperature is attained the thermostat closes a valve in the line, and steam is shut off from the coils.

An additional safety provision intended to prevent the men from scalding themselves consists of two Powers thermostatic water controllers placed below the tank. The heated water must pass through these before it is available. Here it is reduced in temperature to 110 deg. F. through the action of valves that permit the necessary amount of cold water to enter and mix with the hot. Thus water hotter than 110 deg. F. is not available and the men cannot by any possibility be scalded.

In the main shower room, extending parallel with the long side of the building and separated from the dressing or locker room by a brick partition, nineteen Speakman heavy-weight factory-type compression-valve showers with 4-in. heads are installed. The hot- and cold-water control fixtures are located within easy reach of the bather, so that while it is impossible to procure water at a temperature higher than 110 deg. F., any desired mixture down to cold water can be had.

Steam from Showers Kept from Locker Room

The roof of the shower room is fitted with ventilators, and no steam enters the locker room to be absorbed by the miners' clothes. The location of the showers in a separate room is an advantageous detail of the design, as the temperature of this room can be maintained fairly even at all times. Thus, the men, while bathing are not subjected to the sudden blasts of cold air that accompany the entrance into the building of some belated workman. Furthermore, the division of the two rooms by a brick partition makes it impossible for anyone to splash water on the men while dressing.



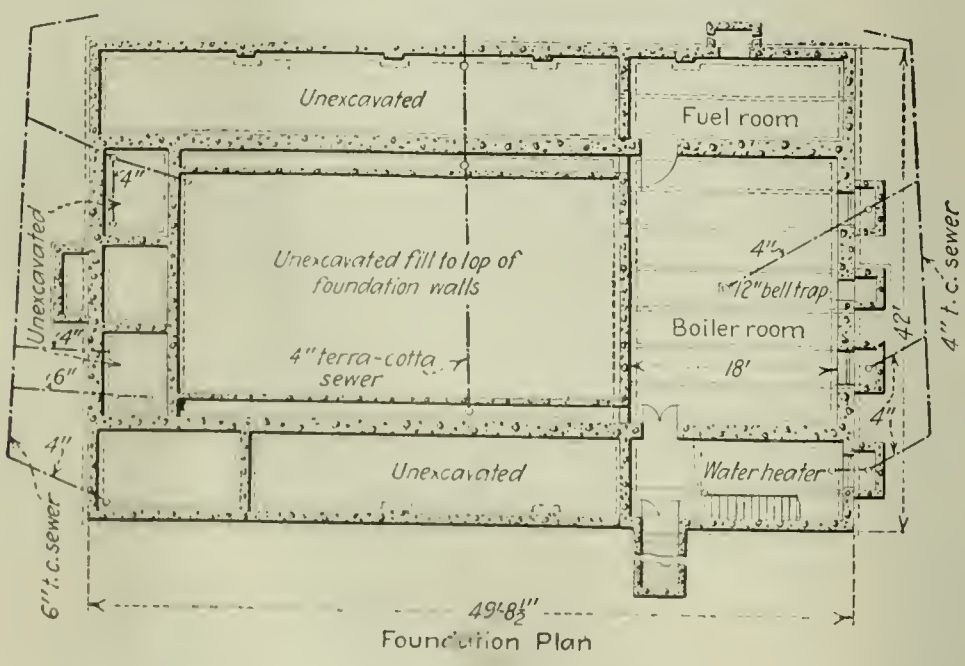
Locker Room

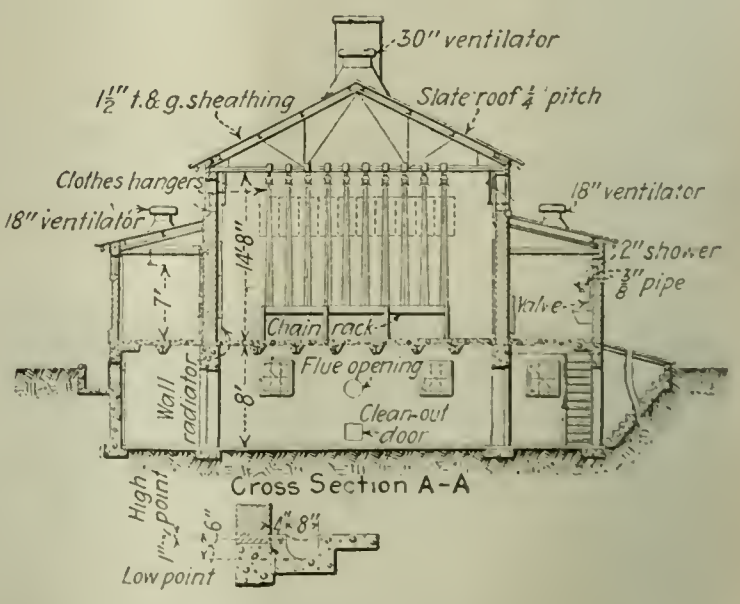
In the central left part of the illustration to the left of the window can be faintly seen a "lockerette," or clothes hook, in suspension. Galvanized iron compartments enclose each individual lockerette with its burden of clothes. When drawn up into place the garments are barely visible.

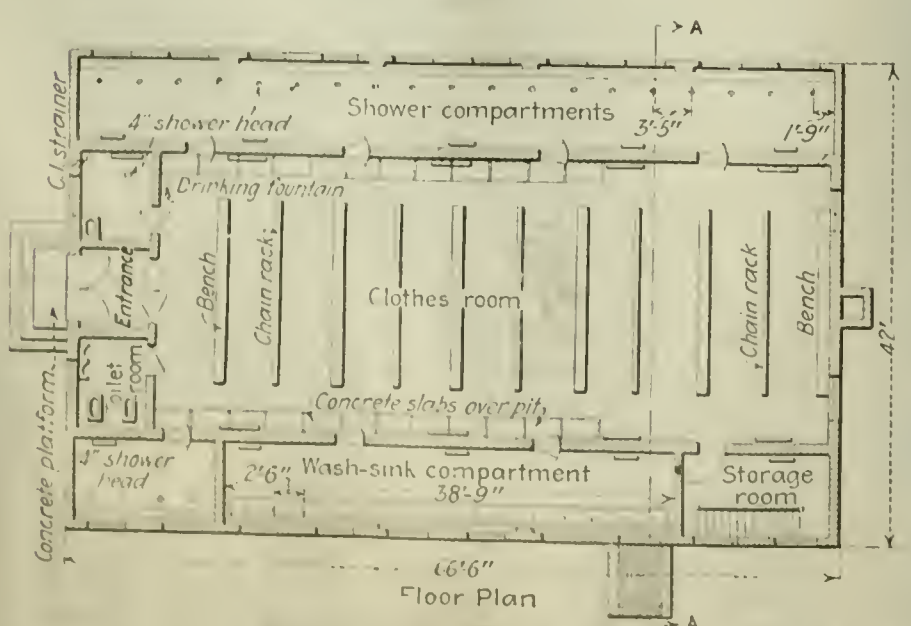
Drains are provided in the concrete floor, and the room may be easily kept clean by simply playing a hose on it. All lighting wires are inclosed in conduits.

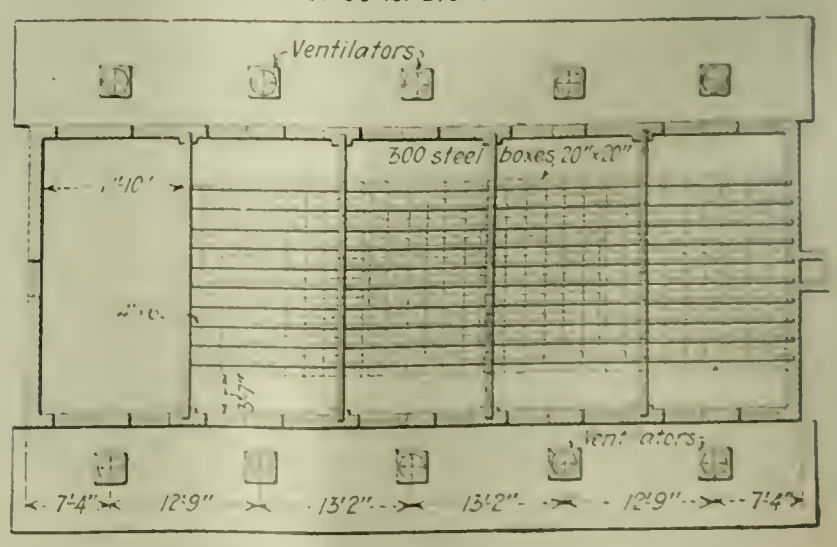
On the side of the building opposing the shower compartment there is a similar room measuring 38 ft. x 7 ft. This is utilized as a wash-up room, where those not desiring complete ablutions may be accommodated. A 37-ft. enameled-iron washstand supported by pedestals is installed in this section. Fifteen Speakman gooseneck wash-up cocks serve as spigots. Swinging doors separate both shower and wash-up rooms from the locker room. This section of the building also is easily kept clean.

The toilet room is in a separate compartment and contains two urinals and two floor-type closets. These are not provided with seats, as the bowls are sunk flush



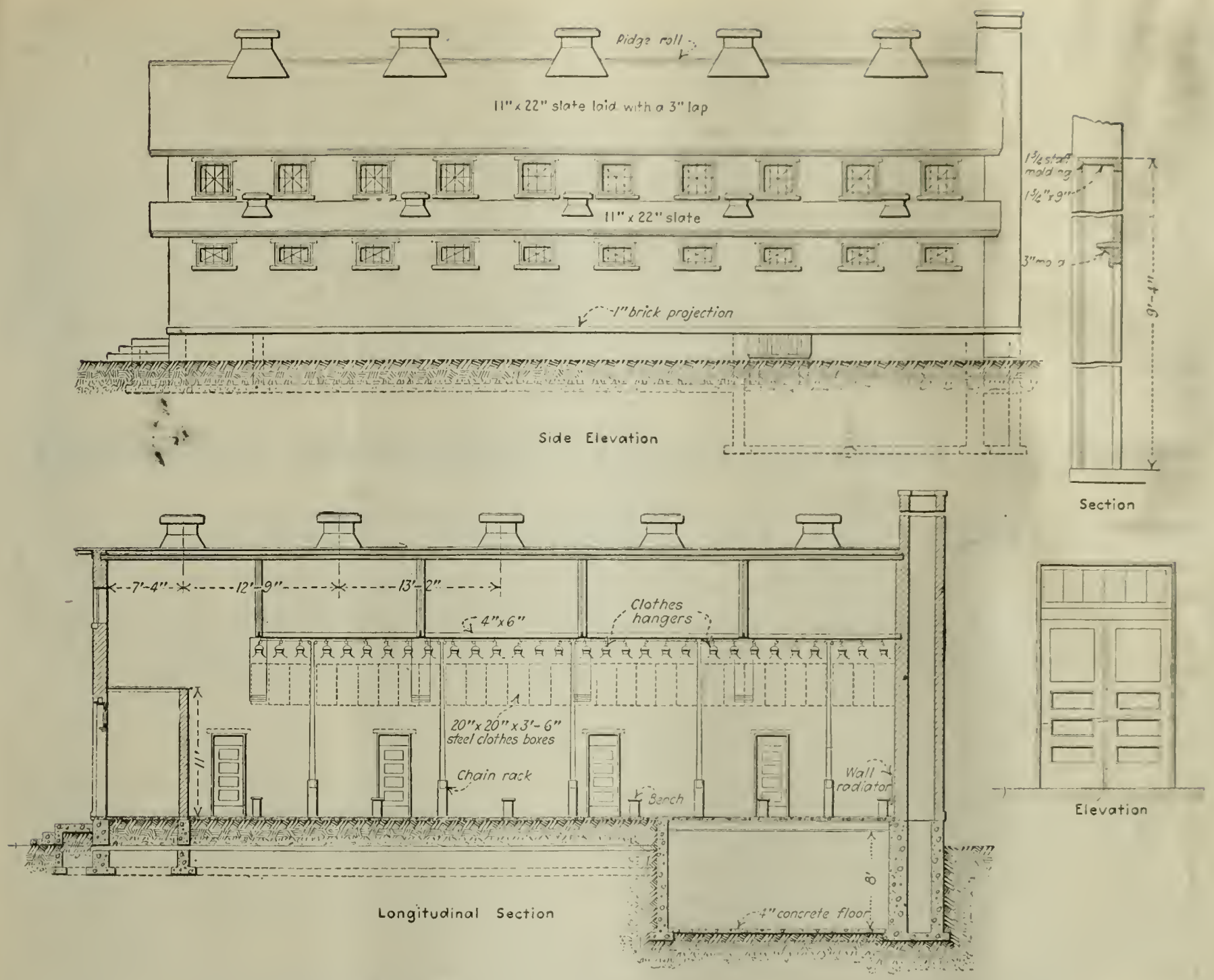






FOUNDATION, FLOOR AND SQUARE PLAN AND CROSS-SECTION OF BATHHOUSE

As may be seen, the foundation calls for little excavation, this being confined to the rear end of the building to permit installation of the heating plant. Roof ventilators insure an abundant supply of fresh air at all times.



SIDE ELEVATION AND LONGITUDINAL SECTION OF THE BATHHOUSE
Light is supplied from windows high in the sides. This not only gives excellent illumination, but as the sashes are made to tilt, aids ventilation when desired. A vestibule prevents entrance of cold drafts, which are highly objectionable.

with the floor. Each is flushed by means of a foot pedal. This type of closet is one that adapts itself readily to a mine washhouse, as it may easily be kept in a sanitary condition.

Perhaps the greatest interest centers in the locker rooms, as it is upon the arrangement of this portion of the building that the men register the most complaints. These relate to the methods of suspension of the clothing as well as to the facilities for dressing. Here 330 ceiling-type lockerettes are installed, each of which is suspended from two ceiling pulleys. These lockerettes are nothing more than galvanized-iron baskets made up of a tray and four wire hooks. The tray is used for holding soap and towels and the hooks are employed in suspending the clothing.

The baskets are raised and lowered by copperized sash chain. They are held in suspension by a ring and snap on each chain. The back of each bench forms a tray and is used to hold the surplus chain when the baskets are in suspension. Locks are not provided by the company, as they are not considered essential, although the men are allowed to purchase and use them if they so desire.

A man is permanently detailed as janitor of the building, and he soon familiarizes himself with the faces of the employees and knows the locker compartment of each. When the building is filled with men he moves among them in a spirit of *camaraderie*, and thus has an opportunity to observe whether each is utilizing only his own individual locker. No thefts have been reported since the building was thrown open for use, and it is not probable that such acts will ever become of common occurrence.

As is shown in the illustrations, each lockerette fits into a separate galvanized iron compartment in the ceiling. Thus, when the baskets are drawn up to their proper height no clothes are visible. These boxlike compartments have been installed for a twofold purpose. In the first place the arrangement is highly sanitary, as no man's clothes can touch those of his neighbor. Secondly, the room is made much more attractive when the ceiling is not bedecked with hanging clothes presenting a riotous profusion of color. A "bubbler" fountain is located in one corner of the room.

This room does not open directly to the outside. A small vestibule must first be entered before access is gained to the inner portion of the building. This is a detail that every bathhouse should possess, as it is inexpensive and perhaps does more than anything else to prevent the men from contracting colds.

The building is heated by wall-type radiators. These are suspended at such a height that the men cannot

come into accidental contact with them and burn themselves. Steam for heating the building is supplied by the boilers in the basement. No great amount of it is necessary, as the rooms might ordinarily be kept warm from the play of hot water in the shower and wash-up rooms. During the winter months the ventilators in the roof of the structure are utilized in ridding the place of steam. In the summer, however, windows in the shower and wash rooms may be raised, affording a more direct system of ventilation.

Out of every six men who avail themselves of the bathhouse facilities—and this includes nearly every man employed at the mine—five take complete shower baths at the end of the day. The men who do not avail themselves of the full opportunities for bathing are in the main those who, being employed on the surface, have no need for more complete facilities than are provided in the wash-up room. The building has a capacity of 100 men per hour. The water supply is obtained from a filtration plant located near the surface works.

All of the plumbing fixtures in the building were furnished by the Bailey-Farrel Manufacturing Co., of Pittsburgh, and the installation was made by C. O. La Clair, of Uniontown. Both of these firms have actively co-operated with the Frick engineers in the equipment of other similar buildings throughout the Uniontown-Brownsville district.

Though Free of Legal Obligation Scranton Mines Pay for Mine-Cave Damages

Property Owners Sold All the Coal Under Their Premises or Accepted Deeds for Land with Right to Support Specifically Excluded, but Emphatically Object When Coal Is Removed and the Surface Caves—Damaged Houses and Streets Are Repaired Voluntarily by Coal Companies

By Dever C. Ashmead
Wilkes-Barre, Pa.

ALMOST incomprehensible appears the attitude of the anthracite coal operators toward publicity. No matter what degree of falsehood or shade of truth the public press may print, no matter what the people may believe or be led to believe as a result of the preachments of irresponsible demagogues who are the irreconcilable enemies of all things capitalistic, no matter what sundry organizations, civic or political, may set forth derogatory to the methods of the various coal companies, the operator remains silent and offers neither defense, exculpation nor apology. The statements made, or those that gain credence, may be absolutely false, misleading and unfair, but nevertheless the operator neither affirms nor denies them.

One coal producer with whom I had a talk recently expressed the conviction that it would be useless to deny any of the false statements made concerning the operators, for the reason that people would not believe the denial. This probably would be quite true if the rebuttal were made but once, and then in a half-hearted fashion, but, if the operators employed half the persistence and enthusiasm practiced by the demagogue some beneficial results might be attained.

Caving Damages Have Been Overemphasized

The newspapers cannot be held strictly to blame for the position that they take as opposed to the coal companies on the mine-cave question. It is their business to disseminate news, and if they cannot procure testimony from both sides to a controversy they will publish that which is most readily obtainable. On the other hand, the demagogue and various antagonistic coal societies always stand ready to furnish propaganda for the newspapers that may tend to further their own selfish aims.

Scranton, Pa., has become famous for its mine caves and for the damage that these have done to the buildings within the city. To read the local newspapers as well as the national illustrated periodicals and the news sheets of other municipalities, one might easily come to the conclusion that one's life is scarcely safe on the streets of Scranton and that it would be still more hazardous to spend a night within the city limits. Such statements and the impressions they foster are, of course, absolutely false, yet the coal companies make no apparent effort to contradict them. What is not emphasized, however, is that the risk is negligible and that the coal companies have a truly excellent organization for the aid and assistance of the property owners as well as for the repair of buildings that have been damaged by the process of coal mining.

In years gone by the owners of real estate in the City of Scranton sold all their rights to the coal under their properties to the companies now operating there. They have thus given the operators every legal right to remove all the coal under their premises. Nevertheless, when a coal company in the exercise of its obvious right and authority removes this coal and the property caves, resulting, we will say, in damage to a house, the owner promptly and loudly complains. He has no legal redress and that he well knows. He is fully cognizant of the facts as to his ownership and knows that he either sold the coal to the operating company himself or that it is specifically stated in his deed that the coal had thus been sold. He, therefore, held or bought his property, as the case may be, with the full knowledge and understanding that at some time it might be affected by mine caves. In spite of all this, however, he vociferously asserts that the coal company is robbing him.

In this section of the Lackawanna Valley the coal beds lie near the surface; as many as six different deposits outcrop within the city limits of Scranton. As these beds lie comparatively level, the cover is neces-

sarily shallow. This means that when second mining is performed the surface will unavoidably be much disturbed.

Scranton owes if not its existence at least its prosperity in large measure to the mining of anthracite. Originally about 400,000,000 tons of this material underlay the city. At the present time there remains approximately 100,000,000 tons. When this coal is removed and placed upon the market it will be worth four times the assessed valuation of all the property within the city limits. The mining companies are now paying their employees approximately $20,000,000 a year in wages as well as spending several million dollars additional for supplies. One company alone pays about a quarter of the city budget in taxes, and as this budget for next year amounts to $1,700,000, it can be seen that the company's taxes are enormous.

The following is a quotation from a brief by W. S. Jenney, general counsel for the Delaware, Lackawanna & Western R.R. Co., before the Commission on Constitutional Amendment and Revision of the State of Pennsylvania: "As illustrating the public attitude toward the coal companies, I beg to submit the following astonishing figures, pertaining to the taxes of our company: In the year 1910 we were assessed in Scranton on $3,905,300 and paid in city taxes $66,170. This year [1920] we were assessed on $11,687,615 and our taxes amount to $413,623. During this ten-year

CITY OF SCRANTON WITH THE HOLDINGS OF THE COAL COMPANIES

Unfortunately the early settlers in Scranton believed that it was the better plan to live near their work and trade near their homes, and so Scranton was built over some of the best coal beds in the world. Much of the coal excavated in early days did not produce caves, and it was thought that the surface would remain undisturbed forever, regardless of the mining done. In any event, the price paid for the coal was ample to satisfy the owner even if the land was rendered valueless. Later, when time and second mining caused the old chambers to cave, the owner, who had begun to realize the increase of the value of his surface interest, or the man who had bought from him tried to get the companies to ignore the "waivers of support" and to pay for the damage, a recompense which the owners of the surface had promised in their deed would never be exacted. With all the *noblesse oblige* which usually goes with great wealth, despite fallacious popular notions to the contrary, the coal companies agreed to rebuild or repair all damaged houses costing under $5,000, which promise covers 90 per cent of the buildings.

period we have removed 24,000,000 tons of coal from our assessed Scranton properties, and yet we are required to pay over six times as much in taxes as ten years ago."

This gives some conception of the situation in which the operators in the city are placed. In order to obtain the coal remaining, it is practically necessary to cause caves, yet if this coal were abandoned, the City of Scranton would be adversely affected, as its chief industry would cease to exist. A reduction in property values would ensue, and a large number of people would have to leave the municipality.

An investigation was made some time ago as to what type of building within the city was most frequently affected by mine caves. It was found that out of 22,263 buildings in 1912, only 823 were assessed at more than $6,000 in value. At this time a commission was appointed by Governor Tener to investigate the subject of mine caves. It recommended only that legislation be passed providing that arbitrators be appointed to settle disputes and that properties be evacuated upon notice that the mining companies contemplate operations under them.

Profitable Destruction

This house originally cost $500; the owner claimed $1,700 damages, and the company paid the bill. Finally the house was torn down and a store put in its place. Both street and building are now in good repair. The illustration is from a photo taken before the readjustment was made.

A Row of Wrecked Houses

These houses are said to have been undermined by the Peoples Coal Co., and some of the houses are alleged to be over workings that were made in coal the company does not own. In that case the owner can sue in court and recover full damages.

Companies Repair Lower-Cost Buildings

Although this plan was approved by the press and accepted by the mining companies it did not please the people, and the Scranton Board of Trade tried to obtain further concessions from the mine operators. It succeeded in inducing them to make certain voluntary concessions, and the Scranton Mine Cave Commission was formed, beginning operations on Jan. 1, 1919. The agreement then entered into was signed by all the companies operating within the city except the Hudson Coal Co.

By the terms of this agreement the coal companies bound themselves to restore all properties up to $5,000 valuation damaged by mine caves and to repair and protect all city streets that might be injured through subsidence. As about 90 per cent of the structures within the City of Scranton have an assessed valuation of less than $5,000 each, it can be readily seen that the dwellings of workingmen and the poorer classes in general are thus amply protected. Arrangement has been made whereby the owners of buildings valued at more than $5,000 are given an opportunity to purchase sufficient coal under them to amply protect them from mine caves. The rate and terms of payment in these cases are such that the owner is not subjected to any real hardship.

Of course, this agreement does not affect owners of property who have not sold their coal, such property holders having redress through the courts in case the coal on their premises is removed without their knowledge, permission and consent.

The purpose of the Mine Cave Commission is to see to it that the companies live up to their agreement. This body is provided by the operators with funds sufficiently large to enable it to repair damaged buildings should the coal companies refuse to make the repairs. During the first year of the commission's existence it has not been found necessary to draw upon its funds, and these still remain intact. When a piece of property is damaged by a mine cave, the owner may report the occurrence to the commission, which sees to it that property is put back into its original shape as soon as possible. On notification from the commission the coal company over whose workings the cave occurred makes the necessary repairs.

This, of course, does not signify that repairs are made immediately, as in many cases the movement of the surface is not at an end. As soon, however, as mining is completed in the section over which the house stands, the structure is repaired so that in the end its condition is as least as good as ever and often much better. The coal companies endeavor as far as

possible to determine in advance what buildings are most likely to be affected by caves. These are then put upon timbers provided for that express purpose. Of course, it is sometimes impossible to afford this protection, as unexpected caves occur.

As an example of what is being done in the way of mine-cave alleviation, the practice followed by the Delaware, Lackawanna & Western R.R. coal department may be cited. This company has a superintendent who has charge of the "cave department." It is this man's duty to supervise all repair work on the surface and to prevent, as far as possible, any damage to existing structures. Under him are two mining engineers who study conditions below ground and who are, therefore, able to anticipate caves.

Of course, such repairs take time, and this is the chief cause of difficulty. It requires a certain period of time to remove all coal from a given section of any mine, and, of course, no repairs can be made until all movement of the surface has ceased. The coal companies in many instances place houses upon timber supports or mud sills and keep them level during the movement of the cave. Nevertheless, a certain amount of inconvenience is incurred, as it may sometimes require as much as eighteen months before the house can be put back into its original condition.

It is the duty of the commission above referred to to see that the coal companies do their work in a proper manner. Inspection of the repairs is made from time to time by the commission or its representatives. This

Reduced to Tinder

Another view of the buildings shown in the preceding illustration. It is not an unusual practice to buy buildings in this condition for the purpose of profiting by bringing suit for damages against the company by which the undermining was done.

After Sixty Years

Mining has not been done at this point for sixty years. Long after the underground operations ceased a water main was laid. It leaked and flushed sand and gravel through crevices into the mine workings, causing the street to cave.

The outside or repair force consists of two gangs of twelve men each, whose duty it is to raise houses that have been damaged, four gangs of seventeen men each who do nothing but repair masonry, such as foundations, brick walls and the like, likewise four gangs of plasterers consisting of six men each, and four squads of carpenters with an equal number of men. Not only does the coal company put damaged houses back into their original shape, but it also employs six decorators who repaper any damaged walls or ceilings.

Were it not for the inconvenience involved, it would be to the advantage of a house owner possessing a building twenty-five or more years of age to have it damaged by a mine cave, as in that case it would be put back free of charge into excellent shape—far better than before the cave occurred. When such a building is damaged, the company will straighten up the foundation, put in new sills, if this is necessary; renew the plaster, if it is broken, and redecorate the rooms.

body also makes investigations into the conditions existing underground. Other coal companies which operate within the city limits do not have such large repair forces as they do not work over such large areas. The D. L. & W. has to redress about 65 per cent of the damage done within the city, and in the twenty months from July 1, 1918, to Jan. 1, 1920, this company paid out $350,909.20 for surface repairs.

It has been proposed to make an amendment to the state constitution giving the commonwealth authority to tax coal mines to the amount of 2½ per cent of the value of the coal produced. This would mean that the state would receive from this source each year the sum of $10,000,000, whereas the actual damage does not amount to more than one-tenth of this figure, and probably in normal years will not exceed $500,000. Why should the state collect more than ten times as much as is now necessary for the carrying on of this work?

It is extremely doubtful, if the state took over charge

of this work, whether the people would be served any more promptly and satisfactorily than they are today. State governments, whether in Pennsylvania or elsewhere, are notoriously slow in settling anything, and the cost of so doing in most cases is much in excess of what might be the necessary expense to a private individual or corporation.

These remarks bear no relation to two sections of the city. Owing to the action that the city authorities of Scranton took against the People's Coal Co., this firm has been unable for a long time to care adequately for the houses damaged by surface settlements in the territory worked by it. Furthermore, the central business section of the city has not been, nor will it be, disturbed, as the original owners of the coal have set aside a sufficiently large block (that cannot be mined) to support the surface adequately. In making this reservation the property holders have provided that the coal companies may drive headings and airways as well as main haulage roads through the section, so that other portions of the company's property may be reached. But these passages must be kept under the streets and not under buildings.

The illustrations accompanying this article are extremely interesting as they show some of the more spectacular conditions existing in Scranton. Much misinformation has been given out and many false impressions have been conveyed in the non-technical and popular press by just such illustrations as those appearing here. Such misinformation is largely the result of the companies' policy of "sitting tight" and saying nothing.

As an example of the activities and propaganda now being used against the coal companies operating within the City of Scranton it may be said that an association has been formed for the ostensible purpose of combating the mine-cave evil. This organization professes to "straighten out mine-cave matters." When a member of this association suffers from a mine cave, the officials of the organization report the matter to the Scranton Mine Cave Commission, which takes it up in the usual routine way, repairs being made in the manner above described. The association thus obtains all credit for repairing the man's house, whereas the same result would have been achieved in any case. In other words, this association is believed to be, in the last analysis, merely a scheme to enhance the political prestige of its officials.

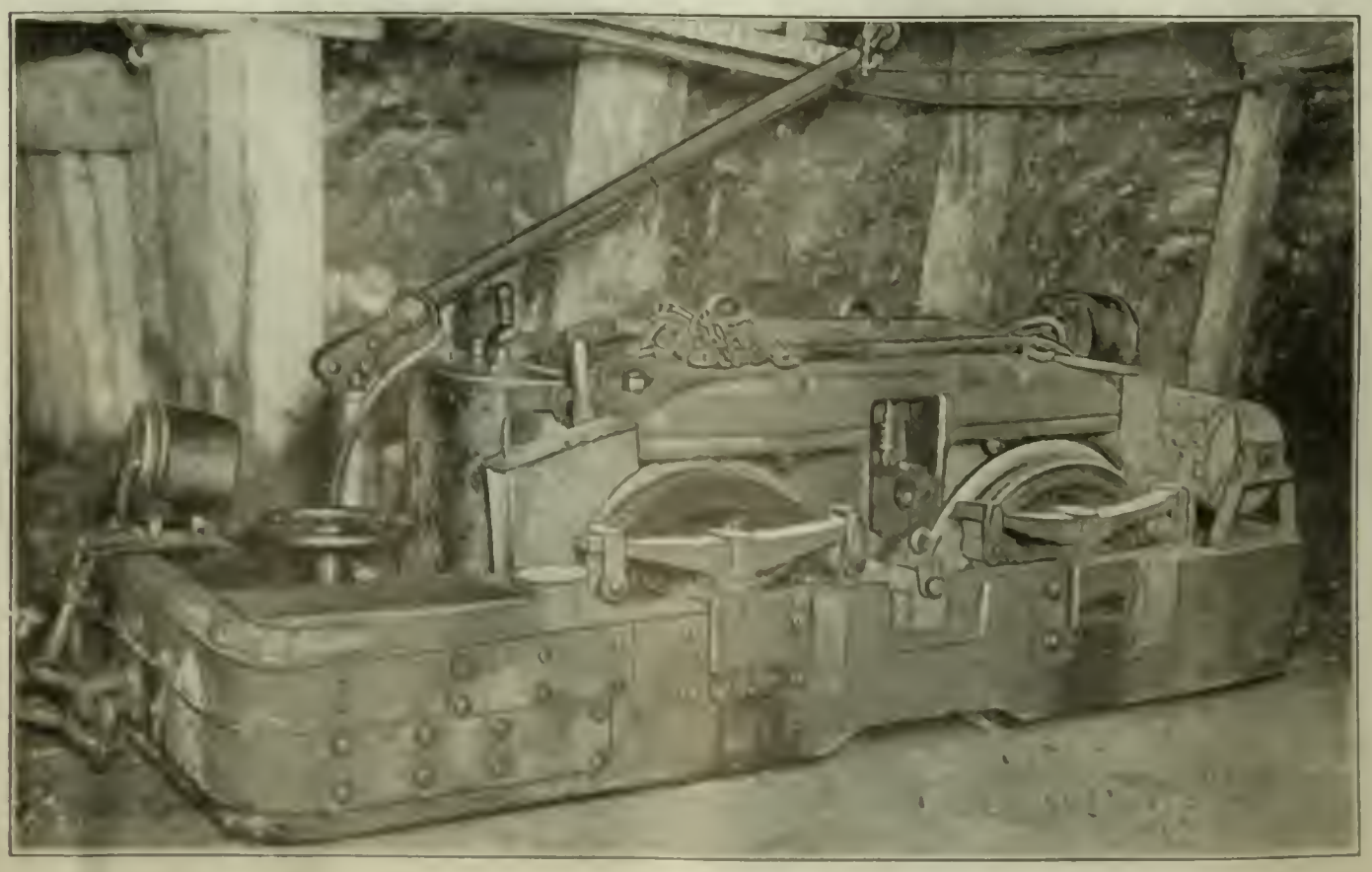
Locomotive in Rock Springs, Wyo., Has Seen 27 Years of Active Service

AN ELECTRIC mine locomotive that has remarkable record for length of service is at present operating in a mine of the Union Pacific Coal Co. at Rock Springs, Wyo. This locomotive was built by the Thompson-Houston Co. and was put into service in its present location twenty-seven years ago. It has been giving continuous service ever since, records kept by the Union Pacific Coal Co. showing that it has hauled 3,712,500 tons of coal over an average distance of 1.5 miles, making a total of 5,568,750 ton-miles.

This locomotive is a type GLM-30-6 terrapin back machine built for 500 volts and having a speed of eight miles per hour. It has a draw-bar pull of 3,000 lb. and the wheels are 28 in. in diameter.

The locomotive is equipped with one motor having a single-field coil and the old Gramme-ring armature. The original field coil is still in service and has never given any trouble. Two armatures have been used, one the original furnished when the locomotive was purchased, and the other a spare. The commutator is much smaller than those used at the present time for 500-volt circuits, and five have been worn out in service. The original control was of the semi-circular disk type, which has since been abandoned. The original brake rigging is still in service. The gears also have had long life, as only three sets have been worn out.

This locomotive also holds the low record in the mines of this company for repair charges, and consequently in cost per ton of coal hauled. In fact it is held to be just as efficient in operation as any of the recently-designed locomotives operated by this company. The feature that is held largely responsible for the low upkeep is the use of the semi-elliptical leaf-spring construction. It is interesting to note in this connection that the General Electric Co. has returned to this design in its trolley locomotives, with the addition of an equalizer bar to distribute the weight evenly.



27-Year Old Locomotive

This machine has moved over 5½ million ton miles and is still in excellent shape. Of course certain parts, such as commutators, gearing, brake shoes and the like, have required renewal, but the main parts of the machine are those originally supplied.

ENTRY DRIVER PROVIDED WITH PIPES FOR PNEUMATIC DISPOSAL OF THE DISLODGED COAL

Mining Machine for Rapid Heading Driving Which Cuts, Dislodges and Loads Coal

Drives a Heading Full Height and Width at the Rate of 66 Ft. Per Day of Less Than Ten Hours—Certain Slight Changes in Detail and a New Method of Car Supply Will Permit Even This Record To Be Improved

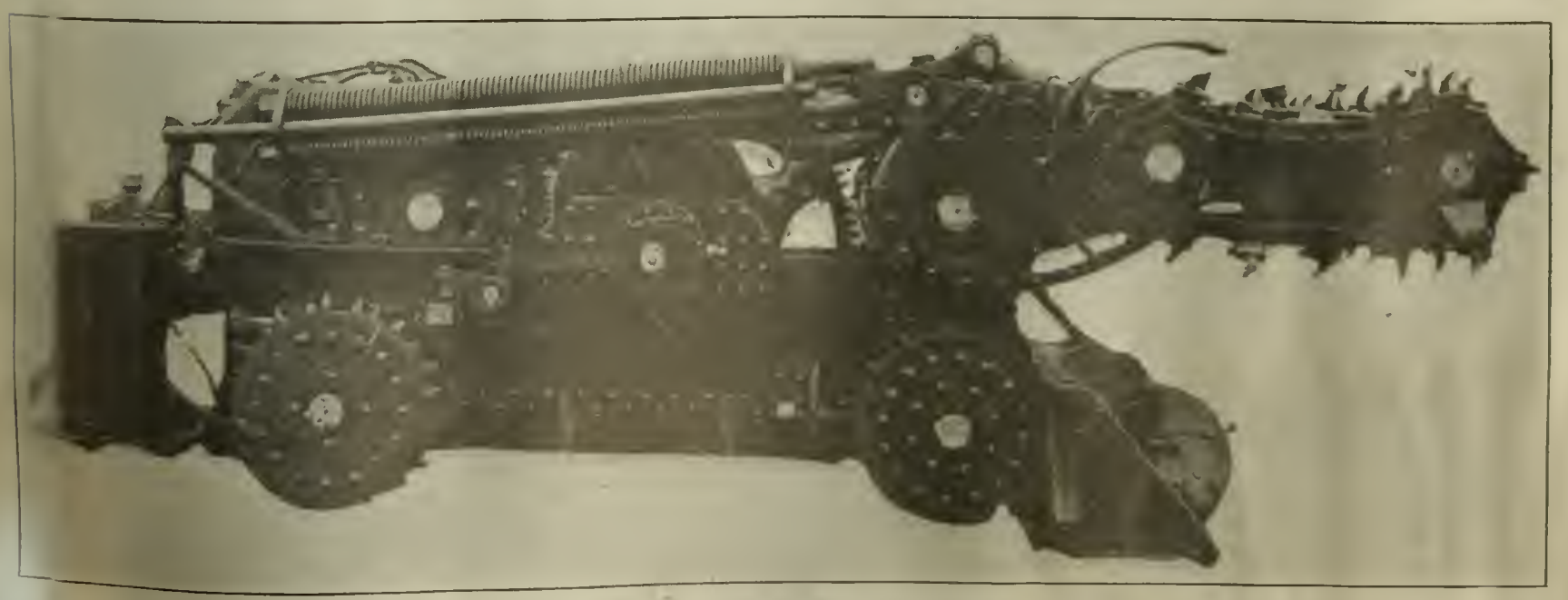
MOST mining machines replace only one of the many hand-mining operations, namely, that of undercutting, while others perform three—cutting the coal, bringing it down and loading it out. This latter combination is an ideal that mining men have long sought.

To this latter type of mining machines the one developed by Colonel Edward O'Toole of Gary, W. Va., and covered by U. S. patent No. 1,143,897, belongs. The present device has been developed as the result of numerous experiments with machines of the same general type. It is designed especially for use in mines producing coal for coking, in which case it is neither necessary nor desirable to obtain large lumps.

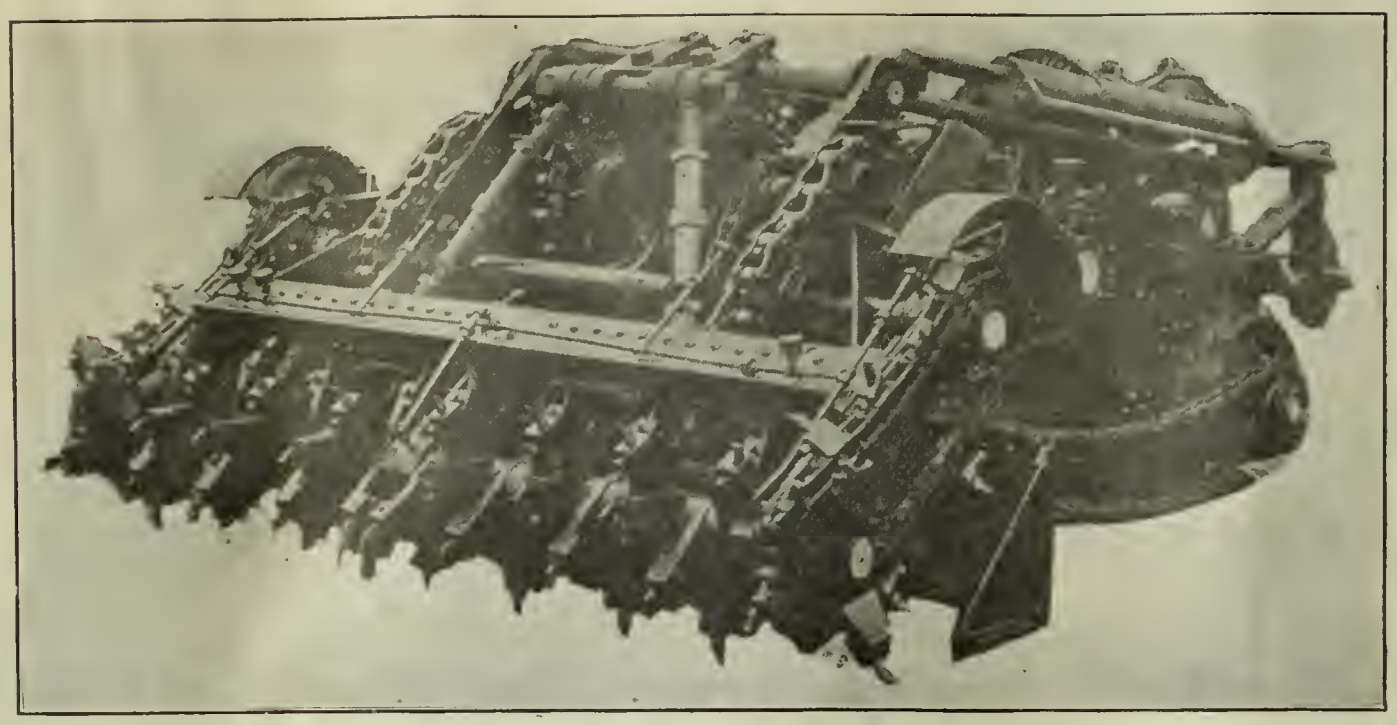
The machine consists of a motor-propelled truck, an oscillating chain-driven revolving head carrying cutter bits and a scraper conveyor for loading the coal from the face into mine cars at the rear of the machine. The head, which swings or oscillates up and down across the working face, consists of a chain-driven steel shaft on which are mounted a number of arms carrying bits. These arms are staggered along the shaft and each bit is about 30 deg. from those upon either side. The head is driven by chains and sprockets through gear and pinion from a 75-hp. motor. The movement of the bits is, of course, rotary about the head shaft, while the entire head is oscillated by means of heavy eccentrics on a drive or countershaft.

As coal is cut from the face, it falls to the floor, where it is moved to the center of the machine by means of two short screw conveyors, where it is scooped into a scraper conveyor that moves it backward over the top of the machine and deposits it in a mine car at the rear. The stress and shock of the cutter head are relieved by heavy triple reciprocating springs mounted upon either side of the machine. All parts are of sturdy and massive construction, and the machine itself as a whole is heavy so as to withstand the hard work it is designed to accomplish. Each part is, however, easily accessible for inspection or repair in case of wear or breakdown.

A daily record of this machine, being the average of several days' operation, is as follows: Distance advanced, 38 ft.; power consumption, 164 kw.; tons mined, 89; average time of operation, 6 hr. 40 min. The tests herein averaged were conducted simultaneously with experiments on exhausting coal from the mine by means of an air blast. A Root blower was connected to a large spiral-riveted pipe and operated exhausting. This pipe extended for several hundred feet into the mine and was connected with the mining machine. An attempt was thus made to draw the coal



SIDE VIEW OF THE MINING MACHINE SHOWING HOW COMPACTLY THE UNIT IS BUILT
Here may be seen the springs which cushion the movement of the oscillating head, the cutting bits and the screw conveyor. The spikes on the wheels are provided to feed the machine forward.



With Lowered Cutter Head

Note the many separate cutting arms which cut the face of the coal by revolving and oscillating vertically and not, as is usual, with cutter chains by moving horizontally.

out of the mine and into a tank over the railroad track. This attempt was highly successfully in so far as coal removal was concerned, but in its passage through the pipe the material was reduced to dust. Although this condition was not disadvantageous, as far as immediate coking was concerned, the coal obtained could not be shipped long distances in open-top cars.

Because readings were being taken at the time that the experiment was being conducted, the results obtained are not a true indication of what the machine can do. One instance of this kind is the record for one day in which 154 tons were mined in 9 hr. and 47 min., and the advance was 66 ft., the average consumption being 120 kw. The passage driven was in all cases approximately 10 ft. wide and 7 ft. high.

It is the present intention to fit this machine with a caterpillar truck and make certain minor changes in the details of construction. A new method of handling mine cars will then be tried, as car supply is the great problem in successfully operating loading machines.

A table showing some of the work performed by this machine, the time consumed and the cost is presented herewith. These figures are now six years old and would have to be recalculated, using a new basic rate, in order to bring them up to date and render them comparable with present conditions and prices.

OPERATION OF O'TOOLE MINING MACHINE, SHOWING WORK DONE AND COST

Month	No. Days Worked	Feet Cut	Tons Mined	Labor Expense: Operation and Repairs	Bits	Pipe	Rash	Misc.	Total
June	15	384.77	872.8	$218.10	$16.10	$174.42	$60.90	$23.20	$492.72
July 1-15	7	264.23	613.2	80.58	4.16	53.84	106.00	10.55	255.13
July 16-31	11	402.07	924.8	102.00	9.59	91.35	120.55	38.53	362.02
Aug. 1-15	8	283.91	845.0	90.93	5.64	100.01	36.04	41.01	273.63
Aug. 16-31	11	518.03	1,301.0	85.44	22.20	113.47	37.94	27.94	286.99
Sept. 1-15	13	394.67	1,216.2	139.20	18.56	123.55	51.72	14.90	347.93
Sept. 16-30	13	216.54		97.51	8.99	88.89	48.56	21.47	265.42
Oct. 1-15	4	67.02	221.7	67.83	2.83	27.03	6.58	121.08	225.35
Oct. 16-31	7	135.13	217.9	45.17	7.90	12.93	9.56	9.05	84.61
Nov. 1-17	5	191.67	601.0	55.65	9.04	24.45	10.60	4.65	104.39
Totals	94	2,858.04	6,813.6	$982.41	$105.01	$809.94	$488.45	$312.38	$2,698.19
Per ton mined	..	.....	.....	$0.1441	$0.0154	$0.1189	$0.0717	$0.0459	$0.3960
Per day worked	..	30.40	72.5						

With Raised Cutter Head

Note the right- and left-hand screw conveyor, by which the broken coal is carried to the center of the machine to be drawn backward toward the mine car.

A Quarter Century of Mine-Car Evolution

New Car Still 42-In. Gage but Almost Twice as Capacious and Nearly 25 Per Cent Lower—Has Outside Journal Boxes, Wheel Housings, Spring Drawheads and No Endgate—Car Is Part Wood and Part Steel

THE accompanying illustrations show the progress made in a quarter century of mine-car design. Both cars were designed by the same engineer—Carl Scholz. This makes a comparison of the two doubly interesting. In both cases also the track gage is the same, being 42 in.

In the older car it may be observed that the wheelbase is 27 in., the wheel is 18 in. in diameter, the length inside the box is 7 ft. 6 in. and over all 8 ft. 11 in. The height of box above the rail is 3 ft. 3 in. and the height over all is 4 ft. The over-all width is 5 ft. ½ in. The estimated capacity of the car box level full is about 60½ cu.ft.

Is a Foot Lower But Takes Twice the Load

The new car has a 16-in. wheel instead of one of 18 in., and a 38-in. wheelbase instead of one of 27 in. The length over all is 12 ft. as opposed to a little under 9 ft., and the width over all 6 ft. 3 in. instead of a trifle over 5 ft. The inside dimensions of the car box are as follows: Length, 10 ft.; width, 6 ft.; depth, 2 ft. Allowing 1½ cu.ft. for the wheel- and draw-bar spring covers this gives a net cubical content, level full, of 118½ cu.ft. The height over all is 3 ft. 1¾ in. It will be noted how much lower the newer and larger car is. It is becoming recognized that a high car causes coal breakage and a considerable waste of muscular energy.

Perhaps the most striking difference between the two cars lies in what might be termed fundamental details. The older car is of a type familiar to all mining men—a wooden car with a flared box, belted and strapped with iron. It was built for end dumping, and the endgate, which, it will be observed, is higher than the car side, was arranged to lift as the car tilted. The new car, built of structural shapes and oak planks, is of solid-body design, usually discharged by means of a rotary dump.

Whereas the old car has solid inside journal boxes, the new car has roller-bearing outside journal boxes, also one tight and one loose wheel. Allowing the car bottom to extend out sidewise beyond the wheels increases the capacity of the car and keeps both its height and center of gravity low. Even on cars built for end dumping the wheel housings within the car box need not interfere with the discharge of the contents.

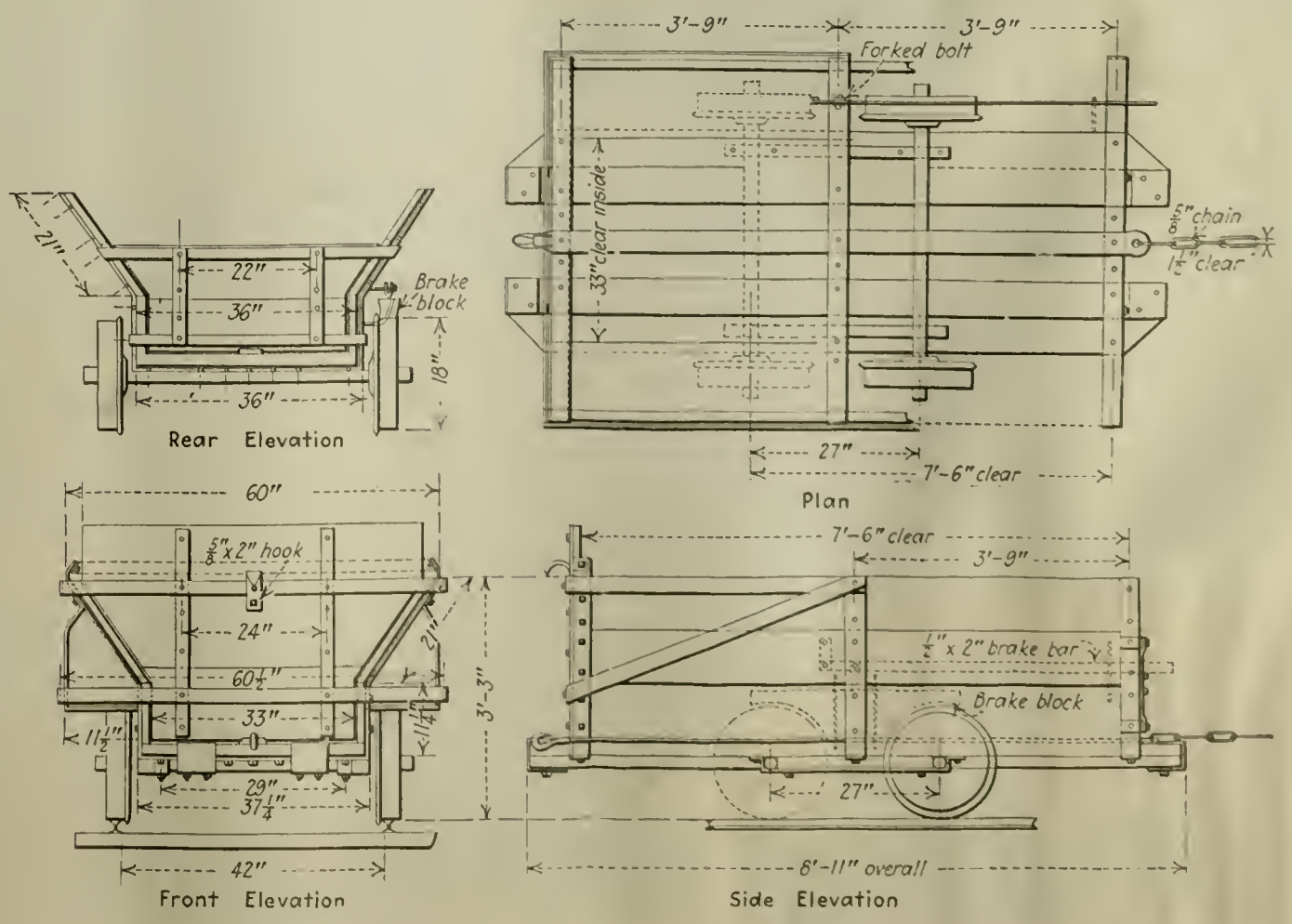
As will be noticed, the draft mechanism is provided with a spring drawhead at one end. Every mining man is familiar with the jerking of a trip of cars when the locomotive attached to them makes a start. This not only subjects the couplings to a decided shock, which when often repeated tends to crystallize the metal, but jerks and shakes coal from the top of the cars upon the track. Putting a spring or springs in the line of pull markedly lessens the jerk imposed upon both the couplings and the contents of the cars.

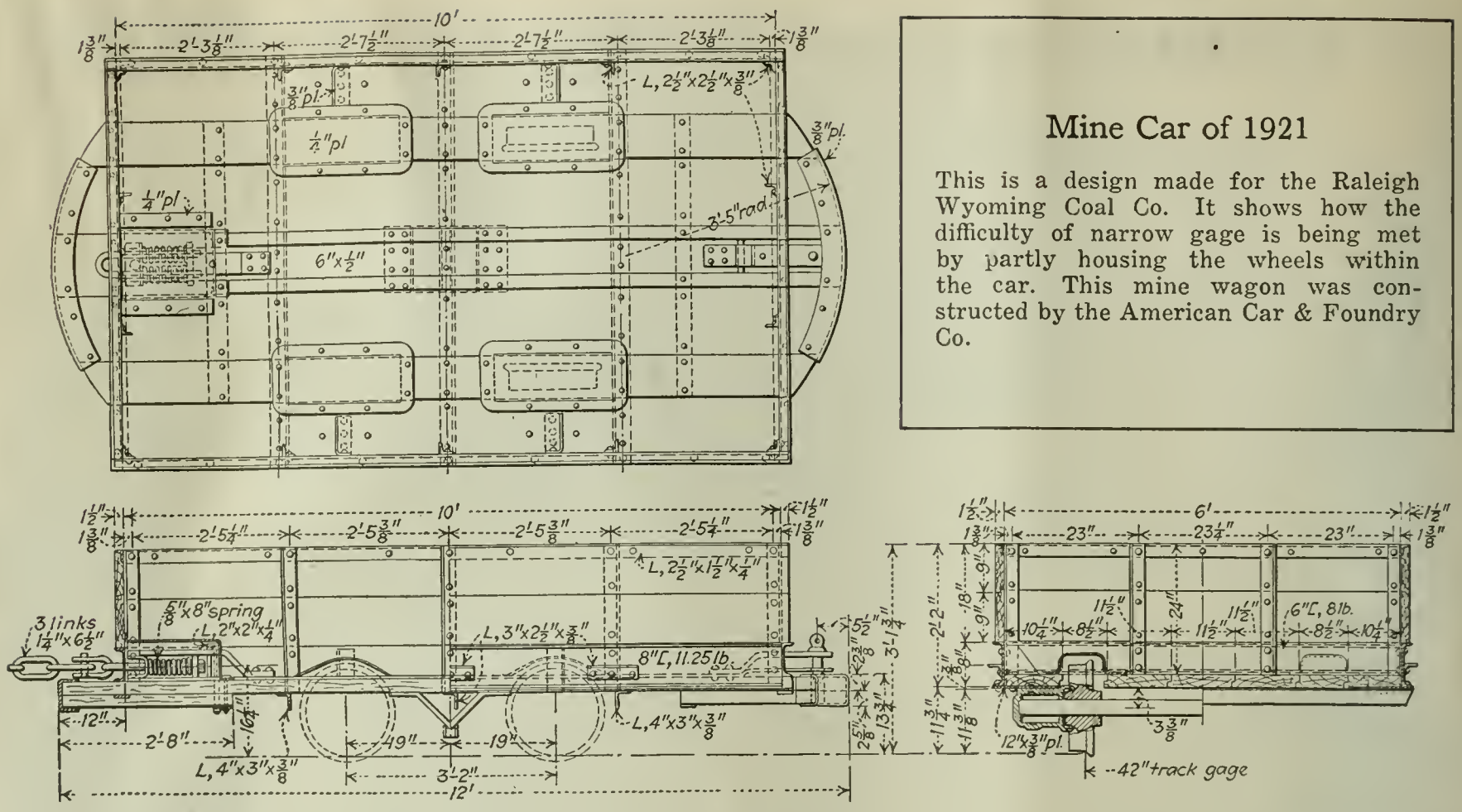
Modeling Cars After Railroad Practice

Gradually the mines are adopting, and adapting, the details of construction that have made our modern railroads possible. The day probably is not far distant when spring-suspended journals will be common practice. Self-acting or automatic couplings doubtless would be advantageous, but the chief difficulty encountered in their adoption is the sharp curves around which the cars must be moved. This problem so far has not been solved.

Mine Car of 1895

This car was designed for the mine of the Thomas Scholz Coal Co., Monmouth, W. Va. The capacity is limited strictly by the gage except in so far as the flare of the car makes it possible to widen the load at the top and in the overtopping. The draftsman has made the endgate fit quite neatly. If it was usually as tight as in the drawing here shown the demand for the solid car would be less pressing.





The new car is of what is termed composite construction—that is, a portion of the box is made up of channel iron, while the remainder is of planking. Opinions differ somewhat among operators concerning the advisability of using steel cars instead of wooden ones. Both types of construction possess obvious advantages. The chief objections to all-steel cars are their rigidity and liability to take a permanent "set" if once strained out of shape. The wooden car, on the other hand, appears to be much more flexible, and will give, or "work," to compensate for unevenness in the track. It admits also of easy repair after accident. The composite car possibly does not embody all of the advantages of either the all-wood or all-steel construction but doubtless shares in large measure the good qualities of both.

Mine Car of 1921

This is a design made for the Raleigh Wyoming Coal Co. It shows how the difficulty of narrow gage is being met by partly housing the wheels within the car. This mine wagon was constructed by the American Car & Foundry Co.

Powdered Coal Saves Stand-By Losses

WHERE proper apparatus and methods are introduced noteworthy economies can be effected by the use of powdered fuel. Losses during short periods during which steam pressure is not required are reduced to a minimum. No air is allowed to pass through the furnace when firing operations stop, the radiant heat of the furnace walls being absorbed by the boiler. Thus are avoided the losses which occur when fires are banked on grates or stokers. Under those circumstances fuel is constantly being burned, and losses are sustained from the incomplete combustion of the gases generated. The time necessary to get up steam is reduced by half when pulverized coal is substituted for lump fuel of similar character. Recent experiments also show an economy in fuel consumption by the use of powdered coal which in some instances is said to be as high as 30 per cent.—*Chemical and Metallurgical Engineering.*

COAL AGE INDEX

The indexes to Coal Age are furnished free to all who ask for them. The index for the last half of 1920 is now ready for distribution, and a copy can be had by addressing a postcard to the Subscription Department of Coal Age.

Howat, Freed, Calls Strike, Is Arrested and Imprisoned for Contempt

ONE of the first acts of Alexander Howat, president of the United Mine workers of America in Kansas, on being freed from incarceration was to order a strike. It was agreed after a meeting of the joint board of operators and mine workers about two years back that Karl Mismash was to have a certain wage on reaching the age of nineteen. The Mismashes have presented a record in the family Bible that Karl is of that age. The operators assert, however, that there are two entries in that book, one of which shows that Karl Mismash is not yet nineteen years old.

On this weak basis for a dispute Howat called out the mine workers at two mines, in violation of the Kansas laws. Presiding Judge W. L. Higgins of the Court of Industrial Relations immediately ordered the arrest of Howat, the order being dated Feb. 5. This strike is the first officially ordered since the passage of the Industrial Relations Law of Kansas. Howat was arrested Feb. 7.

On Feb. 16 he was found guilty of contempt of court and sentenced to a year in jail by Judge Andrew J. Curran of the Crawford County District Court.

With Howat were found guilty his five co-defendants in the contempt proceedings, all officers of the Kansas union. They are August Dorchy, vice president; Willard Titus, John Fleming, James McIlwrath and Earl Maxwell, executive board members.

All the defendants were sentenced to a year in jail and to pay costs.

Howat was released on bail pending a hearing for appeal. He still faces prosecution, however, on a criminal charge for calling a strike in violation of the Kansas industrial law, referred to above.

DR. G. H. ASHLEY, STATE GEOLOGIST, says that originally Pennsylvania had 21,000,000,000 tons of anthracite. Of this about 6,000,000,000 tons have been mined or made unminable. At the present rate of mining—about 80,000,000 tons a year and 20,000,000 tons going into the classification of lost coal—the deposits are good for 150 years. The gas coal of the Greensburg and Uniontown basins will last twenty-five years more, at the present rate of exhaustion, and the Pittsburgh Bed will be gone in eighty years. The state's original bituminous content was 112,500,000,000 tons, of which 106,500,000,000 tons remains available.

Obstacles to Return of Pre-War Mining Costs

As Labor Accounts for 70-80 Per Cent of Coal-Production Expense, Existing Wage Scales Are Almost Insuperable Barrier—Strategic Advantage with Workmen—Greatly Increased Demand Necessary to Encourage Production

By David L. Wing
Washington, D. C.

CHIEF among the factors which cause changes in the costs of a given mine are the changes in the wage scale, and in the tonnage produced. The labor cost per ton forms generally between 70 and 80 per cent of the total f.o.b. mine cost. In the seventy-three mining districts for which detailed statistics for 1918 were published in the Federal Trade Commission series of bituminous coal cost reports the distribution was as follows:

Per Cent of f.o.b. Mine Cost that Goes to Labor	Number of Districts	1918 Production, Tons	Per Cent Total Tonnage
60—64	1	247,000	....
65—69	10	175,880,000	35
70—74	33	158,877,000	32
75—79	18	129,913,000	26
80—84	11	32,502,000	7
Totals.....	73	497,419,000	100

It will be noted that the differences between the labor cost proportions from district to district are much less than between the total costs themselves, which, excluding lignite, ranged from $1.62 per ton in a West Virginia field to $4.45 in an Arkansas field.

The principal reasons for the differences of cost from field to field are the physical conditions under which mining must be carried on, chief of which are thickness of seam and the extent of the use of modern machinery for mining and transporting coal to the mouth of the mine, instead of old-fashioned pick mining and mule haulage. It is a mistake, however, to try to measure the advantage that one district has over another by a direct comparison of their respective labor or even total f.o.b. mine costs. Allowance must be made for the much heavier investment necessary in the fields where machinery is used to cut down human labor for mining and transporting the coal.

Nor does it necessarily follow in a given field that the thicker the seam, the lower will be either the labor cost or the total f.o.b. mine cost per ton. The analyses of cost by thickness of seam mined shown in the Federal Trade Commission reports indicate that after a certain thickness of seam is reached—in most districts between five and six feet—the mining of thicker seams involves higher costs. In other words, both labor and total f.o.b. mine costs per ton in a given field are likely to decrease as the thickness of seam increases from two feet up to between five and six feet, and then to rise as the thickness increases still further. Apparently in such cases it is the greater amount of labor and supplies required in timbering the thicker seams which increases the costs.

Wage scales for each field are fixed with relation to the particular mining conditions of the field. Common or uniform increases in the existing wage scales, however, have widely different results in their effect on the per-ton labor costs of the different fields. Thus it was that the wage increase granted November, 1917, for which a uniform price increase of 45c. per ton was allowed, increased the cost about 28c. per ton in the Illinois mines of F. S. Peabody, according to his testimony before Senator Reed's committee. On the other hand, it has been found that this wage increase in some other fields increased the labor cost as much as 70c. per ton.

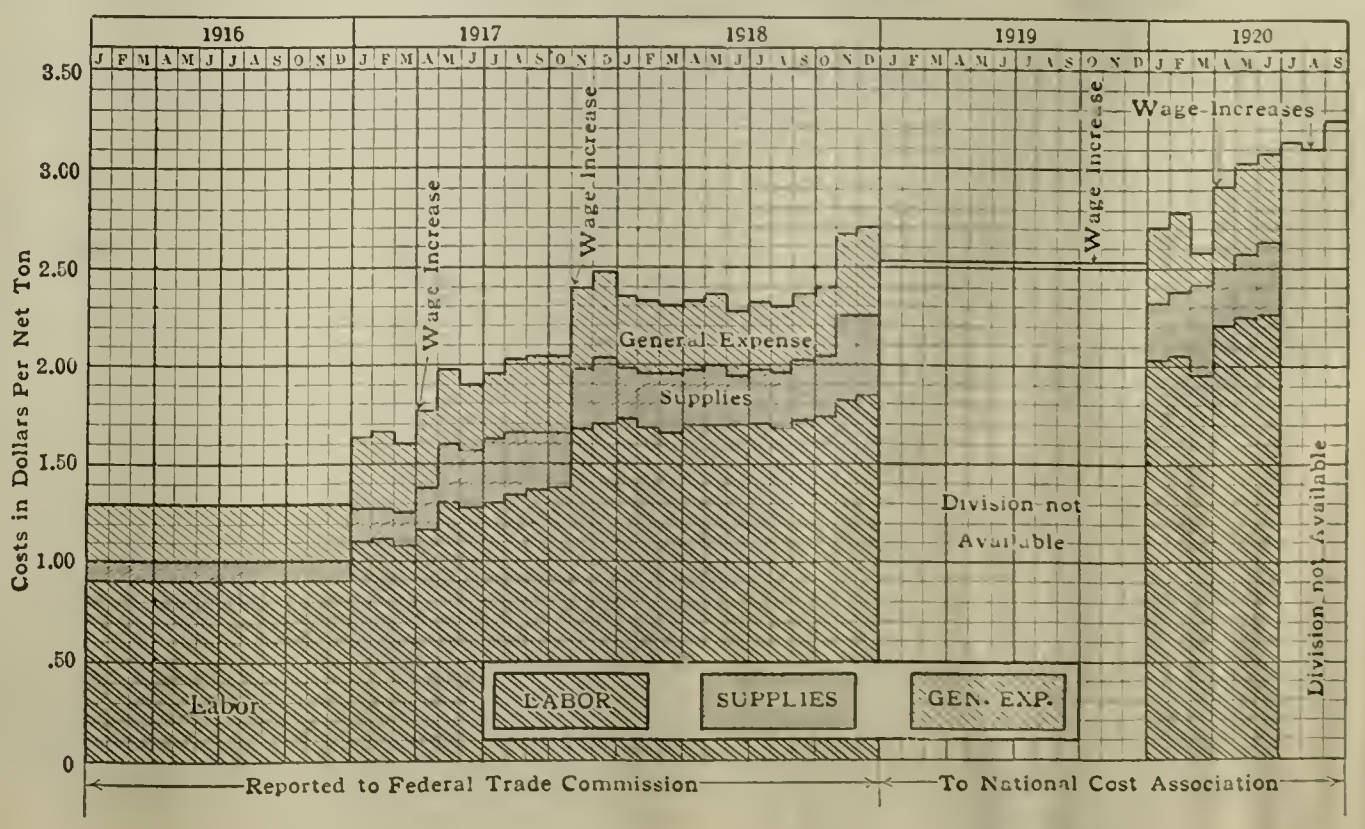
Costs Affected by Variation in Production

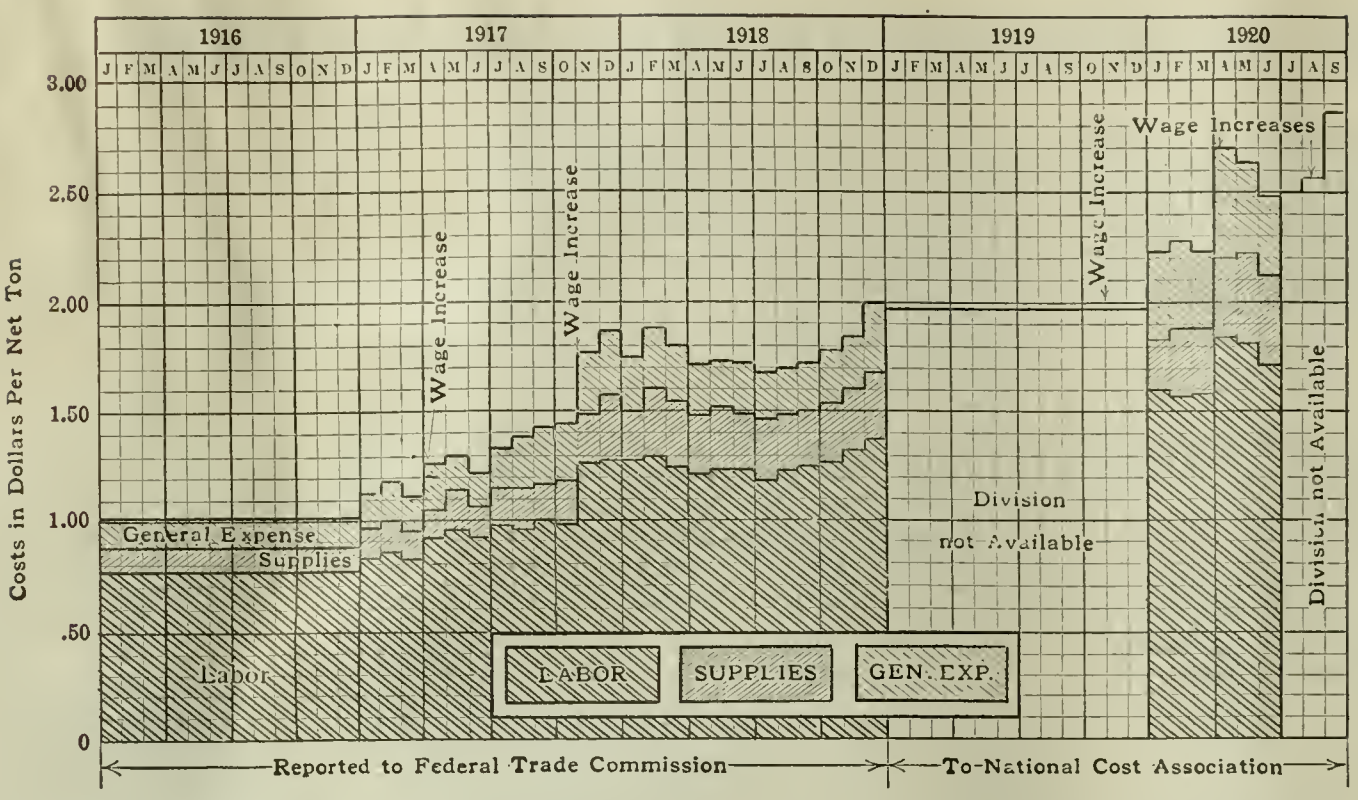
The second chief factor in causing changes in the per-ton cost is the fluctuation in the tonnage produced. Obviously the greater the divisor, the less per ton will be the regular upkeep expenses—whether in supplies or in the general overhead changes. But also the proportion of so-called "non-productive" labor employed in the mine is so large with relation to the labor paid on a per-ton basis that an increase in production will often materially decrease the total labor cost. In fact, the increase in production may be so great as to obscure, for a time, the direct effect of an increased wage scale.

There is little published information available as to costs prior to 1916. There is reason to believe that for the period immediately preceding the war, while costs had been gradually increasing, (leaving out of account the effect of fluctuations in production), there was no sudden jump, the increase taking place in the wages from time to time hav-

Production Costs in Central Pennsylvania

Figures for 1916-18 cover annual production of 9,000,000 tons by thirty-three operators; those for 1919-20 are from the National Coal Association and cover 11,000,000 tons annual output by fifty-nine operators. Federal Trade Commission figures exclude selling expense from cost.





Production Costs in Ohio No. 8 District

Figures for 1916-18 cover annual production of 7,500,000 tons by fourteen operators; those for 1919-20 are from the National Coal Association and cover 7,300,000 tons annual output. Federal Trade Commission figures exclude selling expense from cost.

ing been relatively small as compared to total cost. The 1916 costs, therefore, can be regarded as high water mark for a number of years previous. The experience of the anthracite field, where published labor costs are available as far back as 1913, supports this conclusion. There labor costs on fresh-mined coal of operators who produced about 60,000,000 tons annually were $1.62 per gross ton in 1913, $1.62 in 1914, $1.63 in 1915 and $1.75 in 1916.

The accompanying charts for all of the principal producing fields in the United States—these fields produced about 275,000,000 tons in 1918—show the rapid rise of costs since 1916 and also give some measure of the distribution of costs. The figures for 1916-1918 are taken from the Federal Trade Commission reports, those for 1919 and 1920 from the reports made by operators to the National Coal Association, and tabulated by the Senate Committee on Reconstruction ("Calder committee"). The allocation of these costs to labor, supplies and general expense for January-June, 1920, has been compared on the basis of the distribution shown in the Federal Trade Commission bulletins which covered the first half of 1920. The fields or districts are those established by the Engineer Committee of the Fuel Administration, and are defined as follows:

(1) *Southwest Field, Pennsylvania:* The counties of Allegheny, Westmoreland, Fayette, Greene and Washington, in the State of Pennsylvania, except (1) that portion of Allegheny County from the lower end of Tarentum Borough north of the county line; (2) the territory in Westmoreland County from a point opposite the lower end of Tarentum Borough, north along the Allegheny River to the Kiskiminitas River, along the Kiskiminitas River eastward to the Conemaugh River, and continuing along the Conemaugh River to the county line of Cambria County; (3) operations on Indian Creek in Westmoreland County; and (4) operations in the Ohio Pyle district of Fayette County.

(2) *Central Field, Pennsylvania:* The counties of Tioga, Lycoming, Clinton, Center, Huntingdon, Bedford, Cameron, Elk, Clearfield, Cambria, Blair, Somerset, Jefferson, Indiana, Clarion, Armstrong, Butler, Mercer, Lawrence and Beaver, and operations in Allegheny County from the lower end of Tarentum Borough north to the county line, and in Westmoreland County from a point opposite the lower end of Tarentum Borough north along the Allegheny River to the Kiskiminitas River and along the Kiskiminitas River eastward to the county line of Cambria County, operations on the Baltimore & Ohio R.R. from the Somerset County line to and including Indian Creek and the Indian Creek Valley branch of the Baltimore & Ohio R.R.

(3) *Pocahontas Field, West Virginia:* Operations on the Norfolk & Western Ry. and branches west of Graham, Va., to Welch, W. Va., including Newhall, Berwind, Canebrake, Hartwell and Beech Fork branches; also operations on the Virginian R.R. and branches, west of Rock to Herndon, W. Va.

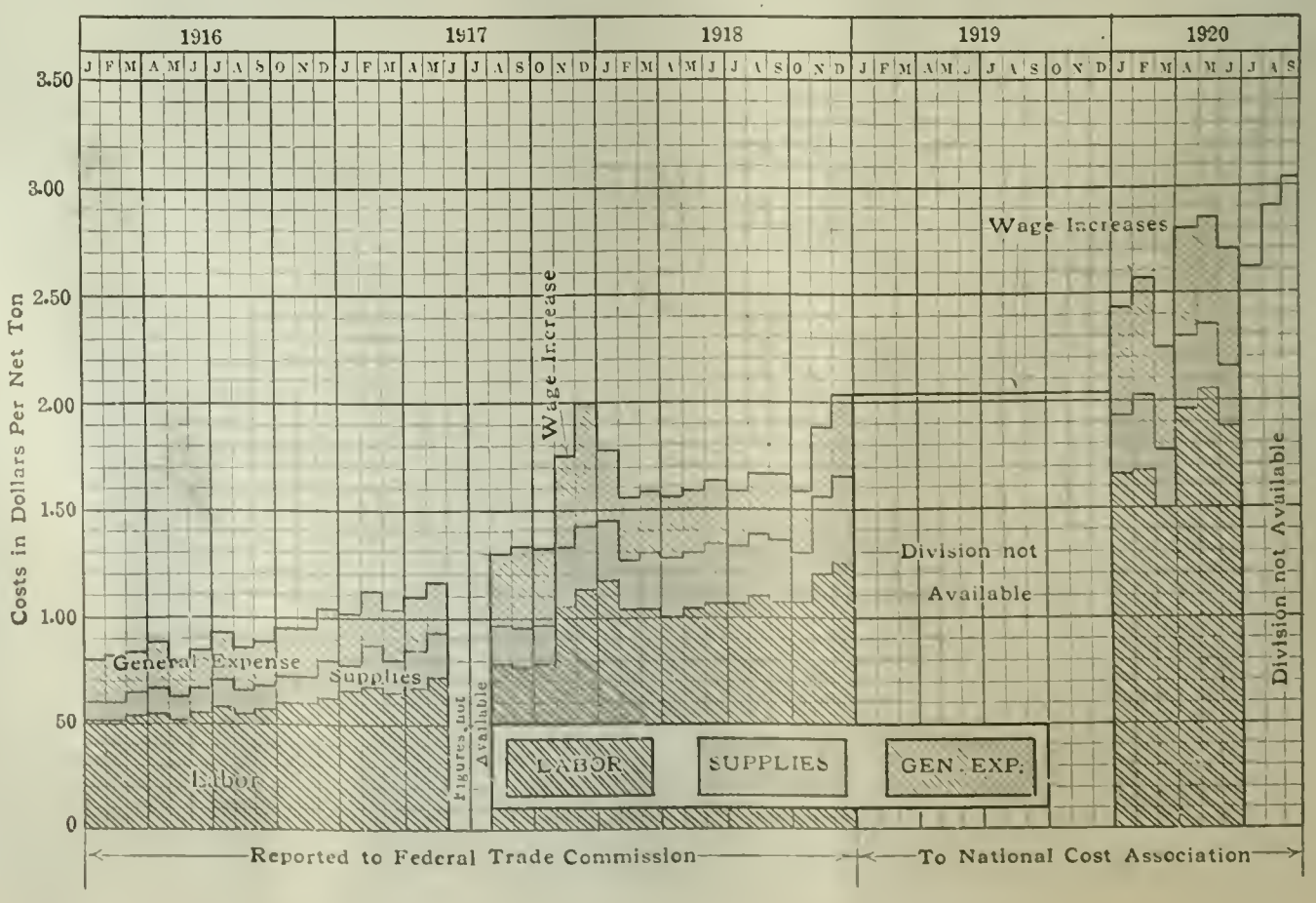
(4) *District No. 8, Ohio:* The County of Monroe, the County of Belmont, except the township of Warren and operations in the 8-A vein in Flushing and Union Townships, the County of Harrison except the townships of Monroe, Franklin, Washington and Freeport, and the County of Jefferson except the townships of Brush Creek, Saline, Ross, Knox and Springfield.

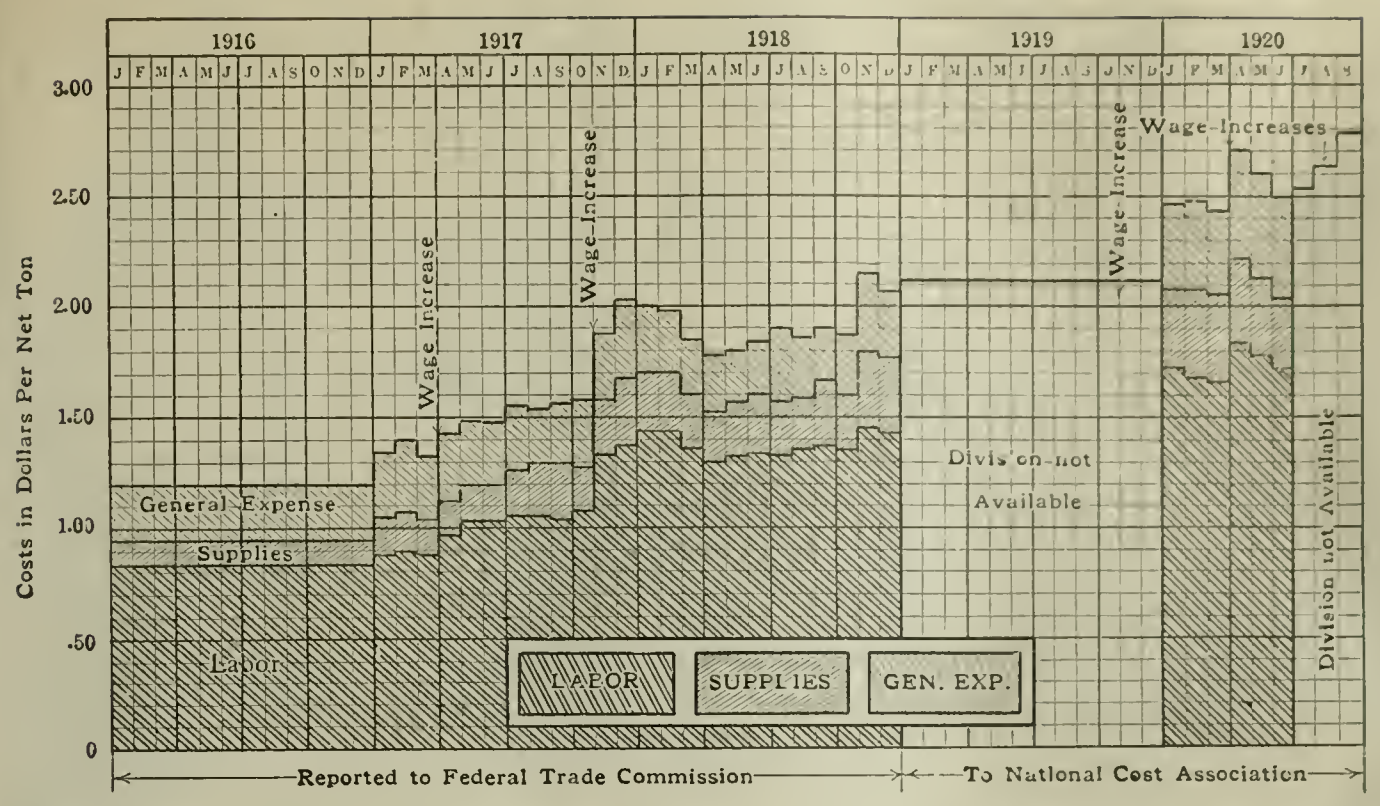
(5) *Bituminous Field, Indiana:* Coal mined in the State of Indiana other than Brazil Block coal.

(6) *District No. 6, Illinois:* Including Marion, Jefferson, Franklin, Williamson, Johnson, Hamilton, Saline, White, Gallatin, and mines along the main line of the Illinois Central R.R. be-

Production Costs in Pocahontas Field, West Virginia

Figures for 1916-18 cover annual production of 7,000,000 tons by sixteen operators, those for 1919-20 are from the National Coal Association and cover 2,600,000 tons annual output by thirteen operators. Federal Trade Commission figures exclude selling expense from cost.





Production Costs in S. W. Pennsylvania

Figures for 1916-18 cover annual production of 23,000,000 tons by seventeen operators; those for 1919-20 are from the National Coal Association and cover 8,000,000 tons annual output by nine operators. Federal Trade Commission figures exclude selling expense from cost.

tween Vandalia and Carbondale in Clinton, Washington, Perry and Jackson Counties.

The charts show clearly what has happened to costs since 1916 in some of the principal fields of the United States. The increases in these fields, based on the 1916 cost, are as follows:

COSTS PER NET TON

(Federal Trade Commission Figures Used Exclusively)

	Pennsylvania				West Virginia			
	Southwest		Central		Pocahontas		New River	
	Labor	F.o.b. Mine	Labor	F.o.b. Mine	Labor	F.o.b. Mine	Labor	F.o.b Mine
1916 (base)...	$0.82	$1.19	$0.92	$1.32	$0.56	$0.87	$0.74	$1.0
Jan.-Mar., 1920	1.50	2.13	1.97	2.56	1.31	1.89	1.79	2.44
Apr.-June, 1920	1.88	2.62	2.17	2.82	1.51	2.11	1.85	2.39
PER CENT OF INCREASES OVER 1916								
Jan.-Mar., 1920	84	179	104	94	138	118	142	124
Apr.-June, 1920	130	120	136	114	175	143	150	120

COSTS PER NET TON

	Ohio		Indiana		Illinois			
	No. 3		No. 8		Bituminous		No. 6	
	Labor	F.o.b. Mine	Labor	F.o.b. Mine	Labor	F.o.b. Mine	Labor	F.o.b Mine
1916 (base)....	$0.84	$1.17	0.78	1.02	0.87*a*	1.09	0.89*b*	1.10*b*
Jan.-Mar., 1920	1.65	2.27	1.54	2.14	1.63	2.00	1.57	1.96
Apr.-June.....	1.64	2.09	1.79	2.47	1.94	2.41	1.77	2.21
PER CENT OF INCREASES OVER 1916								
Jan.-Mar., 1920	97	94	97	110	87	83	77	78
Apr.-June, 1920	96	78	130	142	123	121	100	101

	Illinois		
	No. 3		No. 6
	Labor	F.o.b. Mine	Labor	F.o.b Mine
1916 (base)....	0.86*a*	1.07*a*		
Jan.-Mar., 1920	1.63	1.98		
Apr.-June.....	1.85	2.29		
PER CENT OF INCREASES OVER 1916				
Jan.-Mar., 1920	89	85		
Apr.-June, 1920	115	114		

(*a*) April-December, 1916.
(*b*) July-December, 1916.

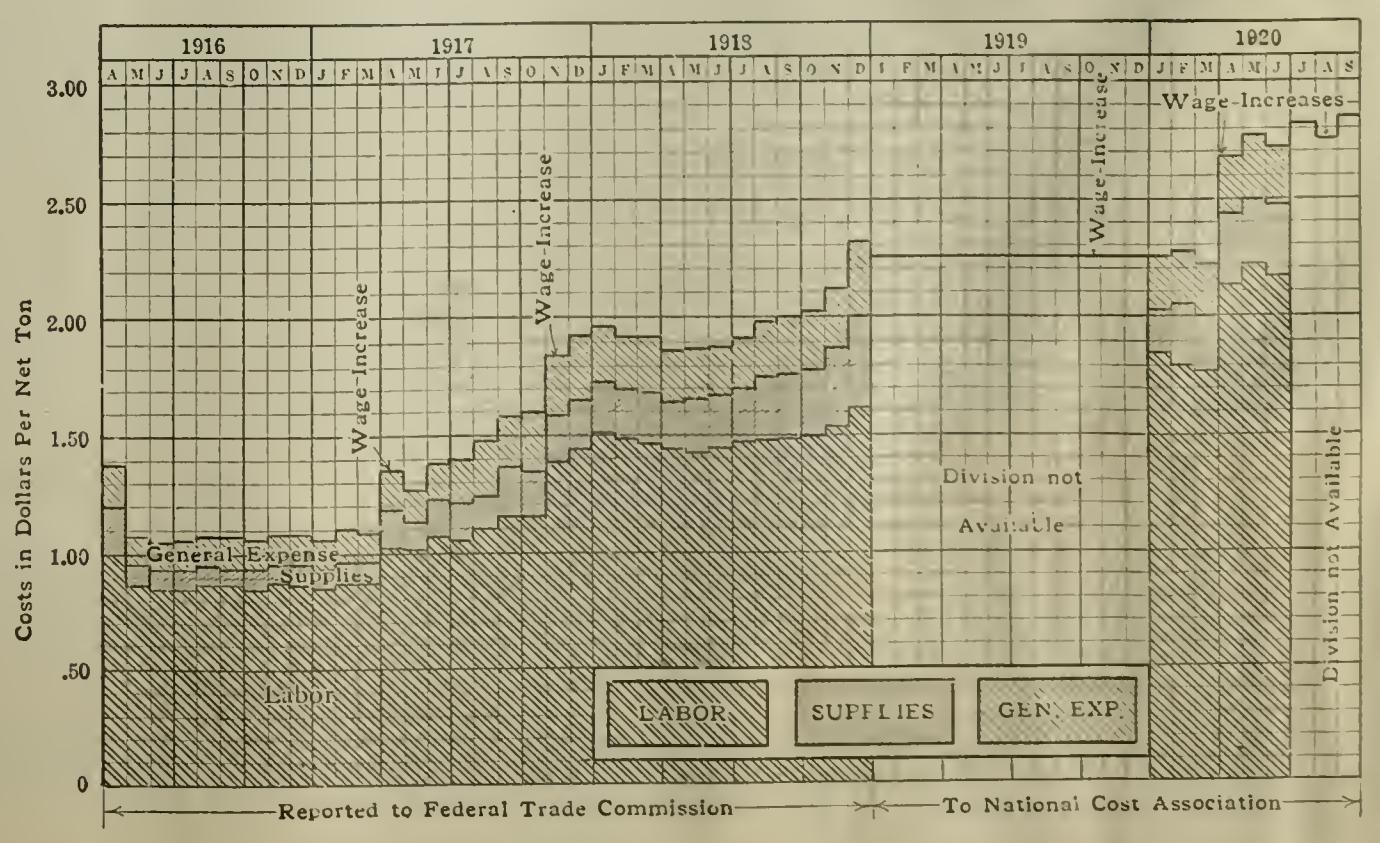
In the foregoing table the 1920 figures, while not strictly comparable because not obtained from the same operators as the 1916 figures, are probably representative enough to show in a general way the change in conditions since 1916. If the September, 1920, total cost figures of the Calder committee be compared with the 1916 total f.o.b. mine cost, the increases shown would be yet more marked, as the effect of the wage increase late in the summer of 1920 was to increase costs. Such increase, however, cannot be as exactly measured because the 1916 figures are "revised" costs and exclude selling expense, while the 1920 figures are "reported" costs, and include selling expense, etc.

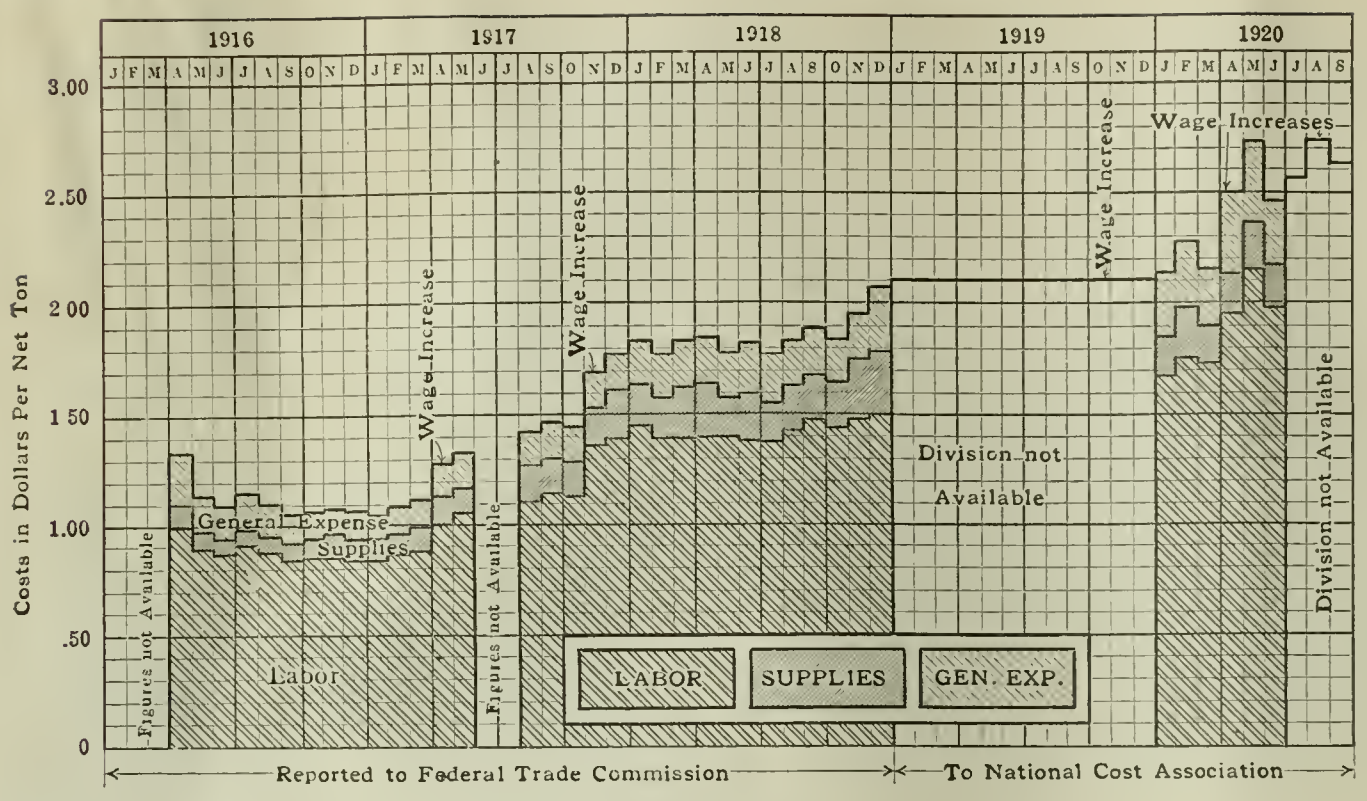
With such increases in costs as those shown above, it is evident that any return to pre-war costs, at least during 1921, is not within the range of probability. While it is conceivable that there may be some reduction in the rates of wages, it will be seen that even so drastic a cut as 25 per cent would not of itself bring costs very materially down, unless at the same time a demand developed which called out a greatly increased production. Furthermore, any substantial reduction of the wage scales, without there first being put into operation some effective measures for increasing regularity of employment, probably would lead to severe labor trouble.

As the events of the past few years have shown, labor in coal mines, just as on railroads, holds the strategic advantage of being able to tie up the whole country throughi

Production Costs in Illinois No. 6 District

Figures for 1916-18 cover annual production of 12,000,000 tons by thirteen operators; those for 1919-20 are from the National Coal Association and cover the same. Federal Trade Commission figures exclude selling expense from cost.





Production Costs in Indiana District

Figures for 1916-18 cover annual production of 14,000,000 tons by thirty-three operators; those for 1919-20 are from the National Coal Association and cover 8,800,000 tons annual output by thirty-one operators. Federal Trade Commission figures exclude selling expense from cost.

an effective strike, it is not likely that costs will be materially lessened through any reduction of wages. Neither is it likely that any material reduction in the total costs will be brought about through further falls in the prices of supplies. Nor can any important reduction be looked for through a decrease in the overhead expense. In fact, the necessary writing off of some of the heavy investment charges caused by high cost development during the past few years, in order to get the investment down to present-day values, will in many cases increase the overhead charge. Finally, while there may be some decrease in cost eventually effected, through the introduction of improved mining methods and machinery, this will be a slow process. Such decreases in the average costs as occur, therefore, are likely to be caused by the closing down of high-cost mines until a balance is reached between the demand for coal within certain price limits and the supply obtainable from mines that can afford to produce at those prices.

The lower price levels, the elimination from the market of the tonnage of the high-cost mines and the increase in demand to be looked for with a revival of industry doubtless will lead to the contracting, next spring, of a much larger proportion of the output than has been the case for several years. The experience of 1920 will not be lost on many large consumers, who now realize that they must contract early in the coal year with responsible parties, and, furthermore, for their own protection they must make better provision for reserve storage at point of destination. All of this can be counted upon to have a steadying effect on regularity of production, and, to that extent, to keep down the costs.

House Bill Provides for Government Coal Purchases by Bureau of Mines

A BILL for the uniform selection and purchase of coal for the government service throughout the country under the Bureau of Mines has been introduced by Representative Rhodes, Missouri, chairman of the House Committee on Mines and Mining, to which the bill has been referred. It provides that the bureau shall select and contract for all coal and other fuel required by any branch of the federal service in Washington or elsewhere within the United States. Provision is made for the selection and purchase of coal direct by any branch of the service upon approval of the bureau. The bureau also is to investigate the coal- and other fuel-burning equipment of the branches of the federal service and their methods of handling, storing and using all fuel, and to recommend such changes in equipment and its use as will result in the greatest fuel economy.

The bill would also authorize the bureau to contract for the purchase of coal and other fuel for different branches of the federal service in advance of the availability of appropriations for payment thereof, contracts not to exceed the necessities of the current year. The bill also authorizes the branches of service to purchase under contracts made by the bureau during April, May and June yearly of such coal and other fuel for their use during the following fiscal year as may be practicable to store at points of consumption, payment to be made by each branch of the service from its appropriation.

It is proposed that the expense of administering the law shall not exceed $100,000 a year, to be made up of assessments of 2c. a ton on each ton of coal purchased for each branch of the service.

U. S. Chamber of Commerce Combating Coal and Live Stock Bills

A VIGOROUS fight has been opened by the Chamber of Commerce of the United States on legislation pending in Congress which in the view of the Chamber provides for government operation of industry. The measures on which the attack is centered as substituting government for private conduct of two of the great basic industries of the country are the Federal Coal Bill and the Federal Live Stock Bill.

Copies of a brief pointing out the dangers contained in the two bills were sent to members of the Senate and the House of Representatives with a letter signed by Joseph H. Defrees, president of the Chamber, asking careful consideration of the arguments advanced against the two bills. At the same time the headquarters of the Chamber sent out to the fourteen hundred organizations and the more than fifteen thousand corporations, firms and individuals included within the Chamber's membership a request that they lend their individual assistance in opposing the legislation.

The Federal Coal Bill, known also as the Calder bill, has been introduced in the Senate and is before the Senate Committee on Manufactures. The Federal Live Stock Commission Bill, popularly known as the Packers' Bill, has been passed by the Senate. A similar measure, much more moderate in form, is before the House.

Mine Payroll Stolen

NOTICE has been received in Louisville, Ky., of the robbery of a registered mail pouch containing $50,000 in cash shipped to the mines of the Wisconsin Steel Co. at Benham, Ky., from a Cincinnati bank, due to arrive at Benham on Friday morning, Feb. 11, for the weekly payroll. It is reported that the pouch was stolen on Thursday night from a truck on the station platform at Corbin, Ky., where mail is transferred from the Cincinnati-Atlanta line to the Cumberland Valley Division of the Louisville & Nashville.

Problems of Operating Men

Edited by James T. Beard

Progressive Standardization

Standardization That Is Not Progressive Is Obstructive and Must Often Prove a Hindrance to the Adoption of Approved Methods and Systems in Any Industry but Particularly So in Coal Mining

AT the December meeting of the Coal Mining Institute of America, held in Pittsburgh, the question of standardization was discussed. The topic proved an interesting one to many of those present and, for a time, there was a lively debate that developed some valuable points, *Coal Age*, Dec. 23, p. 1283, which made some of the contestants sit up and take notice.

Since that time, I have observed that the expression "Progressive Standardization" has come into use in connection with the study of plant management. No long argument is necessary to convince the unprejudiced mind that the word progressive describes the kind of standardization that is to be desired in every industry.

The laws of our country are no more than standardized social customs put into the form of a code by the primary authorities constituting our government. No one questions the advantages gained by a code of laws designed for the guidance of conduct and the protection of life and property. However, what is good for one generation may not prove to be equally good for another.

Standards Become Obsolete with Lapse of Time

With the lapse of time a standard code becomes obsolete. This makes a new one possible and illustrates the idea of progress as expressed by the words progressive standardization in government. The same is true in industry. The practical meaning of progressive standardization is: Much has been accomplished, but more and better is to follow. The movement is ever onward. To stop would be to sprag the wheels of progress.

In the presentation of a new but thoroughly tested idea one often meets with the objection: "I have standardized on such and so, and am not interested in your proposition." Nothing can be clearer to the unprejudiced mind, however, than the fact that standardization is a splendid idea, provided it does not stand in the way of accepting cheaper and better methods of obtaining the same results.

Everyone wants to be progressive, but we are often blinded by the thought that we have adopted the method or equipment that, to our way of thinking, has seemed the most desirable. Let us forget it and conclude that "the best is not yet." No method or system is so complete but that time and practice can suggest improvement. *Progress* is the watchword now and ever.

New York City. L. S. Youngling.

Successful Working of Low Coal

Describing a daily production of 1,500 tons of coal, from a 90-ft. shaft electrically equipped and standardized throughout, the operation being in a 40-in. seam of bituminous coal, in Indiana County, Pa.

I HAVE been reading the interesting article of S. D. Hainley, *Coal Age*, Dec. 30, p. 1334, and am in hearty accord with everything he has said. It would be difficult for me to add very much from my own experience.

Visiting many mines in different localities, one learns that there is a wide difference of opinion in respect to modern methods of coal extraction. On this account, I consider it more profitable to give an account of what has been done in the working of low coal than to express a personal opinion.

Guided by that belief I have chosen to describe a successful operation in a 40-in. seam in Indiana County, Pa. We all realize that every coal mine is a proposition in itself, and a plan that has proved successful in one operation will not necessarily be as successful when employed under seemingly similar conditions in another case.

Mine Electrically Equipped

The mine to which I refer is opened by a 90-ft. shaft and is electrically equipped throughout. The management has standardized on certain designs of motors, pumps, chain machines and drills. The shaft is equipped with an electric hoist that brings to the surface twelve hundred 1¼-ton cars, in an eight-hour shift.

This is a double-compartment shaft and the cages dump automatically by the gooseneck arrangement. Seven men handle the entire daily output of 1,500 tons of run-of-mine coal. This crew includes a cager, tripmaker, coupler, weighboss, a checkboy to handle the checks and two men ("chunkers") who trim and handle the railroad cars as these are loaded.

There are 250 mine cars, which are kept in good condition, a repair shop being located at the shaft bottom. The carwheels are lubricated every ninety days with the best grease on the market, which makes them so easy running that they are pushed both ways to and from the faces in the rooms which are level.

The main north and south entries are driven on the strike, with sufficient grade for good drainage, while the branch entries are made to have a 3 per cent grade in favor of the loaded cars. Four 6-ton and two 10-ton trolley locomotives are employed to haul the coal. The tracks are well ballasted, 45-, 35- and 20-lb. rails being laid on wood and steel ties and coupled with splice-bars at every joint, including jumpers, to provide a good rail return. The longest haul is a mile-and-a-quarter and each car is dumped five times a day, which requires that they be kept moving.

Injurious Effect of Acid Mine Water on Equipment

In this mine, a difficult feature to be overcome was the large amount of highly acid water, which had to be pumped through wooden pipe lines. Centrifugal pumps were used at the shaft bottom, while plunger pumps were employed in the productive sections of the mine, all the pumps being electrically operated.

So injurious was the mine water to all metal parts that it had to be kept from contact with the rails of the track. Otherwise the bottoms of the rails and the spikes holding them would have been rotted out in from four to six weeks. The inflow into this mine was so strong that it was found necessary to pump eight tons of water for every ton of coal hoisted.

While the depth of the hoisting shaft was only ninety feet, the cover overlying most of this seam varied from 100 to 800 ft. About 50 per cent of the roof slate was good, while the rest ran from medium to very bad. In sections where the roof was bad, the coal was higher and of better quality.

One bad feature in the workings was the multiplicity of drippers, producing an undesirable condition to work under. The rooms were driven 30 ft. wide, to a depth of 250 ft., where the roof conditions would permit. A single track was laid in each room, which was timbered with posts set 4½ ft. apart and

kept close to the face. Two men were employed in each place and they did all the work, including drilling and shooting the coal, laying track and setting timber.

All entries were driven 22 ft. wide and double-shifted, as it requires a rapid development to maintain a 1,500 ton output in this low seam. The road is kept on one side of the entry, with a good clearance between the track and the rib. The roof is brushed over the track, this work being done by a crew of three daymen. The material taken from the roof and all refuse is stowed on the gobside of the track.

Good Packwalls Essential

One thing that requires close attention is the building of good gobpacks. On that account, regular slate men are employed to brush the roof and build gobwalls at the side of the road. Where this is left to the miners, the work is but half-done, and the entry is generally kept in a dirty condition, as the boss is apt to think it is the best he can expect of the average miner.

Other instances could be given of mines that are operating successfully in low coal; but few of them present the same difficulties that had to be encountered in the case just cited. I may say, also, that few operations have been as successful in maintaining a good output and preserving the quality of the coal sent to the surface and shipped. The case mentioned furnishes a remarkable instance of what can be accomplished under good management.

Pikeville, Ky. George Edwards.

ANOTHER LETTER

Describing operations in a Nova Scotia coal field underlaid with five or six seams that range from two to three feet in thickness, the beds being inclined at an angle varying from 20 to 30 degrees.

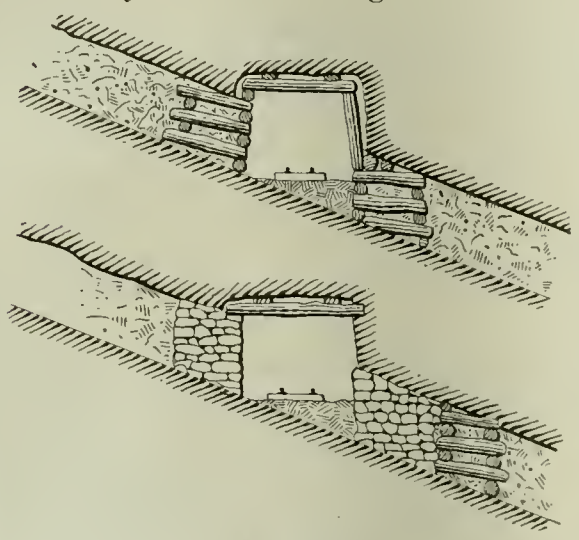
HAVING worked in a dozen different seams of coal where the thickness ranged from 16 in. to 3 ft., I have been interested in what has been said regarding the working of low coal. The operations with which I have been connected have all been paying propositions. All, except one of these, were worked on the longwall system of mining, the one exception having employed the pillar-and-stall method in mining a seam 3 ft. thick.

There are, I believe, more thin seams than thick ones, which makes the question of mining low coal important. I have known instances where the coal from an 18-in. seam and that from an underlying 4-ft. seam were hoisted in the same shaft, and the men working the thin coal made equally as good wages as those mining the thicker seam. In all the places where I have worked hand-pick mining was employed and no cutting machines were in use.

A brief reference to a coal field in my vicinity will be of interest in this connection. The field extends a distance of nine miles, but its breadth has not been fully determined. There are five or six seams of coal, ranging from 2 to 3 ft. in thickness, and the measures are inclined at an angle of between 20 and 30 deg. The coal is generally worked longwall and the face advanced either up the pitch, or across the inclination so as to lessen the grade of the road.

What appeals to me as being of chief interest, however, is the system of timbering the roadways employed in these seams. The method in use is to build cribs of 4-ft. props on each side of the road, as indicated in the upper portion of the accompanying figure. As far as I know, this has been the general method employed in these seams in the past.

Many a time I have examined cribs and wondered if they were actually necessary in the working of a 32-in.



CRIBBING AND WALLING ON PITCHES

seam of coal, as I had never seen a crib used in districts where I have worked under good and bad roof alike. In my experience, the stone from the brushing of the roads was all that was required for building the sidewalls.

Allowing that cribs are necessary to reinforce these walls, in seams of 3-ft. thickness or more, it appears to me that the cribs on the low side of the road should be built at a little distance down the pitch and the space above filled with the bushing, as I have shown in the lower portion of the figure. This plan would furnish a good foundation for the building, which could then be made a good solid wall up to the road and there would be no tendency for it to slip down the pitch.

Walling the High Side of the Road Affords Better Support

The building of the cribs on the high side of the road will take a longer time and require extra care in placing the timbers and giving them a good foundation. If the roof is a soft soapstone or shale it may have a tendency to crumble above the crib. Here too, it seems to me that better support would be given by building a good wall, say 6 ft. in breadth, on the high side of the road. I observed that some of the props in the high-side cribs had been shoved out of place and the support of the roof was greatly weakened.

The opinion seems to prevail throughout this field, however, that the cribs furnish a far greater support to the roof and prevent its caving in on the roads than any other method that could be employed. In my own practice, I have experienced very little trouble from caving. Results show that a longwall roof will settle in its own way, crib or no crib. The steady advance of the working face insures a uniformly gradual settlement of the roof.

Though I have not mentioned this feature, it is clear that the question of cribbing, or building packwalls of stone, must be determined largely by the cost of timber and the possible supply. The point I question is whether timber cribs are necessary in a seam 2 ft. 8 in. in thickness where the inclination is 20 deg. or more. Mac.

Cumberland, N. S., Canada.

A THIRD LETTER

Working low coal must be made attractive and every point looking to economy in production must be carefully considered.

THERE is hardly a question but that the successful working of a low-coal seam requires the thoughful study of all the conditions. The points brought forward in the letter of S. D. Hainley, *Coal Age*, Dec. 30, p. 1334, are most practical and economical, in respect to their bearing on the success of the operation. Permit me to mention one or two others of equal importance.

First, it has been my experience that, in providing the necessary headroom on the roads when working thin coal, it is more practicable to lift the bottom than to brush the roof. In either case, of course, there are yardage charges that must be met and cannot be avoided. The peculiar advantage in lifting bottom where this is required in the rooms is that the miner then works on a bench and is not troubled with water, which would make his work unpleasant and objectionable.

Advantages Gained by Lifting Bottom in Low Coal

When mining in low coal, a man must lie or sit the most of the time on the bottom, which he cannot do comfortably if that is wet. Again, there is the advantage that the coal is more readily loaded off the bench into the car, which stands on the track at a somewhat lower level. Every miner will appreciate what this means to him in the loading of his coal. These minor points, often overlooked, make the work more attractive to the miner and constitute an important feature in the working of low coal.

Last, but by no means least, is the application of mechanical means for mining and loading the coal, with a view to saving labor and increasing the production per man. Today, mechanical inventions are keeping pace with the growing need of such devices in coal mining. This feature justifies a thorough investigation of the latest and most up-to-date drilling, cutting and mining machines now on the market. I believe that the time is near at hand when all low-coal seams of considerable extent will be mined and loaded wholly by machinery with less expense.

Thomas, W. Va. Observer.

Effect of Barometric Change on a Sealed Section of a Mine

Changes in barometric pressure are suggested by this writer as the possible cause of observed changes in the breathing of a sealed section of a mine.

KINDLY permit me to offer the following suggestions regarding the probable cause of the observed change in the breathing of a sealed section of a mine, as described by "Fireboss," *Coal Age*, Dec. 30, p. 1336.

The statement was made that a section of a mine containing about twenty rooms had been abandoned and sealed off, presumably to prevent the escape of the gases accumulating in that section. A pipe had been built into one of the seals and provided with a valve to enable the gases escaping from the section to be tested.

It is further explained that it had been the custom for the fireboss to open this valve when making his examination of the mine in the morning, and observe whether the air was being drawn in or blown out from the section. It is said that the tests showed that air was being drawn into the enclosure during the nine consecutive days. Then, for five consecutive days following, it was observed that air and gas was blown out.

In answer to the question as to the cause of this observed change, allow me to suggest that it can probably be attributed to a change in barometric pressure. It would have been well if the correspondent had given the pressure of the atmosphere at the time of making each test.

If these changes were shown to correspond; in other words, if it was shown that the barometer fell during the night of the ninth day and was lower during the following five days when the breathing was outward, but stood higher during the nine preceding days when the breathing was inward, the conclusion would be natural that the change in breathing was due to the atmospheric condition.

My belief is that any considerable increase in atmospheric pressure would have the effect to force the mine air into the sealed section. Then, any drop in atmospheric pressure would be followed by the expansion of the gases within the section, and they would flow out onto the entry. THOMAS CHESTER.

Pittsburgh, Pa.

Inquiries Of General Interest

Treatment of Feedwater to Prevent Corrosion in Boilers

The Quantity of Each Reagent Used for the Purification of a Given Quantity of Water, To Be Used as Feedwater in a Steam Boiler, Should Be Calculated from the Analysis of the Water

HAVING to use a hard feedwater in our boilers we have been treating this with soda ash and lime to soften the water, besides filtering it through sand for the purpose of removing the sediment before permitting the water to pass into the boilers.

Following is an analysis of the water before and after treatment:

(Before)	Grains per Gal.	Parts in 100,000
Silica	.090	0.154
Iron oxide and alumina	.020	0.034
Calcium sulphate	6.056	10.368
Calcium carbonate	10.121	17.327
Magnesium carbonate	5.653	9.678
Magnesium chloride	2.519	4.313
Sodium chloride	2.271	3.888
Total solids	26.730	45.762

In treating this water we are using 100 lb. of soda ash and 200 lb. of quicklime in 60,000 gal. of water.

(After)	Grains per Gal.	Parts in 100,000
Silica	.06	0.103
Iron oxide and alumina	.06	0.103
Calcium carbonate	.32	0.548
Magnesium carbonate	2.16	3.698
Magnesium sulphate	.18	0.308
Total	2.78	4.760

The suggestion has been made of using zinc in the water, and I would like to ask what effect would pure zinc have when placed in a boiler that is in use. Would it be effectual in keeping down corrosion by softening the water and the scale that is deposited on the tubes and drums? I shall greatly appreciate any information you can give me in this regard.

MASTER MECHANIC.

Universal, Ind.

The analysis of this feedwater before treatment shows that it contains 26.73 grains to the gallon solid matter, or $26.73 \times 17.12 = 45.762$ parts of solid matter in 100,000 lb. of water, which is well within the practical limit of treatment. A water containing 100 lb. of solid matter per 100,000 lb. of water, it is generally agreed, should be condemned for use as feedwater unless a better supply is not obtainable.

However, from the analysis given, we estimate that in the treatment of this water there is too large an amount of the reagents used. We would suggest that for the removal of these impurities it would be better to use 105 lb. of good quicklime and 54 lb. of a good quality of soda ash, in treating 50,000 gal. of the water.

As is well known, the carbonates of the alkaline earths, barium, calcium and magnesium, are held in solution in many waters by reason of the presence of carbonic acid. In other words, the alkaline earths then form bicarbonates, which are soluble. But any substance, as soda ash or quicklime, that will absorb the carbonic acid will reduce the bicarbonates to carbonates, which are insoluble and precipitate in the water. The water should be heated to facilitate and complete these reactions, which are expressed by the following equations:

$$\underset{\text{Calcium bicarbonate}}{Ca(HCO_3)_2} + \underset{\text{Soda ash}}{Na_2CO_3} = \underset{\text{Calcium carbonate}}{CaCO_3} + \underset{\text{Sodium hydrate}}{2NaHO} + \underset{\text{Carbon dioxide}}{2CO_2}$$

$$\underset{\text{Calcium bicarbonate}}{Ca(HCO_3)_2} + \underset{\text{Quicklime}}{CaO} = \underset{\text{Calcium carbonate}}{2CaCO_3} + \underset{\text{Water}}{H_2O}$$

For the purpose of preventing the formation of scale in the use of an impure feedwater in a boiler, petroleum (coal oil) introduced into the boiler in comparatively small quantities has been found efficacious. The action of the oil is to coat the sediment floating in the water, and the surface of the metal on which the scale is deposited with an oily film that prevents very largely the coagulation of the sediment and its attachment to the metal surface.

In any case when using a feedwater that is not pure or that contains sediment the boiler should be blown off at short regular intervals daily, or once or twice a week, according to the purity of the water. This is necessary to remove the sediment from the boiler and drum.

The use of zinc in large plates, say 12 in. long, 6 in. wide and ½ in. thick, suspended within the boiler and having a good contact with the metal tubes and sheets is a means used successfully in marine boilers. It is particularly good for purifying a feedwater containing salt (sodium chloride). But it is hardly necessary in the present instance, as the small amount of sodium chloride present should be held in solution in the water.

Pittsburgh Coal Proposition

A maximum recovery of coal is required in the working of this seven-foot Pittsburgh seam, which must be accomplished without damage to the surface, as the operator owns the coal rights only.

KINDLY permit me to present the following proposition for discussion by *Coal Age* readers who have had experience in the working of the Pittsburgh seam. I would like to ascertain what system of extraction or method of working should be employed to insure the largest extraction of coal and entail no risk of damage to the surface. The proposition is to take out the coal underlying 300 acres of land when the operator owns the coal rights only.

The seam will average 7 ft. in thickness and the depth of cover ranges from zero at the outcrop to about 300 ft. at the boundary, distributed about as follows: Starting from the outcrop, approximately 143 acres has a cover ranging from 0 to 100 ft. in depth; 34 acres, a cover of 100 to 150 ft.; 51 acres, 150 to 200 ft.; 56 acres, 200 to 250 ft.; and lastly 16 acres with cover ranging from 250 to 300 ft. in depth.

A general section of the strata at the thickest point would include the following in their order of succession:

	Feet
Surface	10
Limestone	15
Sandy shale	44
Sandstone	30
Coal	1
Shale	5
Limestone	65
Sandstone	25
Coal	5
Sandstone	25
Limestone	41
Coal	4
Limestone	5
Sandstone	25
Pittsburgh coal	7
Hard fireclay	..

As previously remarked, the owner of the coal possesses no rights whatever on the surface and is liable for damage of any kind resulting from the extraction of the coal. While I have, myself, some very definite ideas in regard to this proposition, it will be a pleasure to learn of the experience of others who have mined the Pittsburgh coal and can suggest what thickness of pillars should be left for the protection of the surface to insure the operator against liability for damage.

Uniontown, Pa. Mining Engineer.

The mining of the Pittsburgh seam under specified conditions is always of interest, and we gladly present this proposition for discussion by those who have had experience in working this coal under conditions similar to those described by this correspondent. Unfortunately, the inclination of the seam has not been given and will have to be assumed according to the writer's knowledge and experience.

Examination Questions Answered

Miscellaneous Questions

(Answered by Request)

QUESTION—*With a fan developing 30 hp. and producing but 50 per cent of useful effect, if the water-gage reading is 2.3 in., what quantity of air should be circulated per minute?*

ANSWER—The effective work in this case is $0.50(30 \times 33{,}000) = 495{,}000$ ft.-lb. per min. The pressure corresponding to a 2.3-in. water gage is $2.3 \times 5.2 = 11.96$ lb. per sq.ft. Then, the quantity of air in circulation, under these conditions, will be $495{,}000 \div 11.96 = 41{,}400$ cu.ft. per minute, nearly.

QUESTION — *An air current of 3,000 cu.ft. per min. is charged with gas to its highest explosive point, how much fresh air must be added to prevent the formation of a cap?*

ANSWER — The answer to this question will depend on the ability of the observer to detect the first formation of a cap, and the kind of lamp used for that purpose. A mixture of gas and air, at its maximum explosive point, contains 9.46 per cent of gas. The volume of gas in this current is, therefore, $0.0946 \times 3{,}000 = 283.8$ cu.ft. per min. Assuming the first indication of a cap is observed when one per cent of gas is present, the volume of air and gas in this current would be $283.8 \div 0.01 = 28{,}380$ cu.ft. per min. The volume of air that must be added to produce this condition is, therefore, $28{,}380 - 3{,}000 = 25{,}380$ cu.ft. per minute.

QUESTION—*Can a miner live in air in which the oxygen content is reduced to 17 per cent?*

ANSWER—Yes. Quoting from "Mine Gases and Ventilation," Second Edition, page 4, we read: "When no carbon dioxide is present in the air the oxygen content may fall as low as 14 per cent before much difficulty is experienced in breathing; but air containing but 10 per cent is no longer breathable and will cause death quickly by suffocation."

QUESTION—*An entry in a mine is 7 x 10 ft. in section and 6,720 ft. long, what is the velocity of the ventilating current passing through this entry when the wager-gage reading is 2 in.?*

ANSWER — The rubbing surface of this entry is $s = 2(7 + 10)6{,}720 = 228{,}480$ sq.ft. and the sectional area $a = 7 \times 10 = 70$ sq.ft. The pressure corresponding to a 2-in. water gage is $p = 2 \times 5.2 = 10.4$ lb. per sq.ft. Then, calling the coefficient of friction $k = 0.00000002$ we have for the velocity of the air current, in this case,

$$v = \sqrt{\frac{pa}{ks}} = \sqrt{\frac{10.4 \times 70}{0.00000002 \times 228{,}480}} = 576+ \text{ ft. per min.}$$

QUESTION—*Given the dimensions of an arched airway as follows: 9 ft. high to top of arch, and the radius of the arch being 4 ft. 6 in., if the observed velocity of the air current is 450 ft. in a minute and a half, what is the total quantity of air passing per minute?*

ANSWER — Assuming this is a semicircular arch, the width of the airway is twice the radius of the arch or $2 \times 4\frac{1}{2} = 9$ ft. The height of the sidewalls, measured from the floor to the spring of the arch, is found by subtracting the radius of the arch from the height of the crown above the floor; thus $9 - 4\frac{1}{2} = 4\frac{1}{2}$ ft. The rectangular portion below the arch, then, has a sectional area of $9 \times 4\frac{1}{2} = 40.5$ sq.ft. The area of a semicircle whose radius is $4\frac{1}{2}$ ft., diameter 9 ft., is $\frac{1}{2}(0.7854 \times 9^2) = 31.8$ sq.ft. The entire sectional area of the airway, is, therefore, $40.5 + 31.8 = 72.3$ sq.ft.

If the air travels 450 ft. in $1\frac{1}{2}$ min., the velocity of the current is $450 \div 1.5 = 300$ ft. per min. The volume of air passing in this airway is, then, $300 \times 72.3 = 21{,}690$ cu.ft. per min.

QUESTION—*What are the aavantages gained by firing shots by electricity?*

ANSWER—By the use of the electric battery in blasting, the operator or miner is in a safe place when firing the shots. He does not have to light a fuse or squib and run with a chance of not reaching safety before the shot goes off. There is less danger of a delayed or premature blast. Electric firing makes it possible to fire two or more blasts, at the same time, in the same place, without the danger that is always present when an attempt is made to fire more than one shot in a confined or poorly ventilated place, by means of fuse or squibs.

In electric firing all the blasts are exploded at once. When fuse or squibs are used it is not possible to determine exactly the order in which the shots will explode. The one that should go off first may be delayed, with the result that the remaining shot will probably blow its tamping. Again, the discharge of one shot following another, consecutively, in the same place, may give rise to a windy shot or a local explosion, because of the ignition of the gaseous products of the first shot. This is impossible in electric firing in a mine properly ventilated.

QUESTION—*A ventilating fan is producing a water gage of 2 in. at 60 r.p.m.; what should the water gage be when the fan is running at a speed of 40 r.p.m.?*

ANSWER—Approximately, the quantity of air circulated by a fan varies as the speed (r.p.m.) of the fan, and the pressure or water gage as the square of the speed; in other words the water-gage ratio is equal to the square of the speed ratio. On that basis, calling the required water gage x, we have,

$$\frac{x}{2} = \left(\frac{40}{60}\right)^2 = \left(\frac{2}{3}\right)^2 = \frac{4}{9}$$

$$x = 2 \times 4/9 = 8/9 = 0.88 \text{ in.}$$

In practice, however, the yield of a fan, in quantity and water gage, falls short of this amount. Approximtaely, the fifth power of the quantity varies as the fourth power of the speed of the fan, or the fifth power of the water gage as the eighth power of the speed. On that basis, the water-gage ratio is equal to the fifth root of the eighth power of the speed ratio, and we have for the required water gage,

$x = 2 \sqrt[5]{(4/9)} = 2 \times 0.27 = 0.54$ *in.*

Morrow Disavows Opposition to Super-Power Survey; Sinister Motive Denied by Dr. G. O. Smith

AS A RESULT of statements published by *Coal Review*, the publication of the National Coal Association, Dr. George Otis Smith, director of the U. S. Geological Survey, felt called upon to explain to a Senate committee that there is nothing sinister in the super-power survey which is being made in the Boston-Washington area. One of the statements published by *Coal Review* is as follows:

"Light from the big electrical utilities is shed by Dr. Smith of the Geological Survey on the super-power project which would invade the coal producers' eastern market to the estimated extent of 30,000,000 tons a year. It seems that the big electrical companies, desirous of entrenching themselves in a fat and lasting business along the Atlantic seabord, are giving their time, their men and their money to further the plan. This mammoth project is being forwarded under the guise of conserving coal."

After quoting extracts from the article, Dr. Smith told the La Follette committee, which is considering the advisability of imposing certain Federal regulations upon the coal industry, that the super-power survey is being conducted under the "guise" of conserving coal. "That is the actual purpose of the investigation," said Dr. Smith, "and it seems to me that when private business introduces the question of the motive of a government bureau simply because Congress authorized the receipt of certain money from certain people, it is an extraordinary proposition.

"These people are contributing—I do not know in what amounts and I do not care. The people who are supporting it (the super-power survey) are the railroads, who are to be the consumers of power if we have electrification of the railroads; the power companies; the public utilities, who are producers of power; and the electrical machinery people. Every one of those interests is parallel and is going in the same direction as the public's interest. If the public utilities can get power cheaper, the state regulations provide that they must sell it cheaper.

Distorted Ideas on Rights of Private Business

"As to that 'fat and lasting business' I will say that we want to improve the public utility business, but it cannot become very fat under state regulation. Here we have an unregulated industry [bituminous coal] which comes before this committee and talks against regulation, pointing out someone else who is going to fatten. I bring this up not to prove anything except that I think some of us have distorted ideas about the rights of private business. Ten years ago I argued before a Congressional committee for the regulation of the coal business because I felt that the coal industry needed it. I thought it was just as good an argument that the public needed it.

"There is nothing that would be a greater calamity to this country than for the government to operate any business even one-half the size of the bituminous coal industry. It is my unqualified opinion that government operation would be a disaster because it would increase the cost of coal. It would make for a very high cost and the public would have to meet it both as consumers and as taxpayers.

"There should be some control of the industry. I believe it is justified under the general principles of the common law as well as under the constitution. That regulation is absolutely necessary unless we are going to be controlled by the industry itself. I contend that control of a basic industry like the coal trade can be exercised more wisely if put in the hands of disinterested persons than if it is left without regulation to the control of those whose interest is a dollar-and-cent interest. I am as much opposed to nationalization of the mines as I am to their being considered the absolute private property of land owners and of mine operators."

It seemed inconceivable to *Coal Age* that the National Coal Association would knowingly adopt such a policy toward the super-power survey or any other measure having for its object the better use of coal, and to bring the matter to a focus the following letter, under date of Feb. 14, 1921, was addressed to J. D. A. Morrow, vice-president of the association. His reply removes any doubt regarding the position of the operators' association on the subject and *Coal Age* is pleased to publish both letters in full.

"My dear Mr. Morrow: The editorial lead in a recent issue of *Coal Review* on the story of Director Smith's testimony before the Appropriations Committee on the super-power survey indicated opposition of the National Coal Association to this project, because it apparently contemplates large economies in the use of bituminous coal, and consequently indicates apparent restriction of the market.

"Does the National Coal Association view the super-power survey in this light, and is the National Coal Association opposed to any program that makes for economical utilization of our coal? C. E. Lesher,

"Editor *Coal Age*."

Favors Economical Utilization of Coal

Mr. Morrow's reply, dated Feb. 15, 1921, is as follows:

"Dear Lesher: I have your letter of the 14th. In answering let me say that the National Coal Association is not opposed to the super-power survey, nor is it opposed to any program which makes for economical utilization of our coal. On the contrary, it is our belief that the development of better methods of utilizing coal is a necessary feature of the future economic development of the United States. We further believe that the coal industry is just as much interested in seeing such better utilization of coal as the industrial interests of the East.

"The remarkable industrial development of the United States prior to the war was based primarily upon cheap fuel, the cheapest fuel available to any great commercial nation of the world. Increases in wages and supply costs have raised the cost of producing bituminous coal in the United States since the European War began by almost 200 per cent. While fuel cost is only a relatively small item of cost in the production of most manufactured goods, it is a considerable element in the cost of some manufactured articles, and in any event the increase in fuel cost referred to places all manufactured goods on a somewhat higher level. To that extent the position of the American manufacturer competing with the manufacturers of other countries in international trade is handicapped.

Says Opposition Would Be Shortsighted

"Since the growth of industry in the United States contributes directly and immediately to the demand for bituminous coal and, therefore, means an increase in our own business, any practical project for the better utilization of coal which means a better opportunity for American manufacturers to extend their business is of direct help to the bituminous coal industry of the United States. You will, therefore, understand that it would be the height of shortsightedness for this industry to oppose such projects.

"As you know, there are other considerations which also move us to this same conclusion, but it is not necessary to go into them in detail because those which I have already mentioned are fundamental and decisive.

"I hope this answers your query satisfactorily, and if you have occasion to convince any doubting Thomases as to the attitude of this organization, you are privileged to use this communication in any manner that seems appropriate to you. Yours very truly,

"J. D. A. Morrow,

"Vice-President."

Colonel Barney, in charge of army fuel purchases, has written about 3,500 anthracite and bituminous coal producers asking if they desire to bid on coal for the army for the year beginning July 1 next.

Classified Directory of Coal Shippers

WITH the growth of the Tidewater Coal Exchange, Inc., and the refinements of classification now under way, more than 60 per cent of the trade buys, quotes and sells by pool number rather than by point of origin. To facilitate inquiries the various sources of supply have been tabulated by one of the large wholesale firms as follows:

HANDLING ALL POOLS

Frame, Friend & Stineman
Fred R. Rohl, Inc.
Blair Parke Coal Co.
Smokeless Fuel Co.
Dexter & Carpenter
Andrade-Eyre, Inc.
W. A. Marshall & Co.
Pullman & Stevens
Robinson & Haydon
Alden Coal Mining Co.
Atlas Fuel Corporation
Eyre Fuel Co.
Wright & Gibson Co.
Hartwell & Lester
Columbia Coal Mining Co.
McCann-Camp Co.
International Fuel & Iron Co.
International Fuel Corporation
Industrial Coal & Coke Co.

SHIPPING OUTSIDE THE POOLS

Piedmont & Georges Creek Coal Co.
Pocahontas Fuel Co.
Pennsylvania Coal & Coke Co.
John Wills
Pittsburgh Coal Co.
Central Iron & Coal Co.
C. G. Blake Co.
North River Coal & Wharf Co.
Sterling Coal Co.
Henriette Coal Mining Co.
Porto Rico Coal Co.
Morrisdale Coal Co.
Consolidation Coal Co.
General Coal Co.
Stineman Coal & Coke Co.
Carl Coal Co.
Portage Smokeless Coal Co.
Duncan Spangler Coal Co.

SPECIALIZING IN SMITHING COAL

Pennsylvania Smithing Coal Co.
Pennsylvania Collieries Co.
Beccaria Coal & Coke Co.

HANDLING ANTHRACITE ONLY

Clarence B. Sturgis
Lehigh & Wilkes-Barre Coal Co.
Pinehill Coal Co.
Williams & Peters
Dickson & Eddy
Lee Coal Co.

SPECIALIZING IN LOW-VOLATILE COAL

Crescent Fuel Co.	Pools 9, 10
Coalmont-Moshannon Coal Co.	Pools, 10, 11, 71
Shoemaker Coal Mining Co.	Pools, 9, 10, 11, 18, 71
Wright Gibson Co.	Pool 71
George D. Harris & Co.	Pool 11
W. A. Marshall & Co.	Pools 9, 10, 11, 71
Seiler Coal Co.	All low-volatile pools
Brothers Valley Coal Co.	Pool 10
Bulah Coal Mining Co.	Pools 9, 10, 15
Majestic Coal Co.	Pools 1, 9, 10, 71
Altoona Coal & Coke Co.	Pool 10
Madeira Hill & Co.	Pools 1, 10, 11
John A. Miller	Pool 14
Duncan Spangler Coal Co.	Pool 9
Dickerman & Englis	Pools 9, 10
Alden Coal Mining Co.	Pools 9, 10
Ches. & Ohio Coal & Coke Co.	Pool 1
Imperial Coal Corpn.	Pools 1, 4, 9, 10, 11, 18, 71
E. Russell Norton	Pools 1, 9, 10, 11, 71
Spring Coal Co.	Pools 4, 9, 10
Empire Coal Mining Co.	Pools 4, 10
Harry A. Freeman	Pools 1, 2, 9, 10, 11
Debevoise Anderson Co.	Pools 10, 11, 14
Thorne Neal & Co.	Pool 9
J. W. Lowe & Co.	Pools 1, 2
Watkins Coal Co.	Pool 10
Haddock Fuel Corporation	Pools 9, 10
Gavin Rowe	Pools 1, 9, 71
Cosgrove & Wynkoop Coal Co.	Pools 1, 2, 9, 10, 11
Emmons Coal Mining Co.	Pools 9, 10, 11, 14

SPECIALIZING IN HIGH-VOLATILE COAL

Producers Fuel Co.	Pools 30, 31, 60, 61, 37, 38, 33, 34, 53, 54, 63, 64
M. A. Hanna & Co.	Pools 5, 6, 7, 41, 43
Jamison Coal & Coke Co.	Pools 33, 34, 35, 37, 38, 39, 40, 53, 54, 63, 64
Franklin Coal & Coke Co.	All high-volatile pools
Slattery Brothers	Pool 64

SPECIALIZING IN CERTAIN POOLS, BOTH HIGH AND LOW VOLATILE

Wm. C. Atwater & Co.	Pools 1, 2, 3, 5, 6, 7, 41, 43, 44, 53, 54, 63, 64
Borden & Lovell	Pools 1, 2, 5, 6, 7, 8, 41, 43
W. K. Althouse & Co.	Pools 9, 10, 11, 18, 71, 30, 31, 33, 34, 44, 60, 61
Cortright Coal Co.	Pools 10, 34
Interstate Coal & Dock Co.	Pools 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 30, 31, 33, 34, 42, 44, 53, 54, 63, 64
Madeira Hill & Co.	Pools 1, 10, 11, 18, 33, 34, 35
Bertha Coal Co.	Pools 11, 14, 30, 31, 32, 33, 34, 35, 37, 38, 53, 54, 60, 61, 62, 63, 64
John F. Murray	Pools 9, 10, 11, 34, 71
Phoenix Coal Co.	Pools 10, 11, 30, 31, 32
Pan Handle Coal Co.	Pools 1, 2, 4, 5, 6, 7, 9, 10, 11, 30, 31, 60, 61, 71
Old Colony Smokeless Coal Co.	Pools 1, 2, 4, 5, 6, 7
Hillman Coal & Coke Co.	Pools 9, 71, 30, 31, 32, 33, 34, 35, 53, 54, 60, 61, 63, 64
Davis Coal Co.	Pools 11, 63, 64
Weston Dodson & Co., Inc.	Pools 1, 2, 5, 7, 9, 10, 30, 31, 33, 34, 35, 53, 54, 60, 61, 63, 64
Geo. E. Warren Co.	Pools 1, 9, 10, 71, 33, 34, 40, 53, 54, 63, 64
W. H. Bradford & Co.	Pools 9, 10, 11, 18, 71, 33, 34, 35, 44, 53, 54, 63, 64
Hasler & Co.	Pools 1, 2, 5, 6, 7
Campbell, Peacock & Kinzer, Inc.	Pools 1, 4, 9, 10, 11, 71, 30, 31, 33, 34, 35, 53, 54, 60, 61, 63, 64
W. C. Mason & Co.	Pools 1, 9, 10, 71, 30, 60
Valley Camp Coal Co.	Pools 5, 6, 7, 30, 31, 33, 34, 35, 37, 38, 44, 53, 54, 60, 61, 63, 64
Island Creek Coal Co.	Pools 5, 6, 7, 32, 35, 41, 43
A. A. Zane & Co.	Pools 9, 10, 30, 34, 60

SPECIALIZING IN BUNKERING

Willard Sutherland & Co., Eyre Fuel Co.

Comptroller Scores Coal Companies, Alleging Exorbitant Prices

CRITICISM of high prices is made by Comptroller of the Currency John Skelton Williams in his annual report for 1920, which is the last report to be made by him as he retires with the incoming of the new administration March 4. "The tendency to maintain excessive profits was particularly seen in the steel and iron and coal industries," he says. "By closing down mills and mines the output of steel and iron, following the armistice, was reduced approximately one-fourth for the purpose of enabling manufacturers and miners to obtain, because of the insistent and peremptory demand for coal and iron the exorbitant profits realized during the war, instead of the more moderate profits which they would have had to accept if the maximum output had been maintained. While the profits of steel manufacturers and coal operators were swollen, the country became poorer from lack of production brought about by the unnecessary closing down of mills and mines and the incidental idleness of labor."

He says that the government itself has paid in recent months for coal as much as four times the pre-war price. Coal companies and firms, according to Mr. Williams, have 156 million dollars in national bank deposits.

Hustlers Join Union; Butler Mine Resumes

AFTER a week's idleness to obtain the discharge of the "hustlers," who had assisted the subcontractors to get a full day's work out of their men in the days before subcontracting was ended at the Pennsylvania Coal Co.'s mines, the men of Butler colliery agreed to return to work Jan. 27, the hustlers having been allowed to join the union. About 1,600 men had taken part in the shutdown. The men returned to work on Saturday, Jan. 29, instead of on the day preceding, fearing disaster or misfortune if work were resumed on Friday.

The Barnum colliery union men on Jan. 26 definitely broke with the insurgents' general grievance committee and refused to contribute to Rinaldo Capallini's salary. James A. Joyce recommended working for adjustment through Board Member Daniel McHugh of District No. 1.

Federal Regulation of Coal Industry Recommended by Judge McGee

STRICT government regulation of coal production, distribution and sale is recommended in a report issued by Judge John F. McGee, Fuel Commissioner for Minnesota, whose charges against mine owners at a recent hearing in Washington brought a hot reply from J. D. A. Morrow, vice-president of the National Coal Association.

In his latest report Judge McGee denounces as false the statements made by Mr. Morrow. Besides governmental regulation of coal production, distribution and sale, Judge McGee urges that coal producers be required to sell to individuals and organizations on the same basis as to coal dealers; that more than one reconsignment of coal be prohibited, and that one be from dealer to consumer; that a standard contract for coal sales be prescribed and that producers be prohibited from contracting to deliver greater tonnage from mines than was actually produced in the preceding year, except with government permission.

The "plunder" of the coal operators during the last year, says the report, equaled more than 10 per cent of the amount it cost the United States to carry on war for two years. He charges that the operators deliberately cut down shipments to the Northwest in order that they might reap dazzling profits on the seaboard for coal for export.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

IN DISCUSSING the recent period of deflation, which he described as a "silent panic," Colonel Leonard P. Ayres, vice president of the Cleveland Trust Co., speaking at the tenth annual convention of the National Retail Dry Goods Association, told the members of the retail dry goods trade that they should not be discouraged by the outlook. He was confident that the worst conditions had been passed, and that, while prices might be expected to continue their decline for a long period, economic and industrial readjustment was taking place, and perhaps in another twelve or fourteen months we would be approaching a period of stability.

Colonel Ayres showed that following the Civil War, when prices reached practically the same peak attained in the World War, there was a thirty-year period of decline. This was followed by a twenty-five-year period of rises in the prices of wholesale and retail commodities as well as the wages of labor and the prices of stocks and bonds.

"The chances are," said Colonel Ayres, "that we are going through the same kind of period that our fathers went through. What we are going through and are still in is a silent panic. We have not thought of it in the terms of other panics but genuinely panic prices were reached in stocks, which fell to their lowest point on Dec. 22 last. There is now an upward trend in the prices of stocks and bonds. That we have been able to pass through this crisis without more serious consequences is due to the stability of our financial system."

Improved Steel Demand Expected

"Indications are that iron and steel making will be gradually receding for the next few weeks," the market summary of the *Iron Age* of Feb. 17 states, "but the general conditions are looked on with favor as hastening the determination of the basis from which a healthy normal demand will spring. The time element required for complete readjustment stands in opposition to any artificial stimulus. Plant operations in the Chicago district have undergone no marked change. In the Pittsburgh district a 20 per cent operation covers the situation with many of the independent mills and the Steel Corporation has lost ground. The Carnegie Steel Co. has withdrawn the blast from two furnaces, now having 45 in operation. Actual steel making capacity is down to 80 per cent, a drop of approximately 10 per cent from the gait of a week ago, and finishing capacity is not over 80 per cent. Two of the largest independent mills are operating at a 25 per cent rate, others are active mainly in making pipe and not over 15 per cent of the independent sheet mill capacity is in operation. The leading interest has dropped off 5 per cent to a 70 per cent basis in sheets and to a 70 per cent from an 80 per cent basis in tin plates. The Steel Corporation as a whole is operating at about an 80 per cent rate."

Silk Mill Operatives Strike

Two hundred employees of the Leeds plant of the Nonatuck silk mills at Northampton, Mass., went on strike Feb. 16 rather than accept a wage cut of 15 per cent, announced Feb. 11.

Woolen Mill Runs, After Shutdown

The 250 employees of the Dunham Mills, Inc., Naugatuck, Conn., makers of woolen knitted goods, were gratified when the carding and spinning departments resumed Feb. 14, on full time. The entire plant, after two months' idleness, is expected to be running within another week.

Columbus Steel Plant Closes

The Columbus plant of the Carnegie Steel Co., employing 850 men, closed down for an indefinite period on Feb. 19, according to announcement made by the company.

Metal Workers Return to Work

One-third of the 3,000 workers normally employed in the inside metal and bronze industry in New York City returned to work on Tuesday, Feb. 15, upon "open-shop" conditions, according to the reports of the more than 100 factories of the Allied Building Metal Industries. Some of the shops have actually turned away men because their ranks had been filled. The opening of the plants, after a lockout of several weeks, was accomplished without any disturbance of consequence, according to Albert S. Richey, of the Richey, Brown & Donald Iron Works, Maspeth, Queens, who gave a summary of the reports from the various individual plants.

N. Y. Central Lays Off 3,600 More

Four repair shops of the New York Central Railroad, employing about 3,600 men, closed temporarily Saturday, Feb. 19. The location of the shops and the number of men each employs follow: West Albany, N. Y., 1,200; Elkhart, Ind., 700; Collinwood, Ohio, 900, and Depew, N. Y., 800. On Jan. 19, 900 workers of the car department at West Albany were laid off "until further notice." None of these has returned to work.

$500,000 Silk Mill for Virginia

Silk manufacture in Covington, Va., is planned by a $500,000 corporation, which has been chartered by New Jersey and Virginia mill men. The Southern Textile Co. is the name of the new enterprise and its officers include H. Ruegg, president, Weehawken, N. J., and W. C. Faulkner, Richmond, Va., secretary.

New Haven R.R. to Expand

More than $2,000,000 will be spent by the New Haven R.R. to enlarge its line in Providence, R. I., from the Auburn freight yard to the Union Station to a six-track system and the line from the Union Station to the Northup Ave. freight yard to a seven-track system. The plan will involve tearing out sixteen bridges and building much larger ones in their places at an estimated cost of $1,000,000. The land which must be bought for the extra tracks will cost, it is said, at least $250,000 more.

Pennsylvania Cement Mills Resume

Work was resumed Thursday, Feb. 17, at the Fogelsville and West Copley mills of the Lehigh Portland Cement Co., near Allentown, Pa. The eight hundred men are working full time at wages fixed Jan. 1. According to an announcement made when the mills reopened, the armrod plant of the company was to resume this week.

Anthracite Shipments in January Curtailed By Holidays and Strike

SHIPMENTS of anthracite in January, as reported to the Anthracite Bureau of Information, amounted to 5,740,338 gross tons, compared with 6,436,320 tons in December, 1920, a decrease of 695,782 tons. There were twenty-five working days, but three of these were observed as religious holidays in some parts of the region, and a strike in the Panther Creek Valley helped reduce the total output. The month's total was nevertheless almost equal to that of November, 1920, 5,765,347 tons, and was slightly in excess of the record for January, 1920, when 5,713,319 tons were shipped. Shipments by originating carriers were:

	January 1921	December 1920
Philadelphia & Reading	1,172,873	1,314,804
Lehigh Valley	1,058,127	1,161,345
Jersey Central	473,784	487,735
Lackawanna	540,260	540,315
Delaware & Hudson	814,491	896,475
Pennsylvania	451,879	457,242
Erie	606,602	675,573
New York, Ontario & Western	156,364	164,337
Lehigh & New England	96,958	318,596
Totals	5,740,338	6,436,320

Chemical Classification to Supplant Visual Inspection at Sewalls Point

ARRANGEMENTS are being made by the Virginian Ry. to revise its methods of classifying coal at the Sewalls Point Coal Exchange and to establish a definite chemical standard for the various grades of fuel shipped through the exchange. Chemical classification will supplant the present method of visual inspection and the company believes it will result in great benefit to the coal trade by assuring standards of quality to purchasers.

A complete survey of the mine products shipped through the exchange recently has been completed and this will form the basis of a definition of "pool members" in terms of thermal units and other chemical measures. The company is erecting a chemical sampling plant at the Sewalls Point coal pier to make it possible to sample the coal there at regular intervals to determine whether or not it is measuring up to chemical requirements. Present prospects are that this plant will be in full operation by the latter part of March. It is expected, also, that the Norfolk & Western Ry. will establish a similar innovation at its Lamberts Point coal piers, a movement to this end being already on foot.

Representative Slemp Says Army Should Pay Not More Than $2.50 for Bituminous

IN testimony before the House Appropriations Committee on the army appropriation bill for the coming fiscal year, Quartermaster General Rogers said the coal estimate was based on an increase of 125 per cent on bituminous and 25.5 per cent on anthracite coal, or on a basis of $7.70 per ton for bituminous and $8.225 for anthracite, as compared with $3.42 and $6.50 respectively last year. When the estimates were submitted last December they were based on $13 for anthracite and $8.75 for bituminous, but the revised estimate had cut the total by slightly over two and a half million dollars.

Representative Anthony, of Kansas, in charge of framing the bill, said Senator Calder had suggested legislation to permit the army to contract for coal in advance of the appropriation, which General Rogers favored, as it would permit the army to make contracts at the same time as commercial interests. Senator Calder's letter to Representative Anthony declared the War Department had lost six million dollars on coal purchases last year, due to the high prices.

Colonel Hannay of the army estimated that the army next year would require 1,425,000 tons of bituminous and 300,000 tons of anthracite. Representative Slemp, of Virginia, said that coal was now selling at from $2 to $2.50 at the mines and that the estimate should be based on not exceeding the latter amount on bituminous and that the anthracite estimate should be reduced by two million dollars. Colonel Hannay said the army had procured coal cheaper last year by open market purchases than it could have done under contract, but Mr. Slemp said that was not borne out by the testimony before the Calder committee.

Hoover Appoints a Committee to Study Elimination of Industrial Waste

A TWO-DAY conclave of engineers and technologists from all sections of the country began in Syracuse, N. Y., Feb. 14, with the announcement by Herbert Hoover, president of the American Engineering Council of the Federated American Engineering Societies, of the appointment of a committee on elimination of waste in industry. The appointment of this committee, according to Mr. Hoover, marks the beginning of what is officially styled by this council as a great national assay of waste, in which from 100,000 to 200,000 engineers functioning through the council will attempt by studying the nation as a single industrial organism to locate the weaknesses in the country's production system.

A preliminary survey, it is announced, has already been organized and the different elements making for production waste, such as labor conflict, decrease in individual productivity, lack of co-ordination, and many other sources of industrial failure will be brought under the close scrutiny of the organized engineers of the nation with the aim of solving pressing economic problems.

The personnel of this committee is as follows: J. Parke Channing, New York City; Dr. Ira N. Hollis, Worcester, Mass.; L. W. Wallace, of Baltimore; H. R. V. Scheel, Passaic, N. J.; L. P. Alford, New York; George D. Babcock, Peoria, Ill.; F. G. Coburn, Bethlehem Shipbuilding Co.; Morris L. Cooke, Philadelphia; Harington Emerson, New York City; C. E. Knoeppel, New York City; Robert Linton, Montana; Fred J. Miller, J. H. Williams, New York City, and Robert B. Wolf, New York.

Mr. Hoover, who is president of the American Engineering Council, also is a member of the committee, of which he is one of the principal sponsors. He will take a leading part in the assay of waste which the committee will conduct for the council. The committee, it was announced, has already started work, and a nation-wide plan, described as the most ambitious movement in the direction of solving economic problems ever undertaken by American engineers, will be put in operation from New York and Washington headquarters of the council at once.

At the meeting of the Executive Board Lawrence Wilkerson Wallace was elected permanent secretary, succeeding L. P. Alford, of New York, who had been acting secretary since the formation of the council.

The council gave formal approval to the action of the Committee on Procedure requesting that President Harding put an engineer on the Interstate Commerce Commission. The Procedure Committee was authorized to name six qualified engineers when requested to do so. Activity in behalf of a National Department of Public Works will be continued by the council through the Public Affairs Committee. It was recommended that engineering efforts be extended to the whole question of government reorganization planned under a special congressional committee.

The plan for the registration of engineers as presented in the council's report was endorsed and the appointment of another committee was authorized. The Russian Affairs Committee was made a new committee on International Relations, the personnel of the old committee being retained.

An invitation from Philadelphia engineers to hold the April meeting in that city was accepted. The June meeting will be held in St. Louis.

The council decided to recommend to President Harding that an engineer be appointed assistant Secretary of War. No action was taken relative to the National Civic Federation, Fuel Conservation, or Merchant Marine Committee appointments. The Committee on Public Affairs was authorized to recommend a congressional appropriation to investigate deeper waterways—St. Lawrence project.

Reading Dissolution Plan Announced

A PLAN for the segregation of the properties of the Reading Co. was announced in Philadelphia Monday, Feb. 14. The stockholders will be called upon to make small cash payment for stock in the new company which will be formed if practicable. The plan submitted to the court provides in part for the Reading Co. assuming the $96,000,000 general mortgage bonds now outstanding. The Reading Coal Co. will be called upon to pay the Reading company $10,000,000 cash and $25,000,000 bonds of the coal company. It is also suggested that the Reading Co. merge the Philadelphia & Reading under the present charter and subject the railroad property to a direct lien of the general mortgage.

If practicable, the coal company will consolidate with the Delaware Coal Co., of which it owns the entire capital stock. The consolidated company will then issue capital stock, of no par value, to the Reading Co. If that is not practicable, a new corporation will be formed to acquire the coal company stock from the Reading Co., and such new corporation will issue no-par-value stock to the extent of 1,400,000 shares. This stock will be sold to Reading Co. stockholders share for share for $5,600,000, or $2 for each share of Reading Co. stock. No speedy distribution of Reading Co. assets is believed to be probable, as the financial structure of the company is so interlaced that it will require some time to unravel it.

International Commerce Board to Study Rehabilitation of World Trade

"THE RESTORATION of the World's Commerce" will be the general subject taken up at the first annual meeting of the International Chamber of Commerce in London during the week beginning June 27. Announcing the subject and the date, the American Section of the International Chamber let it be known that a large American attendance is looked for.

Arrangements are being made for a program of general sessions and group meetings to discuss international economic problems in the fields of finance, ocean and land transportation, communication, production and distribution, and restoration of the devastated areas. All of these topics will be approached with a view to relating them to the central theme.

The International Chamber was organized at Paris last year by representatives from Belgium, France, Great Britain, Italy and the United States. Preparation is now well advanced for participation of a number of other countries in the organization. The American Section has been organized for some time with offices at the headquarters of the Chamber of Commerce of the United States, in Washington.

No Price Fixing for Coal in Wyoming

A BILL offered in the Wyoming House of Representatives Pratt and Brewer, providing for a special commission to investigate and fix coal prices at mines and retail houses in Wyoming, was voted down after a lengthy debate, although the measure was said to have the approval of Governor Carey.

Opponents of the bill asserted that the establishment of such a commission would serve to increase the price to the consumer, rather than decrease it. The defeat of this bill means that it will be two years before the question comes up again before the legislature.

New England Rate Hearing on March 3 To Be Held in Boston

FURTHER hearing on readjustments of rates on anthracite coal from anthracite fields in Pennsylvania and of rates on bituminous coal from origin points in Pennsylvania, West Virginia, Maryland and Ohio to points on the Boston & Maine R.R., Boston & Albany R.R., New York, New Haven & Hartford R.R., Maine Central R.R., Bangor & Aroostook R.R. and Central Vermont Ry., which had been scheduled for Thursday, March 3, 1921, in room 401-C, 143 Liberty Street, New York City, as announced in *Coal Age*, Feb. 17, p. 331, has been transferred to the Chamber of Commerce (third floor), 177 Milk Street, Boston, Mass., beginning promptly at 10 a.m., Thursday, March 3.

Seventh Trade Commission Coal-Cost Report Covers Trans-Mississippi States

COMPLETING the series of coal-cost bulletins the Federal Trade Commission has published the seventh report covering operations in 1918 in Iowa, Kansas, Missouri, Arkansas, Oklahoma, Texas, Colorado, New Mexico, Montana, Wyoming, Utah, Washington and North Dakota.

The data set forth cover the operations of 394 operators who mined about 61,000,000 net tons from 628 mines, and for the years 1916 and 1917 the operations of 27 operators who mined about 4,600,000 net tons annually.

The costs and sales realization are shown for each quarter of 1918 and the year as a whole for each of the twenty-seven producing districts in the thirteen principal coal-producing trans-Mississippi states. The producing districts are those defined by the U. S. Fuel Administration in various price-fixing orders. All operators fully reported are shown in the tables contained in the report, and they produced about 92 per cent of the output for Iowa in 1918, 88 per cent of that for Kansas, 74 per cent of that for Missouri, 74 per cent of that for Arkansas, 87 per cent of that for Oklahoma, 48 per cent of that for Texas, 94 per cent of that for Colorado, 97 per cent of that for New Mexico, 95 per cent of that for Montana, 95 per cent of that for Wyoming, 95 per cent of that for Utah, 90 per cent of that for Washington, and 54 per cent of that for Nroth Dakota.

For the production of about 61,000,000 tons, as shown in the tables mentioned, the average annual total f.o.b. mine costs ranged by districts from $1.08 to $4.45, and the average sales realization was $1.36 to $4.66 per ton.

Returns were received also for a shorter period than twelve months from 112 operators in the various districts, who had an estimated total annual production of about 5,500,000 tons. Examination of such returns shows that had it been possible to obtain reports for the whole twelve months, the annual averages shown in the foregoing table would not be changed more than 1 or 2c. per ton, if at all. Including these mines, the production fully or partly reported covered about 94 per cent of the total 1918 output of the thirteen States.

The labor costs in 1918 in the districts covered are from 39 to 53 per cent higher, and the total f.o.b. mine costs in 1918 were from 42 to 48 per cent higher than those in 1916. The sales realizations in 1918 were from 46 to 69 per cent higher than those in 1916.

Of the amount paid for coal by the purchaser, based on each dollar of sales realization during 1916-1918, the item of most general interest is the proportion which labor received. That part of the amount paid by the purchaser which went to labor varied considerably from district to district, and in most districts from period to period. It was highest (88c. out of each dollar) in both Oklahoma districts during September, 1917, and in the eastern district of Oklahoma in November, 1917, and lowest (58c. out of each dollar) in Montana during the period January-March, 1917.

A comparison of the rate of production per month and margins per ton for three periods during 1917-18, shown in other tables, tends to show that in some instances an increase in production does not necessarily accompany an increase of margin, nor does a decrease in margin necessarily involve a decrease in production. The foregoing facts indicate clearly that the margin is but one of the several factors which may stimulate or retard production. Production was influenced also by such conditions as strikes or other forms of labor shortage, transportation facilities, and the demand for coal in the markets available to the mines, etc. Explanations for the rise or fall of production are to be found in the particular conditions which existed during each period in each district.

Coal Control Bill Will Not Pass Congress by March 4; To Continue Efforts at Regulation at Extra Session

By Paul Wooton
Washington Correspondent

REGARDLESS of the changes which may be made in the Calder coal bill, no hope now is entertained by friends of the measure for its passage at this session of Congress. Had the fact-finding feature of the bill alone been retained and had it been reported earlier to the Senate, such a bill probably could have been passed. Senate La Follette declines to comment as to his plans but it is believed that an attempt is being made to report out a bill. If a majority of the committee cannot agree upon amendments to the Calder bill, it is expected that the Calder bill will be re-introduced embodying fundamental changes.

It is quite evident that the effort to regulate the coal industry has gained strength and that it will be continued at the extra session of Congress. Some form of regulation for the coal industry is expected to be the ultimate outcome of the agitation at this session of Congress. Thus, what was a cloud no larger than a man's hand now fills the whole sky, as one coal operator phrased it.

It is generally admitted that the chances favor a venture on the part of Congress into the field of federal regulation of private industry. That coal has been selected for the experiment cannot be doubted. That this type of activity on the part of the Federal Government is a departure and would set a precedent for the control of other essentials is pointed out. Regulation of the railroads is not comparable, it is asserted, as the railroads produce no new wealth. They simply sell transportation. It is admitted generally that a long fight is in prospect, but it is believed that in the end Congress will approve of some form of regulation.

Suggests Amendments and New Sections

Just how hastily conceived the Calder bill must have been is indicated by the material way in which W. P. Chantland proposes to amend the original measure. Appearing before the La Follette committee on Feb. 15, he submitted a number of amendments and suggested several new sections for the bill. One of his new sections is intended practically to re-enact Section 4 of the Lever Act. It reads:

"That it is hereby made unlawful for any person or corporation to charge an unjust or unreasonable or excessive price for coal, or to make any unjust or unreasonable rate or charge in handling or dealing in or with coal, or to prevent, limit, or lessen the production of coal in order to enhance the price thereof, or to conspire, combine, agree or arrange with any other person or corporation, or both, (a) to limit the facilities for producing, transporting, supplying, storing or dealing in coal; (b) to restrict the supply of coal; (c) to restrict the direct and expeditious distribution of coal to the consumers; (d) to prevent, limit, or lessen the production of coal in order to enhance the price thereof; (e) to exact unjust or unreasonable or excessive prices, or charges, or margins for coal, or to aid and abet the doing of any act made unlawful by this section.

"The reports made by the commission in the performance of its duties as described in Section 4 of this act shall be competent evidence so far as they relate to any prosecution brought under this section, and the findings and facts therein contained shall be *prima facie* evidence of the conclusions of fact and the facts therein stated.

"Any person violating any of the provisions of this section shall, upon conviction, be fined not exceeding $5,000 or be imprisoned for not more than two years, or both."

Another new section proposed is as follows:

"That it shall be unlawful for any person or corporation to sell or offer to sell spot coal or to deal in options in spot coal, for shipment in commerce, whenever such person or corporation shall be delinquent more than ten days in shipment, on demand, or requirement, under contract.

"Upon conviction any person or corporation found guilty of such offense shall be fined not to exceed $1,000 for the first offense and may be imprisoned in a penitentiary not to exceed two years, and for each subsequent offense the fine shall be $5,000 or imprisonment not exceeding five years, or both."

When Mr. Chantland finished reading the above, Senator Reed said, "Let us suppose a big corporation has a contract for 500,000 tons of coal. Suppose this corporation is a hog and, seeing that there is a shortage of coal, proceeds to demand shipment, as it has the right to do under its contracts. In the meantime it has developed that there is a genuine shortage of coal in the country. Householders are freezing. Factories are being compelled to shut down. It is entirely practicable to take a part of this coal and deliver it for the purpose of relieving these emergencies. It would still be possible to deliver on the contracts the coal necessary to keep the contractors' plants running, but this provision would absolutely prevent that. This suggestion came to me in just one and one-half seconds after I heard the language proposed. I think it illustrates the necessity that it is well to give these matters at least two minutes consideration."

Would Give President Control in Emergency

Mr. Chantland proposed the following addition to Section 12 of the Calder bill:

"Whenever, in any emergency threatening, or which has arisen out of an industrial dispute between operators and miners, the President determines in the exercise of the powers herein granted to take over the operation of any mines, he shall include as a part of his order for such taking over, provisions (1) for just compensation for the use of the mining properties taken over and (2) for the payment during such emergency control of a fair living wage to the mine workers, based on a maximum eight-hour day, commensurate with proper and just American standards of living, which provision shall obtain only until the termination of his exercise of such powers as stated or until the settlement of the dispute, whichever event first occurs, but the President shall not use the powers granted herein either to force a settlement of such industrial dispute between operators and miners or to deprive the mine workers in any manner of any power of collective bargaining, through such representatives as they may choose, with the operators relating to such dispute."

The addition to Section 12 suggested by Samuel Gompers reads as follows:

"Provided that nothing in this act shall be construed as to apply to trade unions or other labor organizations instituted for the purpose of regulating wages, hours of labor and other conditions under which labor is performed."

To eradicate the possible danger of a mandamus being directed against labor organizations, Mr. Chantland suggested that "person or corporation" in Section 7 be struck out and the words "operator or dealer" be inserted. At the end of the paragraph he suggests that the following phrase be added at the end of the paragraph: "relating to the production of records or information."

In the light of the discussions before the committee as to Section 14 of the bill, Mr. Chantland said that it would seem that the question well might come up as to whether the 90 per cent of the amounts charged above a certain amount should not be made 100 per cent, so as to stop it definitely at a point. A lot of little companies would be set up, he said, and he suggested the following in place of the proviso at the end of Section 14: "The taxes herein levied shall apply to all transactions in coal whether sales, contracts of sales, or options to purchase, where the coal is not physically handled by the seller, and shall not apply to those transactions in coal where the coal is physically handled by the seller."

Senator Reed asked what would become of the wholesale dealer who is obliged to send out agents at great expense

to canvass the trade, but who does not actually have the coal hauled into his yard and re-handled. Mr. Chantland said the question that the committee will have to determine is how necessary that function is. Continuing, he said:

"I think attention should be called to the testimony of Dr. Wing as to this matter. It may be—if it is possible to put it in legislation, and of course it is probably most difficult and dangerous to fix a stated price for services in legislation—that there may have to be discrimination or an addition to cover that point, if it is conceived that there is a proper or useful function in distribution, or necessary function in distribution. The function of distribution is vastly different in the sparsely-settled sections than in the big congested Eastern centers. Mr. Wing told you that they would have liked to make two rates to take care of that matter, but the order from the President was that there should be but one rate."

George H. Cushing, managing director of the American Wholesale Coal Association, was asked for the names of government and railroad officials who he charged had profiteered in coal last year. Mr. Cushing said his memory was not clear as to the names, but mentioned H. W. Smith as having approached him to procure 450,000 tons of coal for export to South America, Smith having said he had friends interested with him in the State, Treasury and Labor departments and the Shipping Board, and that $1 a ton margin would be divided among those arranging the exportation of the coal. Mr. Cushing said he knew none of the names of people in the departments mentioned. As to railroad officials Mr. Cushing said the names were given him by members of his association whose coal had been involved in confiscation of coal by roads, but he said he would have to ask these members for the names of railroad officials, which he would furnish the committee later.

Department Irregularities Prove To Be "Blue Sky"

H. W. Smith said he was from Elmira, and during the war had distributed Liberty Loan posters to coal operators and also aided the employment service of the Labor Department. Years ago he had been in the coal-mining business at Blossburg, Pa., and his son was now interested in the coal business in Elmira. He had conceived a plan of selling about 200,000 tons of coal to Brazil and Chile and saw Mr. Cushing many times in an effort to get the coal, but did not mention $1 a ton as margin. He had mentioned that he had friends in various departments who were interested in the plan, but testified that he had not sold a pound of coal. "So it's all blue sky," said Senator Kenyon.

Henry T. De Bardeleben, president of the Alabama Coal Operators' Association, telegraphed the committee protesting against the bill and asking for a hearing, but the Alabama interests were not heard.

Mr. Chantland was questioned by the committee as to the seizure of the National Coal Association records last December. He said all but a few of the records had been returned to the association, but Senator Reed intimated that there might be others in possession of the Calder committee. Mr. Chantland read a few letters taken from the association indicating activity, but Senator Reed saw nothing sinister about the correspondence or its contents. Mr. Chantland said that although a watchman had been placed in charge of the records over one night, some were missing the next day when the investigators called. Mr. Fletcher Lewis, of the National Coal Association, resented the innuendo that the association had tampered with the records while they were under investigation by the committee agents. Senator Reed thought the seizure had been illegal.

The Department of Justice is investigating the retail coal dealers' association of the District of Columbia in the light of evidence before the Manufacturers' committee charging that it had maintained prices.

Senator Gay, of Louisiana, is receiving numerous communications from persons engaged in varied business activities commending his minority report (*Coal Age*, Feb. 17, page 330), which opposes government regulation of business such as is proposed in the Calder coal bill.

Coal Deliveries at South Amboy Exceed All Records for December

DECEMBER coal deliveries by the Pennsylvania Railroad at South Amboy, N. J., which supplies 60 per cent of the needs of the subway and street car lines, and of the gas and electric light companies in New York City, broke all previous records for that month. The total amount dumped at these piers in December was 559,450 tons, which exceeded even the high record of December, 1913, by 16,244 tons.

This large delivery was made possible to some extent, of course, by the fact that weather conditions permitted practically uninterrupted service. The high tonnage record for the year 1920 was made in August, when 627,019 tons were delivered at South Amboy. Eighty-five per cent of the coal dumped at these piers is bituminous.

Roads Must File Reparation Claims Within Year of Release of Federal Control

IN THE matter of claims by railroads for reparation the Interstate Commerce Commission advises: By Section 206 (c) of the Transportation Act complaints for reparation on account of damage claimed to have been caused by reason of the collection or enforcement by or through the President during the period of Federal control of rates, charges, classifications, regulations or practices which are unjust, unreasonable or otherwise in violation of the Interstate Commerce Act may be filed with the commission within one year after the termination of Federal control. Notification of the commission that a complaint may or will be filed later for the recovery of damages does not constitute a filing of complaint within the meaning of the statute.

Prompt action will be facilitated if each complaint for reparation be accompanied by reparation statements conforming substantially to the form prescribed by rule V of the Interstate Commerce Commission's rules of practice.

Old N. Y. Tidewater Exchange Appoints Committee to Liquidate Accounts

AT A MEETING of the members of the old Tidewater Coal Exchange in New York City on Feb. 14 the following members, as creditors, were appointed a committee to confer with debtor members on the liquidation of outstanding pool accounts: L. J. McClum, chairman for W. H. Bradford Co.; W. F. Coale, for Coal & Co., Inc.; H. W. Fry, for Wm. Cory-Mann George Corporation; Sanford H. E. Freund, temporarily representing Consolidation Coal Co.; Major Coyle, for Weston Dodson Co.; S. S. Bruce, for Seaboard Byproduct Co.; F. G. Emmons, for Emmons Coal Mining Co.; G. M. Dexter, for Dexter & Carpenter Co.; W. H. Hoppock, for N. Y., N. H. & H. R.R., and A. D. Thompson, for Majestic Coal Co.

On April 30, 1920, when Federal control was lifted, the Tidewater Coal Exchange ceased to function and the present Tidewater Coal Exchange, Inc., was formed. At that time many pool credits and debits were outstanding, some of which have never been adjusted, and the above committee will endeavor to "clean the slate."

A bill introduced in the House of the Indiana General Assembly Feb. 2 would establish a State Industrial Board of three members, instead of five, as now constituted, and would increase the salaries of the board members from $4,000 to $5,000. This bill also would transfer the jurisdiction of insurance matters from the Industrial Board to the Insurance Commission of the State. In the new bill certain work is placed in the extra-hazardous classification, among which would be coal mining or other mining. The representative who introduced the bill says it seeks to make a better law. "This bill saves the state about $12,000 annually, and as to changing the insurance features, I feel that the Industrial Board knows nothing about insurance, and this change would be a protection to policyholders. The bill also clarifies several points that they have been going to court about."

Foreign Markets and Export News

Belgian Coal Output Close to Normal

Trade Commissioner Samuel H. Cross at Brussels states that the average monthly Belgian production of coal in the second half of 1920 surpassed that of the pre-war year, 1913, and furnishes the following official figures for comparison:

	Tons	
	August	September
Hainaut:		
Mons	416,680	425,540
Center	300,735	312,480
Charleroi	608,635	642,450
Namur	51,070	53,320
Liege	457,950	452,200
Limburg	21,000	23,000
Total	1,856,070	1,909,050

The average monthly production for 1913 was as follows: Mons, 364,200 tons; Center, 303,830 tons; Charleroi, 679,000 tons, and Namur, 64,420 tons. The Limburg coal basin was not producing at that period.

The recent strike in the coal mines of the Charleroi district provided the impetus for an official study of miners' wages throughout the country. Since Jan. 1, 1920, wages have been raised four times—15 per cent on April 1; 5 per cent on June 1; 5 per cent on July 4; and between 5 and 10 per cent, according to rate of pay, on Oct. 3. The index numbers for wages, based on the pay of January 1 as 100, therefore amounted to 115 in April, 120.75 in June, 126.79 in July, and 136.30 in October.

The following table shows the average daily wages of various classes of workers in the different Belgium coal basins for both January and October, 1920:

	Vein Workers		Pit Workers		Surface Hands			
					Male		Female	
Districts	Jan. Francs	Oct. Francs	Jan. Francs	Oct. Francs	Jan. Francs	Oct. Francs	Jan. Francs	Oct. Francs
Mons	21.80	32 99	18.95	27.88	14.70	20.79	7.51	10.21
Center	22.33	32.17	18.81	26.75	15.91	22.82	8.61	11.53
Charleroi	21.84	31.35	19.27	26.82	15.28	21.29	8.47	11.65
Hainaut	21.94	32.14	19.05	27.15	15.22	21.49	8.23	11.23
Namur	21.96	30.45	18.83	26.90	14.63	20.19	8.54	11.95
Liege	22.46	33.79	17.25	26.79	14.36	20.99	8.17	11.55
Liege-Herve	21.63	31.25	18.68	25.75	15.39	21.36	8.96	12.83
Limbourg	22.15	32.05	17.52	23.95	13.30	18.49	7.70	9.64
General average	22.01	32.02	18.54	26.49	14.84	20.92	8.27	11.32

The average daily wage for all mine laborers throughout Belgium in January, 1920, figured on the basis of the data just quoted, was 15.91 francs; by October it had increased to 22.68 francs, or 41 per cent.

The colliery owners have been compensated for this increased production cost by officially authorized basic increases in the sales price of coal per ton at the mines of francs on April 1; 3 francs on June 1; 3 francs on July 1; and 4.75 francs on October 1.

America Must Extend Long-Time Credits To Retain Foreign Customers Acquired Since War Began

In the annual report of the Federal Reserve Board Governor W. P. G. Harding informed Congress that the utmost care must be taken to conserve our credit and preserve the basis of the country's prosperity in order to avoid the extreme conditions prevailing in Europe.

"Upon the United States," the Governor declared, "the solvency and financial stability of many other countries depend. This fact greatly increases the responsibility resting upon the American banking system and calls for exercise of good judgment and strict observance of sound financial and economic principles." Restoration of the buying power of Europe can only be restored, according to Governor Harding, if American raw materials go forward steadily over an extended period against long time credits. By means of corporations organized under the Edge act for financing foreign trade, the Governor contended, long time credits may be granted to finance exports. This operation he described as necessary for the solution of the present world problem. Financing exports to Europe through credits extended by the the Government was considered by Governor Harding to be a war-time expedient.

The above remarks are especially applicable to the exporting of American coal. Foreign buyers, under the stress of intensified demand last summer waived the long-term credits formerly permitted by British exporters, until the war, the main factors in the export industry. Old conditions are fast returning, and to retain her new export outlets American shippers must be prepared to extend the same long-time credit accommodations which foreign buyers enjoy in their trading with British houses.

Exports of Coal and Coke from the United States by Customs Districts, December, 1920

	Coal		Coke
Districts	Anthracite, Gross Tons	Bituminous, Gross Tons	Gross Tons
Maine and New Hampshire	60	41	.....
Vermont	2,114	14,854	.....
Massachusetts	68	.....	.....
St. Lawrence	105,773	510,188	1,036
Rochester	5,884	51,900	685
Buffalo	31,777	437,653	35,593
New York	9,695	44,209	2,363
Philadelphia	8,361	205,946	5,490
Maryland	.....	257,314	10,436
Virginia	.....	755,711	955
South Carolina	.....	26,334	.....
Georgia	.....	3,831	.....
Florida	6	6,773	850
Mobile	.....	9,375	.....
New Orleans	.....	5,218	6
San Antonio	7,395	5,989	315
El Paso	213	25,393	6,553
San Diego	1	26	.....
Arizona	.....	4,191	1,967
San Francisco	2	11	5
Washington	259	1,430	.....
Dakota	749	1,408	102
Duluth and Superior	47	2,665	62
Michigan	27	114,661	10,374
Ohio	10	197,418	312
Porto Rico	.....	176	5
Totals	372,441	2,682,715	77,109

BUNKER COAL

Districts	Tons
New York	358,311
Philadelphia	36,662
Maryland	61,037
Virginia	219,302

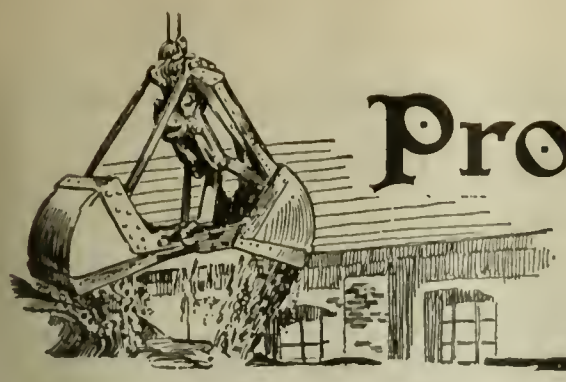
British Output Declines, Export Quotations Show Increase

Weekly coal production in Great Britain is again declining. The output for the week ended Jan. 29 was 4,607,000 tons, more than one million tons short of the last preceding week and less, by 200,000 tons, than the output during the week ended Jan. 15.

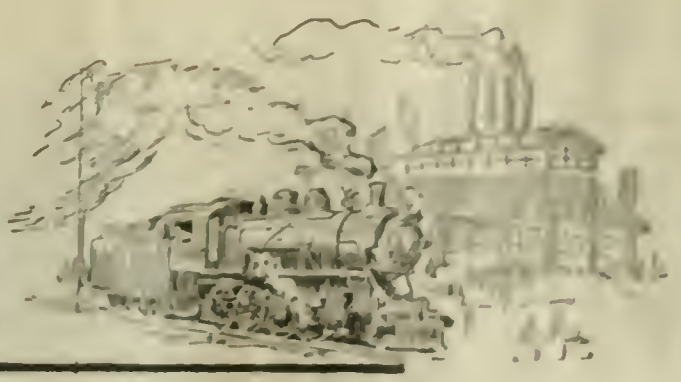
The South Wales colliery owners are adhering to their adopted minimum, i.e., £2 19s. for the best large steamers and £1 for the best smalls. The latter, it is anticipated, will see a further decline when control ceases, while other qualities will advance.

Coal exports to the Far East are expanding. Quotations to foreign consumers are as follows:

Admiralty grades, £2 19s. to £3; smalls, £1 to £1 2s. 6d.; cargo grades, 18s. 6d. to 19s. 6d.; inferior, 16s. 6d. to 17s. 6d.



Production and the Market



Weekly Review

COAL men may be described as "marking time," awaiting the inevitable swing of the trade pendulum back to a normal market. Spot demand is demoralized. Buying for overseas is at a standstill; the business depression and recent overproduction of industrial coal have caused the market to be glutted, and the movement of soft coal to retailers has been hard hit so far by the unusually mild weather. That anthracite is no longer in urgent demand is shown by another price decline this week, "independent" domestic coal now selling around $8.75 f.o.b. mines. Numerous cancellations of orders for this class of fuel indicate the growing adequacy of "company" shipments to meet current demand. Hard-coal production is being steadily maintained; 2,048,000 net tons is the output recorded for the week ended Feb. 12. Complete stagnation exists in the coke market. Independent steel interests are in the midst of cost reducing in an effort to stimulate business, expecting producers to make like reductions on their coke contracts which otherwise will be entirely out of line.

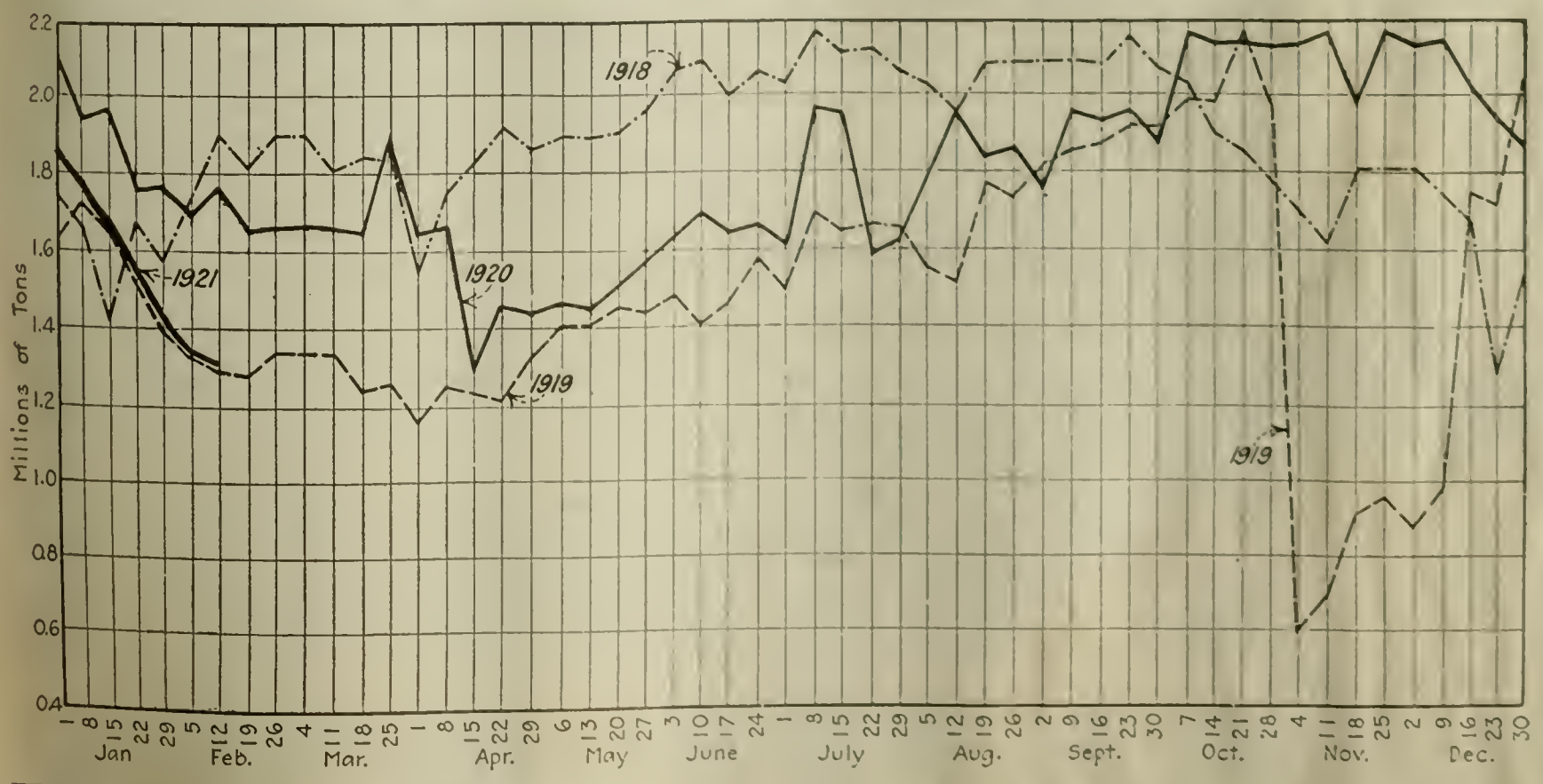
Interest in both spot and contract markets is very limited. While it is true that many buyers have such heavy stocks that spot purchases later in the season will be ample for their fall and winter needs, nevertheless many in the trade feel that any prolonged continuance of the present sluggishness is certain to be followed by a reflex, which makes it likely that this year will see a mild repetition of the strenuous times of last summer, when producers and shippers were besieged by importunate buyers. Active buying in the domestic market is now confined to current requirements. The season is too far along to necessitate stocking, and as the winter has been an exceptionally mild one, lowered consumption has materially reduced the tonnage usually moved. A few cold snaps may be in store for the retail trade, but this stimulation will hardly be felt by producers, as stocks in the hands of dealers are generally large enough to meet any sudden temporary demand.

Railroad Contracts Curtailed by Low Price

Railroad fuel consumption also has been affected, due to lighter freight movements. Roads are drawing on their storage piles or are buying in limited quantities only, as their contract offers to producers, based on present low market figures, are not acceptable to the industry.

The only sign of activity in the buying market is the easy absorption of "distress" coal on its appearance. As the tonnage involved in this class of business is now quite small, many in the trade believe that this activity finally presages a renewal of buying interest. An

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

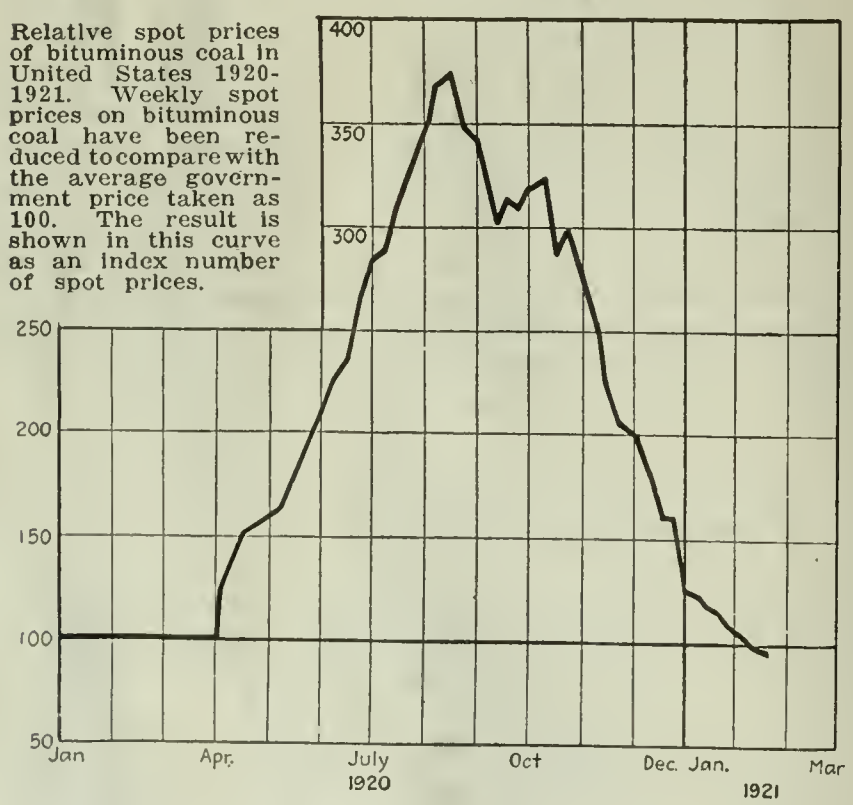
increasing number of operators have determined to rest on their returns of last season, at least for the present, rather than sell at a loss. Production has shown a steady downward trend since early in December, 1920, and the effects are already showing in more stable mine prices, which in some instances have rallied during the past week, as shown by quotations appearing in *Coal Age*.

BITUMINOUS

Soft-coal production continued its steady decline during the week ended Feb. 12. For the first time since last April the output fell below the 8,000,000-ton mark. According to the Geological Survey, 7,861,000 net tons were mined during the week. The average daily production still parallels that of the coal year 1918-19. It is expected that production will go to even lower levels during the third week in February as loadings on the first two days of that period indicate a further decline of perhaps 4 per cent.

PRICES

Coal Age index of soft-coal prices declined to 98 in the week of Feb. 22, from 99 the week before, as compared with the drop of 3 points from 102 to 99 the preceding week. While little coal was sold on the spot market, this indicates a growing determination of producers to refrain from forced production and to hold tonnage against a legitimate price. The trend of the index is shown in the accompanying diagram.



Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.

Estimates of Production

From the Weekly Report of the Geological Survey
(NET TONS)

BITUMINOUS COAL

Total bituminous, including coal coked

	1921 Week	1921 Coal Year to Date	1920(a) Week	1920(a) Coal Year to Date
Jan. 29b	8,570,000	459,693,000	10,594,000	397,469,000
Daily average	1,428,000	1,800,000	1,766,000	1,550,000
Feb. 5b	8,126,000	467,819,000	10,010,000	407,480,000
Daily average	1,354,000	1,790,000	1,668,000	1,553,000
Feb. 12c	7,861,000	475,680,000	10,484,000	417,964,000
Daily average	1,310,000	1,779,000	1,747,000	1,557,000

(a) Less two days' production during the first week in April to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date(a)
Jan. 29	1,999,000	75,632,000	1,839,000	77,509,000
Feb. 5	1,985,000	77,617,000	1,451,000	78,960,000
Feb. 12	2,048,000	779,665,000	1,822,000	80,782,000

(a) Less 2 days' production during first week of April to equalize number of working days covered for the two years.

BEEHIVE COKE

Week Ended Feb. 12(a) 1921	Feb. 5(b) 1921	Feb. 14 1920	1921 to Date	1920 to Date(c)
227,000	233,000	439,000	1,503,000	2,849,000

(a) Subject to revision. (b) Revised from last report. (c) Less two days' production during New Year's week to equalize number of days covered for last two years.

"No market" conditions are steadily growing, closely approximating 50 per cent of full-time output, taking the field as a whole. Production in the Pocahontas, New River and Winding Gulf sections recovered slightly during the first week of February, while the sluggish demand caused an increase in the number of idle mines very generally throughout the rest of the country. In the Appalachian region a decline in the Northern and Middle sections, which commenced two months ago, continued through the week ended Feb. 5. Production for that period was 4,619,000 net tons, or a decrease from the preceding week of 259,000 tons and 28 per cent less than the weekly average in 1920.

Declining Prices Make for Labor Efficiency

For some time past no labor comments have been necessary, as declining prices, abolition of wage bonuses, etc., operated for a greater degree of efficiency on the part of miners. However, two disturbances were noted in the past week—many Kansas miners are idle as a protest against the sentencing of Alexander Howat, district president of the

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Coal	Market Quoted	Gov't Price	Jan. 20 1921	Feb. 15 1921	Feb. 22 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$4.75	$3.85	*$3.50*
Pocahontas lump	Columbus	2.60	6.20	6.00	6.00
Pocahontas mine run	Chicago	2.35	4.60	2.75	**2.50@3.50**
Pocahontas lump	Chicago	2.60	5.50	3.90	3.25@4.50
Pocahontas mine run	Boston*	...	7.00	6.15	*5.75@6.25*
Pool 1	New York	2.35	4.00	3.50	*3.25@3.50*
Pool 1	Philadelphia	2.35	4.00	3.50	*3.00@3.40*
Pool 1	Baltimore	2.35	....	3.00	**3.00@3.25**
Clearfields mine run	Boston	2.95	2.85	2.60	2.15@3.00
Somersets mine run	Boston	2.95	3.60	3.15	2.50@3.75
Pools 10, 11	New York	2.95	2.75	2.50	**2.85**
Pools 10, 11	Baltimore	2.95	2.80	2.50	2.50
Pools 10, 11	Philadelphia	2.95	3.00	2.50	*2.00@2.75*
Pool 18	New York	2.95	2.25	2.15	*2.00*
Pool 18	Philadelphia	2.95	2.25	2.00	.....
Pool 18	Baltimore	2.95	2.25	2.00	**2.00@2.15**
High-Volatile, Eastern					
Pittsburgh mine run	Pittsburgh	2.35	2.50	2.40	*2.20@2.50*
Pittsburgh se'd. gas	Pittsburgh	2.35	3.50	2.90	*2.50@2.75*
Kanawha mine run	Columbus	2.70	2.65	2.50	**2.60**
Kanawha lump	Columbus	2.95	5.25	3.90	*3.50*
Hocking mine run	Columbus	2.50	2.25	2.40	*2.25*
Hocking lump	Columbus	2.75	4.15	3.85	*3.65*
Pitts. No. 8 mine run	Cleveland	2.35	2.75	2.50	*2.25@2.50*
Pitts. No. 8 lump	Cleveland	$2.60	$4.25	$3.75	**$3.75@4.00**
Pool 34 (54, 64)	Philadelphia	2.50	2.25	2.10	**2.25**
Pool 34 (54, 64)	New York	2.50	2.25	2.15	2.00@2.25
Pool 34 (54, 64)	Baltimore	2.50	2.25	2.15	*2.00@2.15*
Midwest					
Franklin, Ill., mine run	Chicago	2.35	2.90	2.75	2.25@3.25
Franklin, Ill., lump	Chicago	2.55	4.00	3.80	3.50@4.15
Central Ill., mine run	Chicago	2.35	2.25	1.85	1.50@2.25
Central Ill., lump	Chicago	2.55	3.40	2.60	2.00@3.25
Ind. 4th Vein, mine run	Chicago	2.35	2.50	2.20	1.85@2.50
Ind. 4th Vein, lump	Chicago	2.55	3.70	2.30	2.50@4.15
Ind. 5th Vein, mine run	Chicago	2.35	2.40	2.15	1.80@2.50
Ind. 5th Vein, lump	Chicago	2.55	3.55	3.10	2.40@3.75
Standard mine run	St. Louis	2.35	1.90	1.95	1.90@2.00
Standard lump	St. Louis	2.55	3.00	2.50	**2.50@2.75**
West Ky., mine run	Louisville	2.35	2.25	2.30	*2.00@2.25*
West Ky., lump	Louisville	2.60	3.85	3.40	*3.25*
South					
Big Seam mine run	Birmingham	2.45	3.10	3.10	2.95@3.25
Big Seam lump	Birmingham	2.75	4.50	3.75	3.50@4.00
S. E. Ky. mine run	Louisville	3.00	2.80	2.65	**2.50@3.00**
S. E. Ky lump	Louisville	3.25	5.25	4.40	*3.75@4.25*

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

United Mine Workers, and in Alabama a bridge serving an Alabama mine was dynamited. This mine, which is run open shop, was served a warning against its operation, it is alleged.

TIDEWATER

Accumulation at the piers is being slowly absorbed, but in most cases by material price reductions. The market is extremely flat, only one cargo clearing for France from Hampton Roads during the week ended Feb. 12, and this was shipped on a contract made before the French Government's recent action in placing a new low maximum price on imports of American coal had practically stopped our sales in that country. Loadings at this port declined to 290,000 gross tons. Less coal is coming to Tide on a consignment basis, producers being content to run on short time rather than repeat their recent unprofitable experience when such coal was sold at ruinous figures. Offerings were light but it was necessary to shade quotations to obtain business. Lots of Pools 1 and 2 on hand at piers were quoted $6 f.o.b. Hampton Roads and in some cases even lower. Shipments coastwise continue to decline. Vessel owners are making a vigorous effort to obtain charters and several private terms were closed during the week ranging $1.25@$1.50, vessel rate to Boston.

Twenty-nine Firms Bid on Panama R.R. Coal

Prices ranging from $3.50 to $4.39 per net ton f.o.b. mines were quoted by twenty-nine coal firms for furnishing the Panama Railroad Co. with 750,000 tons of pools 1 and 2 coal when the bids were opened on Feb. 18 in New York City. Davis Coal & Coke Co. offered to supply 300,000 tons of Davis and Orenda, pool 71, at $4.02, and the Stine Coal & Coke Co. bid on 180,000 tons of pool 10 at $3 net ton f.o.b. mines. The bid of Lake & Export Coal Co. received after time for closing, was read without prejudice. It was for 250,000 tons of pools 1 and 2 at $4.25. The Pocahontas Fuel Co.'s bid provided that the price be named once each month. The White Oak Coal Co. provided in its bid that shipments of 4,000 tons monthly start Aug. 1, while the bid of the Central Pocahontas Coal Co. provided for acceptance by Feb. 28. The bid of Ajax Coal & Mining Co. of $7.53 was for gross tons, f.o.b. Hampton Roads. The bid of Dexter & Carpenter, Inc., was subject to acceptance in nine days. This concern also submitted an alternative bid on the same tonnage at cost plus 10 per cent. The United Collieries Corporation in its bid for 75,000 tons stated the coal would be from mines of the Gulf Smokeless Coal Co., while L. A. Snead Co. proposed to supply the 100,000 tons bid on from the Tams, Hot Coal and Wyco mines, Raleigh County, West Virginia.

All-rail movement to New England increased slightly during the week ended Feb. 12. According to the Geological Survey 3,390 cars were forwarded through the five rail gateways. Compared with the week preceding this was an increase of 171 cars, or 5 per cent.

ANTHRACITE

Hard-coal production continued in heavy volume during the second week in February. The output amounted to 2,048,000 net tons, thus approaching the high record set in 1918. Cumulative production for the coal year (April 1, 1920, to date) now stands at 79,665,000 net tons, or slightly over a million tons less than during the corresponding period of the preceding coal year.

Heavy Company Output Lowers Independent Price

Continued heavy production by the larger companies has now met the urgent demand and the situation is much easier. Independent prices softened further during the week and good domestic grades can now be obtained on a basis of about $8.75 f.o.b. mines. This brings independent anthracite much nearer to the level of company coal. Shippers to New England are now actively canvassing for the trade which for a time at least was utterly disregarded during the period of feverish demand.

COKE

Beehive coke production continued its steady decline during the week ended Feb. 12. The output fell to 227,000 net tons, a decrease of 6,000 tons when compared with that of the preceding week. Cumulative production for the year has reached 1,503,000 tons, or but little over half of that during the corresponding period in 1920.

Reports From the Market Centers

New England

BOSTON

Steam Grades Extremely Quiet—Water Freights Much Reduced—Less coal at Tidewater Piers—Pocahontas and New River Output Curtailed—Anthracite Easy.

Bituminous—In the face of quotations based on figures close to $3 per net ton at the mines for fair grades classified in Pools 10 and 11, the present inactivity may be like turning down gold dollars, but buyers always love company and it is extremely difficult to persuade them to enter a market in small groups. They feel much more comfortable when all hands are after the same thing.

Spot buying as well as purchasing on contract is only scattered. Steam-users are frankly not ready to buy; they want to see something like a settled contract basis before giving much encouragement to shippers. A large number, also, are to carry over such heavy stocks that spot purchases later in the season will give them all they are likely to need for next fall and winter. The general industrial situation here is but little improved.

Another element in the current market is the depression in water freights. The unions are resisting any scaling down of seamen's wages, and it is quite possible there will be something in the nature of a strike later on. The basic consideration, however, is the great surplus of marine transportation and rates have declined as sharply as towing and other charges will permit. While $1.25@$1.50 from New York to Boston is freely quoted, in the view of some of those closely in touch with freighting a flat basis of $1 is within the possibilities. Steamer tonnage is a drug on the market, and several private terms have been negotiated that show the great eagerness of owners to secure charters. All this tends to discourage purchases all-rail. The proposed revision upward of all-rail rates to points that are assumed to be competitive with Tidewater is another factor. Receipts both by water and all-rail have fallen off to a marked degree.

Accumulations at Tide are being absorbed very slowly. The outlook for spot sales for transshipment by vessel is in no way encouraging. Serious cuts have been made in prices in order to move coal at Tidewater, reductions which in most cases would not have been considered at the mines merely to place coal. A lot of operators have determined to rest on their returns of last season, at least for the present, rather than sell at less than mining cost.

Curtailment in the smokeless districts in West Virginia has been enforced almost horizontally. A few operations have been obliged by the lack of business West to dispose of accumulated slack, but less of this is likely to be heard of during March.

Pocahontas and New River are quoted at $5.75@$6.25 per gross ton f.o.b. Hampton Roads, but coal at such prices is in the hands of agencies that have few contracts. Clearfield, Cambria and Somerset prices are unchanged and are shown in the Weekly Review.

Anthracite—Domestic sizes are noticeably in much better supply. Shippers who had withdrawn from this

market to every point and purpose are now actively canvassing for orders. Retail trade is extremely dull.

Tidewater—East

PHILADELPHIA

Anthracite "Break" Seems on the Way—Independent Prices Soften—Market Glutted with Steam Sizes—Bituminous Extremely Quiet with Prices Firm—Contracting at Standstill.

Anthracite—The situation is easing up fast. Retail yards are accumulating stocks of all sizes and are presenting a fuller appearance than for many months. The weather has been extremely balmy and current consumption has been much reduced. While most dealers have had a fair amount of business, others have reached the point where they have for the first time in four years laid off men in their yards due to lack of business.

The shipping trade is of the opinion that as April approaches there will be a strengthening all around, similar to the break which followed in February, 1919, which was quickly succeeded by a rush period which has continued to this time. Due to the easier conditions the small independents who have been out of the local market are coming back with offers of prepared sizes around $8.50, but with no trade left are finding it difficult to secure an outlet.

With coal easier some of the smaller dealers quickly held or cancelled their orders, but concerns with plenty of storage room are going to let it come.

The steam market almost approaches a glut. Independents are offering buckwheat as low as $2.75, as compared with company price of $4.25. We have also heard of a Tidewater shipment of buckwheat being sacrificed at $1.90. Barley caught in a similar manner has been reported down to 90c. The companies are fast creating big piles of steam sizes in the storage yards, as they are following traditional custom in not shading the price.

Bituminous—So far as prices are concerned the soft coal market is firm. Prices have averaged close to the same level for three weeks past, with Pool 9 offered $3@$3.25. Spot quotations are shown in the Weekly Review.

Consumers are still quite conservative in adding to their stocks and the only buying is by the concern which is absolutely in need. With most mines closed down deliveries are far from prompt, and the belief now is that with the least stimulation prices will advance moderately.

There is little talk of contracts, as the consumer seems to have learned as much as he can of the attitude of the shippers on this point. Big houses cling to their $4.35 price, but nearly all in the trade are simply sitting tight and waiting for developments, as they realize that consumers generally will not sign agreements at this time at any price approximating $4.35.

NEW YORK

Domestic Coals Easier—Independent Quotations Lower—Bituminous Demand Is Quiet—Little Change in Quotations.

Anthracite—The situation has become so easy that some wonder why the market has not broken. There has been a gradual lowering of quotations for independent coals and last week's prices ranged $8.75@$9, or slightly more than the company schedule with the 75c. differential added. On the other hand, some shippers said they were moving coal on orders placed when fuel was selling around $10.

Coal is coming forward in larger supply and already there is a tendency on the part of large buyers of independent coals to restrict their purchases. Those dealers who are regular customers of the large producers are obtaining sufficient tonnage for their needs and unless weather conditions change considerably will begin the new coal year with bins well filled. There are many inquiries as to what might be expected of prices on April 1 but so far nothing definite has been learned.

All of the domestic coals are in better supply. Most producers are working on old orders and in this way find a ready market for their product.

Steam coals are being stored in large quantities by the producers. Demand is flat. Buckwheat is being quoted $3.25 @$3.50. Rice, which is holding up better than buckwheat, $2.25@$2.50, and barley from $1 up, with occasional sales at lower figures.

Bituminous—The market developed a surprising steadiness during the week. Prices were slightly firmer, although demand was no stronger. Contract coals continued to move in good volume. Buyers were out to take in whatever "distress" coal they could obtain but the supply was small.

Not many contracts have been closed but prices ranged about one dollar more than present mine quotations. The large supplies in consumers bins will probably be the reason for much delay in the closing of many contracts. Customers are expected to hesitate in signing at prices higher than the existing market and will take chances in spot buying.

Shippers are still exercising care in sending coal to Tidewater. There is no large surplus on the docks, while there are comparatively few loaded boats in the harbor.

Quotations f.o.b. this harbor are on a slightly lower basis than prices for the same coal at the mine. The range of mine prices for the various pools shows little variation from last week. Quotations appear in the Weekly Review.

BALTIMORE

Price Conditions Improve — Export Movement Is Poor—Bunkering Again Permitted at Piers—Hard Coal in Light Sales.

Bituminous—Some coal men see a "silver lining" and point to the fact that the basis of sales generally is better at this writing than a week or ten days ago. While this is true, there is no doubt that some remarkable cutting, even on high grade coals, has been and still is in progress. Dealing with the market as a whole, it may be pointed out as a sign that business is improving that the demand for best coals is slightly stronger.

The average run of prices at the mines for best steam coals, such as Pools 71 and 9, with some of Pool 1 occasionally, are around $3@$3.25. A large producer has sold in this market and is still selling at times Pool 9 as low as $2.25@$2.50 at the mines. As this is the average of such coals as Pool 10 and 11 here at present, the offerings of Pool 9 on this basis have at times cut out the sales of other grades. Lower class steam coals are still to be had at $2@$2.15.

Export movement is poor, the total cargo loadings for the first half of February running only 50,000 tons, with around 7,000 additional taken as bunker supply. In the lull the B. & O. and Pennsylvania are giving a 60-day trial to the plan of again allowing loading of bunkers at the piers instead of in stream. Thus the cost per ton for trimming is cut to 31½c., against the present charge for lightering, loading and trimming up to 35 feet of $1.10 at present, which was formerly $1.40.

Anthracite—Receipts here continue light, with the demand very poor in the face of warm temperatures. Yard supplies are sufficient to meet any sudden emergency. While most dealers are figuring that there will be a re-adjustment of wholesale prices in April, they are figuring that it will consist of raising the company rates to a reasonable "independent" charge and the bringing down of the prices demanded by the high-flying independents to the same scale. Such a plan would not allow a cut in retail prices. The spring schedule is, therefore, figured to be pretty near that set last October and now in force.

BUFFALO

Bituminous As Weak As Ever—Contracts Hard to Make—Anthracite Situation Easy.

Bituminous—Some shippers claim to see a plain weakening of prices still going on. They are finding it impossible to sell enough coal on the road to make it worth while to send salesmen out and are waiting for the general business of the country to revive.

It is claimed that consumers are using more coal than they are buying, and as a rule they are not asking for contracts. Some railroads are in the market but shippers do not see any prospect of an agreement on prices and do not pay much attention to them. A few early contracts have been made as high as $4, but it would not be possible to do anything of the sort now, and as the shipper does not care to contract from $3 down he simply stays out of that side of the market.

There is a still increasing number of mines closing down. Where a mine would lose more money by closing than by running the plan generally is to

keep going. Prices are weak and unsteady at $3.50 for Youghiogheny gas, $3 for Pittsburgh and No. 8 lump, $2.75 for all mine run and $2@$2.50 for slack.

Anthracite—The situation is easing off rapidly. There is coal enough to meet all demands, in fact the season is beginning to wane so fast that consumers are becoming quite unconcerned. The light winter seems to please the shippers as well as anyone, for they have been unable to supply the demand so long that they are relieved when it drops off. Independent operators are still asking a small premium. It now runs a little above a dollar a ton and is on the downward turn, soon to disappear, as it looks now.

It will be some time before there is enough surplus to afford any for the Lake trade. It would be easy to load it now, as there is no ice in the harbor, but it will probably be another month before there is enough coal to make a showing in that direction.

Coke—Furnaces do not seem to have their season well mapped out yet. They may be running at good speed in a month and they may not get started soon enough to make much of a season of it. But for the big shutdown of the coke ovens local jobbers would get very little to do. They are getting some orders at about $5.75@$6.50 for 72-hour foundry, $5@$5.50 for 48-hour furnace, $4.75 for stock and $6.25 for domestic sizes.

HAMPTON ROADS

No Spot Demand—Loadings Drop—Prices Lower—Accumulations Are Disappearing.

Absence of any demand for spot coal has made the week ended Feb. 12 another period of pronounced dullness. Loadings at the various piers dropped to 290,000 gross tons, which is, with the exception of the third week in January, the lowest figure in eight months. Pools 1 and 2 have dropped to $6 and below, while other prices are so varied as not to allow a market to be established.

Tidewater stocks were reduced nearly 30,000 tons during the week, while dumpings were also cut down, showing that mine shipments are being greatly curtailed.

Local piers are working on two shifts per days, with too much work for one and not enough for two full shifts. None of the piers at the end of the week had any vessel tonnage for loading, with the exception of a few isolated cases.

Prices have a weaker tendency, especially in the case of low-volatile coals, where accumulations still exist to some extent.

Some 40 vessels are expected at this port for bunkers, and one for cargo coal at this writing. Twelve cargoes cleared during the week, only two being shipped to France, contracts for this having been made before the French government's action in placing a maximum price on coal went into effect. Among cargoes clearing were:

Am. SS Suffolk, for Marsellles, 6,000 tons; Br SS Malvern Range, for Rotterdam, 5,918 tons; Br. SS Devon Clty, for Buenos Aires, 6,729 tons; Dan. SS Thalassa, for Buenos Aires, 2,159 tons; Dan. SS Asgerd, for Buenos Aires, 2,425 tons; Am. Schr. Samuel W. Hathaway, for Hamilton, Bermuda, 1,206 tons; Am. SS Santa Cecelia, for Italy, 6,817 tons; Am. SS Eastern Glen, for Tiburon, 7,574 tons; Br. SS Blossom Heath, for Chile, 7,188 tons; Br. SS Dunolly, for Bordeaux, 4,930 tons; Br. SS Ronalee, for Amsterdam, 4,501 tons; Swed. SS Gothia, for Clenfuegos, 2,700 tons.

Northwest

MILWAUKEE

Unprecedented Dullness Prevails—Yards Closed Every Other Day—Hints of Another Price Cut.

It looks as if the fuel business would remain quiet for the remainder of the season. A real old-fashioned cold wave might galvanize the market into life for a period. The various coal yards and offices bear a Sunday aspect the week round, local deliveries being at such a low ebb that the leading distributing yards are now closed every other day.

There is very little outward movement by rail to the interior, as country dealers are buying very gingerly and industries are consuming only a small fraction of what they required last year at this time. As one dealer put it, everybody is scared to death.

Naturally there are hints of further reduction in soft coal and coke. This may come on March 1 if conditions do not improve by that time. Such a reduction would leave anthracite hanging high and naturally would reduce the demand for it. Coke piles are growing and unless prices are reduced thousands of tons may have to be carried over until another season. There is no change in the price list formulated on Feb. 1.

MINNEAPOLIS

Wide Range of Prices, with Trend Steadily Downward—Interest in Spring Quotations—Spot Business Very Low.

There seems to be almost nothing to keep up interest in the coal business at this time, but members of the trade have some distractions from monotony in wondering what will be done with the Calder bill and also what is likely to be done in the Minnesota legislature. There is nothing strenuous pending in the latter body but a bill authorizing municipal coal yards, but there is always a possibility that some drastic move will come forward up to the last day for filing bills. Of course there is an investigation or two in sight as usual.

Prices on soft coals of all grades are from $1 to $3 lower than two months ago. None of the declines have moved as declines usually do—that is in substantial uniformity—one concern starting with a cut which is speedily followed by others. Instead, there has been a darting around of prices, one after another, without any apparent connection. Those with limited stocks are less eager to cut prices, while those seeing danger of carrying over considerable coal have slashed in an effort to get from under. There is hardly a uniform market existing on similar grades in this territory, either on dock or all-rail coal.

No word has been received as yet as to the opening prices for spring. Many insist that present costs are as low as the spring can possibly give, arguing that present costs are based upon current mine costs which cannot be changed much, if at all. People of the Northwest feel that they have been held up on coal costs, particularly on hard coal, and it will take a great deal of arguing to convince them to the contrary. And they will have the reports of the former fuel administrator to support them. That much can be explained to the satisfaction of reasonable beings has but little bearing, for the reason that it has not been explained, and would hardly be received if it were attempted.

Current businss is dragging along on the closest sort of buying for urgent requirements, and there is hardly a chance for any change for the remainder of the season.

Inland West

CHICAGO

Slight Flurry in Screenings—Smokeless Strengthens — No Industrial Improvement.

On account of decreased production and stagnation in the retail trade, there has been a small flurry in the screenings market. Screenings and steam coals which were selling as low as $1.25 @$1.50 last week, are now bringing $1.75@$2.

The domestic market is quiet with practically no demand, although some cold weather which is predicted will probably stimulate trade to a small extent. Dealers who buy smokeless coal are now having to pay a reasonable price for it as the days of open consignment and demurrage seem to have come to an end. Good Pocahontas lump and egg is selling at $6, although very little is moving. Mine run is selling in small lots at $4@$4.50.

Franklin County operators are holding firmly to their circular prices and the retailer who wants this coal still has to pay $4.15 for lump, furnace and small egg.

Chicago coal men are becoming accustomed to the idea that business will be very dull until July first or after. They have scanned the commercial horizon and see no indications of improvement. Far-sighted operators are closing their mines for repairs or running them only one or two days a week. When an operator gets enough business booked to run his mine one or two days, he does it, but after that, he usually closes it again and waits for another accumulation of orders.

CLEVELAND

Heavy Consumption from Reserves—No Spot Activity — Prices Weaken Slightly.

Bituminous—Sluggishness in the coal trade is increasing and the last few days saw further declines in both production and prices. The No. 8 field is leading the state in working time. Slack has suffered the worst depression and some spot sales at $1.75 have been reported. Current quotations will be found in the Weekly Review.

Industrial consumption is almost entirely from stocks and buying is practically at a standstill. Coal men say that more reserve fuel is being used than at any time in the last twenty years for this period of the season. While industrial conditions are better the improvement is not yet reflected in the coal buying market.

Bituminous receipts continue at the minimum, the number of cars arriving during the week ended Feb. 12 being: industrial, 1,132 cars; domestic, 353 cars.

Pocahontas and Anthracite — Retail prices for Pocahontas have been reduced from $11.90 to $11.60. Curtailed rail movement of domestic indicates that domestic dealers are cutting down their purchases and are selling out of their present yard stocks. No. 6 and No. 8 mine run steam at retail dropped to $7.75.

Lake—Within the next week some 38,000 tons of bituminous will be loaded from the Ohio fields to Lake Erie docks. This constitutes virtually the only sign of life in the local trade.

COLUMBUS

Reduction in Lump Production—Screenings Develop Strength—Contract Market Inactive—Prices Are Steady.

Strength has developed in screenings, due largely to curtailment of lump production. Manufacturing plants are slowly resuming and there is a better demand for small sizes. As a result, screenings have advanced. Quotations have risen to $1.90@$2.10 and in some cases slightly higher.

Mine run is fairly strong under present conditions and a considerable tonnage is being used in place of nut, pea and slack. Some Pocahontas mine run is coming in but this is limited. Reserve steam stocks are still fairly large and the policy followed is to consume the reserve before buying much more. Mine prices are quoted in the Weekly Review.

Domestic trade is dull in every particular. Dealers have trouble to dispose of stocks because of the open winter which has prevailed. As a result householders are playing a waiting game and ordering in small loads only. Retail prices are rather firm at former levels. Hocking lump is $7.50 @$8, and mine run $5.50@$6; West Virginia splints $8.50@$9, while Pocahontas lump is $10.50@$11.

Some Lake shippers are looking around and a few small contracts have been made at rather low prices. But conditions do not indicate any strength and little movement is anticipated before June 1.

Contracting for steam tonnage after April 1 is quiet. So far only a few scattering contracts have been closed and consumers are not pushing the matter.

ST. LOUIS

Demoralized Conditions Prevail—Lower Prices Fail to Move Coal—Mildest Winter on Record.

Extremely mild weather prevails throughout the territory. The tonnage of coal moved per capita is smaller than in the history of the St. Louis coal business. Added to the dull domestic call the industrial situation has brought about an extremely depressed market. Standard mines are generally working but one day per week although many have been idle now for several weeks. Prices remain unchanged and are quoted in the Weekly Review.

Mt. Olive field conditions are somewhat the same. The railroad tonnage is a little stronger, but two to three days per week is considered good running time.

In the Carterville field screenings are piling up. The domestic market is sluggish and there is an oversupply of all grades. Association mines are maintaining prices on domestic while fine coal ranges $1.50@$2.50. Independents are having great difficulty in marketing their product, and are cutting their prices.

Duquoin field conditions are extremely bad. In the Big Muddy field it is almost impossible to move screenings and this has made for mine idleness.

No anthracite is moving into St. Louis and the movement of coke is extremely slow. There is no change in retail prices.

DETROIT

Indifference Among Buyers Continues—Receipts Are Greatly Reduced —Good Coal at Bargain Prices.

Bituminous—With buying at a very low ebb the market in Detroit has become a listless, dragging affair. Jobbers say it is almost impossible to arouse any interest among consumers of steam or domestic sizes and that they are virtually obliged to force sales.

Although the industrial situation is reported making gradual improvement the gain is not yet reflected in any strengthening of demand. Nor do low prices seem to exercise any stimulating influence. Among the jobbers there is a belief that the continuance of existing market conditions is certain to be followed by a reflex and that later in the year there is likely to be a repetition of the developments that occasioned troublesome conditions last year.

Dealers are buying only when they confront the necessity of renewing some portion of their supply. While few yards are heavily stocked, the coal is not moving to consumers.

Ohio domestic lump is quoted at $4 at the mines, with mine run $2.75 and nut and slack $1.75. Lump from West Virginia or Kentucky is $4, mine run $2.75@$3 and nut and slack at $2. Smokeless mine run is $4.50, with lump about $6.50, though little is to be had.

Anthracite—Because of the diminished demand from household consumers there is an apparent increase in supply of anthracite in prepared sizes. Shipments have not materially increased. Retail prices remain at the level established last fall.

CINCINNATI

Steam and Domesitc Markets Inactive —Mine Idleness General—Prices Even Lower.

Continued warm weather is largely blamed for the present state of the market. Many plants which have been closed for several months because of lack of orders still remain idle, while the few that have resumed operations are running but one or two days a week, and for the most part still have a sufficient supply on hand to last for some time.

Retail dealers are much perturbed over the continued warm weather which has been prevailing in Cincinnati during the past month or more. Because very little of this winter's coal supply has been used it is probable early fall orders will be affected accordingly.

In many of the public buildings and private institutions where ordinarily at this time of the year the winter's supply of coal is about exhausted, almost a third of the coal pile still remains untouched. Efforts to drum up trade in the way of future orders are meeting with little success.

Bituminous lump at the mines was quoted $3.50@$4, while nut and slack brought quotations as low as $1.50@$2. Smokeless lump was quoted $5.50@ $5.75, while mine run was $3.75@$4. The following retail delivered prices were quoted: Bituminous lump, $9.25 @$10; mine run, $8.50@$9; smokeless lump and egg, $10.50@$11; mine run, $9.50; anthracite egg, $15@$16.25; domestic egg coke, $14.50@$16.

West

DENVER

Bituminous Fairly Firm — Lignite Drops—"No Markets" Cut Production.

Although actual production in bituminous mines reached a critical period during the first week in February, operators have kept prices firm in the face of a soft market. The lignite field, on the other hand, has weakened, further reductions at the mine and on retail markets being noted.

Car distribution has been a serious factor recently only in Routt County, where snows have made shipments slow and uncertain. Other fields escaped, perhaps, on account of the visible "no market" conditions that kept down production by one-fourth or an equivalent of 95,000 tons. Total

production in all fields for the week ended Feb. 5 was 194,896 tons.

Insistence on the part of certain lignite operators to keep their mines going is one reason ascribed to the latest 50c. reduction to $5.25, which promptly became general in the Louisville district. Weld district, second-grade lignite, dropped 50c. at the mine to $3.50, and took another 40c. tumble in retail markets. This makes the new price $7.25.

Shoveled lignite lump is $7 on retail markets. Lignite steam is practically unchanged, bringing $2.40 at the mine and $5.30 in wagon lots, retail. Bituminous steam is around $3.25, but some has dropped as low as $2.50. Bituminous steam retail is around $6.75 and coking steam $8.05.

Southwest

KANSAS CITY

Retailers Endeavoring to Move Surplus—Prices Unchanged—Mine Idleness Growing.

A brief spell of cold weather throughout this section is aiding retailers to clean up some of their excessive stocks. However, it came too late to have any material effect on the wholesale market which is extremely quiet.

Quotations are practically unchanged, although prices are only nominal, as little business is being done at these or any other figures. Mine operations continue on about the same schedules as reported last week.

Alexander Howatt, president of the Kansas District, U.M.W., has been sentenced to one year in jail but is out on bail pending a hearing for appeal. Howatt called a strike recently in violation of the injunction and his sentence for contempt followed. This has caused some mine idleness.

South

BIRMINGHAM

No Steam Market — Continued Warm Weather Slackens Domestic Demand—Production Being Rapidly Curtailed.

There is practically nothing doing in the coal market. No interest is being manifested in spot purchases, no new contracts are being offered, with few old ones expiring at this season, and there seems to be no indication of an early revival in the trade. Movement of steam is limited to the minimum tonnage allowed in contracts in most cases. Mine quotations are holding steady as a rule, ranging about as follows:

	Mine-Run	Washed	Lump
Big Seam	$2.95@3.25	.....	$3.50@4.00
Carbon Hill	2.85@3.35	3.35@3.85	5.25@5.50
Cahaba and Black Creek	4.00@4.35	4.50@5.00	5.00@7.50
Pratt	3.50@4.00	.....	.....
Corona	3.50	.....	6.00
Montevallo	.....	.....	9.50

Demand for lump coal has slackened considerably on account of the continued warm weather and the consequent falling off in retail trade, and there is now some surplus domestic coal to be had. Prices, however, have not declined as yet, but will likely seek lower levels on account of "no market" conditions affecting this class of producers for the first time in the past twelve months.

Quite a few commercial mines are now idle, those running being on an operating schedule of two and three days per week. Production is showing a rapid decline in the face of no demand.

LOUISVILLE

Mild Weather Slows Prepared Demand — Early Lakes Buying — Prices Weak.

With extremely mild weather demand for prepared sizes has slumped away. Prices are weak, but about on a par with last week.

Mines are operating one to one and a half days a week. According to jobbers and producers, coal sales are worse now than at any previous time in two years or more, there being very little demand from any consuming industries.

The trade is not anticipating much early improvement in demand. Lake movement is not expected to be big this year, but it may come early.

It is reported that some inquiries have been received from Lake buyers, but probably just to line up prices. At that, these buyers could probably take advantage of some of the very low present prices of spot coal.

Harlan gas is in slightly better demand than some other southeastern Kentucky coals, but all grades are dull. Hazard lump is quoted around $3.75@$4, as against Harlan $3.75@$4.50. Hazard mine run is $2.25@$2.75, while Harlan is $2.50@$3. Screenings are being quoted $1.25@$1.75. Jellico and Straight creek grades are lining up close to Harlan, with Elkhorn between Hazard and Harlan.

Canada

TORONTO

Trade Quiet and Featureless—Mild Weather Causes Decreased Demand.

Trade continues quiet and featureless, and dealers are able to fill orders promptly. Most consumers having laid in stocks for the winter, business is largely confined to the poorer class who buy from hand to mouth, and the demand is unusually light, owing to the mildness of the season. Anthracite is coming forward in fair quantities and the yards are sufficiently well-stocked to meet any emergency which may occur through interruptions to transportation. There is little call for bituminous, of which there are ample supplies on hand with a downward tendency in prices.

Quotations are as follows:

Anthracite, egg, stove, nut and grate	$16.90
Pea	15.40
Bituminous steam	11.50@12.25
Domestic lump	13.25
Cannel	17.00
Wholesale f.o.b. cars at destination:	
Three-quarter lump	8.00@ 9.00
Slack	6.50@ 7.00

News From the Coal Fields

Northern Appalachian

UNIONTOWN

Coke Output Sharply Curtailed—Demand is Non-Existent—Distress Tonnage at Minimum.

Curtailment of output was commenced this week by the H. C. Frick Co. The coke subsidiary of the United States Steel Corporation has been operating virtually at capacity for several months past while all independent operators have been compelled to practically suspend operations. Frick plants basis and byproduct mines, excepting this week were placed on a 70 per cent those situated along the Monongahela River, are operating from 80 to 90 per cent.

The general industrial situation shows absolutely no change. Demand for both coal and coke remains non-existent and consequently little tonnage is being produced. Coke buyers, however, who have been picking up "distress" tonnage at "bargain" prices are finding it more difficult every day to locate any such tonnage.

Never in the history of the region, operators say, has there been so little coke standing on tracks. While there remains very little demand for spot tonnage, jobbers are refusing to accept what few orders do come through because they do not know where to find the tonnage at the price offered. Furnace coke remains $4.50@$5 with foundry a dollar higher. Steam coal is quoted at $2 but sales have been recorded as low as $1.50. In several instances tonnage is being held at the quoted figure. Byproduct coal is quoted $2.25@$2.50.

PITTSBURGH

Market Still More Stagnant—Operators Endeavor to Reduce Costs—Prices Slightly Weaker.

The coal market has become even more stagnant than formerly, there being so little demand that the mines that were endeavoring to maintain an operation by day-to-day sales have practically given up the effort. Additional mines have closed, while with reduced requirements against contracts the operators who have been regulating their production to contract re-

quirements have had to curtail operations further.

Continued reduction in operations seems to have had one favorable effect, in that there is now little "distress" coal offered, and thus less tendency to make prices that are below what operators would accept against regular production. The market has not been stiffened thereby, however, as some operators are making efforts afresh to get down their production costs and feel that costs cannot well be reduced while a mine is idle.

Production as a whole is now at about 40 per cent of rated capacity. However light the line demand may be it is expected that there will be a material improvement in production when the Lakes season opens.

We quote spot coal approximately as follows: Steam, slack, $1.85@$2; mine run, $2.20@$2.50; screened, $2.40 @$2.60; gas, mine run, $2.25@$2.50; screened, $2.50@$2.75; byproduct, $2.50 @$2.75.

EASTERN OHIO

Production Slumps — Lakes Tonnage Going Forward — Mine Ratings Reduced — Prices Stable.

Contrary to expectations, production fell off during the week ended Feb. 12. Reports covering some 168 mines indicate an estimated production of 285,250 tons or about 44 per cent of the rated weekly potential capacity of 650,000 tons. The output shows a deficit of 22,000 tons as compared with the previous week.

It was anticipated that output during the week would hold up because of some stimulus in loading to Lake, but this did not materialize. However, it is understood 35,000 tons are lined up for boats at Erie and Ashtabula to come out of the No. 8 field immediately and this will no doubt assist in bolstering production during the coming week.

It is understood that February railroad ratings of the mines, based upon January performance, will result in a reduction in the rated capacity of the district, and the potential loss of production, account "no market" conditions, will show up correspondingly less.

Mines continue to work very irregularly and some are closed down completely. Operators generally are unable to detect any change in the sluggish market which has prevailed in this section since early January; at least there is yet no perceptible change for the better.

Mine prices remain stationary, the range being somewhat as follows: Slack, $1.75@$2 25; mine run, $2.25@ $2.75; 1¼-in. lump, $3.25@$3.75, and domestic lump, $3.75@$4.25.

CENTRAL PENNSYLVANIA

Trade Still Stagnant—Operations Curtailed—Improvement Expected with New Administration.

Due to the fact that weather conditions for the month of February have operated in favor of the consumer, mining conditions have not improved materially and the demand for coal for immediate shipment has been low, good coal being offered at $2.30@$2.75.

There is a general feeling of optimism among operators that business will revive immediately after the big events of March 4 are over and the new administration gets settled down to a program of reconstruction. At a meeting of the Kiwanis Club of Altoona, which is made up of a large number of the leading business men of the city, a resolution was unanimously adopted opposing the Calder bill now before congress.

CONNELLSVILLE

Complete Stagnation Due to Light Blast Furnace Operations — Buyers Could Name Prices—Production Further Reduced.

With a complete absence of any demand for furnace coke on account of an unprecedented situation in pig iron there is no opportunity for a definite market to exist. Only a few blast furnaces that depend on Connellsville coke are operating, and some of these are likely to go out in the near future. While there was not a great deal of contracting for the present half year, it is far in excess of the amount of coke actually required to sustain present blast furnace operations.

It is quite probable that if a furnace interest desired to buy spot furnace coke it could buy at practically its own price without any reference to the cost of production. There is a considerable stock of coke in the region, which is weathering from week to week, and which a furnace would hardly consider if it did wish to buy. The market is supposed to be made by the price at which freshly drawn coke could be bought, and that is hardly over $4.50. Some of the operators are quite content to leave their ovens idle, while others are desirous of making sales for the purpose of getting an operation.

Foundry coke is in some demand, but only very limited, and in spot carloads. The market is quotable approximately as follows: Spot furnace, $4.50; contract, $5; spot foundry, $5.50 @$6.50; contract, $6.50.

The *Courier* reports production in the week ended Feb. 12 at 127,060 tons by the furnace ovens, a decrease of 10,120 tons, and 19,080 tons by the merchant ovens, a decrease of 820 tons, making a total of 146,140 tons, a decrease of 10,940 tons.

FAIRMONT AND PANHANDLE

Mine Idleness More Pronounced—Distress Coal Tonnage Increases—Some Lakes Contracts.

Fairmont

Mine idleness became more pronounced than ever during the week ended Feb. 12. Over 277 operations were closed down in northern West Virginia at the end of that period. Production was estimated at less than 50 per cent of capacity. Mines were being operated not more than two days per week. Spot sales were very few while dead-loads increased, indicating that producers are throwing some coal on the market in an effort to keep their operations intact.

Offers made of $2.40@$2.50 on contract were not sufficiently alluring to most operators. Railroad fuel shipments were much under normal and the field suffered from the acute stagnation in the foreign market.

Northern Panhandle

Conditions were slightly worse as compared with preceding weeks. Contract inquiries were more frequent. Spot sales were few and much coal so sold was sacrificed at figures below production costs. Producers are hoping that an early opening of the Lake season will afford them a much-needed outlet for their production. Some Lake coal was being contracted for at a price around $3.50.

Middle West

MIDWEST REVIEW

Consumption Declines Further—Better Interest Shown in Buying—Mines Steadily Reduce Output—Prices Firm.

Extremely mild weather all over the Middle West has just about paralyzed the demand for domestic coal. Householders who are now coming to the bottom of their coal bins have come to the conclusion that prices are going to still lower levels and consequently are placing orders in very small lots.

The steam market is just about where it was last week, in short, in a state of stagnation. Factories that are lucky enough to be running are either burning storage coal or else taking a small amount due them on contract. In a great many cases, contracts have been held up entirely, while the manufacturer is purchasing coal at a cheaper price on the open market. This practice is being watched very closely by Illinois operators and this type of purchasing agent will doubtless find himself in a difficult position should the situation suddenly change. Salesmen who have been covering the territory pretty thoroughly report that factories are taking far more interest in coal than they did a few weeks ago. This is taken as an indication that the industrial situation is showing signs of improvement.

The situation in the Northwest is highly unsatisfactory. Last summer, thanks to priority orders, some docks were fortunate enough to get coal at reasonable prices, while others had to pay higher figures. Those who paid high prices are faced with the choice of having their coal stay on the docks all summer, or cutting prices to get in line with the others.

Mines in the Middlewest are steadily reducing their tonnage but in spite of this, more coal is being produced than is consumed and consequently, it is expected that more mines will be idle during the coming week. Practically all operators in the Illinois and

Indiana fields have had their fingers burned with demurrage coal and have by this time learned that they are pursuing the wisest policy by keeping their mines closed.

Current prices are fairly stable and are shown in the Weekly Review.

WESTERN KENTUCKY

Demand Quiet and Operations Sluggish —Prices Weaker.

Present demand is dull, mild weather curtailing calls for prepared sizes, while steam coal is in very low demand due to light industrial operations, and fair stocks still in hand.

Prospects as a whole are not especially good, but western Kentucky has the advantage of better freight rates, enlarging her territory, and believes that the 1921 season as a whole will be a fair one, at any rate much better than some of the pre-war years.

Records for the week ended Feb. 12 show prepared coal average price at $3.55, range, $3.15@$4.25; mine run, $2.65, range, $2.25@$3; screenings, $2.05, range, $1.75@$2.75.

This week's spot quotations show lump, $3.25; mine run, $2@$2.25; screenings and nut and slack, $1.45.

DUQUOIN

Mild Weather Curtails Domestic— Spot Market Inactive.

During the last week demand for lump fell off rapidly. The drop was unexpected in most regions and all mines were hit very hard. The only demand was for fine coal and many of the mines practically cleaned their storage tracks of screenings and partly of nut coal. Egg remained heavy throughout the week with very little moving.

The weather for the first two weeks in February has been almost the mildest on record in southern Illinois. Prices were very unstable, with practically no coal being bought on the spot market.

Middle Appalachian

LOW-VOLATILE FIELDS

All Markets Stagnant—Production Declines—Mine Idleness Grows—Demurrage Coal Accumulates.

New River and the Gulf

Production in the New River region was smaller during the second week of February than any time in recent years. This was entirely due to reduced contract needs. Operations were confined to less than two days during the week. Although there was no spot market, some smaller companies proceeded to slash prices merely to keep running. At Newport News the low price of $6 alongside was made.

Demurrage coal is accumulating at Tide and also in the Middle West. Few contracts are being offered, although some operators are making agreements and naming the price every thirty days.

The same conditions prevailed in the Winding Gulf region. Mine idleness was general except where contracts still held or where cars were shipped unsold.

Pocahontas and Tug River

In the Pocahontas region "no market" losses alone represented more than the total tonnage produced. The output was cut to a minimum by dwindling contract orders. However, unconsigned loads were few, owing to the policy of the N. & W. in setting out such loads at weighing points. There was enough unsold coal at Tide and Western points to force prices even lower.

Even the best grades of Tug River coal found no market as conditions in general paralleled those in the Pocahontas region. Tidewater points were overstocked and lower prices resulted from such conditions. Empties were so plentiful that they interfered with the free movement of the small tonnage loaded.

HIGH-VOLATILE FIELDS

Contract Orders Are Fewer—Spot Sales Limited—Production Greatly Curtailed —More Mines Down.

Kanawha

Production declined during the week ended Feb. 12, the output not exceeding 75,000 tons. Spot sales were exceedingly few and distress coal in some instances was sold at ruinous figures. Only limited contracts remained in force. More mines closed during the week owing to the stagnant market.

Logan and Thacker

Increased production in the Logan region followed some resumption of mine operations. Total production reached about 150,000 tons or 23 per cent of potential working time. This resumption was possible because of a revival of contract orders, while the spot market was almost entirely inactive. Operations were limited to a day or so per week and producers refused to run on spot orders offered at ruling price levels.

Williamson production was cut by "no markets," the output being placed at about 45 per cent of capacity. Strike losses were no longer a factor. Little coal changed hands on the spot market and the better rate of production was maintained due to the fact that contract suspensions were not quite so heavy as in other high volatile regions.

Northeastern Kentucky

"No market" losses alone represented 175,000 tons, production being limited to 20 per cent of potential capacity. Market conditions were virtually unchanged, although even the light demand for domestic weakened. Production figures show that the policy of the producer is to withdraw from any activity in the spot market and await better prices, closing his mine in the meantime.

Virginia

Only about 100,000 tons or 50 per cent was the production figure for the week ended Feb. 12. The entire loss was due to dull markets. Producers believe that industrial reserves are not large and that it will not be long before more normal industrial consumption will react on the present sluggish market.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Prices Continue to Slump—Demand for Prepared Coals Very Light—Few Mines Running.

The market for all coal continues in a nonchalant mood, with buyers continuing to beat down prices. Domestic dealers are buying but little in anticipation of the approach of spring.

Both buyers and sellers are now getting interested in probable prices for the coming season's contracts, but so far they are not very close together. Larger mines are standing pat on a price that will enable them to make a fair profit, but some operators are still pursuing a cut-throat policy, naming ridiculous prices for spot coal. There is also considerable distress coal in the South, which is knocking prices right and left.

Only a few mines are operating, and some of them state that unless there is a material change in the market they cannot hold steady running time much longer. Cars are plentiful, and labor is in a working mood.

West

UTAH

Mine Idleness Grows—Coast Trade Better—Labor Plentiful.

Mines are not working more than half their capacity and there are no signs at present that the situation is going to be better in the near future. Consumers are buying only such coal as they need to carry on. Merchants of Utah's capital city have said so much about "slashing prices," "prewar prices," "prices returning to normal," and the like for the past three months that buyers are looking for even lower coal prices.

The coast trade is a little more brisk. Prices for Utah coal at the mines are: Lump, $5; mine run $4, slack $2.75. Retail prices are $10 for lump, $9.50 for nut, $6.75 for pea and $6.25 for slack. Dealers in Salt Lake City are not buying now, but stocks appear adequate.

Labor conditions are good. Producers are letting out many of the less desirable men but are trying to retain all the better-class miners. Retailers are turning many men away every day.

MINE And COMPANY NEWS

ALABAMA

Walter Moore, of Birmingham, is president of a new corporation which plans big coal developments around Empire. The company is capitalized at $2,500,000, and owns properties of 45,000 acres in the Alabama coal fields of the Birmingham district, together with the **Empire Coal Co.**, the **Panama Coal & Iron Co.**, and lands owned personally by Mr. Moore. Engineering plans are being prepared for mining installations and town construction estimated to cost $970,000.

COLORADO

Proposed legislation, intended primarily to curb alleged profiteering among coal dealers, but broad enough in its scope to involve operators who might be similarly charged, is arousing considerable interest in discussions incident to its consideration in the state legislature. The bill is aimed at "profiteering in fuel, food and clothing," and besides carrying severe penalties, gives the purchaser of these necessities at a high price the right to go into court and charge the merchant with making an unreasonable profit.

Judgment obtained by the city of Denver against John R. Smith in a suit growing out of the city's venture in the coal business, has been set aside by the District Court and a new trial ordered on a supplementary showing. A jury had agreed that the city was entitled to collect on a $5,000 bond which Smith posted to guarantee the fulfillment of a contract which the **Cambro Coal Co.** of Lafayette had made to furnish the city with coal from its mines.

ILLINOIS

The tipple of the **Eagen Bros. Coal Co.**, near Canton, was recently destroyed by fire, which is supposed to have originated in the tip house of the mine. The damage done by the fire will cause the plant to be idle for some time. All of the men who were at work in the mine at the time the fire broke out escaped from the air shaft.

The Perry County Coal Corporation of St. Louis and its selling agent, the **West Virginia Coal Co.**, recently filed suit against the B. & O. for $125,000 damages. Failure to properly distribute coal cars is given as the main cause for the suit, the Perry corporation claiming $100,000 damages and the West Virginia Coal Co., $25,000.

It has been generally understood for many years that the ancient **No. 1 Big Muddy mine out of Murphysboro** was the first deep-mining operation in this vicinity. Evidence to the contrary is stated by John Weigle that a slope miner two miles west of this place, has run his slope into ancient coal workings on the Graff land adjoining Indian Creek. The workings are in fairly good condition, the props being well preserved, and indications are that this mining must have been carried on previous to a hundred years ago.

INDIANA

The Shelby Clay and Coal Co., operating the Sterling mine, west of Brazil, has been sold to the Brazil Machine and Foundry Co. at receiver's sale, for $6,260. The original claims of the miners against the company were $6,000. The new owners will dig out the remaining coal and then dismantle the mine. As a result of the closing of the mine, a miners' train on the Otter Creek branch of the Chicago & Eastern Illinois railroad is being taken off.

Announcement has been made of the formation of the **Tower Hill Coal Co.** at Linton. K. L. Ogle, John Hibbitt, and S. D. Royce of Terre Haute, organized the company, which has a capital stock of $50,000.

A new mining company has been organized at Evansville, with a capital stock of $100,000. The company will be known as the **Fricke & Blair Co.** The company is incorporated under the laws of Indiana and the directors are L. A. Fricke, Christene J. Fricke and J. H. Blair.

The Vigo Mining Co., of Terre Haute, has filed a complaint with the Public Service Commission of Indiana against the Illinois Central and Monon railroads, asking that the roads be ordered to refund money on freight charges for hauling water from Sullivan, to its mine near Victoria. Charges for this amounting to $1,400 were approximately twice as high as similar charges for service to other mines, it is alleged, and was due to separate rates being charged by each railroad.

Asking for the appointment of a receiver, and for $332.85, alleged to be due him for work and labor performed, Roy Mann, of Terre Haute, has filed suit in the superior court against the **Big Four Coal & Mining Co.** Mann alleges that the amount was due him and that approximately $1,800 was due eighteen other miners for labor.

Preliminary arguments in the case of the **Boonville Mining Co.** at Princeton, against the **Cypress Creek Coal Co.**, defining issues, were heard recently in the Gibson circuit court, with Chase Harding, of Crawfordsville, special judge, on the bench. The case is a suit to quit title and involves coal rights valued at $250,000. The actual trial date has not been fixed.

Coal mines in Indiana are being hard hit by a slump in sales. A number have been forced to close on account of lack of business. **The Island Valley** mine near Jasonville was closed indefinitely Feb. 1. About 150 men were employed.

KENTUCKY

The Little Fork Coal Co. of Willard has won its suit before the Interstate Commerce Commission against the Eastern Kentucky Ry. for a readjustment of freight rates to Cincinnati and other points. The railroad has been ordered to prescribe reasonable and non-prejudicial rates. The coal company has also been awarded reparations amounting to several thousand dollars for the excessive rates charged.

Charleston and Wheeling coal men are largely interested in the **Tidewater & Western Coal Co.** which has been organized as a Delaware corporation with a capital stock of $6,600,000. This concern has recently come into the possession of large acreages of coal, oil, gas and timber lands in Kentucky, such territory being in the counties of Whitley, Laurel and Pulaski. The company is said to have acquired more than 28,000 acres, 10,000 of which are underlaid with deposits of cannel coal. The company proposes not only to develop its coal territory but also to develop available water power.

H. J. Nunnemacher, Herman Franke and Walter S. Dropper, of Milwaukee, Wis., were awarded $18,000 in a suit against J. D. McRae, W. Wayne Wilson, John T. Glover and James Williams. The litigation grew out of an option on a coal mine alleged to be owned by the **Brownie Creek Coal Co.** near Miracle, the plaintiffs claiming that they were deceived in the transaction. It was further stated in the petition that E. A. Pollard, who acted as agent, conspired with other defendants to deceive the plaintiffs, who paid $18,000 for the option under an agreement that the defendants would each pay $6,000 into the corporation.

Among new companies incorporated in the mountain coal fields is the **Bellinger-Jones Coal Co.**, with $90,000 capital, organized in the Hazard field by J. N. Bellinger, J. E. Jones, Bert Buel, and W. B. Vance, Tennesseans.

In the new Beaver Creek field the **Porter Mining Co.**, which recently increased its capital to $175,000, will make developments, leases having been closed. This new development will be on the Baltimore & Ohio.

MARYLAND

The Western Maryland R.R. Co. is planning to place its new coaling pier at Port Covington in service on March 15. The new pier is 800 ft. long and will have a dumping capacity of 40 cars per hour, or 20,000 tons in a 10-hour day. All machinery is electrically operated. The company has arranged for certain extensions in the original plans and will expend about $250,000, it is said, for additional machinery and construction work.

MINNESOTA

The wave of crime has included a number of holdups of coal offices in the Twin Cities. So when the men of the **Campbell Coal Co.'s** extreme suburban office at Richfield, on the southern edge of Minneapolis, saw three armed men approaching, and stop to adjust masks, they took no chances. The door was barred with a heavy desk. Entrance being blocked the men fired through the door, but the shots failed to land on the inmates, and the assaulters disappeared in the neighboring railroad yards.

MISSOURI

Frank M. Leaply has been appointed receiver of the **Billy's Creek Coal Co.**, near Novinger. The closing of factories in all parts of the country has made it difficult for the company to collect its bills, whereupon it became insolvent. The last week it operated it was unable to meet its payroll.

NEW YORK

Buffalo capitalists have organized the **Egkol Corporation** with $500,000 capital stock, for the purpose of manufacturing anthracite briquets. An office is opening in the Association Service Bldg. and options have been obtained on property in this vicinity for the plant. It is planned to be ready for operation by July. The president is Arthur Warne, Jr., and the secretary, Cassius M. Webb, Jr.

OHIO

Assistant U. S. District Attorney Ford has begun to examine the mass of evidence and data secured by special agents of the Department of Justice when they investigated the coal situation in Ohio. Mr. Ford announced that the Federal Grand Jury would be convened in April instead of June as is the custom. The evidence will be submitted to the Grand Jury.

The sale of the Kirk-Dunn mines in Columbiana County, located five miles south of Lisbon, to the **Segar Fuel Co.**, of Ligonier, Pa., is announced by officials of the former concern. The deal was closed early in February by A. J. Tice, one of the principal stockholders of the **Kirk-Dunn Coal Co.**

A contract to supply 2,500 tons of nut, pea and slack for the use of the various city departments of Hamilton, has been awarded to the **Reliance Coal & Coke Co.**, of Cincinnati, at $3.88. The contract is to expire April 1.

At a meeting in the Wheeling & Lake Erie R.R. offices of coal operators, jobbers and retailers, consideration was given to the matter of stimulating the production and movement of coal this time from mines on that railroad. The conference resulted in the appointment of four representatives of the coal operators, to be accompanied by W. & L. E. traffic officers for the purpose of making a trade tour to all manufacturing points on the line and a special train was placed at their disposal. It is understood these representatives will call on manufacturers, retail dealers and other buyers of coal, assisted by the various Chambers of Commerce, and endeavor to stimulate the purchase and storing of coal during this period of industrial inactivity.

The Rosemary Coal Co., Cleveland, operating mines at Flushing, Belmont County, anounces that A. J. Wolf has been elected treasurer of that company effective Feb. 1.

A bill providing for a **production tax on coal, oil, gas,** and various other minerals, has recently been introduced in the Ohio legislature, proposing a tax of one per cent per annum upon the gross value of such minerals produced during the preceding calender year. Representatives of the various interests affected, appeared before the Finance Committee of the Senate on Feb. 1, in opposition to the bill, S. B. No. 29. The coal people pointed out that the industry is already heavily burdened with taxes, especially in the appraisal of mining machinery and other equipment, as well as a transportation tax resulting from excessive increases in freight rates as compared with increases in rates on coal from producing districts in other states which reach the same markets. A similar bill was introduced several years ago but failed of passage.

The largest coal stripping operation in southeastern Ohio is to be undertaken by the **Central Mining Co.**, recently organized at McKeesport, Pa., which will have general offices at Lisbon. F. F. Marquard is president; Dr. J. F. Conrad, secretary and F. M. Baldridge, treasurer. The company has secured 1,000 acres of coal lands in the vicinity of West Point, seven miles south of Lisbon. Several large steam shovels will be installed.

OKLAHOMA

The McAlester-Edwards Coal Co. of McAlester, one of the largest coal mining companies in Oklahoma, has entered suit in the Supreme Court of the District of Columbia seeking mandamus to compel John Barton Payne, secretary of the interior; Douglas H. Johnson, governor of the Chickasaw Nation, and William F. Semple, principal chief of the Choctaw Nation, to issue patents to certain coal lands in Oklahoma after acceptance of the tendered purchase price. The suit involves several thousand acres of the most valuable coal lands in Oklahoma, and is being watched with unusual interest, as on its outcome will depend several similar suits. The preferential right of a lessee of coal lands to purchase such lands at the appraised value when they are finally placed on sale is the basis of the suit.

The Trinity Coal Co. has been organized at Henryetta, and will develop coal lands in that part of Oklahoma. The company is capitalized at $9,000, and the incorporators are: R. T. Potter of Okmulgee, Richard Corrigan and J. W. Kincaid of Henryetta.

PENNSYLVANIA

The Lehigh Coal & Navigation Co. reports for the year ended Dec. 31 last gross revenues of $26,888,330, against $24,886,907 in 1919 and a surplus, after dividends of $1,711,137, compared with $540,966 in the preceding year. The total amount of commercial coal produced by the company and its lessees in 1920 was 4,125,629 tons, against 4,108,968 tons in 1919.

The American Coke Corporation is preparing to strip 12 to 15 ft. of cover from about eight acres of Pittsburgh seam underlying the bottom land adjoining their Sunshine Mine at Linn, Fayette County, near Brownsville. Some narrow rooms were driven in this coal some years ago and caved in. Now all the remaining coal will be recovered after stripping.

Nearly a million bushels of coal a day were shipped down the Monongahela River in January, in spite of a decided slump in the operation of industries in the Monongahela Valley. According to the report of Lockmaster Sweeney of Lock No. 4, 29,232,000 bushels of coal passed through that lock in January. This amount was 11,262,000 bushels greater than recorded in January, 1920, but 7,620,000 bushels less than in December, 1920. No coke was shipped through the locks last month, while in January, 1920, 260,000 bushels were locked through.

The court has appointed A. A. Scott and L. C. Waggoner, of South Brownsville, as receivers for the **Elmo Coal Co.**, a corporation with offices in Brownsville and workings in Luzerne township, upon petition of the Monongahela National Bank and the Second National Bank of Brownsville. The total assets of the company are placed at $125,000 and the total indebtedness at $45,000.

The **Fredericktown Cross Creek Coal Co.** has purchased two tracts of 250 acres of coal in Washington County along the Monongahela River for $40,000. The mine site is located along the Pennsylvania siding.

The Western Pennsylvania Division of the National Safety Council is arranging a safety instruction course, for superintendents, foremen and other mine officials consisting of a series of talks and discussions at evening meetings to be held in Uniontown during the spring. The dates of the meetings and the topics to be handled are as follows: Feb. 23—Organized accident prevention and what it has accomplished. March 9—Labor turnover and its relation to accident prevention. March 23—First Aid, and how to stimulate interest. April 6—Mine foreman's and superintendent's responsibility for accident prevention and its relation to production. April 20—Electrical hazards as applied to mining. May 4—Transportation hazards as applied to mining. May 18—Face hazards and their prevention. June 1—Closing meeting with banquet. The principal speaker at the first meeting will be C. G. Rice, of Pittsburgh, President of the Western Pennsylvania Division of the National Safety Council. The other speakers have not yet been announced.

A verdict was returned by a jury in the court at Ebensburg, Cambria County, in the case in which Samuel S. Hoffman brought an action in trepass against the **Berwind-White Coal Mining Co.**, for $7,000. This case was tried in the Cambria County court several years ago, and Hoffman was awarded $14,000. This was appealed to the state supreme court, and a new trial was granted on the grounds that improper testimony had been introduced and an error had been made in the court's charge to the jury.

The Schuylkill Valley Coal Co. has succeeded the **Port Carbon Coal Co.**, of Pottsville, taking over all of its assets and liabilities. The business will be conducted under the new name; and any obligations of the Port Carbon Coal Co. will be met by the Schuylkill Valley Coal Co.

According to the annual report of Mine Inspector David T. Williams, of the **Sixth Anthracite District**, 3,605,100 tons of coal were mined during 1920. Sixteen fatal and sixty non-fatal accidents were recorded during the year. The tonnage produced by the various companies in the district was as follows:

Pennsylvania Coal Company	1,267,847
Delaware, Lackawanna & Western Railroad Company	792,947
Hudson Coal Company	743,461
Scranton Coal Company	266,582
Mt. Jessup Coal Company, Ltd.	164,047
Quinn Coal Company	119,837
Spencer Coal Company	62,292
Nay Aug Coal Company	60,671
Bald Mountain Coal Company	50,871
Carney & Brown Coal Company	30,671
John J. Boland Coal Company	8,333
Scranton Anthracite Coal Company	7,541
Total	3,605,100

Production in the central Pennsylvania field fell off 1,660,000 tons during the month of January, as compared with Dec. 1920, according to figures compiled by the Central Pennsylvania Coal Producer's Association. Total production for the month was 3,753,533 tons. In December the production was 5,413,829 tons. Operators express the belief that the lowest ebb has been reached and that the demand for coal will be very much larger in the near future.

A new company which is to be known as the **Fort Hill Coal Co.** has been capitalized at Johnstown, for $500,000, under the laws of Delaware, the incorporators being Carl G. Heinz, Adam Trabold and W. H. Morgan, all of Johnstown. A deal was recently closed for the purchase of 1,500 acres of valuable coal land in Somerset County, located in the vicinity of Fort Hill and engineers at work say the coal appears as good as any ever developed in Somerset County. Shipping facilities are exceptionally good as the mines will be located along the main line of the Baltimore & Ohio. All of the coal purchased is of the C and D veins.

UTAH

State Mine Inspector C. A. Allen, who has just completed an inspection of the mines of the **United States Fuel Co.** at Hiawatha, reports that with few exceptions the properties are well equipped to observe the "Safety First" principles laid down by state authorities. According to Inspector Allen, this is the first of a series of inspections that will include the entire state.

The Blue Seal Coal mine has been opened at Scofield. The property is expected to have an ultimate capacity of from 9[illegible] to 1,000 tons a day. Belmont M[illegible] of Denver is the operator.

Mining operations are to be resumed at Sunnyside Mine No 2, the property of the **Utah Fuel Co.**, in Carbon County. This mine has been the scene for several months of one of the most disastrous fires in the history of mining in this state. The fire started in August. It is still burning in certain sections of the mine, but these are to be blocked off and operations resumed in those portions now workable.

The Knight interests are making preliminary surveys of the proposed railroad to connect the town of Salina with the Salt Lake Route, at Juab. If built the road will connect up with the valuable coal holdings on Red Creek, and there may possibly be a few branches to other mines that are expected to be opened on the East slope of the range. It is stated that construction of the road will begin as soon as the weather permits.

VIRGINIA

The Red Ash Fuel Sales Corporation, recently incorporated, is planning for the development of about 1,200 acres of coal lands near Raven. Two mines will be opened and operated, providing a total daily output of about 400 tons. Machinery will be installed at an early date.

WASHINGTON

Installation of machinery in the **Centralia Briquetting Co's.** plant, north of Centralia, was recently completed and the plant was given a trial run. Coal will be sent through and the plant will soon be manufacturing briquettes to its full capacity.

The year 1920 will be remembered as the banner coal mining year in the **Roslyn-Cle Elum coal fields**, the total output having reached figures never heretofore attained here. The total output in tons reached 1,917,311.

WEST VIRGINIA

The Ursula Coal Co. has been sold to F. L. Marsh and W. T. Hopke, the latter having been in the employ of the B. & O. for a number of years. Messrs. Marsh and Hopke will conduct their business as a partnership.

One of the larger coal companies formed during the early part of February for the development of smokeless coal territory was the **Tug River Smokeless Coal Co.** of Welch, which will operate in McDowell County. It has a capital stock of $550,000. A branch office of the company will be maintained in Chicago. Leading figures in the new company are Thomas A. Lowery, Nelson A. Reinert, Claude Sachs, Perry S. Patterson, Dwight P. Greene, Chicago, Ill.

In connection with the expenditure of $250,000 in the construction of a mining plant near Barrackville, the **Chesapeake Coal Co.** has perfected plans for the erection of 200 miners' dwellings as a part of a model mining town.

Following the preliminary organization of the **Triple Pocahontas Coal Co.** with a capital stock of $125,000, officers have been elected as follows: W. C. Neikirk, Davy, president; Charles R. Woolwine, Jr., Davy, vice-president; Leo J. Signaigo, secretary-treasurer and general manager. A total of 334 acres of land on Dry Fork in McDowell County not far from Iaeger are to be developed.

It is considered probable that the number of district mining inspectors on the force of the **West Virginia Department of Mines** will be increased from 19 to 22, a bill to make that possible having been introduced in the Senate. Until 1919 there were only 15 district mine inspectors. There had been such a tremendous growth in the number of mines that it was then necessary to increase the number to 19. Should the bill become a law it would necessitate a redistricting of the state and reappointment of all present inspectors for the period of the unexpired term ending Dec. 31, 1921. After Dec. 31 appointments of inspectors will be for a term of four years.

Pennsylvania people are principally interested in the **Fulton Gas Coal Co.** which plans to undertake the development of coal land in Clark district of Harrison County, being capitalized at $400,000.

Personals

R. E. Eggebrecht, for the past three or four years sales manager of the Southern Coal, Coke & Mining Co. of St. Louis, resigned on Feb. 1, to accept the general sales agency for the two mines at Marissa of the Egyptian Coal & Mining Co. with offices in the Boatmens Bk. Bldg., St. Louis. He is succeeded by **Robert H. May** of Chicago, who has for many years been connected with the Coal Traffic Department of the Burlington R.R.

John E. Shaw, one of the oldest coal men in years of service in St. Louis, has recently resigned from his connection with John T. Hesser & Co. and retired from business, settling down on a plantation at Citronville, Ala.

H. W. Salmon, who has been in the coal business in St. Louis for the past two or three years in a jobbing way, has resigned and accepted a position with the Missouri Pacific R.R. as acting fuel agent, succeeding **W. P. Hawkins,** president of the Western Coal & Mining Co.

T. C. Hughes, president Kentucky Collieries, Pineville, was a recent visitor in New York City negotiating the disposition of his tonnage on the overseas market.

P. F. Merritt, formerly with the coal purchasing department of the central region of the Pennsylvania has been appointed vice-president of the Eastern Fuel Co., with headquarters in Pittsburgh.

According to word received in Fairmont, **W. C. MacQuown,** who has been the sales manager for the A. R. Hamilton Co., Pittsburgh, and business manager of the *Coal Trade Bulletin,* has resigned to become president and sales manager of the Keister-MacQuown Fuel Co., Inc.

W. S. Wood, identified with several large companies in the Kanawha and New River fields, having his headquarters at Charleston attended the banquet of the Logan Operators Association at Huntington on Feb. 3.

R. J. Stegall, auditor for the Geo. M. Jones interests with headquarters at Amherstdale was a recent visitor at Huntington, W. Va.

W. T. Jones, general superintendent of the Main Island Creek Coal Co. at Omar W. Va. was a visitor in February at Huntington.

R. L. Wildermuth, interested in coal companies operating in both Ohio and Logan County, W. Va. was a visitor in Huntington early in February.

Garner Fletcher, of Huntington, manager of the Elkhorn-Piney Co. was in the Gulf region of West Virginia on business during the first week of February.

T. L. Lewis, secretary of the New River Operators' Association, with headquarters at Charleston, attended the banquet of the Logan Operators' Association at Huntington on the night of Feb. 3.

Clark Dobbie, general superintendent of the Jamison Coal & Coke Co.'s West Virginia operations and **J. D. Victor,** general inspector of mines of the company, were in Pittsburgh on business during the first week of February.

A visitor in Pittsburgh early in February was **Guy Hartley** of the Winfield Coal Co., with headquarters at Fairmont.

R. F. Hopes, connected with Coale & Co. of New York was in Charleston, W. Va., during the early part of February organizing the New River, Raleigh & Pocahontas Coal Co.

The Morgantown Coal Co. was represented in Pittsburgh during the early part of February by **M. L. Taylor and Harry C. Owen,** of Morgantown.

W. J. Manley, traffic manager of the Logan Operators' Association with headquarters at Huntington, was a visitor in Washington, D. C., during the early part of February.

Thomas W. Arnell, of Fairmont, president of the Antler Coal Co., has returned from a month's sojourn at Hot Springs, Ark.

John Meyers, formerly mine manager of the Security mine at Duquoin, Ill., of Chicago, and who has served in many capacities with various coal concerns throughout the southern end of the state, has accepted a position as mine manager for the Majestic mine, a large plant controlled by the Equitable Coal & Coke Co., of Chicago.

R. A. Harmon, who has for the past months been connected with the Sterling-Midland Coal Co., Chicago, has joined the forces of the Wolverine Coal & Mining Co., also of Chicago.

Colonel H. C. Rizer, the genial chief clerk of the U. S. Geological Survey, was the guest of honor at a lunch given by all his associates on Jan. 15 to celebrate his completion of thirty-five years of service with the survey.

Association Activities

Northeast Kentucky Coal Association

New officers were elected by the association at the annual meeting held at Ashland. Fully forty companies were represented, the attendance eclipsing that of any previous annual meeting. The meeting itself was preceded by a banquet. Following the banquet, President Charles W. Connor called the general meeting to order. After important business matters had been taken up and acted upon, new officers and three new members of the executive committee were chosen.

On the roster of new officers are the following: Cadwalader Jones, vice-president of the Big Elkhorn Coal Co., of Betsy Lane, Ky., president; C. W. Connor, general manager of the Elkhorn & Shelby Creek Coal Co., Esco, Ky., first vice-president; E. R. Price, manager of the Consolidation Coal Co., Van Lear, Ky., second vice-president: George B. Archer, general manager Middle Creek Coal Co., Prestonburg, Ky., treasurer.

Elected as members of the new executive committee were: J. G. Smyth, manager of the Consolidation Coal Co., Jenkins, Ky.; T. S. Haymond, vice-president and general manager Elkhorn Coal Corporation, Fleming, Ky.; Henry LaViers, Paintsville, Ky.

Morgantown Coal Club

Coal men of Morgantown have ushered into existence what will be known as the Morgantown Coal Club. The movement to form such a club was engineered by those who felt the necessity of having an organization which would hold meetings regularly for an exchange of views and in order to insure more co-operation among operators. At the first meeting held, Marvin Taylor of the Morgantown Coal Co. acted as chairman, R. R. McFall of the Southern Fuel Co. being the secretary. A committee on organization and bylaws was named, consisting of the following members: C. M. Lyons, Fuel Corporation of America; R. M. Davis, Davis Coal Co.; C. E. Watson, Watson Coal Co.; C. E. Gadd, Gadd-Shaw Fuel Co.; G. L. Rodgers, Mon-Scott Fuel Co.

Companies having representation at the first meeting were: Citizens Fuel Co., Fiedler-Davis Coal Co., Mon-Scott Fuel Co., Morgantown Coal Co., Southern Fuel Co., Fuel Corporation of America, Davis Coal Co., C. E. Watson Coal Co., Commercial Fuel Co., Gadd-Shaw Fuel Co. and W. A. Marshall & Co.

Traffic News

The Kanawha Operators' Association has been engaged in an effort to equalize the rates between the Kanawha field and Cincinnati and although a decision has been handed down by the I. C. C. it is rather indefinite as to just what points the decision applies. At the present time a differential of 35c. a ton exists on Kanawha coal destined for Cincinnati as all coal consigned to the point named must cross the L. & N. bridge at Cincinnati. The L. & N. has applied for an increase in rates on coal shipped from mines on its lines to points in Central territory but so far it has not been learned as to just how the L. & N. has construed the decision of the commission. Unless the differential is eliminated it will keep Kanawha coal out of Cincinnati and certain Indiana markets.

Attorneys and representatives of the **Kanawha, New River and Winding Gulf Operators' Association** closed their arguments late in the first week of February against the proposed increase in rates of the Virginian Power Co., amounting to 15 per cent and which if granted would amount to an increase of 100 per cent over the original rates.

In a complaint to the I. C. C. the **Manufacturers' Association of Connecticut, Inc.,** attacks unreasonable coal rates between points in Connecticut and from points in Rhode Island to points in Connecticut between June 24, 1918, and Oct. 21, 1918.

The Mississippi Valley Iron Co. of St. Louis attacks as unreasonable rates on coke from Minneapolis to St. Louis.

The Midland Coal Co., of Williams, Okla., attacks as unreasonable rates on coal from Williams to Kansas City, Mo.

The Fairmont & Cleveland Coal Co., of Fairmont, attacks as unreasonable rates on coal from Hood Mine, W. Va., to destinations in New York and New Jersey by reason of additional charges assessed by the New York Transit Co.

The principal argument advanced by the **Monongahela Ry.** against dividing any part of the increase in coal freight rates received last August with the Morgantown & Wheeling Ry., a short line coal carrying road operating on Scotts Run, in a hearing before a representative of the commission at Morgantown early in Febuary, was that the M. & W. Ry. was receiving a just proportion of the rate based on the value of the property of the short-line road. Rebutting the argument, the M. & W. claims that the value of its property does not enter into the question, the question to be decided being whether or not the road should receive any part of the general increase granted roads in general by the commission.

The I. C. C. has assigned for hearing March 16 at Birmingham, Ala., the complaint of the **Corona Coal Co.** vs. the War Department Inland Waterways, Mississippi Warrior Service.

In the case of the **Omaha Chamber of Commerce,** a tentative report of an I. C. C. examiner recommends that the reconsignment rules and charges on coal and coke in territory west of the Mississippi River are not unreasonable.

The Public Service Commission of Nevada has complained to the commission against unreasonable rates on coal from Wyoming and Utah points to Nevada points.

In the complaint of the **Keeler Lumber & Fuel Co.** the I. C. C. decides that the rate on coal from Nokomis, Ill., to Shopiere, Wis. is unreasonable.

In the complaint of the **Nason Coal Co.,** the commission holds that the rate on bituminous coal from Nokomis, Ill., to Union Grove, Wis., is unreasonable.

In furtherance of its plans for expansion in the coal districts of West Virginia and Kentucky the **Norfolk & Western R.R.** has taken over the Tug River and Kentucky Railroad of 4.45 miles at $53,745 and the Williamson and Pond Creek Railroad Co. or 16.29 miles at $71,994.

The fleet of the **Connecticut Transportation Co.,** coal carriers, has been bought by the **James McWilliams Blue Line Transportation Co.** of New York. The fleet comprises one large tug valued at $100,000 and seventeen barges valued at $500,000.

Coming Meetings

New York State Coal Merchants Association's third annual group meeting will be held at the Pennsylvania Hotel, New York City, March 3. Recording Secretary, F. Davey, Amsterdam, N. Y.

New England Coal Dealers Association will hold its annual meeting March 23 and 24 at Boston, Mass. President, W. A. Clark, Boston, Mass.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Northwestern Pennsylvania Coal Operators' Association will hold its annual meeting Tuesday, March 1, at the Old Colony Club, Pittsburgh, Pa. Secretary, T. E. Diefenderfer, Butler, Pa.

The Rocky Mountain Coal Mining Institute will hold its annual winter meeting Feb. 25 and 26 at the Albany Hotel, Denver, Col. Secretary, F. W. Whiteside, 307 Ernest & Crammer Building, Denver.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Windsor Hotel, Montreal, Quebec, Canada. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Canada.

COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 19 NEW YORK, THURSDAY, MARCH 3, 1921 Number 9

Taking the Calder Out of Coal Control

BY THE TIME this is read the fate of the amended Federal Coal Act will have been determined by limitation of time. The Senate Committee on Manufactures after hearings lasting over a period of nearly a month has reported out the Calder Bill, in which they have not so much made amendments as elisions. As this is written we have but telegraphic reports of the action and have not yet had opportunity to read and study the amended bill and the recommendations of the committee reported as unanimous for immediate passage of the measure at the present session. As forecast some time ago, the new committee bill has deleted all provisions for Federal control during emergencies and all tax proposals aimed at elimination of the middleman, but has retained the requirement for the collection of full and current reports on costs of production and on profits. In other words, the measure is essentially along the lines of the Frelinghuysen Coal Commissioner Bill of last year, perhaps more drastic in some of its provisions, but to all intents and purposes designed to produce facts about the industry.

The committee is frank enough to say this bill is "not offered as a complete legislative solution" of the problem of preventing "a recurrence of the deplorable conditions to which the consuming public has been subjected, more especially during the past year." With respect to these conditions the committee advises it found no cause that "constituted either justification or legitimate excuse for the great advance in prices which occurred." The committee reports that high prices were participated in by operators, wholesalers and retailers, and a horde of speculators, but that not all operators, wholesalers or retailers took advantage of the situation, as many, particularly the operators of the larger class, confined their business to the contracts entered into at reasonable prices prior to the opening of the speculative market.

Paramount interest attaches to the assertion of the committee that Congress "has a manifest duty at this time" to bring about the publicity of costs and profits in the industry and to declare that "coal is a basic necessity, charged with public interest and use." If this view prevails in the Congress, if the inflamed attitude of the general public toward the coal industry persists, then we may fully expect the next Congress to give serious consideration to the regulation of the coal industry.

There is just one safe course to follow and that is for the men of the industry to assume that something will be done to or for the coal industry by the next Congress, and to immediately plan to take the offensive in the next round. Our idea of one way to do this is the recent manner adopted by the Knox County Coal Operators Association of Indiana in telling their story to the people of the state in a big, broad, open way through the local newspapers.

One of the commonest errors of the public with respect to coal, and one most provocative of misunderstanding of the situation, is the confusion of anthracite used at home and bituminous used in the factory, and their ignorance, through no fault of their own, of real conditions in the industry. They are suspicious, but what is being done to overcome their suspicion? They denominate every coal man as a "baron." What are you doing in an educational way to overcome this misconception?

The Futile Foreman

HAS anyone held a time clock over a mine foreman? He is one of the busiest men about a plant, yet about half his time is really wasted. Of the twelve hours which most foremen work few serve any real purpose.

Among the greatest of time wasters are transportational difficulties—locomotives and cars off the track or perhaps a wreck on the plane. No railroad could do business that had derailments as frequently as the average mine haulway. A little thought of the causes of these derailments would considerably lighten the foreman's duties—and incidentally enable him to increase the output. Unfortunately we have allowed it to be thought that these derailments are necessary. They should be exceptional. Cars should go to the places appointed for them without entailing any effort of supervision.

Another fault is inadequate power to handle cars. Gravity should be eliminated as far as possible, as it is an uncertain provision. Any uncertainty not only costs much money but distracts the foreman from his proper work. If certainty in operation were a watchword the work of the foreman would immediately rise to a higher level.

One of the many entries charged against a mine foreman's time would be the hours spent in breaking in new men and in finding working places for new employees, in short, in labor turnover. If this turnover were reduced the mine foreman would have fewer duties to perform and what he did do would be much more worth while.

And then when he has done his day's work he not infrequently goes home to a house so remote from the company's office that he spends an hour or more in the evening in making a trip to see the superintendent. He travels for a mile or even further over ill-lighted roadways or sidewalks to get to headquarters. If his home were near the office he could spend more time there or, what would be better for him and his family, more time in his home.

Let every superintendent think the matter over. How much of a foreman's time is profitably spent, and how much of the wasted time could be saved if his work were made more automatic and not frittered away in placing

men, replacing cars and plodding over ill-lighted and perhaps snow-laden pathways to and from the office? Lighten his labors and he will help to lighten the work of the superintendent and have more time to comply with the law.

In the space of a single editorial it would be hard to outline all the many ways in which the foreman's duties might be lightened. These are a few of them. Any superintendent with his eyes wide open, even without a time clock, will find many others.

A Voice from the Past

TAKING a long-range view of the problems in the bituminous-coal industry one finds such a range of opinion as to what is wrong and how to right the wrongs as the desire for Federal regulation expressed by the operators as long ago as 1910 and a sentiment for regulation of coal coming from the consuming public in 1920.

When the coal market was poor and the margin between cost and sales price was often a minus quantity and at best but a few cents, the producer was gasping for help from the highest source, the Federal Government; when margin was greatest and prices highest, the consumer called on Uncle Sam for help, and in some instances took matters into his own hands locally by attempting state regulation. From famine to feast and back to famine again, the causes for dissatisfaction, first to producer and second to consumer, are not difficult to locate, but whatever the cause or causes, the fact remains that somebody on one side or the other always is dissatisfied and wants Washington to intervene, and when Washington does intervene, as it did to the limit in 1918, not everyone is content. In 1920, when further effort was made by the Interstate Commerce Commission to regulate distribution and increase production, many in the trade and more without took a fling at that august body for interfering with business.

It is well in thinking of coal regulation in terms of such proposals as the defunct Calder bill, or even the hibernating Frelinghuysen measures, to bear in mind that there is another side to the story, and that the causes that operated prior to 1916 to make the operators look to Congress for relief are not cured.

In the first issue of *Coal Age* (Vol. 1, No. 1, Oct. 14, 1911, page 15) John H. Jones, then president of the Pittsburgh-Buffalo Coal Co., discussed the advisability of government regulation of coal prices, and after succinctly stating the highly competitive situation in soft-coal production suggested the fixing by the government of maximum and minimum prices and a determination of miners' wages based on the selling price of coal.

In a paper before the Eighth International Congress of Applied Chemistry at Washington in 1912, Samuel A. Taylor recited the conditions of production and distribution that make for waste in the bituminous-coal industry and said:

"If any person interested would take the time to investigate the cost of producing coal and the price at which it is sold they will very readily understand why the above condition continues to exist, but there are several remedies that may be applied to this condition of affairs. *First, there might be devised some plan by the National Government by which they could have general control of the mining situation.* I am not prepared at this time to suggest just how this could be done. There have been a number of suggestions, but they have been looked upon with considerable incredulity by reason of the fact that they have been brought forward and promulgated by coal operators or at least those interested in coal mines or properties and, as stated above, they do not have the same effect upon legislators for the reason that they believe that underneath their suggestions is a selfish motive and consequently little attention is paid to their suggestions.

"Another remedy, it seems to me, which is probably only a part of the first, is that the government through some sort of a *commission* should modify the resultant action of the present national law known as the Sherman Anti-Trust Law, so as to permit combinations, and by this I mean a combination that will in the end work out for the welfare of the whole community in that it will restrict or reduce the production of coal to the amount necessary to be consumed, and that it will permit, in selling of this coal, the obtaining of a price that will give to the men that labor at the mine a fair compensation for their work, together with all the safety obtainable; to the parties who have their money invested in the enterprise a fair return on their money, together with a sinking fund sufficient to pay back to them the investment which they have made in the mine by the time it is exhausted, and, third, guarantee to the consumer that he will not be overcharged for the fuel which he requires.

"This, while seemingly very easy, is in reality very difficult to obtain and will require a great deal of thought and time to the working out of these conditions successfully. But as matters stand today operators are fearful of undertaking any such proposition lest they be haled into court for acting against the spirit, if not the intent, of the Sherman Anti-Trust Law. If some such a *commission* were appointed, with power to act so that they were permitted to work out a *regulation* of the coal business, which is so important not only to the present generation but also to future generations, I believe the first step would be taken toward the true conservation of the fuel resources of our country."

It thus seems to be true that the trouble with the bituminous-coal industry is that it either makes too much money or too little. For this reason bankers are not interested in soft coal—even Jett Lauck has not thought that bituminous coal is controlled by Wall Street. One thing should be self-evident—whatever is done to help this "worst-functioning" industry must be aimed to fill up the low points and level off the peaks of demand, production, price and profit. Control of price is no remedy.

Although we now speak of the Calder bill and its highly objectionable proposals in the past tense, there is little dissenting from the opinion that more measures looking to regulation of the coal industry will be brought forth in the next Congress. Between now and then the men of the industry will look back over pre-war history and decide whether on the occasion of their next visit before a congressional committee they are going to have a program that is more than just plain opposition or whether they will come forward with a seasoned plan that can be put over.

If after sober thought the men of the industry cast the die for determined and everlasting opposition to any and all forms of paternalistic control or regulation, let it be with full knowledge of what the pre-war past bodes for the future. It is for the industry to decide, but the decision should not be delayed until another flare-up in Congress sounds a call to arms.

Small Mine Stores Run-of-Mine Coal with Derrick and Grab Bucket

Coal Is Piled About Thirty Feet Deep — It Is Loaded Directly Into Railroad Cars—By Use of a Dragline Bucket the Area Available for Storage May Be Greatly Extended

By Donald J. Baker
Wilkinsburg, Pa.

THOUGH the Irwin Gas Coal Co., of Greensburg, Pa., with mines chiefly in Westmoreland County, is in the aggregate a coal producer of fair size, it does not boast of any individual plants that would be regarded today as of large capacity. One interesting fact about these operations is that they have taken up the problem of the storage of coal at the mines and at some of their plants have already installed facilities for that purpose.

Before describing the storage methods at one of the typical operations of this concern, Mine No. 4 at Elrico on the Turtle Creek Branch of the Pennsylvania R.R. out of Trafford City it might be pertinent to note the mine-operating conditions, which explain why this corporation considered it justifiable to install storage facilities. While many of the tipples owned by this company are equipped for preparing and sizing the mine product, that at this mine supplies in the main only run-of-mine coal. As a result any breakage that may occur in loading is not regarded as important as if prepared sizes were being made or stored. The coal produced is sent mainly to Tidewater to be used as a steam fuel.

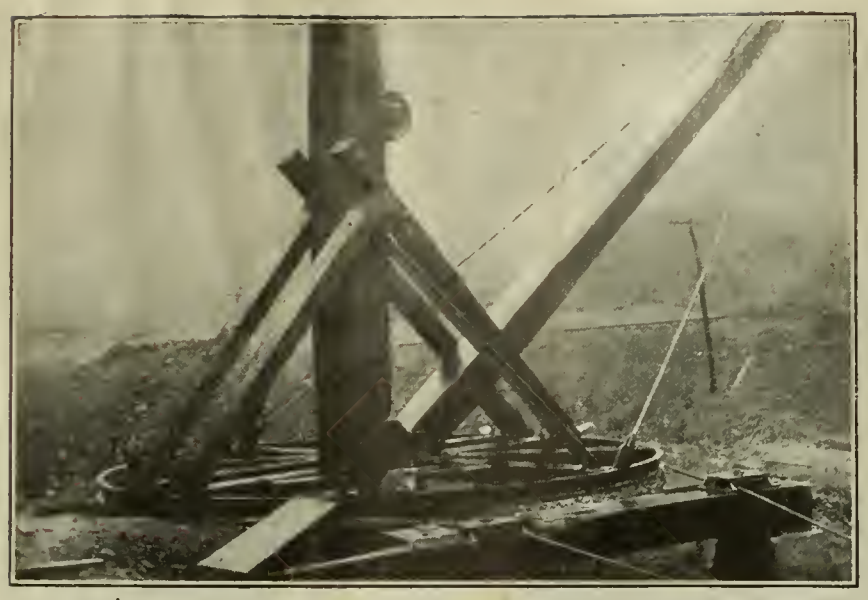
Instead of filling run-of-mine orders at every tipple, these orders are handled at plants designed and built especially for supplying this demand. By this means the company is enabled to operate more efficiently. Degradation of the mine product by breakage at these run-of-mine tipples, as already mentioned, is not a factor of importance, and this was regarded as a favorable situation for the installation of storage equipment. As a matter of fact, there is less breakage from the handling of coal to and from storage piles than is commonly supposed, if credence be given the reports of operators who have had experience in this matter.

Storage Equipment Inexpensively Installed

The storage equipment at the No. 4 mine was installed at extremely low cost, as readily may be imagined from the illustrations accompanying this article. Primarily the equipment, which was manufactured and installed by the Beckwith Machinery Co., of Pittsburgh, consists of an 80-ft. guyed mast derrick equipped with a 70-ft. boom and a 1½-cu.yd. Blaw-Knox "speedster" clamshell bucket. The mast is held in place by six guy cables each of which is attached to a "dead man" beyond the storage area. Both mast and boom are joined to a bull-wheel base, by which they are swung or revolved. The bull wheel is controlled by two cables which lie in a groove in its circumference and pass thence to a shed at the rear. Here a three-drum electrically- driven hoist

Derrick, Tipple and Storage Yard

With a plant of this kind there is no complicated machinery. It is so simple that the handy man around the tipple operates it with facility. The illustration shows the yard after the coal has been largely reclaimed.



BOOM BASE AND BULL WHEEL AT FOOT OF MAST

The wheel by which the boom is revolved is controlled by two cables from the rude engine shed shown in the center foreground of another illustration.

engine is direct-connected to a 52-hp. motor and also to a double-drum derrick swinger.

The operator of this equipment is a general utility man on the tipple. Thus it is not necessary to detail a man permanently to the manipulation of this machinery. The operative easily and quickly learns how to get full speed out of the apparatus. A round trip of the bucket in either the storing or reclaiming process does not consume more than a minute and it is possible to handle sixty tons per hour with ease.

When Cars Are Lacking Coal Is Stored

When cars are not available at the tipple the coal is dumped into a gravity chute which leads it to the ground. From that point it is picked up by the bucket and stored. The area that was selected for storage is a small gulley lying between the tipple siding and the main tracks of the railroad. The ground, which was uneven, has been leveled off and a concrete floor is now being constructed for the storage pile. This will prevent the coal from picking up any dirt while in storage and will also allow the bucket to operate more effectively. On the side of the storage yard adjacent to the tipple a 5-ft. concrete retaining wall will be built, so as to give the yard greater capacity.

Will Add Receiving Hopper to Tipple

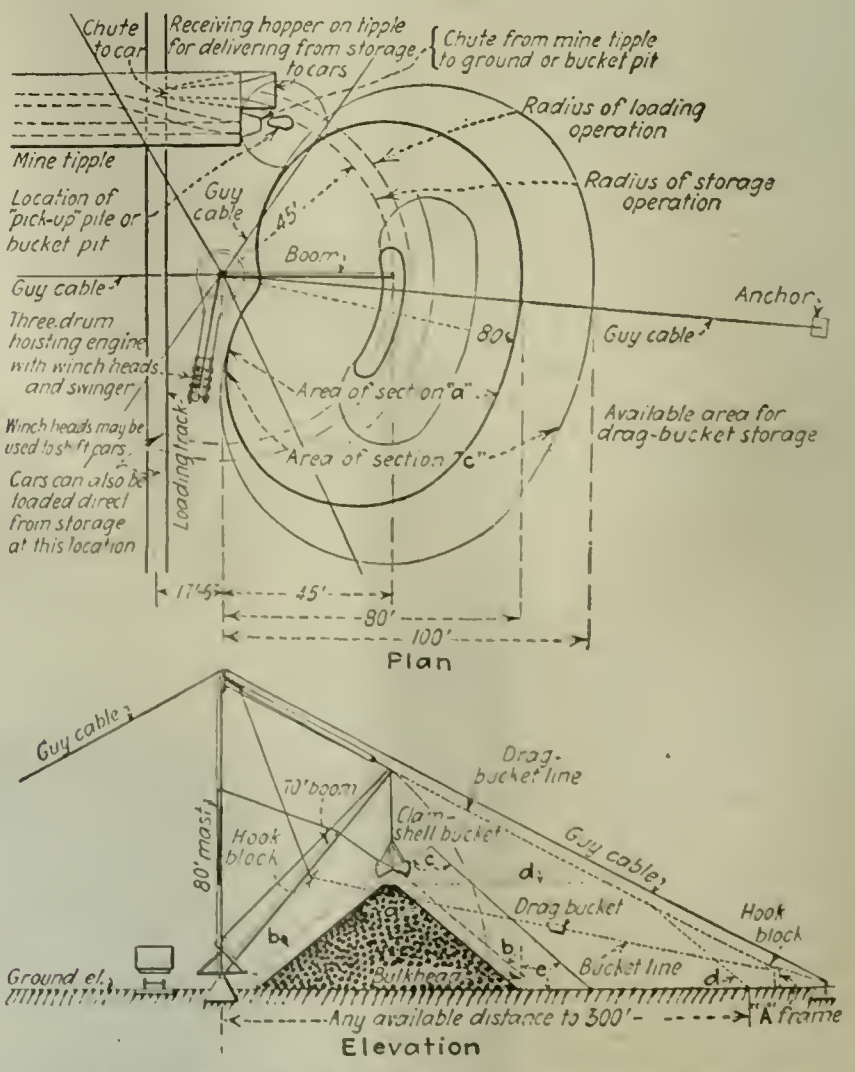
In the near future the tipple will be equipped with an open-top receiving hopper at its rear, so that the coal being recovered will then pass directly into the building before being loaded. At present the railroad cars must be filled from the bucket. This is not desirable from the standpoint of spillage. The three-drum hoisting engine and swinger is located at such a point that its winch heads may be utilized if desired for shifting railroad cars.

The area that may be utilized for storage with a system of this kind is large. Whether the Irwin company will avail itself of the full storage facilities at this mine is still a question. On the line drawing accompanying this article storage capacity is shown which is large even assuming that the shovelman makes no use of his opportunity to throw the bucket in operating the shovel. Section "a" of the drawing shows a cross-section of the area that can be completely reclaimed by the bucket. In this case the storage capacity of the yard would be about 2,000 tons. Section "b" shows a method of increasing the reclaimable storage area by means of the retaining bulkhead, to which reference has already been made. This will be constructed at the toe of the slope of the coal pile. By building a wall 5 ft. in height, as the Irwin company contemplates, storage is increased so that the capacity of the yard will be 3,000 tons, or 50 per cent in excess of that shown in section "a."

Section "c" shows a storage area that might be utilized by the bucket in stocking-out but not in reclaiming. This area would accommodate 6,000 tons of coal but it would be somewhat undesirable to use all that area as means other than the shovel would have to be used for the recovery of nearly 50 per cent of the pile. Section "d" of the drawing shows a method that could be followed in utilizing all available storage space by using a dragline bucket as an auxiliary to the clamshell in conveying coal to and from the pile "a."

Change from Clamshell to Dragline Bucket

To make the change from the clamshell to the dragline bucket, the two control ropes are detached from the former; one is reeved through a snatch block anchored to a "dead man" and passed over an "A" frame. This is attached to one end of the dragline bucket. The other rope also is passed through a snatch block attached to a loose link on the boom end and is led thence to the other end of the dragline bucket. By means of two drums on the hoisting engine the dragline bucket is shuttled back and forth in conveying the coal to and from pile "a." The tail-end "A" frame is moved up on the coal pile as the height increases. Thus any available space in any radial direction from the derrick may be made available and the total storage capacity is in a sense unlimited. With the use of a dragline bucket as described the system is highly flexible.



STORAGE SYSTEM IN USE AT NO. 4 MINES OF IRWIN GAS COAL CO. AT ELRICO, PA.

This simple storage system enables the operator to stock or reclaim about sixty tons per hour. By the use of a dragline bucket it is possible to spread the coal over a larger area than has been used hitherto at the Elrico plant.

By Making Boom Horizontal, Surface Type Of Shovel Is Adapted to Mine Work

The Brown Electric Shovel Is Provided with a Horizontal Boom, an Automatic Dipper Trip and a Conveyor and Will Work in Coal Only Five Feet Thick, Will Place Itself and Move Its Own Cars to and from the Sidetrack.

By D. C. Ashmead
Wilkes-Barre, Pa.

Because of the decrease in the supply of labor throughout the country and the increasing wages that this labor continually demands, it is becoming more and more advisable to devise ways and means for reducing the amount of muscular energy required in the mining and loading of coal underground. Undercutting and loading are probably the two jobs least sought for in American coal mines, and it is becoming increasingly difficult to procure men who will perform this kind of work.

Many machines have been designed for the loading of coal. Some of them both mine and load the material, while others merely load it. In general, no difficulty has been encountered in devising an apparatus to place the coal upon the cars, the main disadvantage of all such devices being that it is impossible to feed cars to the machines with sufficient rapidity to make mechanical loading practicable. As a result such machines stand idle a goodly portion of the working day waiting for the loaded cars to be taken away and their places filled by empties. Furthermore, these machines are, as a rule, cumbersome and difficult to move because of their great weight.

Mr. Brown, the superintendent of strippings for the Locust Mountain Coal Co. near Shenandoah, Pa., after making a study of the use of steam and electric shovels for coal loading, arrived at the conclusion that a machine of this kind could be so designed that it could be employed in comparatively thin measures. Low electric shovels have been used underground in thick beds and have given excellent results, but they are too large and too cumbersome to be used in thin deposits.

Taking all these things into consideration, the problem that presented itself was to design a machine that would work in beds of coal as thin as 5 ft. After three years of study and thought Mr. Brown has laid his plans and obtained patents upon his device, and the Locust Mountain Coal Co. has now started the construction of a shovel to work in a 6½-ft. bed of coal. This size was selected because it can be used in any of this company's underground operations.

Boom Is Not Set Inclined but Horizontal

In general the lines of the ordinary steam shovel have been followed, but the boom, instead of being at an angle, is horizontal and the dipper arm, instead of being operated as on an ordinary machine, works only forward and backward along the full length of the boom. The bucket is of the ordinary steam-shovel type. Fig. 1 shows a model of the new underground loader, the dipper being in the position which it would assume at the commencement of work in a room. The bucket is filled in the ordinary manner and when loaded is raised and run backward by means of the worm to the hopper shown at the front of the truck. Here it is emptied by dropping the bottom in the ordinary manner. It is not necessary to trip the bottom by hand, as is usual with the ordinary shovel. As the dipper has to come to the same point every time it is emptied, it may be tripped automatically.

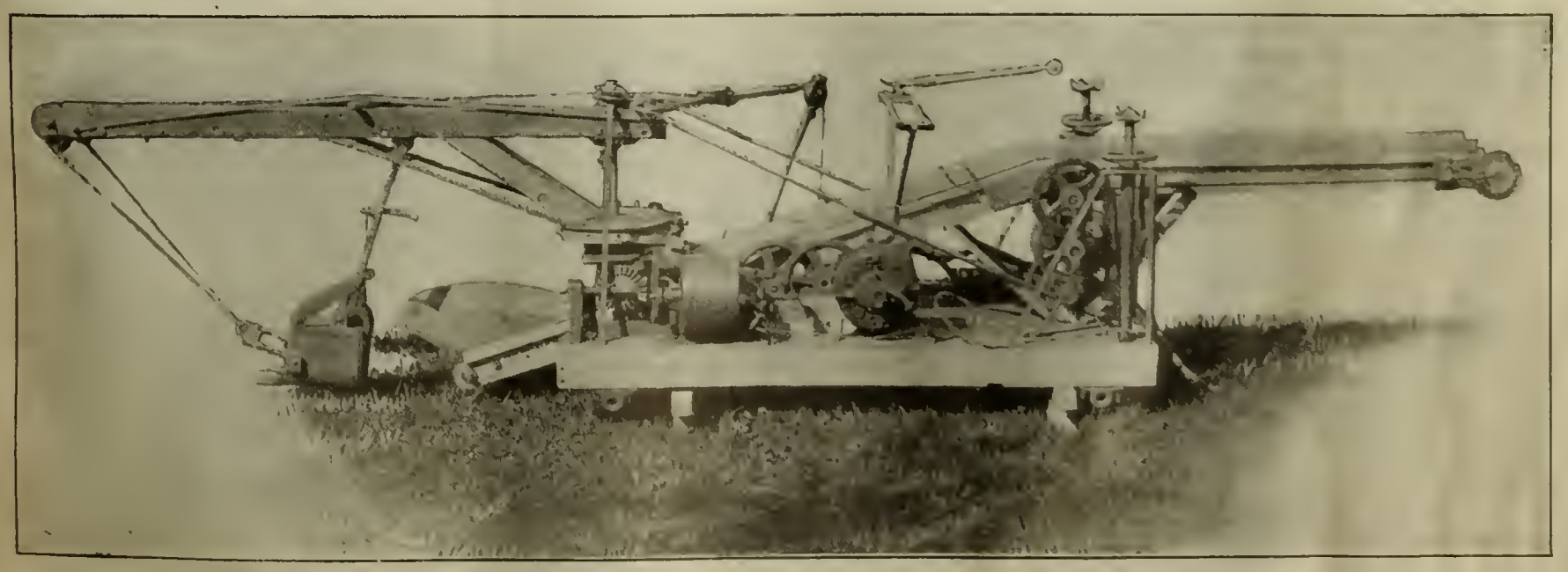


FIG. 1. ELECTRIC DIPPER SHOVEL MAKING A LOADING STROKE

Underground shovels are of four main types—conveyor, scoop and dipper shovels and the shovel with gathering arms. The conveyor shovel gets under the coal and lifts it off the floor. The scoop shovel has buckets on a conveyor chain. The dipper shovel gathers the coal by an action similar to that of a miner when shoveling. On the other hand, the machine with gathering arms forces the coal toward the conveyor, which then draws the coal up and toward the mine car. The shovel here illustrated is of the dipper type. The boom has a wide lateral movement but the loading conveyor is kept in line with the track. This is essentially a track loader, as are most loading machines. Illustration shows the machine on the lawn of the inventor.

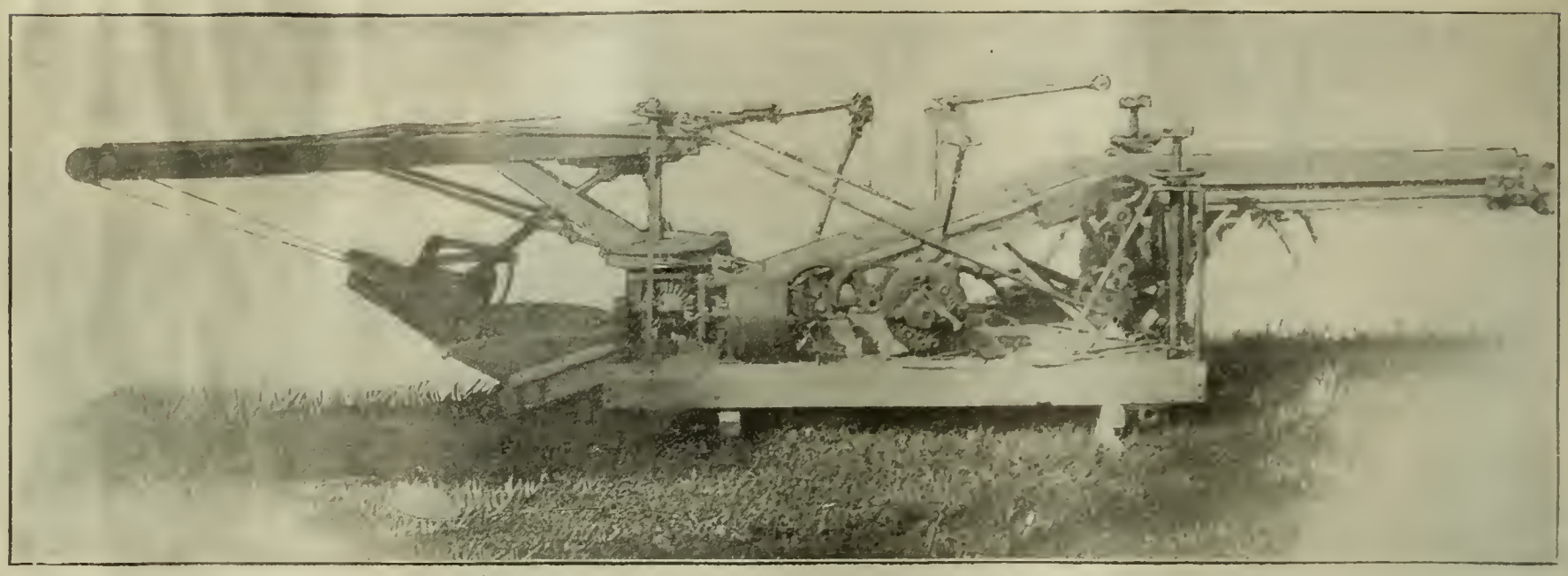


FIG. 2. MACHINE DUMPING A DIPPER LOAD INTO CONVEYOR OR HOPPER

From the hopper the coal is lifted by a conveyor. Note the two jacks, which form part of the machine and keep it in place. The new machine now being constructed will have two motors, one for dragging the dipper forward and for swinging the boom, and one for propelling the dipper arm. There are three motors on the machine illustrated.

Fig. 2 shows the dipper discharging into the hopper. The boom swings to either side, and to dump the bucket it is not necessary to bring it back to a central position, for it can be discharged into the hopper from an angle. The shovel now under construction has two motors, whereas the model shown in the accompanying illustrations is provided with three. The main motor will be employed in digging and by means of a friction clutch will swing the boom. The other motor will be used to propel the dipper arm backward and forward by means of the worm.

When the coal or rock, as the case may be, is dumped into the hopper it will be picked up by a rubber conveying belt and discharged into a mine car placed at the rear of the machine. The main motor is so arranged that by means of a clutch it may be made to drive the supporting wheels, thus propelling the machine from place to place in the mine. The traversing speed will be 300 ft. per minute. As will be noted in the illustration, two jacks are provided at the rear end of the machine, so that it may be held securely between roof and rail.

Shovel Will Place Its Own Mine Cars

One of the most advantageous details of the whole device is the means provided wherewith to handle the mine cars. Only three track conditions are possible in any room or working place. These are: First, the track may be level; second, the grade may be in favor of the loads, and third, it may be against the loads.

In all cases a double track is employed to a point immediately behind the machine where the two are merged into one. In the first case a jack with a snatch-block attached is placed near the rear end of the loaded track, a rope from a crab on the loader is run through the block, and when the mine car is loaded the end of the rope is attached to it and the car is pulled away from the machine. The rope is next hooked to an empty and the machine pulls it into place.

In the second case, as the loads can be dropped by gravity, it is only necessary to pull the empty cars to the proper point. In the third case the jack is merely used to pull the loaded cars away, the empties being dropped to the machine by gravity. By this means it is not necessary for the loader to be idle as long as empty cars are within reach of the cable.

Furthermore, it will be unnecessary to have a locomotive in continual attendance. This in itself means an appreciable saving, as one man can attend to the car supply. Moreover, this will permit the locomotives which ordinarily would be used for shifting to assist in taking the loaded cars to the outside. By experiment it has been found that three dippers full of coal or rock may be taken in one minute and loaded into mine cars.

The machine can be built sufficiently small to operate in a heading that is only 5 ft. wide and 5 ft. high. That which is now being constructed will have a height of 6½ ft. and a bucket holding ¾ cu.yd. The boom will be about 12 ft. long, thus enabling the machine to load coal or rock in a heading 16 ft. wide. By increasing the length of boom, coal from a wider room may be loaded.

A shovel of the size and type being built will be 22 ft. long over all and will weigh about six tons. It will have a capacity of three dips of ¾ cu.yd. per minute, or approximately ¾ ton of coal. As the cars of this company hold five tons, the shovel can load one car every seven minutes.

Little time will be lost in setting up the machine, as all that is necessary is to run the shovel to the loading place, tighten up two jacks, and the machine is ready to begin work. Comparatively little time will be consumed in moving from place to place, for, as above stated, the traversing speed will be 300 ft. per minute. The machine also may pull after it any empty cars that may be left unloaded in a previous place.

It is, of course, true that this device has not yet been tried out on a commercial scale, but the working model here shown has demonstrated that it is possible to do satisfactory work, and, in fact, much more work than was expected. It is hoped that the new and larger machine will be completed within the next few months so that it will be possible to get more accurate data as to just what output may confidently be expected from a shovel of this type working under mining conditions.

In conclusion I should add that the Locust Mountain Coal Co. regards the new device as one of merit and of possibilities and intends to give it a good trial, but it is little disposed to make predictions as to its value till its ability to load coal economically has been made manifest under actual mining conditions.

Conserving Coal Through the Use of Gas

Industrial Fuel Engineering Service an Important Co-Operative Step in the Solution of Fuel Problems—Elimination of Waste Through Easy Regulation and Control of Heat Within Narrow Limits Cited as Advantage of Gas Over Coal

By W. A. Ehlers, M. E.*

MANAGERS, engineers and others responsible for the efficient operation of plant equipment who still adhere to the antiquated methods of their predecessors in the matter of fuel economy are contributing largely to the waste of our natural resource—*coal*. It is safe to say that the majority of coal firing at the present time is done with little thought of efficiency. Many boiler plants are not carefully investigated for stack losses, and industrial heating furnaces are wasteful in fuel consumption and in most cases are inadequately insulated.

This condition in the utilization of coal has been closely watched by central-station fuel plants and local gas companies, and during the last ten years wonderful progress has been made in the application of gas to industrial heating. Especially was this true during the war. Not that gas was unpopular for industrial work before the war or its value unrecognized, but the war gave it an impetus that it might never have received in time of peace, and more progress was made in its adaptation to manifold processes during that period than ever before.

Utilizing Gas for Industrial Heating

Ever since the introduction of gas in the home for cooking, heating and lighting there has been a healthy development of its use for industrial purposes. It has grown by leaps and bounds until its use may be noted in almost every branch of industrial work where fuel is required. Ten years ago the consumption of a million cubic feet of gas by one customer at a single plant in one month was looked upon as phenomenal; today it is quite common to find single industrial plants burning six to eight million cubic feet of manufactured gas in a single month.

*Industrial fuel engineer, American Gas Association

Gas company managers were not slow in appreciating the great possibilities of their product for industrial heating processes, and in the larger cities industrial fuel departments were organized and placed under the direction of competent sales engineers. This position required a man of unusual qualifications, embodying the qualities of a first-class salesman with wide experience and extensive knowledge of the technique of industrial processes.

The development of this activity of the gas industry has been carried to such an extent that in all the larger cities of the United States where gas is manufactured there may be found a well-organized industrial department of the gas company devoting its entire time and resources to the study and development of gas-fuel application.

Not long after these departments were organized and began their activities there was a need felt for a central co-ordinating agency where data and facts could be collected and disseminated to others engaged in similar work. This, together with the manifestation of a desire on the part of the smaller gas companies for assistance in applying gas to industrial heating processes, led to the establishment of an industrial fuel engineering service by the National Commercial Gas Association in March, 1916.

The activities of the National Commercial Gas Association were, however, merged into the American Gas Association in 1918 and the service was continued along the same lines. To make the industrial fuel engineering service operative the association added to its office staff a mechanical engineer of considerable experience in manufacturing processes and the utilization of gas for industrial heating operations. The main object of the movement was to give practical assistance to the smaller companies by providing them with an engineer who

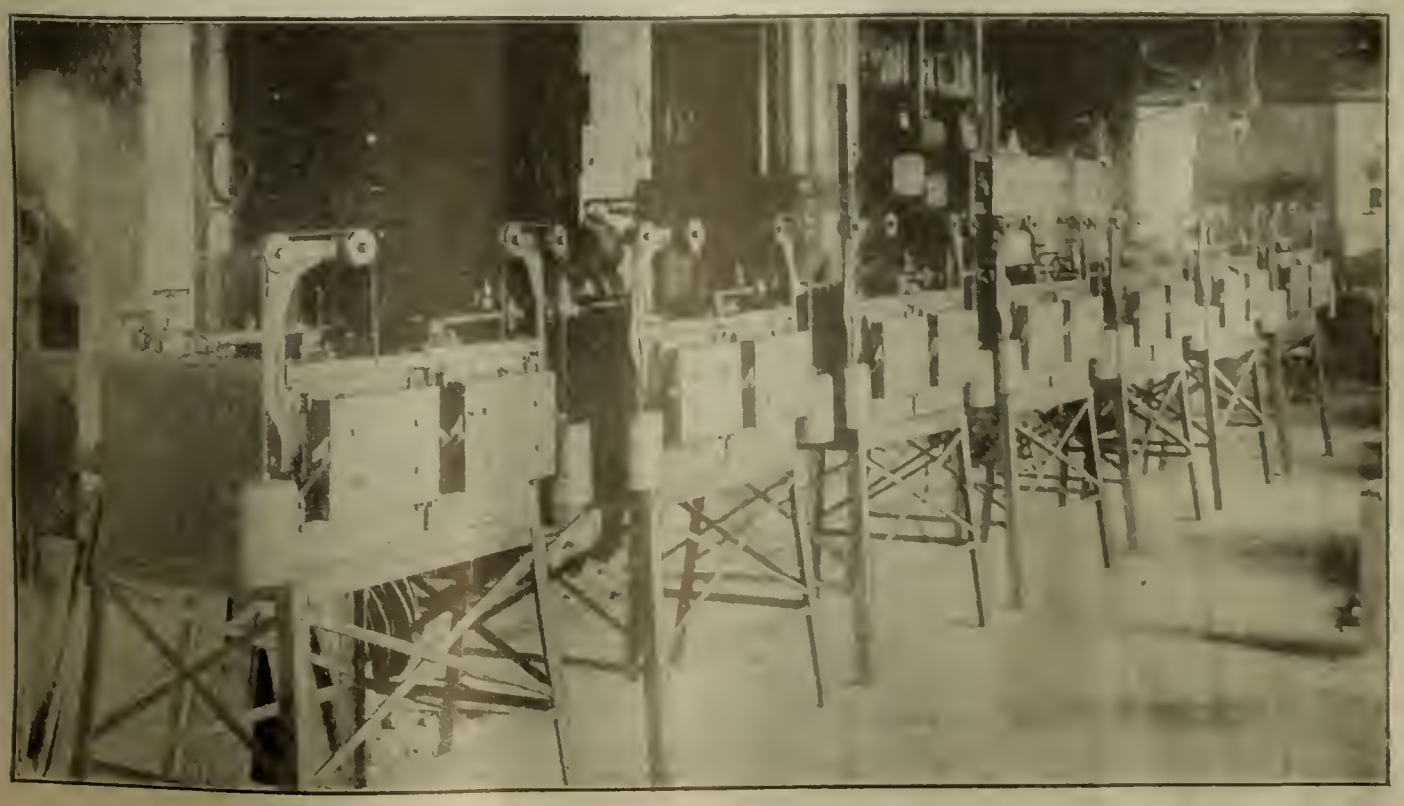


FIG. 1

Rivet Heaters Fired by Gas

This battery of double-chamber rivet heaters is part of the equipment of a large boiler plant. When gas is used for rivet heating, scaling may be reduced a minimum through perfect control of combustion.

FIG. 2. GAS-FIRED FURNACES FOR TEMPERING BEARINGS

could go to them for whatever length of time they desired and thus make it possible for them to obtain a service comparable with that maintained by the larger companies where one or more men are continuously employed. A reasonable per-diem charge is made for the service of the association's engineer when engaged upon field work, to which is added his traveling and living expenses while on the field engagement.

It has never been the intention of the association to conduct this department for profit, rather the idea has been to be of real assistance to the smaller gas company, and therefore the service has never been entirely self-supporting. It is gratifying, however, to be able to say that fifty-seven gas companies have availed themselves of this opportunity and purchased the service in periods varying from one day to three or four weeks. Moreover, a number of companies depend entirely upon the association's engineer for advice, and he has made as many as ten return visits at different times.

By the above plan the American Gas Association has placed at the disposal of even the smallest gas company a service which it could not otherwise obtain and which is offered at a low cost, so that it has the opportunity of offering to its local manufacturers a service comparable with the larger cities.

Another activity of the industrial fuel engineering service is to maintain a "Cost and Data File" in the headquarters office, where is kept all available information on the many industrial processes, together with facts concerning the cost of production of the commodity when using gas as a fuel and also when using a competing fuel. This is of valuable assistance to those companies which have undertaken to apply gas fuel to processes in which they have had no previous experience. Valuable assistance also is given to a large extent to companies through correspondence, advising on special applications and in many instances designing equipment for special needs.

Many times the question is raised: "How can gas compete in manufacturing plants with coal, coke or oil, which contain many more heat units when calculated on the basis of the number of heat units obtainable for a given cost?" The answer in most instances is as follows:

(1) It eliminates waste.

(2) It gives in most cases a greater production for the same period of operation.

(3) It cheapens production.

(4) It improves the working conditions.

Waste means loss. Modern methods are being adopted everywhere with the object of eliminating waste. This is brought about with gas fuel in two ways:

(1) The heat of combustion may be applied to the work at the point where it will be most effective. The temperature is subject to close regulation, indeed in many instances it may be automatically controlled between narrow limits. Thus there is less loss of heat from the fuel consumed.

(2) With correct heat application and accurate temperature control there is much less waste on account of spoilage. The day of the monumental "scrap heap" is passing. Manufacturers are quick to see the advantage to them in a saving in "rejects." This applies particularly to the larger heat-treating operations.

Increase in Production Obtained

Likewise greater production is obtained in two ways:

First, the rate of combustion can be maintained uniformly throughout the day, and it never becomes necessary to wait for a slow fire. A striking example of this great advantage may be well illustrated by the experience of a large brass and copper manufacturer in New England. For many years this company had

been using coal-fired furnaces for brazing brass tubing. The fire in each furnace was maintained by the operator who did the brazing. These men were required to come an hour and a half earlier every morning in order to get the furnaces ready for brazing at seven o'clock. Besides, many times during the day the fires would get low and work would have to stop until they were brought up again. The local gas company called for the industrial fuel engineer of the American Gas Association, and after a careful study of the situation the furnaces were redesigned, gas applied and thereafter no more trouble was encountered. Thus, with the same amount of labor, working a less number of hours, greater production was obtained.

The other way in which production can be increased is by changing the rate of combustion. This applies to the larger furnaces, particularly those for "case-hardening" and "pack annealing." In this operation the furnaces are loaded with a large amount of material at one time and unless the temperature is raised to an excessive point previous to loading, the large amount of cold material when first placed in the furnace will absorb heat so rapidly that in striking a heat balance the temperature of the furnace will fall very rapidly. With the gas-fired furnace the rate of combustion may be changed momentarily, and this condition is easily taken care of.

Why Production Cost Is Lowered

The cost of production is less because more marketable material can be produced with the same labor and overhead expenses. The capital investment is less because the fuel is delivered as used and paid for monthly. There is no outlay for stored fuel. Other fuels require large storage space and depreciate when stored very long. Less labor is required. With gas there is no stoking, clinkering or removal of ashes. Valuable floor space is saved by eliminating storage of fuels and by the use of smaller furnaces. Gas furnaces do not require as much floor space as other furnaces.

A high standard of health and efficiency is one of the most important essentials in the improvement of the industrial output. Operators like gas furnaces because they are clean and easy to operate. There is less smoke and the shop may be kept cooler, all of which makes for better working conditions and a more contented spirit among the employees.

Basis of Comparison in Fuel Costs

The fundamental principle upon which success in competitive industry is based is to produce at the lowest unit cost. It matters little what the price of coal or coke is per ton, oil per gallon, or gas per thousand cubic feet. The method of applying the heat of combustion in any case is different. Therefore, it is a fallacy to undertake to compare these fuels on the basis of their B.t.u. content.

Industrial heating with gas is a subject about which very little is known by the majority of practical shopmen. Indeed this criticism may be applied to many metallurgical engineers. A mistake too often made is that in order to use gas in a furnace it is only necessary to take *some* air, mix it with *some* gas and burn it with any old kind of a burner. This method does not bring satisfactory or economical results. Gas is a combustible mixture requiring for complete combustion a definite amount of air, supplied regularly and at uniform pressure. The pronounced failure of a gas-fired furnace or appliance to do certain work is more often the fault of the man who uses it than of the fuel. The location and design of the burner and the method of premixing the air and gas are two of the most important things to be considered in the burning of gas.

The location and design of the burner depend entirely upon the character of work and amount of gas to be consumed. Mixing of the air and gas should preferably

FIG. 3

Gas-Fired Core-Drying Oven

This oven is 16 ft. wide, 10 ft. high and 24 ft. deep. It has shelves 3 ft. wide on both sides and back, extending from the floor to the roof and accommodates two 10 x 10 ft. car-type trucks in the center space.

be done by automatic mechanical means. There are several approved devices to be had for this purpose. Air at high pressure should never be used. Best results can be obtained with air at one and a half pounds pressure per square inch.

The old method of mixing by the use of a T-pipe fitting, with gas connected to the stem, air to one side, and the air-gas mixture let out the other side of the T, is wasteful and unsatisfactory. The mixture is subject to the movement of the valves on the air and gas line, the slightest change of which affects the resulting mixture, although the volume of the mixture might remain the same. The average operator has an indefinite idea of the proper mixture as shown by the character of the flame; even skilled men are unable to get the same character of furnace atmosphere in repeated firings. By a mechanical mixing device the ratio of gas to air can be fixed according to the character of furnace conditions desired, and when so set it becomes only necessary for the operator to turn one valve on or off to obtain more or less heat.

Space will not permit of a description of the large gas-fuel installations that have been made in recent years. The photographs shown are intended to illustrate in a general way some of the many uses of gas for shop work and industrial heating.

A battery of seven double-chamber gas-fired rivet heaters installed in a large boiler plant is shown in Fig. 1. Gas is the best fuel for rivet heating because with a control of the combustion products the scaling of the rivet is reduced to a minimum.

Depicted in Fig. 2 is a large battery of tempering furnaces fired with gas in a plant manufacturing bearings at Toledo, Ohio.

A core oven 16 ft. wide, 10 ft. high and 24 ft. long, heated with gas, is portrayed in Fig. 3. Four years ago the industrial fuel engineer of the American Gas Association made a general survey of this plant, the largest manufacturers in the world of the most complete line of railway and track appliances, such as gasoline motor cars, inspection cars, hand cars, push gates, electric lights, etc. At that time coal, coke and gasoline were used almost exclusively. Today gas is used for thirty-five different processes, including metal melting, annealing, brazing, carbonizing, core baking, forging, japanning, motor testing, hardening, tempering, etc.

In a large copper-wire manufacturing plant in New York State I have converted several large coal-fired muffle furnaces to gas fuel. The price of coal at that time was about $6 per ton delivered to the plant. The rate for gas was about 90c. per thousand cubic feet. It was cheaper per unit of production to anneal with gas than with coal.

The foregoing only inadequately indicates hundreds of ways in which gas is supplanting other fuels. It is displacing other combustion material because it eliminates waste, speeds up production, cheapens production and improves working conditions.

A Handy Portable Power Plant for the Driving of Small Units

AN EASILY transported power unit designed for driving the small portable conveyors used in certain classes of mining is illustrated in this article. It may be employed, of course, for many other purposes than those for which it was originally designed. Though it had its origin in South Africa it is now being adapted to the many needs of this character which are encountered in the mines of this country.

A portable power unit can be advantageously used at strippings, where it can be set to void the surface sumps or to provide for lighting, if the pit is operated at night. It will be found of value at plants under construction, where it can be used to drive saws, light the operations, pump out drifts, slopes or foundation pits, run a small fan or even supply power for haulage or hoisting purposes. It has a definite availability at isolated drifts which will ultimately connect with the main workings and where, consequently, no permanent plant will ever be put in. It may be used to drive conveyors in sand pits or to assist in prospecting a property by shaft sinking. In case the town lighting breaks down such a unit can be used temporarily to supply the need for electric current.

Hitherto power for this purpose was furnished by the old-fashioned reciprocating engine and portable boiler with belt connection to the driven machine. The object of the Ludlum Dynomobile, as this unit is called, is to realize the utmost economy in power generation, high economy and great flexibility in delivering the energy thus produced to the driven mechanism.

The unit consists of a special type of water-tube marine boiler, a steam turbo-generator, a switchboard, boiler-feed pump, feed-water heater, condenser and, where the highest economy is sought, a superheater. All these elements are mounted on a steel frame supported on wheels. The complete plant is extremely simple in construction and operation, is free from vibration and practically "foolproof."

The type of marine boiler employed has gained wide acceptance in the maritime world by virtue of its high

PORTABLE SELF-CONTAINED POWER PLANT

Mounted on a small truck is a water-tube marine boiler for rapid steam generation, a steam turbo-generator, a switchboard, boiler-feed pump, a feed-water heater, condenser and, if desired, a superheater. It can be set to work far from any other source of power and will burn any kind of fuel.

economy, simplicity and compactness. In the unit illustrated the boiler was designed for burning wood, the combustion chamber being unusually large. The outfit, however, can be furnished for burning any kind of fuel. The combustion chamber is entirely surrounded by the water-filled steam-generating parts of the boiler. This construction not only assures high economy but also does away with all fire-brick furnace lining. The latter feature is of special value in a portable plant, as transportation over rough roads would be likely to break or dislodge the fire brick.

The high efficiency of the boiler and turbo-generator, as well as its compactness and light weight, makes this unit a most economical and desirable one for portable power purposes, as it can be located near its source of fuel and the energy developed electrically transmitted to any reasonable distance with a minimum loss. It is expected by the builders that this new high-duty portable equipment will supplant the European outfits extensively used in foreign countries consisting of an internally-fired boiler of high efficiency, and a reciprocating steam engine embodying many refinements making for economy. In spite of the fact that these are heavy and costly, they have found extensive use abroad because of their economy.

The weight of the Dynamobile is only about one-third that of units of the type referred to and its price is much lower, while its efficiency is higher. The outfit illustrated is of 10 kw. capacity. Larger sizes up to 200 kw. are furnished to supply either alternating or direct current. The manufacturer of this handy plant is the New York Engineering Co., 2 Rector St., New York.

Pennsylvania Coals and Shales Greatly Vary in Their Content of Oil*

Comparison of Oil Resources of Pennsylvania and the Bituminous Minerals of Other States—Eastern Coals and Shales Were Distilled Before Man Appeared on the Earth

By George H. Ashley† and Charles R. Fettke‡

IN ORDER to assist in the solution of the oil and gas problem, the State Geological Survey of Pennsylvania has been conducting a series of experiments to determine the amount of oil obtainable from Pennsylvania coals and black shales which will be of interest to coal men. A preliminary statement of the results of these experiments is given in this article. For purposes of comparison the results of similar tests made in the same way on the cannel coals of other states and on the rich oil shales of the West also are given.

The results show that Pennsylvania is not well supplied with rich oil-producing coals or shales. The conditions that produced the valuable field of anthracite in the eastern part of the state and the high-carbon coals in the eastern part of the bituminous fields drove the oil and gas out of the black shales of those regions, so that satisfactory quantities of oil could be obtained only from the coals and black shales in the extreme western and northwestern counties of the state.

The experiments show that anthracite coal will yield no oil on distillation, nor will the black shales of the central and eastern parts of Pennsylvania. This has been one of the facts that have led geologists to believe that those parts of the state contain no commercial supplies of petroleum or natural gas.

The coals and black shales of the counties lying immediately west of the Allegheny front—Tioga, Lycoming, Clinton, Center, Clearfield, Cambria and Somerset—likewise give little promise, yielding only from two to twelve gallons of oil per ton of coal or shale. The cannel coals in those counties are "lean cannels" or "semi-cannels," differing chemically but little from the bituminous coals of the same area.

Better results are obtained from the coals and cannel shales within the main oil and gas field of the state, including Allegheny, Armstrong, Beaver, Butler, Fayette, Greene and Washington Counties. In general, the best results are obtained from the coals and shales of the region north and west of Pittsburgh, corresponding to the area of high-gas coals. The bituminous coals of this area yield from twenty to nearly forty gallons of crude oil to the ton of coal, or less than one barrel of forty-two gallons.

In this area there are many small deposits of cannel coal, some of which yield over one barrel of oil per ton of coal. The cannel coal at Cannelton, Beaver County, the richest source of oil by distillation yet examined in the state, yields in the test up to a barrel and a quarter per ton of coal. In this connection it must be remembered that it has not always been possible to obtain commercially as much oil from a given rock as the small-scale laboratory test indicates should be obtained, due to the difficulty of properly heating a mass of rock more than a few inches in depth. Some of these black shales forming the roof of coal beds are of considerable extent, though only a few feet thick. These extensive roof shales are, however, as a rule, poor in oil.

Here and there in western Pennsylvania there are what have been called "cannel shales," in reality high-ash cannel coals that yield from fifteen to forty-five gallons of oil to the ton. Unfortunately the deposits of cannel shales, like those of cannel coals, are very limited in extent, usually amounting to less than 500 acres in any one deposit, and lying usually in narrow belts or channels. Such deposits may have a thickness of 5 to 10 ft. in the center but commonly thin rapidly to either side. The cannel coal and the cannel shale at Cannelton have been mined for a long time, so that the original body of coal and shale has been much reduced, if not nearly exhausted. A table showing these results may be found on the succeeding pages.

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*Article originally entitled "Oil from Pennsylvania Shales and Coals."

†State Geologist of Pennsylvania.

‡Assistant State Geologist of Pennsylvania.

Oil, Water, Ammonia, Gas and Residue Obtained Per Ton of 2,000 Lb. on Distilling Certain Coal and Shales

Locality	Description of Sample	Description of Residue	Oil, Gal.	Water, Gal.	Amm'a Lb.	$(NH_4)_2SO_4$, Lb.	Total N. %	Gas Cu.Ft. 0 Deg. C. 760 mm.	Residue in Lb.
Allen County, Kentucky									
On Barren River, east of Cedar Springs	Bit. shale, Chattanooga black shale from outcrop	No tendency to coke	6.6	7.3	1.08	4.19	.....	1,183	1,759
Montgomery County, Kentucky									
Near Means P. O	Bit. shale, Chattanooga black shale from outcrop	No tendency to coke	11.6	11.6	1.90	7.37	0.55	1,297	1,710
Macon County, Tennessee									
On Long Fork Creek near Red-boiling Springs	Bit. shale, Chattanooga black shale from outcrop	No tendency to coke	10.5	5.8	1.41	5.47	0.50	1,121	1,750
Mahoning County, Ohio									
American Fire Clay & Products Co.'s Mine, Canfield Township	Can'l coal (Old Hickory Bed)	Very slight tendency to coke	46.1	16.3	2..87	11.12	.....	3,139	1,301
	Can'l shale	No tendency to coke	44.0	11.3	2.39	9.29	.....	2,827	1,357
	Can'l shale	No tendency to coke	28.7	11.1	2.13	9.18	.....	2,340	1,494
Morgan County, Kentucky									
Near Redwine Station	Can'l coal	Very slight tendency to coke	59.1	14.4	1.68	6.51	.....	2,377	1,232
Garfield County, Colorado									
Grand Valley	Oil shale from Green River formation	Cokes to a soft greyish dull mass	66.6	6.7	1.88	7.23	0.96	3,846	1,082
Uinta County, Utah									
Vernal	Oil shale from Green River formation	Cokes to a soft greyish dull mass	71.6	10.1	2.10	8.15	1.29	4,411	1,027
Nova Scotia									
.....	Oil shale	Cokes to a soft greyish dull.	50.6	5.5	2.67	10.34	157	3,244	1,176
Allegheny County									
Pittsburgh Plate Glass Co.	Bit. coal, Upper Freeport	Hard porous coke	30.1	16.2	2.34	9.08	1.62	4,209	1,400
Creighton Mine, Creighton	Cannel coal above bit. coal	No tendency to coke	33.3	11.9	2.25	8.73	0.95	3,313	1,493
	Cannel shale above bit. coal	No tendency to coke	13.6	11.1	1.27	4.93	0.43	1,841	1,684
Bessemer Coal & Coke Co.'s No. 2 Mine, Russelton	Bit. coal, Upper Freeport	Hard porous coke	27.0	18.2	1.99	7.70	.....	4,886	1,386
	Bone in bit. coal	Slight tendency to coke	13.9	14.3	1.21	4.71	.....	2,552	1,623
	Cannel coal and cannel shale above bit. coal.	No tendency to coke	28.4	11.3	2.75	10.68	.....	3,024	1,529
Superior Fuel Co.'s Mine at Russellton	Bone in bit. coal	Slight tendency to coke	18.1	12.3	3.26	12.80	0.99	3,382	1,580
	Cannel coal above bit. coal	Slight tendency to coke	39.1	9.2	2.55	9.74	1.29	3,609	1,446
	Cannel shale above cannel coal	No tendency to coke	19.9	9.2	1.25	4.87	0.62	1,966	1,575
Armstrong County									
Sandy Creek	Elk Lick coal (weathered)	Hard porous coke	32.6	16.3	2.81	10.91	.....	3,958	1,357
	Bit. shale at base of Birmingham shale (weathered)	No tendency to coke	6.9	14.2	1.42	5.51	.....	1,417	1,712
Pittsburgh	Bit. shale over Pittsburgh coal	No tendency to coke	8.5	15.2	1.18	4.58	.....	1,107	1,728
Pine Run Coal Co.'s Mine No. 10, New Bethlehem	Bit. coal, Upper Freeport	Hard porous coke	23.8	11.3	2.23	8.71	1.50	3,624	1,428
	Bony coal above bit. coal	Slight tendency to coke	17.0	12.2	1.92	7.45	.....	2,590	1,577
	Cannel coal above bit. coal	Very slight tendency to coke	27.3	12.2	2.90	11.27	0.98	3,756	1,524
Pine Run Coal Co.'s Mine No. 9, New Bethlehem	Cannel coal, Upper Kittanning	Slight tendency to coke	34.4	9.4	2.30	8.93	1.25	3,485	1,481
	Curley or Birdsey Cannel coal	Slight tendency to coke	35.6	8.2	1.69	6.55	1.62	3,377	1,415
	Cannel shale above cannel coal	No tendency to coke	29.1	8.6	1.51	5.87	0.78	2,319	1,564
	Bit. coal below cannel coal	Hard porous coke	30.4	14.9	3.12	12.09	1.77	4,264	1,351
	Bit. shale above cannel coal	No tendency to coke	6.2	10.3	1.46	5.65	.....	1,321	1,749
C. P. Gruver Farm, near McWilliam	Cannel coal (weathered)	Hard fairly porous coke	30.8	11.1	1.74	6.75	.....	3,448	1,416
Beaver County									
Keystone Drilling Co.'s mine, at Cannelton	Bit. coal, Upper Freeport	Slight tendency to coke	23.6	15.3	1.72	6.67	1.66	3,278	1,433
Wister Coal Corporation's Mine at Cannelton	Cannel coal, Upper Kittanning	Hard, fairly porous coke	53.6	12.9	2.76	10.71	1.27	4,089	.....
			54.7	11.5	1.29	5.00	1.55	2,573	1,276
	Cannel shale above cannel coal	No tendency to coke	33.2	12.7	2.04	7.92	0.77	2,624	1,500
			44.2	9.6	1.49	5.78	0.91	2,379	1,420
			15.6	10.6	1.09	4.24	0.45	1,591	1,651
	Bit. coal interbedded with cannel coal	Hard porous coke	38.2	15.5	2.35	9.12	1.87	4,802	1,257
			38.7	16.0	1.60	6.22	1.87	3,382	1,290
Beaver Cannel Coal Co.'s Mine at Cannelton	Bit. coal, Upper Kittanning	Hard porous coke	33.4	16.1	1.89	7.32	1.62	3,803	1,344
Blair County									
Altoona	Carb. shale (Burket), Upper Devonian	Very little change in appearance	None	11.6	1.56	6.05	0.20	369	1,864
Butler County									
Butts Cannel Coal Co. Annandale No. 1 Mine, Deegan P. O	Curly cannel coal (weathered), Upper Kittanning	No tendency to coke	31.9	25.8	3.22	12.49	.....	4,463	1,256
	Cannel shale above cannel coal (weathered)	No tendency to coke	31.1	13.1	1.68	6.52	1.09	2,934	1,419
Butts Cannel Coal Co., Annandale No. 2 Mine, Deegan P. O.	Lower bench, bit. coal, Brookville	Hard porous coke	30.0	17.1	1.13	4.57	1.21	3,063	1,342
	Upper Bench, bit. coal, Brookville	Hard porous coke	35.7	17.3	1.95	7.55	1.29	3,699	1,347
Center County									
Moshannon Coal Co.'s No. 11 Mine, South Philipsburg	Cannel coal B. bed	Slight tendency to coke	10.9	10.9	2.4	9.31	1.38	4,733	1,631
	Bit. coal under cannel coal	Very porous, fairly hard coke	12.9	10.3	2.28	8.85	1.42	5,439	1,586
Clearfield County									
Sterling No. 2 Mine near Houtzdale	Cannel coal, Upper Kittanning	Slight tendency to coke	5.3	7.1	1.20	4.64	1.39	3,001	1,642
	Bit. coal below cannel coal	Rather soft very porous coke	8.8	12.7	1.27	4.94	1.62	3,192	1,566
	Cannel shale	No tendency to coke	5.5	10.3	1.74	6.74	.....	2,025	.....
	Bit. shale above cannel shale	No tendency to coke	1.9	10.2	1.71	6.62	.....	1,114	1,831
Hartley No. 1 Mine, North of Graham Station near Philipsburg	Bit. coal D. bed	No tendency to coke	6.5	15.1	2.39	9.30	1.63	5,137	1,594
Woodland Cannel Coal Co.'s Cannel Crest Mine near Woodland	White-ash bed cannel coal	Very slight tendency to coke	12.9	7.4	2.93	11.38	1.37	4,309	1,658
Old Overly Farm, Woodland	Red-ash bed cannel coal (weathered). Probably Middle Kittanning	No tendency to coke	11.4	12.1	1.67	6.48	1.38	3,240	1,578
Fayette County									
New Geneva Fuel Co.'s mine, New Geneva	Bit. coal, Pittsburgh bed	Soft porous coke	26.8	14.3	2.41	9.36	1.58	5,299	1,403
Near New Geneva	Cannel shale Redstone from outcrop (weathered)	No tendency to coke	9.5	24.5	1.91	7.41	0.71	3,902	.....
	Bit. coal, Redstone (weathered) from outcrop	No tendency to coke	4.3	24.5	1.52	5.90	.....	3,582	1,371
	Bone in bit. coal from outcrop (weathered)	No tendency to coke	12.7	17.6	2.09	8.11	.....	3,046	1,490
Greene County									
E. R. Gabler Farm near Greensboro	Cannel shale, Redstone	No tendency to coke	23.9	12.7	1.89	7.33	0.91	3,401	.....
S. I. Black Mine near Greensboro	Bit. coal Sewickley bed	Fairly hard porous coke	27.3	17.5	2.10	8.16	1.56	3,768	1,387
Israel Barclay Farm near Gray's Landing	Bit. coal Uniontown from outcrop (weathered)	Fairly hard porous coke	22.6	14.7	1.32	5.12	.....	2,529	1,375
	Bit. shale above coal from outcrop (weathered)	No tendency to coke	4.5	8.3	0.88	3.41	.....	562	1,773
	Bit. shale same horizon nearby	No tendency to coke	3.7	11.8	1.15	4.46	.....	645	1,788
On Purnam Run, Waynesburg	Bit. shale from weathered outcrop above Washington coal	No tendency to coke	3.6	19.6	1.33	5.16	.....	1,050	1,681
	Bit. shale from weathered outcrop below Washington coal	No tendency to coke	12.4	16.8	1.06	4.11	.....	944	1,702

Oil, Water, Ammonia, Gas and Residue Obtained Per Ton of 2,000 Lb. on Distilling Certain Coal and Shales

Locality	Description of Sample	Description of Residue	Oil, Gal.	Water, Gal	Amm'a Lb.	$(NH_4)_2SO_4$, Lb.	Total N, %	Gas Cu.Ft. 0 Deg. C 760 mm	Residue in Lb
Indiana County									
Bicknell Bros. Mine near Savan.	Cannel coal, Upper Kittanning	Hard dense coke	19.2	9.4	1.30	5.03	1.38	2,958	1,538
	Cannel coal above cannel coal	No tendency to coke	5.8	10.3	1.51	5.87	....	2,272	1,661
	Bit. coal below cannel coal	Very porous coke	13.6	11.3	1.57	6.08	1.57	3,777	1,491
Jefferson and Clearfield Coal & Iron Co.'s Mine No. 2, Ernest, Pa.	Bit. coal, Upper Freeport	Extremely porous coke	19.3	15.4	0.91	3.55	1.42	2,739	1,481
	Bone in bit. coal	Slight tendency to coke	8.4	10.0	1.63	6.32	0.79	2,177	1,648
Russell Coal Mining Co.'s Victor No. 29 Mine at Clymer	Bit. coal, Lower Kittanning	Hard porous coke	15.1	10.8	1.34	5.20	1.47	2,928	1,495
Near Barnard, Armstrong Co.	Bit. shale, Lower Conemaugh, weathered material from dump	No tendency to coke	6.4	11.8	1.64	6.36	0.57	2,933	1,537
Luzerne County									
Lehigh & Wilkes-Barre Coal Co.'s Stanton No. 7 Mine at Wilkes-Barre	Anthracite from Hillman bed	Practically no change in appearance	.....	5.7	1.44	5.59	0.98	2,458	1,883
	Canneloid anthracite in Hillman bed	Practically no change in appearance	.....	1.9	0.63	2.44	0.83	688	1,889
Lycoming County									
Ralston Coal Co.'s Mine at Ralston	Bit. coal, B. bed. Lower bench	Very slight tendency to coke	3.4	8.7	2.42	9.39	1.09	4,922	1,727
Sullivan County									
Northern Anthracite Coal Co.'s Mine at Lopez	Semi-anthracite coal, Bernice Bed	Practically no change in appearance	.....	9.9	2.24	8.68	1.18	3,288	1,865
Tioga County									
Bower Coal Co., at Blossburg	Bit. coal, Bloss bed	Dense hard coke	5.8	8.1	1.39	5.38	1.21	3,703	1,667
Jenkin Bros. Mine at Blossburg.	Bit. coal Seymour bed	Slght tendency to coke	8.5	8.5	1.16	4.49	0.73	5,792	1,647
	Bony coal above main bench in above	Very slight tendency to coke	4.5	12.0	2.46	9.53	1.35	3,849	1,720
Morris Run Coal Co.'s No. 15 Drift, Morris Run	Cannel coal	Very slight tendency to coke	7.1	7.1	2.16	8.39	0.73	4,778	1,676
	Middle bench of cannel coal and bit. shale from cannel bed	No tendency to coke	2.9	12.2	2.37	9.17	0.73	2,493	1,768
	Cannel coal from middle bench cannel bed	No tendency to coke	3.0	10.1	1.77	6.86	6.86	2,214	1,759
Morris Run Coal Co.'s Mine at Morris Run	Bit. shale above Seymour bed	No tendency to coke	1.3	11.0	1.48	5.74	0.33	1,287	1,800
Washington County									
Ellsworth Collieries No. 2 Mine Ellsworth	Bit. coal, Pittsburgh bed	Hard porous coke	28.5	24.4	1.39	5.40	1.55	1,947	1,408
	Roof coal (bit. coal), Pittsburgh bed	Soft porous coke	28.5	16.9	1.44	5.59	1.33	2,074	1,381
	Coal washer refuse	Slight tendency to coke	4.3	5.9	0.70	2.70	0.60	1,778	1,686
Union Coal & Coke Co.'s Marianna Mine	Refuse from picking table	Slight tendency to coke	5.3	14.1	1.15	4.46	0.45	1,230	1,705
	Coal washer refuse	Slight tendency to coke	12.7	15.2	1.67	6.48	0.82	2,709	1,631
Vesta No. 4 Mine, Jones & Laughlin Steel Co., California, Pa.	Roof coal (bit. coal), Pittsburgh bed	Hard porous coke	25.0	25.0	2.68	10.41	1.48	4,320	1,391
Jones & Laughlin Steel Co.'s coal washer	Coal-washer refuse	Slight tendency to coke	3.2	12.8	1.63	6.32	0.44	1,816	1,664
Jones & Laughlin Steel Co.	Coal-washer refuse	Slight tendency to coke	3.0	12.5	1.20	4.66	0.32	1,157	1,731
American Zinc & Chemical Co.'s Mine, Langeloth, Pa.	Bit. coal, Pittsburgh bed	Hard porous coke	26.5	17.7	1.99	7.73	1.41	3,737	1,363
Westmoreland County									
Jamison Coal & Coke Co.'s No. 6 Mine near Greensburg	Bit. coal, Pittsburgh bed	Soft porous coke	25.8	23.8	2.39	9.26	1.60	4,078	1,450
	Roof coal and shale Pittsburgh bed	Tendency to coke	12.8	10.9	1.86	7.21	0.77	2,140	1,664

Results Obtained in Large Vertical Retort

Beaver County, Pennsylvania									
Wister Coal Corporations Mine at Cannelton	Cannel coal	Hard fairly dense, dark grey coke with sub-metallic lustre	46.0	11.7	4.01	15.56	1.27	5,306	1,278
			44.5	13.0	5.84	22.66	1.55	5,719	1,280
	Cannel shale above cannel coal	Very slight change in appearance	31.7	12.6	4.15	16.10	0.77	3,302	1,477
			14.6	10.6	1.08	4.19	0.45	2,248	1,615

Determining Ash Content in Coal for Given Fixed-Carbon Percentage in Coke

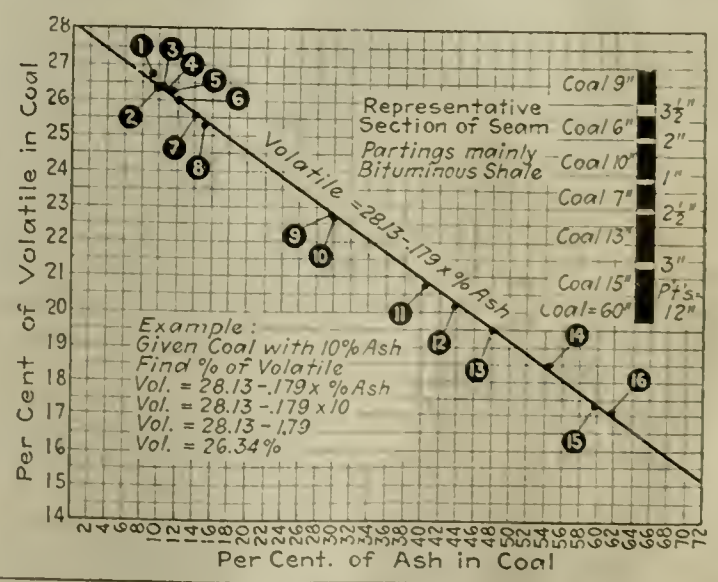
By E. S. Ward
Sabinas, Coahuila, Mexico

At CLOETE, Coahuila, Mexico, the coal bed belongs to the upper Cretaceous series. It is situated in what is known as the Sabinas coal basin. The mines are on a branch of the Mexican International R.R. about six miles west of Sabinas Station and seventy-two miles south of the United States border.

In Fig. 1 may be found a composite section of the bed made from a series of measurements taken throughout the mines. Five consistent partings were encountered made up generally of a high-ash dark bituminous shale. The coal between the partings contained about 11 per cent of sinks in a solution having a specific gravity of 1.4. The partings made up more than 21 per cent of the bed by weight.

The entire bed carried about 26 per cent of ash, according to the studies made from the composite section. An earlier report made by Roberts & Schaefer from the quartering down of twenty mine cars containing run of mine gave a total ash content of approximately 30 per cent, but the workings at the time of the Roberts & Schaefer report were considerably thinner than at present.

In reporting upon the preparation of this coal for coking it was noticed from the analyses that the vola-



ASSAYER	ASSAY No.	ASSAY VOLATILE	FIXED CARBON	ASH	CHARACTER OF COAL ASSAYED
Local Assay	1	26.74	64.26	9.00	1.35 S.G. Floats Seam with Partings Removed
" "	2	26.33	64.10	9.57	1.40 S.G. " "
" "	3	26.28	63.57	10.15	1.45 S.G. " "
" "	4	26.22	62.96	10.82	1.50 S.G. " "
Roberts & Schaefer	5	26.25	62.57	11.18	1.40 S.G. " Seam Including Partings
" "	6	26.05	62.15	11.80	1.45 S.G. " "
Local Assay	7	25.54	60.46	14.00	Seam with Partings Removed
Pittsburgh Testing Lab.	8	25.26	59.72	15.02	" "
Roberts & Schaefer	9	22.77	47.41	29.82	Seam Including Partings
" "	10	22.68	47.40	29.92	1.50 S.G. Floats or Sinks at 1.40 S.G.
Local Assay	11	20.76	38.85	40.39	1.35 S.G. Sinks Seam with Partings Removed
" "	12	20.22	36.10	43.68	1.40 S.G. " "
" "	13	19.52	32.48	48.00	1.45 S.G. " "
" "	14	18.58	26.80	54.62	1.50 S.G. " "
Roberts & Schaefer	15	17.45	22.87	59.68	1.45 S.G. " Seam Including Partings
" "	16	17.27	21.07	61.66	1.50 S.G. " "

FIG. 1. SECTION OF SEAM AND GRAPH CORRELATING ASH AND VOLATILE MATTER

New Coking Formulae and Relation existing between Ash and Coal charged to Ovens and fixed Carbon in Coke Produced

y = Per Cent. Yield of Coke
A = " " Ash in Coal
V = " " Volatile in Coal
A_c = " " Ash in Coke
V_c = " " Volatile in Coke
F_c = " " Fixed Carbon in Coke

$$A_c = \frac{A(100-V_c)}{100-V}; \text{(Equation 2)}$$

Substituting for V its Value as determined on Fig. 1

$$V = 28.13 - .179A$$

$$A_c = \frac{A(100-V_c)}{71.87+.179A}; \text{(Equation 3)}$$

$$F_c = 100\% - A_c - V_c; \text{(Equation 4)}$$

$$y = 100 - V + V_c\frac{y}{100}$$

$$y - \frac{V_c y}{100} = 100 - V$$

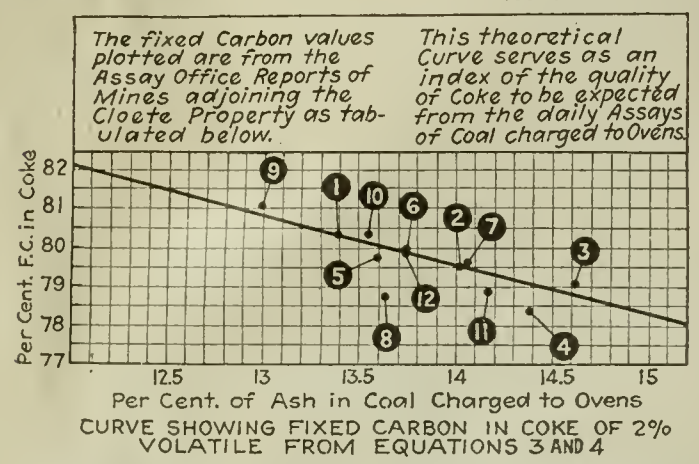
$$y(100-V_c) = (100-V)100$$

$$y = \frac{(100-V)100}{100-V_c}; \text{ (Equation 1)}$$

$$A_c = \frac{100A}{y}$$

$$A_c = \frac{100A}{\frac{(100-V)100}{100-V_c}}$$

$$A_c = \frac{A(100-V_c)}{100-V}; \text{ (Equation 2)}$$



CURVE SHOWING FIXED CARBON IN COKE OF 2% VOLATILE FROM EQUATIONS 3 AND 4

Fixed Carbon in Coke Shipped Free of Breeze and Ashes and Ash in Washed Coal Charged to Bee-Hive Ovens.—Cia. Combustibles "Agujita" S.A. Agujita, Coah; Mexico.

ASSAY No.	1919	ASH IN COAL	F.C. IN COKE
1	July	13.40	80.37
2	Aug.	14.03	79.53
3	Sept.	14.62	79.09
4	Oct.	14.38	78.35
5	Nov.	13.60	79.77
6	Dec.	13.74	79.97

ASSAY No.	1920	ASH IN COAL	F.C. IN COKE
7	Jan.	14.06	79.67
8	Feb.	13.63	78.73
9	Mar.	12.98	81.12
10	Apr.	13.55	80.38
11	May	14.16	78.92
12	June	13.74	79.93

Average Assay of Coke (Omitting No. 8)
F. C. 79.74
Vol. 2.01
Ash 18.25

Calculated Assay of Coke By Equations 3 and 4
F. C. 79.75
Vol. 2.01
Ash 18.24

FIG. 2. EQUATIONS FOR DEDUCING ALLOWABLE ASH PERCENTAGE WITH GRAPH CORRELATING ASH IN COAL WITH FIXED CARBON IN COKE

tile content decreased uniformly as the ash content increased. This relationship between ash and volatile was plotted and a formula expressing the relation was evolved as shown in Fig. 1.

Fig. 2 shows the development of special algebraic coking formulæ, utilizing the formula of Fig. 1 to obtain equation 3, permitting a theoretical curve to be drawn showing the relation existing between the ash in the coal and the fixed carbon in the resulting coke. This theoretical curve was drawn as on Fig. 2 for a coke of 2 per cent volatile so as to make possible a study of a coke containing that average of volatile constituent, such as was being produced at the neighboring coke plant of the American Metal Co.

This study is shown by the plottings of Fig. 2, which indicate that the coke being shipped, free of breeze and ashes, agrees in fixed carbon content almost precisely with the theoretical values. The plotted theoretical curve thus becomes a true index of the quality of commercial coke to be expected from a coal carrying a known percentage of ash.

The curve shows that it will be necessary to reduce the ash content in the Cloete run-of-mine coal to about 13.5 per cent in order to insure obtaining an 80 per cent fixed carbon coke, which is the contract base for the district. The algebraic coking equations can be applied to any coal and probably will be especially useful when the relation between the volatile and ash in the raw material can be determined.

I am indebted to M. R. Tennant, formerly washery superintendent at the Agujita plant of the American Metal Co., for the idea of evolving these algebraic coking formulæ.

G. S. Brackett Is New Vice-President of No. W. Va. Operators Association

GEORGE S. BRACKETT, of Fairmont, is the new executive vice-president of the Northern West Virginia Operators Association, succeeding George T. Bell. He is widely known in northern West Virginia, having been active with C. D. Robinson and his associates and with the association.

Mr. Brackett as one of the first acts of his administration has divided the twelve and a half counties in northern West Virginia into divisions for which he has completed arrangements to procure daily reports of loadings and distribution.

GEORGE S. BRACKETT

Mr. Brackett was graduated from Columbia University in 1897 and for nine years was in independent engineering practice covering bituminous coal mines and equipment in western Maryland, central Pennsylvania, Upper Potomac, Preston County, the Fairmont region and eastern Virginia. Following this for five years he had charge of one of the largest coal-producing mines in the Fairmont region. For nine years he was general superintendent and general manager of the Pittsvein Coal Co. until its purchase by the Robinson interests in the fall of 1920.

Would Form a West Virginia Miner's Union

DESIRING to free themselves of their relations with the mine workers of Indiana, Illinois and Ohio, certain employees in the coal mines of West Virginia, led by Albert T. Manka, president of the Polish Society in West Virginia, are discussing the formation of a new and separate organization. Manka was formerly an international organizer for the United Mine Workers of America. C. F. Keeney and Fred Mooney, president and secretary respectively of District 17, United Mine Workers, deny that any separatist sentiment exists in West Virginia and declare that Manka is a bona fide member of the present union.

SENATOR PHIPPS, OF COLORADO, has presented to the Senate petitions against the Calder coal regulation bill from the following Colorado interests: Denver Civic and Commercial Association; William E. Russell Coal Co., and Canon Reliance Coal Co., Denver; Pueblo Retail Coal Dealers Bureau; Govereau Coal Co., Rocky Ford; Colorado Retail Coal Dealers Association, Denver, and F. R. Wood, Trinidad.

Mining Engineers Hold Their Annual New York Session

Coal Men Declare Alaska Coal Fields Greatly Overrated—Allen Lays at Rest Doubts as to Whether Skip Hoisting Can Be Conducted Without Undue Degradation—Reger Shows That High-Volatile Coal Occurs in General in Oil Zones

ABOUT eight hundred persons attended the New York sessions of the American Institute of Mining and Metallurgical Engineers held Feb. 14 to 17 in the Engineering Societies Building, New York City. The first day was devoted to metal mining, non-ferrous metallurgy and non-metallic minerals, the only papers of interest to mining engineers being one by H. W. Seamon in the mining and milling section on the "Relation of Air Pressure to Drilling Speed of Hammer Drills."

In view of the growing use of these drills in roof, floor and coal the subject is of increasing interest. It is the outcome of no less than 1,500 tests made by the United Verde Copper Co. Factors of desirability were obtained by adding together the costs of drilling, of power and of maintenance per foot of hole to obtain the real cost of operating the drill, and taking the reciprocal of the figure thus obtained as the factor desired.

Experience shows that there is little or no increase in mechanical efficiency of the drills above 90 lb. of pressure, that the distance drilled per air indicated horsepower is greatest for the jackhamer type at 90 lb., and increases at a slow rate for other machines at the higher pressures, that the average thermal efficiency is greatest at about 95 lb., that the factor of desirability, while increasing with the pressure, shows a comparatively slow rate of increase for pressures above 100 lb.

The author adds that as the average drill is made to be used at a pressure of 80 lb. or less, the user of pressures much exceeding this will invalidate the present replacement agreements with the manufacturers, thereby increasing the upkeep cost, that increased breakage at the higher pressures with consequent greater loss of time of the drill runner in changing or repairing the machine would tend to reduce the factor of desirability and that the increased breakage of drill steel would tend to limit the pressure that could be economically used, although sufficient data have not been obtained whereby the maximum can be determined. For the United Verde works 95 lb. at the drill appeared to the author of the paper to be the most economical pressure.

Time Upsets Simple Systems of Depletion

John W. Roberts, a certified public accountant of Clarksburg, W. Va., presented a paper on "The Time Factor in Depletion of Mines." He showed that where a body of 1,000,000 tons of mineral was bought for $100,000 (which is the physical equivalent of a cost of 10c. a ton), with the prospect that it would be exhausted in a term of fifty years, the value would appear at first sight to be 10c., but what was to be mined in the first part of the first year would be worth 31.72c. and what was mined in the fiftieth year would have a present value of 1.725c. per ton.

These are the relative values when the rate of interest is figured at 6 per cent. Figured at 8 per cent the mineral now mined and that to be extracted in the fiftieth year would be worth 40.87c. and 0.871c. per ton respectively. There can be little comparison in value between the mineral extracted in 1921 and that which we can hope to mine only in 1971.

Mr. Roberts contended that the depletion of value should be calculated with these facts in view, that it was not just to deduct 10c. per ton in the instance cited but rather 31c. or 41c., and this wholly apart from the consideration that greater depth, greater distance or great difficulty might make the mining of the more distant mineral unduly expensive unless a development of mining methods offset this consideration.

Mr. Roberts declared that should a man purchase a load of hides of many grades and select the poor hides and sell them at the average figures, reserving the better hides for later sale, meantime valuing the better hides at the average value, the Treasury Department would declare that he had made an erroneous return and compel him to put a higher valuation on the select hides.

So the mineral mined today has a greater value than the mineral which it is necessary to reserve for future extraction. The first is being mined now and in a depletion estimate should be evaluated at the higher figure.

In the evening of the Monday session a smoker was held in the auditorium with E. P. Mathewson as master of ceremonies. The members and guests were entertained entirely by professional talent and not, as is usual, by stunts prepared by the members of the institute. The affair, therefore, had no mining color, and it did not afford an opportunity for friends to greet one another, taking place as it did in a room with serried immovable seats. Magic and music, comic boxing and a "movie" of the Dempsey-Brennan fight were the principal numbers. From all sides came expressions of regret that the affair was not more dignified and more befitting an assembly of engineers.

Edwin Ludlow Is Chosen New President

Early Tuesday morning the annual meeting of the institute was held. Herbert Hoover made a brief report of the activities during the past year. Bradley Stoughton, as secretary, also made his report as did also the membership, library and auditing committees. The tellers announced that the slate of officers for 1921 was elected without exception. The official heads for the present year will therefore be: President, Edwin Ludlow; Vice-Presidents, E. L. Degoyler and Albert Burch. Serving with these three as directors will be R. V. Norris, W. G. Mather, George Otis Smith, W. E. Wrather and J. C. Greenway. Announcement was made that Walter Lewisohn had offered a $1,000 prize for the best paper by a member of the institute on the uses of platinum.

Following the business meeting the principal technical session was addressed by George S. Rice and ex-president H. V. Winchell. Mr. Rice's talk was on "The Rehabilitation of Devastated French Coal Mines." In summarizing France's condition Mr. Rice said that of sixty million tons yearly consumed in that republic before the war forty million tons were produced in France, and the rest was imported. Of the forty millions, twenty-eight millions were produced in northern France, twenty millions of this production were destroyed by German and allied gunfire and military operations and by the wanton destruction perpetrated by the Germans when shortly before the armistice they decided to evacuate the coal region.

French Collieries Use Vacuum Dust Hoods

Mr. Rice showed with what scrupulosity all the dust made in the screen house is gathered by vacuum hoods. This is done largely to prevent the fine dust from being drawn into the shaft, from which the screen house is further separated by a large interval. The photograph he exhibited showed an almost entire absence of dust throughout the building. He also noted the fact that French mines had adopted the practice of storing coal at the plant. He showed several cross-sections of the French fields, explaining that the measures had been so violently distorted that they were encountered in the reverse order from that in which they would have been found had they been noted before the folding took place.

Mr. Rice laid much stress on the development of cementation in France. The French art of cementing against water is far in advance of anything of the kind in this country. Here the work is limited to the plugging of water-bearing fissures during shaft sinking. In France the site of the shaft is rendered impervious to water by the passing of

cement under intense pressure down boreholes from the surface. Where the rock resists penetration by the cement, chemical lubricants are used, by which this difficulty is overcome. The Germans found unusual difficulties in breaking through the water seals in those shafts which had been sunk by the cementation process.

It is not necessary to discuss Mr. Winchell's paper on "the Geology of Pachuca and El Oro." It was too closely detailed to be of real value to an audience not specially interested in the deposits described. Moreover, it seriously needed illustration by drawings to make matters plain. The conclusions he presented were, however, well worth while, and the address was delivered with all Mr. Winchell's notable powers of expression. It is unfortunate that a paper of this type is given unlimited time at a general session, whereas a number of articles of immensely broader appeal, even in a special session, are drastically cut short by the ten-minute rule.

Alaska Coal Beds Vastly Overrated

One of the afternoon sessions was devoted to coal. It opened with an address written by George Watkin Evans. This was not read at length but briefed by Dr. E. A. Holbrook. Mr. Evans disclosed in his paper that the wonderful deposits of Alaska are greatly overrated. The better coals cannot be depended upon and are not likely to make anyone unduly rich.

Philip N. Moore said that he visited the mines of the Alaska Engineering Commission in the Matanuska field and he noted that every little while a volcanic dike would cut through or appear to cut through the seam, and when the tunnel would be driven through the dike there might be on the other side no coal or another seam altogether. Thirty or forty men were getting out in aggregate about 125 tons a week. It is true that many of these men were engaged in prospecting and not in coal production. One seam was said to measure 12 ft. in thickness; really it was only 4 ft. thick. It had been folded on itself twice and so measured three times 4 ft. Mr. Moore said that the Matanuska field was a shining example of what could be done by the "propaganda of faddists."

H. H. Stoek called attention to the fact that Mr. Morris had reported to much the same effect in *Mines and Minerals* some fifteen years ago. George S. Rice said that the Chickaloon field had been opened first, as at this point the coal was found to be of high rank, but it was so troubled that it was decided to open at Eska Creek, where the coal was more regular but where accordingly there had been less metamorphism and the coal was consequently of lower rank. About 4,000 tons was mined a month, and a pile of 30,000 or 40,000 tons of coal was accumulated. The Eska coal had 20 to 25 per cent of ash and was a high-volatile fuel, but it was thought better to mine it and to leave in the ground the higher-grade Chickaloon coal with the multiplicity of difficulties involved in its extraction.

That Forty-Foot Seam Had a Short Career

The mine on the celebrated Cunningham claim, so prominent in the Ballinger controversy, located in the Bering field, stood in 40 ft. of coal. After the mine had been driven in 300 ft. the coal was lost and was never found again. It was not equal to the New River or Pocahontas coals. From Chickaloon 1,000 tons was at much trouble and expense brought out on a sled and used by the navy. It was better than the average run of navy coal because it was hand-picked. In Mr. Rice's belief the Chickaloon coal should be developed for navy use. We need a supply of high-grade coal on the Pacific in case of war, but no private concern could afford to undertake the risk, and the development of the coal cannot be taken up as a separate venture.

A member then declared that he had visited every field in Alaska and found they all fell in one of three categories: Coal abundant but no good; good coal so badly faulted it can't be mined; and good coal so located that it can't be shipped. He regarded Alaska as being not as far advanced as twenty years ago.

The paper by L. D. Tracy, of Pittsburgh, on "The Mine-Water Neutralizing Plant at Calumet Mine" was then presented. It has been already printed in *Coal Age*. A member in the discussion of the paper said that the water had not been so far neutralized that it could be fed to the boilers as a steady diet. It had been used for washing purposes and had served for use in the boilers when other water was lacking.

Water Hoists Are Being Replaced by Pumps

Howard N. Eavenson then delivered his paper on "Run-off and Mine Drainage," which was followed by a written comment contributed by J. R. Campbell, who said that from four to seven tons of water entered the mine for every ton of coal mined. Another member put the mine water in the Punxsutawney district at eleven tons for every ton mined. J. D. Warriner said that the Lehigh Coal & Navigation Co. was abandoning water hoists and replacing them by pumps. Most of the water came in from the outcrops, and in steeply pitching beds the amount of water to be handled depended not so much on the acreage mined as upon the condition of the outcrops and the readiness with which water was directed to these means of access to the workings.

R. V. Norris, who was in the chair, said that in the shallower and more level mines of the anthracite region water most abounded under the small streams where the operators ventured to withdraw the supporting pillars. It was always drier under the rivers, for there the removing of pillars could not be so much as considered.

In reply to a question of J. R. Campbell, forming part of his written comment, Mr. Eavenson said that in the effluent of the Gary mines there were three grains of acid per thousand gallons with normal run-off. At times of freshets there was no acidity. It was said that the mine waters became increasingly acidulous with the advance of time.

Mr. Strange declared that it was possible by flushing sand into breaches to reduce the quantity of water entering the mine.

Does Skip Hoisting Break the Coal?

Andrews Allen then presented the paper written by himself and John A. Garcia on "Skip Hoisting for Coal Mines." He could offer no unquestionable proof that coal was not broken in hoisting by skips, but the evidence is strongly favorable to that belief. At a mine using a cage hoist 9.3 per cent of the product was 6-in. lump. At one using a 10-ton skip 10.5 per cent was of this large size for the period between Jan. 1 and Oct. 30. In fact in October it rose to 12.7 per cent.

The results as regards 2-in. material show also the superiority of the material hoisted in skips. Until we have details of the size of the coal produced with cage and skip hoists from the same mine using the same screens and making identical product and at a silimar period of development, full conviction as to the superiority of the skip system will not be felt. However, it must be remembered that the 10-ton skip mine for which the paper gives the results obtained is Kathleen, which mine, being new, must be doing much development work, and yet its showing is the better of the two.

George S. Rice said that in 1893 he had inspected a plant erected by Richard Ramsey which had a skip hoist. Later one was erected in Alabama for the Tennessee Coal, Iron & R.R. Co. In Europe, where there are various kinds of coal, as many as eight or nine in some fields in the different seams mined, it would seem impossible to introduce skip hoisting. T. M. Chance later in the meeting showed methods of installing chutes which would permit of the loading of coal at the different landings.

Cage Hoist Spills Coal to Landing and Sump

Howard N. Eavenson said he had investigated the hoists in Illinois and found that where a big tonnage was being raised by a cage hoist the mine force was kept under continuous tension in its effort to maintain the steady output of coal. There were thirteen men at the bottom on the day of his visit. At a skip hoist the men seemed to be handling the coal in a dilatory manner, their efforts being so much more fruitful of result. He was of the opinion that there was 2 per cent less small-size coal with skip hoisting than there was when hoisting was done in cars.

At the cage hoist eight tons per day were dropped on the ground landing and twenty or thirty tons in the same period

of time went down the shaft and landed at the bottom; so much, in fact, that arrangements were made so that a car could be lowered into the bottom for the loading out of the fallen coal. E. A. Holbrook said that the Dominion Coal Co. in 1902 decided to lower its shaft to a depth of 960 ft. and it installed two 9- or 10-ton skips, which were able to handle 4,000 tons a day.

The symposium on pillar drawing was somewhat shortened because most of the papers prepared were held up for the Wilkes-Barre meeting. The two presented were "Coal Pillar Drawing Methods in Europe," by George S. Rice, and "Pillar Drawing in Thick Coal Seams," by George B. Pryde and R. A. Magraw. Neither of these papers was discussed. The report and suggestions of the committee on "A Standard System of Accounting and Analysis of Cost of Production" by the National Coal Association also was passed by, being neither briefed nor made the subject of discussion. It was unfortunate that neither Mr. Pryde nor Mr. Magraw had made provision for an alternate to make a brief presentation of the contents of their paper, which consequently was only read by title.

In the evening an entertainment was held in the auditorium for both ladies and gentlemen. The amusement was furnished by two excellent entertainers. This program was followed by dancing.

On Wednesday morning welfare films of the United States Steel Corporation were shown; the Petroleum and Gas Section held a meeting, the annual reports of the Industrial Relations Section's subcommittees, T. T. Reed presiding, were presented and a session was held on "The Breakage and Heat Treatment of Drill Steel," at which Benjamin F. Tillson presided.

Look for Oil Where Fat Coal Is Found

At the Petroleum and Gas session the only paper of direct interest to coal men was that by David B. Reger, State Geologist of West Virginia, entitled "Carbon Ratios of Coals in the West Virginia Oil Fields." Mr. Reger noted, as has David White, of the U. S. Geological Survey, and George H. Ashley, State Geologist of Pennsylvania, that in coal fields oil occurs only where the coal contains a large quantity of volatile matter. It is believed that the same causes which have devolatilized the coal and oil shales have also removed oil such as is now found in pools.

With Mr. Reger's contribution was a map of West Virginia showing lines which are termed iso-carbs. They show in this instance the amount of carbon in the "pure coal" of the lowest measures in the region through which they pass. On this map are delineated the oil fields of the state. It is easy to see at a glance that where the percentage of carbon is high, oil is invariably absent, or at least has not been discovered. Where the percentage of carbon is low, oil is apt to be found if other conditions favor its segregation into pools.

Valuable Discussion Regarding Drill Steel

No discussion seemed more animated than that regarding the breakage and heat treatment of drill steel, for which two sessions were held. The questions were taken up under the following heads: (1) Study of drill steels which give the greatest service before breakage; (2) maximum service that may be expected; (3) mechanics of failure; (4) development of machines for accelerated tests of drills; (5) correlation of field tests with accelerated tests in the laboratory and (6) reclamation of depreciated drill steels.

Charles M. Brown, vice-president of the Colonial Steel Co., said that cruciform steels were being displaced, some companies substituting the quarter octagon section. The cruciform shapes have comparatively little steel in the striking bit and, moreover, are much injured in the process of forging.

Van H. Manning, research director of the American Petroleum Institute, offered a resolution calling on the directors of the institute to engage with several other organizations named in a research into drill steel. The resolution was unanimously adopted. In the afternoon moving pictures on the mining of asbestos and of sulphur and on the making of steel were shown by the U. S. Bureau of Mines.

Another session was held by the Industrial Relations Section, at which Dr. A. J. Lanza, formerly of the U. S. Bureau of Mines and now medical director of the Hydraulic Steel Co., read the first paper. In his address Dr. Lanza urged the industrial physician at mines to go underground and become acquainted with the conditions under which the mine workers labored, so as to know the class of medical hazards to which they are subjected. Otherwise he will be debarred from adequately taking part in preventive medical work. The importance of this is seen in the fact that about four times as much time is lost from illness as from accidents. The industrial physician should work hand in hand with the superintendent, manager, foreman, employment director, safety man and other mine officials.

Dr. Lanza said "It is not the purpose of the physical examination to bar the abnormal man from work. It would be absurd for industry to take the stand that only those can work who are able to pass a fairly rigid physical examination. Neither industry nor society in general could begin to deal with the economic problems involved were such a state of affairs to become existent. But it is fair to assume that no man has a right to work at a specific occupation where, as a result of his physical condition, he might be a source of danger to himself, his employers or his fellow employees.

Certain classes of employees, such as hoisting engineers, cage tenders, rescue men, fire crews, shotfirers and men working on underground haulage systems, should be examined not only when hired but at stated periods also. For many purposes a skilled and rapid inspection will suffice. To be successful in its operation, the establishment of such an inspection presupposes that the mine doctor has an accurate knowledge of the nature and requirements of the jobs in the mine."

Dr. Lanza declared that "miners' nystagmus and the affections known as 'beat hand,' 'beat knee,' etc., which figure in English mining literature are apparently unknown in our mines. The most widely spread specific disease is miners' phthisis, or miners' consumption, which is limited to hard-rock metal mines."

Hospitalitis and Its Successful Cure

In discussing this paper Robert Linton, the chairman, said that on leaving the hospital men were apt to have what was often called "hospitalitis," which caused them to shirk work. Lately a more kindly attitude has been taken toward such men than at first. They are now believed not to be lazy but weak and lacking in confidence. In consequence men just released from the hospital are given light work until strength and confidence are restored. They seem more anxious to do work that lies within their powers, and with the progress of time will undertake with efficiency work such as they were in the habit of performing.

Parke Channing remarked that at the Miami Inspection Hospital, rehabilitation apparatus had been installed, and as a result men had been returned to work six weeks earlier than had been possible before they were given the treatment which the apparatus made possible. The chief surgeon said he used to think that 60 per cent of the men discharged from the hospital were malingerers. He now believes that 90 per cent of the men want to return to work and they exhibit that disposition by following up the reconstruction work religiously.

Alabama Coal Strike Officially Ended

As THE result of an order of the United Mine Workers of America the Alabama coal strike came to an end Feb. 22 after six months of disorder. For a long time the mine workers had been losing ground and the waning demand for coal gradually destroyed all hope of a victory.

Alabama national guardsmen were withdrawn by order of Governor Kilby, in whose hands the entire question had been placed for determination. His decision will be final.

On Feb. 19 the railroad bridge over the Warrior River in Jefferson County, near Deltona, which furnished access to the mines of C. O. Rogers, was dynamited, isolating the coal properties. The mine had been operated on the "open-shop" plan, and threats had been received as to what would be done if the company continued to work under those conditions.

Problems of Operating Men

Edited by James T. Beard

Should Mine Foremen Serve on Examining Boards?

A Properly Constituted Mine Examining Board Should Be Representative of the Three Classes Concerned; Namely, the State Inspection Department, Mine Owners and Operators, and the Mine Workers Employed in the Mines, Which Was the Evident Intention in the Framing of the Mine Law

WHEN I went before the examining board to take the examination for mine foremanship, the board consisted of the district mine inspector, a mine superintendent and a practical miner. It seemed to me that this was a fair representation and one that gave promise of the just treatment of any miner who would come before the board. Personally, I would rather take the examination before a board of this kind than to run a possible chance of prejudice on the part of some mine foremen sitting on the board.

As is well known, there are a large number of mine foremen who have come into personal contact with the miners who present themselves for examination. In some cases, a foreman will be prejudiced by reason of his previous acquaintance with an applicant and, in that case, it will be difficult for him to render a just opinion regarding the qualifications and fitness of the man to fill the same position that he himself holds.

Effect of Prejudice of Foremen

Indeed, the prejudice of a foreman sitting on an examining board may be either for or against an applicant. But, in either case, the result is alike harmful. While a mine superintendent or operator may have more or less knowledge of the men coming before the board, he has not had as close association with these men as the mine foreman and is better able to give a fair judgment, holding as he does a higher position than the one for which the applicant is striving.

As at present constituted, a mine examining board represents the three classes chiefly concerned. The district mine inspector represents the state and safeguards its interest in the work of mining. The superintendent represents the owner or operator of the mine; and the practical miner sitting on the board looks after the interest of the workers employed underground.

In the past few years I have observed with pleasure the kind of certified men our examining boards have been producing. The results show that the standard of competency has been gradually raised to keep pace with the advancement in coal mining. This is gratifying, as we know that many mine foremen neglect to keep abreast of the times. Too often, they are prone to keep to the old familiar methods of operating and reluctant to change in favor of a new system.

One can readily understand that dissatisfaction with an examining board will frequently result from a man's failure to pass the examination. Sometime since, a friend of mine who did not succeed in passing the board, explained that someone on the board had a grudge against him. The following year he went before the same board and was successful. He then stated that his failure to pass the examination the previous year was his own fault, as he had not secured the proper endorsement certifying to his experience as a miner.

In closing, allow me to say that what we need most of all in examining boards is the fair, intelligent and practical treatment of every applicant. Prejudice for or against an applicant should never be allowed to affect the judgment of any member of the board. To my mind, an operator or a superintendent occupies a position where he is generally better able to judge of the qualifications of applicants than would be the average mine foreman.

Johnstown, Pa. OPERATOR.

Assistant Foremen and Firebosses

The safety of mine workers is more largely dependent on the active co-operation needed between assistant foremen and firebosses than is generally suspected, notwithstanding the fact that the mine foreman is the one who is ultimately responsible for the safety of the mine and the men employed therein.

FREQUENT references have been made recently, in *Coal Age*, regarding the relative responsibilities of the mine foreman, assistant foreman and fireboss, for the safety of the mine and the men employed underground. In this respect, while we must not forget the responsibility that rests on the shoulders of the mine foreman, most of us will agree that much depends on the kind of co-operation that exists between the assistant foreman and the fireboss.

Speaking of safety in the mine, my thought is that both the assistant foreman and the fireboss come into closer contact with the miners than the most active and industrious foreman. For this reason, it is my belief that they should be held more strictly to account for safe conditions in the workings and throughout the mine than the foreman himself.

In order to secure the greatest measure of safety, there must be real co-operation between these two under-officials. When one of them observes a danger he must not fail to report it to the other and confer with him in regard to taking all needed precautions to avoid an accident.

Real Co-operation Requires More Than Is Stated in the Law

For instance, let us say that a fireboss, on discovering a danger when making his morning round, fences off the place with the proper danger board, reports the same to the mine foreman and makes the proper entry in the book kept for that purpose. We must admit that he has done all that the law requires of him in such a matter.

However, if there is real co-operation between that fireboss and the assistant foreman, the former will not fail to talk with the latter and advise him in regard to every little detail that will acquaint the assistant more thoroughly with the conditions found and make him better able to deal intelligently with the situation. In that way, many an accident will be avoided and there will be no excuse for misunderstanding which is so often claimed.

Every assistant foreman should be broadminded enough to receive and act upon the suggestions of a fireboss who has discovered some danger that he knows the assistant will meet and regarding which he should be informed. In other words, these two officials should work hand in hand for the protection of the men in their charge.

Occasionally, one sees a disposition on the part of an official to treat the miner with less consideration than is his due. It is false pride on the part of an official who is entrusted with the duty of protecting his miners, to consider himself as though he was a superior being. If an official has such a disposition, let him forget it and begin at once to treat the miner as a "pal."

Far better results will be obtained

and greater safety secured by conferring frankly with a miner regarding a possible danger that may exist in his place. Talk with him about it and bring him to appreciate the fact that he must watch himself closely and use every precaution for his own safety. My experience is that talking frankly with a miner makes him more careful in the future.

It is true there are miners who are indifferent, and it is necessary in that case to emphasize an argument more forcibly. This fact shows, however, the need of understanding your men, knowing their whims and habits, and treating them accordingly. Let me suggest, here, the need of all mine foremen encouraging greater co-operation between their assistants and firebosses, along the lines I have mentioned. OBSERVER.

Johnstown, Pa.

Observations and Conclusions of a Brother Fireboss

Conditions may exist when it would be dangerous to leave a large abandoned section of a mine open. Because of the continued generation of gas within, safety may require it to be sealed. The breathing of a sealed section is affected by changes in barometric pressure.

IT has been with great interest that I have read the discussion relating to the observed change of breathing of a sealed portion of a mine at Bruceville, Ind., as more fully explained in *Coal Age*, Jan. 27, p. 186. The suggestion appended by the editor as to the possible causes of the observed change in the breathing of the section, is to my mind quite feasible.

Inasmuch as I was employed as fireboss in that particular section to which this discussion relates, and was well acquainted with the conditions that prevailed in the sealed area previous to the erection of the seals, and had every opportunity to observe the behavior of the gas after the seals were built, I may be permitted to offer a few suggestions resulting from my observations.

Roof Conditions Very Bad

As my brother fireboss has stated, the conditions that prevailed in that section were very bad. Shortly after the section was opened every precaution was taken to avoid trouble. For a distance, both the entries and the rooms ran level, and the roof was fairly good in the first seven rooms, driven off each entry. These rooms showed no signs of caving for some time after they had been driven their full distance.

But conditions changed when No. 10 room was turned. The coal was lower and the entries started to rise, while the roof became very bad. Both the entries and the new rooms caved up to the "steel band," and this caving soon spread over most of the panel. I would say the roof slate beneath the steel band would hardly average more than three feet in thickness.

The fact that the steel band would not break soon made it evident that trouble was in prospect. A creep developed and an enormous pressure was thrown on the room and entry pillars. The weight even crossed the barrier pillar and threatened the main haulage road. The entire panel seemed to be alive and generated large quantities of gas, which came from the steel band. Tons of coal were crushed off the pillars and, finally, all hope of saving the section was abandoned.

Decided to Seal Off the Section

At this point, it was decided to seal off the section. I cannot agree with Richard Bowen, who comments on this point in the same issue and states, page 187, that "the safest plan to adopt is to ventilate all abandoned areas in such a manner as to prevent the accumulation of any dangerous quantity of gas within them."

It is my belief that it would have been very dangerous indeed to have left this section open, under the conditions described. Before and during the sealing of the area, roof falls were occurring daily and liberating large quantities of gas. After the panel was sealed, this condition quieted down and no further trouble was noticeable. To have left the section open would not have prevented the heavy falls of roof and the gas would have found more ready access to the workings than when the section was sealed.

In my opinion, to leave such a section unsealed would be to invite trouble. As the mine is developed and the old workings become more extensive, more air, more material and more men will be required to keep the abandoned areas ventilated and safe. The open areas would soon become a constant source of danger, particularly in a mine worked with open lights.

Large Sealed Section in an Illinois Mine

Having worked in a mine here in Illinois, where more than 600 acres of abandoned workings had been sealed off, I have been forced to the conclusion that to have attempted to ventilate those areas would have been practically impossible. Mr. Bowen's suggestion of sinking boreholes from the surface, for the purpose of draining off the gas from such areas, does not appeal to me as practicable. Even putting aside the possible danger of the gas issuing from the boreholes becoming ignited, it does not seem to me that the holes would have any appreciable effect to drain the gas from large abandoned sections where great quantities were being generated.

Before closing, let me say that changes in barometric pressure are, to my mind, largely responsible for the observed change in breathing of this sealed section. A fall of barometer is evidence of a less pressure being exerted on the sealed area, other conditions remaining unchanged in the mine. This relief of pressure must naturally be followed with an outflow of gas, from the sealed section, into the mine. On the other hand, a rise of barometric pressure would cause the mine air to flow into the sealed area. Allow me to add that while in charge as fireboss in the mine mentioned, I have frequently noted the correspondence in the breathing of this sealed section and the rise or fall in barometric pressure. Observing the change of barometer reading would enable me to foretell the breathing out or drawing in of the gas and air at the seal.

Zeigler, Ill. STEPHEN ARNOTT.

ANOTHER LETTER

Changes observed in the travel of the air current in a mine entry is here assumed as possibly effecting some change in the breathing of a sealed section of a mine.

KINDLY permit me to add a word or two regarding the observed change in the breathing of a sealed section of a mine, as described by a fireboss in the issue of *Coal Age*, Jan. 27, p. 186. It would have been of some help had it been stated how far this seal is from the intake airway of the mine; also, how far inside from the seal is a door or other obstruction to the flow of the air?

My idea is that what takes place in a mine airway is very similar to the flow of water in a stream. If the water is dammed back there is a greater head or pressure exerted; but at a point where the stream is especially wide whirls and eddies generally form.

Numerous Causes Suggested as Affecting the Sealed Area

Now, in a few words, let me say that a possible door in the mine entry, inby from the seal, may have caused a back pressure on the seal when the door was closed, with the result that air would be forced into the abandoned section if the valve in the seal was open at that moment. On the other hand, should it happen that the door was opened at the same time with the opening of the valve, the effect would be to produce an outflow of gas and air from behind the seal.

Again, assuming the seal is a short distance back in the heading, from the airway, the whirl or eddy of the air in front of the seal would have a tendency to cause an outflow through the seal when the valve was open, although this effect is comparatively slight, as I believe, and more or less the same at all times.

Another effect that I would mention has reference to the air travel in an airway, as changing from the top to the bottom, or *vice versa*, according to changes in the relative temperatures of the mine air and the outside atmosphere. To illustrate this point, let me cite an instance of my own observation not long since.

On an idle day, taking a man with me, I started to hang some wires in

the mine, on an entry where a good current of air was passing. No one was in the mine other than myself and the man who helped me. Outside, the sun was shining and the air clear and warm during the forenoon. At that time when drilling the holes in the roof, I noticed that the air was traveling along the roof, as the dust from the drill, carried along by the air, was quite annoying and troublesome.

By noon there was a change outside. The afternoon was rainy and the damp cool air entering the mine traveled along the floor. The change was quite noticeable in drilling the holes in the roof. The dust now dropped toward the floor and gave us no annoyance, as during the morning.

Relation of Outside and Inside Temperatures Important

To my mind, it would be well for this fireboss to observe the temperature outside and inside the mine, and note whether or not the air is traveling at the roof, as this will have its effect on the breathing of the sealed section when the valve is opened.

There are other causes that may have produced a greater or less effect on the observed breathing of this section. One of these, no doubt, is the roof settlement taking place within the abandoned area. Attention has been called to this by another writer, who has mentioned the possible effect of a large fall of roof within the section, which he thinks would drive the gas out through the seal.

However, if this condition continued to prevail, it would not explain the drawing in of the air during the first nine days of the test. It would only serve to explain the blowing out of the air during the five days following.

To judge intelligently the effect of these various causes must necessarily be left to the fireboss, who is on the ground and acquainted with the conditions that exist in the mine.

Thorpe, W. Va. G. W. B.

Penalize Uncertified Mine Officials

The blanket provision of Article 26 of the Bituminous Mine Law of Pennsylvania imposes a penalty on any person who neglects or fails to perform the duties required by the act.

WHILE it is true that certified mine formen, assistant foremen and firebosses may be deprived of their certificates, when found guilty of neglect to perform their several duties through incompetency or carelessness, and though they suffer more than the uncertified official who has no certificate to lose, it is not true that the law imposes no penalty on the uncertified man who fails in his duty.

This question was raised in *Coal Age*, Feb. 3, p. 234, and several articles and sections of the law quoted, which authorize the employment of uncertified men in these positions, provided the employer regards them as "equally competent" with a certified person.

Seemingly, the blanket provision contained in Article 26 of the bituminous law was then overlooked. Section 2 of that article imposes a fine not to exceed $200, or imprisonment in the county jail for a period not exceeding three months, or both, at the discretion of the court, whenever a person has been convicted of a misdemeanor under the act, in the Court of Quarter Sessions of the county. The section goes on to state: "Any violation of this act, which has been declared to be a misdemeanor by any part thereof, shall be punished in like manner." The question would seem to hinge on whether the act of which the uncertified man is found guilty is a "misdemeanor" under the law and is so specified.

Personally, I would not have an uncertified man acting in an official capacity in a mine of which I had charge. As I regard, it would be a penny-wise and pound-foolish policy to employ such a one when there are enough good certified mine foremen, assistant foremen and firebosses at hand. It may mean a few more dollars of outlay, but what is that when men's lives are at stake?

Let me say, in closing, I believe the certified man feels a greater responsibility resting on him and will take fewer chances than an uncertified man. It is true there are men in the mines who are old and experienced, though they cannot read or write and are unable to pass the examination required by law.

But there are other ways of rewarding such men than to place them in positions where the lives of mine workers must depend on their capabilities under all conditions. When accident and loss follows the employment of an uncertified man, the one who placed him in charge should be punished.

Johnstown, Pa. "SUPER."

Inquiries Of General Interest

Value of the Coefficient of Friction in Mine Ventilation

The Values Given by Different Authorities Vary Widely Owing to Various Conditions Existing in the Mines Where the Values Were Established by Experiment. The Abbreviated Atkinson Value Is Probably Most Representative of Conditions in American Mining Practice

WHEN looking over some back numbers of *Coal Age*, a short time since, I came upon a question answered in Vol. 13, p. 518, concerning the circulation of 50,000 cu.ft. of air, under a 2-in. water gage, in two equal splits, each 6 x 10 ft. in section and 10,000 ft. long. It was desired to find the size of opening required, in a regulator placed in one of these splits, such that would reduce the quantity of air passing in that split to 15,000 cu.ft. per min., assuming the power on the air remained unchanged.

In the reply to this question, it was shown that a circulation of 50,000 cu. ft. of air per minute, in two equal splits of the dimensions given, could not be produced by a 2-in. water gage, but would require a gage of 3.56 in., provided the usual value of the Atkinson coefficient of ($k = 0.0000000217$) friction was used in the calculation. It was stated that the value given by Fairley ($k = 0.00000001$) was probably employed.

The use of this smaller value given by Fairley, however, would call for a water gage of 1.78 in. It appears, therefore, that the original question must have been based on a value somewhere between the Atkinson and the Fairley values of this coefficient, say $k = 0.0000000112$. I would like to ask what is a safe value to use for the coefficient of friction, in American mining practice when estimating for power.

STUDENT.

Columbia University, New York City.

There are no less than ten or a dozen different values given by experimenters for the coefficient of friction or, more correctly speaking, the unit of resistance offered by airways and mines to the passage of a ventilating current. One of the lowest of these values is that given by Navier, a French experimenter, who gives $k = 0.000000001872$. The highest value is that found by the well known English author and investigator of mining conditions, J. J. Atkinson, who gives $k = 0.0000000217$.

It can be said that the chief cause for the variation in the values given by different investigators, must be attributed to the physical differences that existed in the airways and mines investigated. It is noticeable that the values obtained in French mines are generally lower in comparison with those obtained in English mines.

Presumably, the lower values obtained are the result of purely physical differences in the mines. Shorter and straighter air-courses having a generally greater sectional area, less obstruction by reason of the style of tim-

bering, sharp bends in the airways, and methods of splitting the air, involving the use of overcasts and the elimination of doors, together with the arching and lining of air-courses all contribute to reduce the value obtained for the coefficient of friction or the unit resistance of a mine.

Undoubtedly, these conditions vary to a greater or less extent in different American mines and mining districts. For instance, there is no doubt but that the generally larger and less obstructed airways of the anthracite coal fields will afford a lower value for the coefficient than what would be obtained in the generally longer, more tortuous and obstructed airways of the bituminous fields, in Western Pennsylvania and elsewhere in this country.

Experience and an intimate knowledge of the conditions to be met in any particular mine or district must be our guide in making a close estimation of the power required for a given circulation of air in a certain mine. Such an estimate should always be based on a specified air volume circulated under a given water gage.

In Fan Practice

Frequently, when a fan is installed at a mine, under a guarantee to produce a certain quantity of air under a given water gage, it is found that the conditions existing in the mine are such that a less or a greater gage is required to circulate the required quantity of air.

In every such case, it is evident that the fan has not been designed on the basis of the present circulation in that mine, after allowing for the effect of possible air columns. The only safe way to proceed is to first ascertain the so-called "equivalent orifice" of the mine or the mine potential, as expressed by the ratio of the quantity of air in circulation (cu.ft. per min.) to the square root of the unit pressure (lb. per sq.ft.) producing the present circulation. Or, in respect to the necessary power on the air, ascertain the ratio of the quantity of air in circulation to the cube root of the present power on the air in the fan drift.

In fan practice, the best results are obtained by estimating on a fan whose equivalent orifice is from two to three times the orifice of the mine. A fan so designed should show a manometric efficiency of between 80 and 90 per cent. In other words, the actual water-gage reading in the fan drift should be from 80 to 90 per cent of the gage due to the tip speed of the fan.

Returning, however, to the question of a suitable value for the coefficient of friction, to be employed in a given mine or district, this is of practical importance only as indicating the relative efficiency realized in the ventilation of a mine. Large unobstructed airways give a low unit of resistance, provided the air is conducted in a number of splits sufficient to afford a moderate velocity of the current.

A number of years of practice in the ventilation of mines in the Central Basin, has indicated that the general practice in mining the coal of Illinois, Iowa, Missouri and Kansas, makes the value of the unit resistance to closely approximate the Atkinson coefficient. A fact that favors the use of this coefficient is that it is on the safe side when estimating the ventilating power required for any given development.

In the preparation of the papers on Mine Ventilation, for the study courses of the International Correspondence Schools, Scranton, Pa., which papers now form a part of Vol. 145, I. C. S. Reference Library, I suggested (Sec. 13, p. 20) the use of an abbreviated Atkinson coefficient, as giving practical results. This value is $k = 0.00000002$, and I believe this is a safe value for estimation, in general bituminous mining practice, in this country at the present time.

Examination Questions Answered

Examination for Mine Foremen, Sixteenth Anthracite District

Selected Questions

QUESTION—*If a gangway is running north seventy degrees east (N 70° E) and it is desired to turn off a breast at right angles, or square with the gangway, what will be the compass course of the breast?*

ANSWER—The best method of calculating the course of a breast turned square with this gangway is by azimuths, in which the angles of all courses are computed to the right, starting from due north: thus, the azimuth of a gangway whose bearing is N 70° E is 70 deg. Then, if the room is turned to the right of the gangway its azimuth is found by adding 90 degrees to the azimuth of the gangway, which gives 70 + 90 = 160 deg. This angle being greater than 90 deg. and less than 180 deg., lies in the southeast quadrant, and the angle of the bearing is 180 − 160 = 20 deg. Therefore, the bearing of a room driven to the right of this gangway is S 20° E.

On the other hand, if the breast is turned to the left of the gangway and square with it, its azimuth is found by subtracting 90 deg. from the azimuth of the gangway; thus, 70 − 90 = —20 deg. The azimuth of this breast is therefore 360 − 20 = 340 deg. Evidently, this azimuth lies in the northwest quadrant and the angle of bearing measured from due north is 360 − 340 = 20 deg. Therefore, the bearing of a room turned to the left and square with the gangway is N 20° W.

QUESTION—*What is the elevation of the face of a breast above the gangway if the breast is 285 ft long and has a pitch of 27 deg? What length will it show on the mine map if the map is made in accordance with the law?*

ANSWER—The rise of a breast is found by multiplying the sine of the pitch angle by the length of the breast measured on the pitch, which gives in this case 285 × sin 27° = 285 × 0.454 = 129.39, which is the elevation of the face of this breast above the gangway.

The Anthracite Mine Law requires all mine plans to be drawn to a scale of 100 ft. to the inch. The horizontal distance corresponding to a pitch distance of 285 ft. is 285 × cos 27° = 285 × 0.891 = 253.93 ft. On a scale of 100 ft. to the inch, this distance would measure 2.54 in.

QUESTION—*What are the duties of a mine foreman? Whose interest should he always have in mind?*

ANSWER—The law makes a mine foreman responsible for all matters pertaining to the ventilation of the mine. He must employ a sufficient number of assistants and firebosses and know that they perform their several duties in accordance with the law. He must personally direct the operations of the mine in such a manner as to insure the safety of the men and the economical extraction of the coal. He must do all in his power to maintain and increase the daily production of the mine, while at the same time inspecting all machinery and appliances used in the mining and transportation of the coal. He must examine and sign the reports of his assistants and firebosses, investigate and report all accidents and attend any inquests that may be held.

A mine foreman should have in mind continually the interests of his employer as well as those of his men. He must be fair and just in all his dealings and see that all supplies are ordered as needed in the mine.

QUESTION—*What will be the quantity of air passing in a gangway timbered with collars 7 ft. between notches and 12 ft. spread, the clear height above the rails being 8.5 ft. and the anemometer showing 180 ft. per minute? How many men would this current support in accordance with the mine law?*

ANSWER—Assuming the dimensions given, length of collar and height above rail, are a fair average in computing the sectional area of the airway, the average width of this cross-section is ½(7 + 12) = 9.5 ft. The sectional area within the timbers is therefore, 9.5 × 8.5 = 80.75 sq.ft. Again, taking the reading of the anemometer (180 ft. per min.) as the average velocity of the air current, the quantity of air passing in this airway is 80.75 × 180 = 14,535 cu.ft. per min.

Some Results of Legislative Regulation of the Coal Industry in Indiana*

Fuel Control Act Construed as Valid Exercise of Police Power—Control of Price Called Best Remedy for Extortion—Company Reports Disclose Surprisingly Low Production Costs, Considering High Salaries to Officials and Increase in Labor Scale

BY JESSE E. ESCHBACH

ON JULY 31, 1920, the Special Coal and Food Commission of Indiana embarked on an uncharted sea. The coal industry had reached a pinnacle in profiteering never heretofore conceived of by human beings. Never before since the days of Captain Kidd had the black flag been nailed to so many mastheads on the commercial seas. Many operators, greedy and merciless, had conceived that the human race was the proper object of plunder and pillage, and that the law-making and the law-enforcing bodies of Indiana and America had long since forgotten the people for whom alone the sovereign state existed.

During the entire controversy over the law and the orders of the Coal Commission, all that you could get a large class of the operators and jobbers and their lawyers to talk about in court or out of court was the sacred right of property, meaning their property and their right to charge any outrageous and extortionate price the suffering public would pay, seeming to forget or refusing to consider that there is such an element left in human life as the rights of the people.

The Special Coal and Food Commission faced an unsolved problem with a novel and untried law, and the people faced a grave and critical emergency and possible suffering. In four short months the commission obtained the opinion of the second highest court in the land as to the validity of the act. They fixed the price of coal in the hands of all producers, dealers and consumers; caused to be distributed directly and indirectly 1,500,000 tons of Indiana coal at a saving of more than $3,000,000 to the people, and passed and relieved one of the gravest emergencies which ever existed, without a single case of actual suffering, and in that period reduced the cost of coal to the oridinary consumer from $3 to $5 per ton.

A LANDMARK IN AMERICAN REGULATIVE LEGISLATION

The passage of the act creating the Special Coal and Food Commission of Indiana was a landmark in American legislation. Never before had any commonwealth in America attempted to regulate the coal industry or to create a price-fixing body for the output of said industry. The act not only created a body or commission with power to investigate the coal industry and fix the price for the output thereof but it placed in the hands of the commission the means by which it could take care of the needs of the inhabitants of the state with an equitable distribution of the coal mined therein, and in emergency cases could prevent suffering. There is little doubt among fair-minded American citizens, conversant with the subject, that this act was a valid exercise of the police power.

Judges Francis E. Baker and Evan A. Evans of the Circuit Court of Appeals of the United States for the Seventh District, and Judge Ferdinand A. Geiger of the District Court of the United States for the Eastern District of Wisconsin, on Sept. 6, 1920, in the Federal Court of the United States in the City of Indianapolis, sustained the constitutionality of the act and dismissed the motion for a preliminary injunction of the American Coal Mining Co.

In the course of the opinion rendered by Judge Baker he said:

"Among the powers surrendered [by the states], of course, was the power over interstate and foreign commerce, treaty making, the war power, and others. But there remained to the people of Indiana, as absolute sovereigns, the whole of the police power over matters within the state. That means the power of the people to determine upon measures for the public welfare, which may be expressed by the Legislature without any limitation that is not imposed upon the state by the Federal Constitution.

"In such cases the right to exercise the police power is based upon the fact that they either had a public charter, exercising a public power, like that of eminent domain, or they were performing a public service. But there are other cases in which none of these elements of a charter, or the power of eminent domain, or a public service, or a devotion of property to public use, appears.

"How about the laws, in this coal-mining industry, relating to the furnishing of timbers and props, and cages, and ventilation, and the general taking away of the freedom of contract between the mine operators and the miners with respect to the conditions under which they shall work? Under those laws it was no longer permissible for them to barter about what should be done with respect to the conditions in the mines. There was an absolute standard fixed, and the mine operator was absolutely prohibited from doing certain things. Why that law? Because of the dominance of the operator it was found by the Legislature that the men needed protection. The same thing is the basis of all our inspection laws. All of these things that are controlled in that way may be inspected, and the cost of the inspection charged against that particular industry, just as the examination of banks is charged against the banking business.

COMPARISON WITH MORE FAMILIAR RESTRICTIONS

"Those are all familiar restrictions. Thousands of them could be cited, but they are all over on the other side, and there is a clear line dividing them from the cases that are based upon franchises and the exercise of eminent domain—the employment of streets for water and lighting and transportation purposes. These have no basis at all except upon the power of the people to restrict the theretofore existing circle in which a person had his life, and the one within which he had his liberty, and the one within which he had his property, to bring these down narrower on account of conditions that were found to be oppressive to the people.

"There is no infringement of the right of a man to hold property, if, under the power of eminent domain, it is taken from him for a public use and the fair value of it is paid him. That is a constitutional thing, and there is no objection to it. So, when it comes to regulating the returns that he shall receive from his property, that is not taking his property; it is simply a control of his property as an instrument in his hand, with which the Legislature has found that he has been bludgeoning the people.

There has been one statute that from the earliest times has stood over on this side of the line purely as an interference with the right of contract and regulating the price. Take the case of the lender making a loan to a man at usurious interest. Now, what is a loan? A loan is really a sale. Title passes at once. Money is a commodity. Bankers buy and sell money. Now, here is one line of business that never has depended, as a basis of control, upon the power of eminent domain, or a public service. It is

*Abstract of an address by the chairman of the Special Coal and Food Commission of Indiana, delivered Dec. 15 before the Purchasing Agents' Association of South Bend.

private business. Nothing could be more private than the pawnbroker's business, and yet from time immemorial it has been unquestioned that the power existed to regulate that business by fixing the prices for money. I am unable to distinguish the underlying principle in that case from this, or from the statutes regulating rentals.

"No dispute has ever arisen when health and morals were concerned. When you get down to welfare the question is frequently raised about financial considerations. But, of course, the state has a right to protect its people with respect to financial considerations. All of our blue-sky laws, and our married women surety laws, and our laws restricting the sale of patent rights, and our laws controlling fire insurance rates, and our exemption laws, are all financial questions, looking to the welfare of the citizens of the state, and, ultimately, the welfare of the state, because the state has an interest in the welfare of all of its citizens and inhabitants.

"But, as we have heretofore indicated, control of prices is known of old as a remedy for extortion. We are satisfied that the general power of the state to touch, in some way, upon the coal-mining industry, exists."

The only question that can be involved in an attack on the constitutionality of the law is whether or not the coal industry is such an industry that it is affected by the public interest. With very few exceptions every hamlet, town and city in America would be in darkness; not a pound of freight and not a passenger would be moved; the wheels of industry would stop, and the population in America would be cold and hungry if the coal industry were to cease. No industry in America is so affected by public interest and so affects the public interest as does the coal industry, and it does not require the judge of a court or a constitutional lawyer to understand this.

Expect Confirmation by U. S. Supreme Court

There is a little doubt that the Supreme Court of the United States will eventually sustain the action of the Special Coal and Food Commission of Indiana in fixing prices and in regulating the industry. How far the court will go in sustaining any interference with interstate commerce no one at this time can tell.

With the act creating the Special Coal and Food Commission, the observations of Judge Baker as to the rights of the state not only to regulate the industry and fix the prices but to compel the production of sufficient coal to meet both the requirements of interstate and intrastate commerce, and with the knowledge that the people of the Commonwealth of Indiana were being obliged to pay extortionate and unheard-of profits for their coal, the Special Coal and Food Commission undertook, before the severe weather of winter should come, to bring relief not only as to supply but as to prices.

The accountants for the Special Coal and Food Commission were assigned to the various coal-producing companies of Indiana with instructions to produce for the use of the commission the cost of each of said companies in the production of coal. Bearing in mind that the act provided that every person engaged in the coal industry—operator, jobber or retailer—must receive a reasonable return on his investment, and that there must be no confiscation, the commission promulgated three orders.

Order No. 1 fixed the price of coal for the coal-producing companies of Indiana. In the preparation of this order the commission was confronted with the difficult problem as to the method and classification to be followed. Perhaps the most nearly correct economic method was to fix the cost of production of every producing company in Indiana and to this cost add a reasonable return and profit. To this method there were several objections.

There would be as many different prices of coal in Indiana as there were producing companies, and the entire coal market would be thrown into confusion. There would have been more opportunity for unjust treatment of the consumer; the method would have offered inducements for inefficient rather than efficient methods of production, and the prices fixed would have been subject to change with every change in the cost of production. This method was rejected because of said objections.

The second method was to fix the same price for all mines in the State of Indiana, which would necessarily have been the cost of production of the highest-priced coal in the state plus a reasonable return thereon. This would have afforded little relief to the people and would have given a large percentage of the coal-producing companies an abnormal and unreasonable profit.

The method finally adopted was to arrive at the correct cost of production for each mine and place the mines of the state in four groups. To the cost of production for the highest-priced mines in each group there was added a reasonable return, and the price of coal in that group was fixed for all said producing companies.

The prices fixed for the first group were as follows: For screenings, $2.80 per ton f.o.b. mine; mine run, $3, and prepared sizes, $3.25, to which the operator might add 15c. per ton if he maintained his own selling force. If the coal was sold through jobbers or wholesalers the producing company could not add the 15c. but the wholesalers or jobbers were entitled to said 15c. per ton, but there could be but one such 15c. margin without regard to the number of jobbers or wholesalers handling the coal.

Group 1, which was the lowest price, produced approximately 73 per cent of all the coal in Indiana. The other groups were two, three and four, based on their cost of production. Group 3 was made up largely of wagon mines, which as a rule can exist only through the period of high prices and are compelled to haul their coal varying distances from the mine to the car. Group 4 was made up of the mines from which Brazil block was produced. There is a very limited supply of Brazil block coal in Indiana and such supply is constantly diminishing.

Order 2 fixed a margin for wholesalers and jobbers as indicated, or 15c. per ton without regard to the number who might handle it. Order 3 fixed the margin for retailers, the general margin being $2.25 per ton, which would include all coats from the unloading of the car to the dumping at the curb of the consumer.

In a number of cities where labor and economic conditions were acute, the retailers were allowed $2.40 and $2.50 gross margins, there being an additional allowance of 25c. per ton for anthracite and 25c. delivery charge for part ton deliveries.

Retail Handlers of Coal Too Numerous

The retail coal business is in the same condition as practically every other retail business in America. There are at least 50 per cent, and possibly 75 per cent, too many dealers, and very few dealers handle sufficient quantities to give a reasonable return on the investment. We are further of the opinion that the equipment of 75 per cent of the retail coal dealers in America is antiquated, broken down or entirely inadequate, and the handling of coal is one of the most expensive businesses because of the poor equipment and inefficient management.

Immediately upon the promulgation of the price-fixing orders there appeared what impresses the public as a concerted action on the part of the producing companies to deprive the citizenship of Indiana of Indiana coal. Many methods were resorted to, the principal one being the shipment of all Indiana coal out of the state. In order to meet this situation the commission issued its order No. 8, which is known as its allocation order, directing each producing company in Indiana to sell or order for sale within the State of Indiana a designated number of tons of coal, which was approximately 30 per cent of their output, or about the same percentage of Indiana coal as is used and consumed within Indiana.

Under the allocation order of the commission, and until Nov. 29, the day upon which the Federal Court issued its temporary restraining order, the producing companies of Indiana sold within the State of Indiana approximately 1,500,000 tons of Indiana coal at a net saving of more than $3,000,000.

As the emergency became graver and the weather became more severe, conditions existed in various communities calling for more drastic remedies, and the commission under section 20 of the act resorted to emergency orders and issued to the various producing companies of Indiana an order directing that in a given designated community

where there existed a grave emergency from which the inhabitants thereof were likely to suffer, said producing companies consign to said community upon their first working day a certain fixed quantity of coal and continue said shipments at fixed periods until certain quantities of coal had been delivered in said communities.

Under these orders the Special Coal and Food Commission distributed approximately 2,159 carloads of Indiana coal, or more than 100,000 tons, with a saving of approximately $300,000 and without a single case of suffering in the state.

The question presented to the U. S. Court in the hearing on Nov. 27 was whether or not the emergency orders and the allocation orders of the commission did not interfere with interstate commerce in those cases in which the producing company, or companies, had contracts with railroads or persons in other states for the output of their mines. Upon a hearing for a temporary restraining order the U. S. Court held that such orders did in such cases interfere with interstate commerce and as to the two companies, petitioners in said case, the Special Coal and Food Commission be restrained from enforcing such orders.

It is to be remembered that during all the period from Oct. 6, the day upon which our price-fixing order became effective, until Nov. 29, the coal consumers outside of Indiana were still paying the exorbitant prices which made our act necessary, and had it not been for such act and the orders of the Special Coal and Food Commission the citizenship of Indiana would have paid such prices for the 1,500,000 tons sold in Indiana.

Cites Thorough Organization of Coal Industry

The coal industry is the most thoroughly and minutely organized industry this country has ever known. It has its National Coal Association, its state coal associations and its district coal associations in all bituminous fields. The effectiveness of these organizations for the betterment of the industry itself perhaps cannot be questioned. Whether or not the public received the proper consideration is another question, and the past six months does not indicate that the associations have any particular care for the needs of the public.

I venture the assertion that the American people will never again submit to the extortion and profiteering which have been practiced by some of the coal operators within the past six months. The American people are patient and long suffering, believing that their legislative bodies and their courts represent them in securing and maintaining their rights. For long periods they submit to economic oppression and injustice and extortion, but when they become awakened and realize the injustice and the perpetrators of such injustice they apply other remedies quickly, directly and drastically.

Some of the profits made by wholesalers, retailers and producing companies are unheard of and will never again, we believe, be tolerated by the American people. Every American citizen in principle denounces profiteering—the newspapers, the judges from the bench, the legislators, the merchants—and as a generality profiteering affords a wonderful opportunity for grandstand playing by the pettifogger and the profiteer himself. "Stop thief" is one of the most common methods of turning the public gaze in the public pursuit from the guilty to the innocent, and all profiteers, without exception, are perfectly willing to have all other profiteers, except themselves, regulated and punished.

Since the issuance of the temporary restraining order on Nov. 29, twenty operators in Indiana have submitted to the commission voluntarily their cost sheets. Of course, these cost sheets would come only from the companies whose profits are the most reasonable. Of these twenty companies the largest producer in ten months from Jan. 1, 1920, to Oct. 31, 1920, produced 301,530 tons at a cost for the entire ten months of $1.757 per ton.

The commission fixed the price of the coal from this mine as follows: Prepared sizes, $3.25; mine run, $3; screenings, $2.80. This cost of production was based upon the company's own figures after every possible charge, including an abnormal depreciation and depletion fund, large salaries for every officer, and in the ten months on an approximated cash investment of $200,000 this company alone made $376,192 net profit. For the month of September, after all wage increases were in, it made a net profit, even at $3 per ton, of $41,800, and in October $45,337.

The smallest production of the twenty companies was that of a wagon mine, which produced in the ten months 11,231 tons at an average cost of $2.184 per ton. In the month of September it produced 1,110 tons at a cost of $2.44 per ton and in October 893 tons at a cost of $2.57 per ton. If this wagon mine sold its output for the ten months at the prices fixed by the commission it would have showed a net profit for the ten months of $24,327.05—this after every conceivable charge and large salaries to all of its officers.

As the running time increases, the cost decreases per ton, and if the selling prices were to be fixed on the cost for the months of September, October and November, 1920, it would be appreciably lower than the prices fixed in order No. 1 of the commission, or the margin of profit would be much higher.

On Nov. 21 blank cost sheets were sent out to all licensed operators, asking them for a report of their costs by mines for the months of September and October, 1920. The temporary restraining order was granted against the commission in the case of the Vandalia Coal Co. and the Vigo Coal Products Co. vs. the commission on Nov. 27, and since then we have received no reports from the commercial mines of the state. Twelve companies, however, reported before the injunction was issued, and they will serve to show the effect of the increased running time.

During the ten months ending Oct. 30, 1920, these twelve companies produced 1,259,083 net tons of coal at average cost, according to their own reports, of $2.18 per ton, the lowest cost being 301,530 tons at $1.757 per ton and the highest cost being 67,196 tons at $2.593 per ton.

Gives Some Cost and Production Figures

During the month of September these companies produced 155,847 tons at an average cost of $2.30 per ton, the lowest cost being 36,894 tons at $1.867 per ton and the highest 64,453 tons at $2.53 per ton. During the month of October the same companies produced 192,671 tons at an average cost of $2.15 per ton, the lowest cost being 39,017 tons at $1.839 per ton and the highest 38,241 tons at $2.54 per ton. Eighty per cent of the 192,671 tons produced in October, or 154,430 tons, was at an average cost of $2.06 per ton, coming from nine of the twelve companies.

A large mining company alleged it could mine 8,000 tons a day. Last year it really mined 800,000 tons at approximately or a little less than $2 per ton. If this company is allowed full time on its own figures, it will mine 1,600,000 tons a year. We have allowed it an approximate net profit of $1 a ton, which would make a net profit of $1,600,000 on a capitalization of $1,500,000.

Two small companies with a total output of 23,000 tons in April, with practically the same stockholders and same officers, pay their president alone $20,400 a year salary. These companies, even with these abnormal salaries, showed a production cost in the month of April of $2.58 per ton and $2.59 per ton, which included all such salaries and the 23 per cent increase in wages which took effect April 1.

Another company incorporated with an entire capitalization of $10,000 has been paying officers salaries alone of $24,000 a year. In April this company, with these high salaries included, mined coal at a production cost of $2.50 a ton and in May $2.26 per ton. Another company with a total investment of $64,000, including every possible item, has been making returns of $2,700 net profit a month, its depletion and depreciation all being figured on the present abnormal price of everything entering into production costs and depletion being fixed on its coal lands at the present high price of coal. Still another coal company, with a production of 16,414 tons in April, paid officers salaries alone that month of $9,375, or 57.11c. per ton, asserting that the actual charge that ought to be made for officers' salaries is $3,750 per month, or 22.84c. per ton. With all such abnormal salaries added in its production costs and with the 23 per cent labor increase effective April 1, the company produced coal that month at a cost of $2.36 per ton.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

"MOST convincing evidence that we are on the high road to recovery," says Archer Wall Douglas, chairman of the Committee of Statistics and Standards of the Chamber of Commerce of the United States, "is found in the universal report, brought by traveling salesmen from every section of the country, of steadily growing sentiment that 'business will be better in the spring'—not a sudden return to prosperity, which is neither likely nor desirable, but a slow and natural working out of those processes of liquidation, which are now in full operation.

"There are few who are more responsible than these same traveling salesmen for the growth of this healthy sentiment, which in effect is the recognition of the inherent soundness of the situation, and that the remedies for it lie largely in constructive action. Not only is sentiment improved, but there is definite increase in the volume of business done. It is not a very great increase, but, as Mercutio says, ''Twill do,' for it forecasts the beginning of better days. Farmers are gradually bringing their produce to market. Bankers are slowly 'loosening up' and extending to farmers and dealers money and credit, the two vital factors needed to restore the situation.

"Out in the world of cold, hard facts, few take much stock in the current prophecies of the coming of a new prosperity at any specified date. Nor yet in those mystic charts which foretell when declines will cease, and business resume its upward march. For it is perfectly obvious that prices have not reached bottom in all lines, and even a Wall Street lamb does not buy heavily on a falling market. The general thought inclines to early spring—March or April—as the date when distinctly definite improvement will set in, though in many parts of the Cotton Belt the belief is that June is early enough to expect a decided change. Yet scarce any believe that present conditions will prevail throughout the year.

"All are agreed that the only way to hasten matters is by the general exercise of the homely virtues of hard work and economy."

Ford Plant Soon to Work at Normal

The Ford Motor Co.'s plants will be in full operation in a few weeks, Henry Ford said Feb. 23. Men are being rehired as fast as the company can take care of them. Orders for 79,000 cars in March have already been received, Mr. Ford stated, and the blast furnaces and tractor plants at River Rouge have been set in operation. Between 15,000 and 20,000 men are employed in the Rouge plants. Three thousand men were to be rehired at the Highland Park plant before the end of the week, bringing the total working force in that plant to nearly 20,000.

Holyoke Paper Workers End Strike

All of the workers of trades allied with the paper industry involved in the controversy with the Croker-McElwain and Chemical Paper companies, Holyoke, Mass., who have been on strike in resistance to the individual contract system returned to work Feb. 17, and it was indicated that the paper makers, members of Eagle Lodge, would go to work Monday, Feb. 21, following the recommendations of a special committee pending the drafting of a new agreement. Confidence was expressed following a conference with the paper manufacturers that Eagle Lodge would accept the contract.

Sharon Steel Hoop Mills Resume

The Sharon Steel Hoop Co., Sharon, Pa., announced that four of its finishing mills, which had been shut down for some time, would resume operations Monday, Feb. 21. Five hundred men were to return to work. The open-hearth furnaces and the blooming mill of the concern, however, were not to reopen yet.

Textile and Shoe Trades Improve

Activity in shoe manufacture and definite improvement in textile lines, as compared with three months ago, are reported by the Associated Press from centers in New England. The shoe industry, virtually flat last fall, has taken a spurt as a result of Easter demands. Manufacturers say they look for a return to normal production by the end of the year. Production of cotton textiles has increased by from 25 to 50 per cent and more in some special lines. In New Hampshire, Rhode Island, Maine and Massachusetts a distinct advance is reported. In the two leading industrial lines in Manchester, N. H., it is estimated that about 14,000 now have steady work, whereas during the latter part of 1920 less than half this total was employed only three days a week, with complete shutdowns for varying periods. Except in the Fall River print cloth industry, where the mills employing 35,000 are operating on full time, few instances of a return to normal have been reported. In New Bedford 30,000 of the 40,000 operatives of the cotton, yarn and cloth mills are employed, while three months ago there was employment for only 17,000 two or three days a week. Mill men estimate production at 50 per cent of normal, an increase of 42 per cent. In Lowell and Lawrence textile conditions are gradually improving.

Jersey Central Shops Close

Two thousand workers in the repair shops of the Central Railroad of New Jersey at Elizabeth, N. J., were thrown out of work Saturday, Feb. 26, following an order issued by C. E. Chambers, superintendent of motive power of the railroad, that the plant be closed indefinitely. The shops at Ashley, Pa., and Mauch Chunk, Pa., also will be closed, Mr. Chambers said.

South to Make Artificial Silk

Twenty-four Southern girls went to Belgium last fall to learn the art of making artificial silk so that they might teach it to hundreds of others in this country. They are now at Hopewell, Va., where the Tubize Artificial Silk Corporation is about to open a big plant for the manufacture of this product. When the Hopewell plant opens it will employ close to 5,000 people, mostly women and girls. Once its output has reached certain quantities no more artificial silk will be imported from Belgium, for then the same product, made from American cotton linters, with American chemicals and turned out by American workers, will be in the market. The plant will specialize in the fine threads needed in the underwear and similar trades.

World Atlas of Commercial Geology Published by U. S. Geological Survey

COAL men interested in the export trade may find of value the first part of the World Atlas of Commercial Geology just published by the U. S. Geological Survey. The atlas is a product of studies of the world's supply of essential minerals begun during the world war as a part of the task of keeping American industries supplied with raw material. Part I, dealing with the production and distribution of minerals, consists of seventy-two maps, size 10½ x 13½ inches, and seventy-two pages of text of like size.

The section dealing with coal includes eight maps and eight pages of text. The coal maps are as follows:

(1) Production and consumption of coal in 1913, by countries; production of coal in 1913 and approximate outlines of coal fields: (2) North America, (3) South America, (4) Africa, (5) Europe, (6) Asia, (7) Oceania; (8) production of coal in the United States in 1918 and outlines of coal fields other than lignite.

Explanatory text accompanying the maps sketches the broader outlines of the world's coal trade. The discussion is necessarily brief as it attempts to cover the production, distribution and consumption of coal in each of the major countries of the world. Like treatment is given to petroleum, oil shale, natural gas, and 26 other minerals.

The price set on the atlas, $2, is to cover the cost of printing and engraving. Payment may be made by money order or in cash. Orders should be sent to the Director, U. S. Geological Survey, Washington, D. C.

Twenty-nine Companies Submit Bids on Coal for Panama Railroad Co.

BIDS submitted by twenty-nine coal firms for furnishing the Panama Railroad Co. with 750,000 tons of Pools 1 and 2 coal, which were opened Feb. 18 in New York City, are given below. The proposal of the Pocahontas Fuel Co. provided that a price be named monthly.

Name of Bidder:	Aggregate Tonnage	Pools or Coal Name	Price
A. C. Atwater & Co., Inc.	180,000	Poca. M/R	$4.00
A. C. Atwater & Co., Inc	60,000	Poca. M/R	4.10
A. C. Atwater & Co., Inc.	60,000	Poca. M/R	4.20
Crozer-Pocahontas Co.	750,000	Pool 1	4.00
C. G. Blake & Co.	240,000	New River	4.00
Castner, Curran & Bullitt, Inc.	300,000	1 and 2	4.00
Ft. Dearborn Coal & Export Co.	100,000	Pool 2	4.25
Interstate Coal & Dock Co.	100,000	Pool 1	4.24½
Flat Top Fuel Co.	120,000	1 and 2	4.00
J. W. Lowe Co.	50,000	Pool 1	4.35
Manhasset Coal Co.	12,000	Pool 2	4.39
Smokeless Fuel Co.	120,000	Pool 1	4.00
United Collieries Corporation	100,000	1 and 2	3.80
United Collieries Corporation	75,000	1 and 2	3.99
Pocahontas Fuel Co.	300,000	Poca.	....
Chesapeake & Ohio Coal & Coke Co.	180,000	1 and 2	4.25
Maryland Coal & Coke Co.	120,000	Pool 2	4.25
White Oak Coal Co.	104,000	Pool 1	4.00
Fayette Smokeless Coal Co.	180,000	Pool 1	3.90
Chesapeake & Ohio Coal Agency	100,000	1 and 2	4.00
Central Pocahontas Coal Co.	120,000	1 and 2	4.00
Ajax Coal & Mining Co.	250,000	.....	7.53
Dexter & Carpenter, Inc.	120,000	Pool 1	3.85
Bluefield Coal & Coke Co.	120,000	Pool 2	4.20
Leckie Coal Co.	60,000	Pool 1	4.25
New River Coal Co.	60,000	Pool 1	4.00
Weston Dodson & Co., Inc.	20,000	Pool 1	4.00
Northern Coal Co.	60,000	1 and 2	4.00
Houston Coal Co.	120,000	1 and 2	4.15
Raleigh Smokeless Fuel Co.	10,000	1 and 2	3.75
Pocahontas Coal Sales Co.	60,000	Poca.	4.00
L. A. Snead & Co.	100,000	1 and 2	3.50

Enjoins P. C. C. & St. L. R. R. from Enforcing Embargo in Violation of Contract

IN A SUIT brought by the Knox County Fourth Vein Coal Co., Indianapolis, against the P. C. C. & St. L. R.R. Co. to enjoin it from maintaining an embargo against the company's mine located at Westphalia, Ind., Judge Albert B. Anderson of the U. S. District Court, Indianapolis, issued a preliminary injunction on Feb. 16 against the railroad, restraining it from enforcing the embargo.

The complaint states that on Sept. 4, 1920, the Chicago, Milwaukee & St. Paul R.R. contracted for the entire output of the Knox County Fourth Vein Coal Co.'s mine, to run until March 31, 1921. On Feb. 4 the P. C. C. & St. L. R.R., which was the intermediary carrier for the C. M. & St. P. R.R., placed an embargo against the coal company's mine, the complaint setting forth that this embargo was placed at the request of the C. M. & St. P. R.R. The complaint sets out that the contracting road had never notified the operator of any cancellation or rescission of the contract. It was also set forth that when this contract was made the coal company had to cancel contracts with its other buyers and instruct them to purchase coal in the open market and reimburse these buyers for the difference between their contracts and the market price.

The complaint brought out that under the Hepburn Act the P. C. C. & St. L. R.R. was, as a common carrier, required to transport the coal from the Westphalia mine. The facts were not disputed by the defendant, and entry of the restraining order was placed by the court. The case is important in that it prevents a purchaser of coal from evading valid contract commitments by interposing an embargo against the shipper.

Bill to Codify Mining Law Introduced in Indiana General Assembly

CODIFICATION of the laws regulating the business of mining coal and a raise in the salaries of the chief deputy inspector of mines and mining and his deputies are embodied in a bill introduced in the Indiana General Assembly Feb. 15 by Senator Clem J. Richards, of Terre Haute. A commission, to consist of two practical coal miners, two operators, and two members of the department of mines and mining, and appointed by the Governor is provided to examine and revise and codify the laws regulating coal mines. Provision also is made to raise the salary of the chief deputy from $2,000 to $3,500 a year and the pay of his deputies from $1,500 to $2,500 a year. Heretofore places of competency examinations have been at Washington, Daviess County; Brazil, Terre Haute, and specified localities, some of which are no longer important mining centers. The new bill provides that the chief deputy may hold examinations wherever he sees fit. New regulations governing ventilation, safeguarding of live wires, washhouses, housing of explosives and warning bells are included in the bill.

Court Gives Ruling Ending Kansas Strike

BY DECIDING that Carl Mishmash must be paid by the Mackie Fuel Co. the wages of an adult workman the Industrial Relations Court of Kansas, on Feb. 20, broke up the strike which had lasted two weeks, the calling of which was the cause of the incarceration of Alexander Howat, the district president of the United Mine Workers of America, and other officials of that organization. The court required the mine workers to go back to work and the company to pay the clerk of the district $187 for Mishmash's back wages.

AT THE HEARING BEFORE the Federal Power Commission on the project to develop water power and supply water from the Great Falls of the Potomac, Secretary of War Baker, chairman of the commission, said the country ought to develop all available water power in order to conserve coal. A proposal to develop steam power near a coal mine in Western Maryland or near Piedmont, W. Va., in lieu of the power development at Great Falls, was advocated by F. R. Weller, of the District of Columbia Board of Trade. He argued that water power plants could not compete with steam power plants developed near coal mines.

GENERAL AND INCREASING UNEMPLOYMENT continues among the seamen and dock laborers throughout the United Kingdom. Cardiff reports exports of coal improving. A slump in freights is reported at Liverpool, 80 tramp steamers being idle. Hull reports 2,000 seamen and 2,600 dock laborers idle.

Foreign Markets and Export News

Export Business Lacking; Freight Rates Easier

There are few export orders in the market and comparatively few boats asking for this business, according to W. W. Battie & Co.'s coal trade report of Feb. 14. The freight market, therefore, is very sluggish and rates are somewhat easier.

Freight rates by steamer are about as follows:

	Feb. 7, 1921	Feb. 14, 1921	Tons Discharged Daily
Malmo	About $6.25	About $6.25	1,000
Copenhagen	About 6.25	About 6.25	1,000
Stockholm	$6.50/ 7.00	$6.50/ 7.00	800
Gothenburg	About 6.25	About 6.25	1,000
Antwerp/Rotterdam	3.75/ 4.00	About 4.00	1,000
Hamburg	About 4.50	About 4.75	1,000
Fr. Atlantic ex Rouen	4.25/ 4.50	4.25/ 4.50	700
Lisbon	About 5.00	About 5.00	700
Algiers	About 6.00	About 6.00	800
West Italy	5.50/ 5.75	5.50/ 5.75	1,000
Marseilles	5.50/ 5.75	5.50/ 5.75	1,000
Piraeus	About 6.50	About 6.50	1,000
Trieste/Venice	About 6.50	About 6.50	1,000
Port Said	About 6.00	About 6.00	1,000
Alexandria	About 6.00	About 6.00	1,000
Constantinople	About 6.75	About 6.75	500
Gibraltar	About 5.00	About 5.00	1,000
Teneriffe	About 5.50	About 5.50	500
Pernambuco	About 6.50	6.50/ 6.75	500
Bahia	About 6.50	6.50/ 6.75	500
Rio	5.75/ 6.00	About 6.00	750
Santos	About 6.25	6.50/ 7.00	500
Buenos Aires, La Plata or Montevideo	5.50/ 6.00	About 6.00	500
Para	About 6.50	About 6.50	500
Rosario	About 6.50	6.50/ 7.00	750
To Nitrate Range	About 5.00	5.00/ 5.25	500
Havana	2.50/ 2.75	About 2.50	500
Sagua or Cardenas	About 4.00	About 3.75	300
Cienfuegos	About 3.50	About 2.75	400
Caibarien	About 4.00	3.50/ 4.00	300
Guantanamo	About 3.50	3.25/ 3.50	500
Manzanillo	About 4.50	3.50/ 4.00	300
Bermuda	About 3.00	About 3.00	300
Kingston p. c. and dis. free	About 3.25	2.75/ 3.00	400
Barbados	About 3.50	About 3.25	500
St. Lucia	About 3.50	About 3.25	500
Santiago	About 3.50	About 3.25	500
Port of Spain	About 3.50	3.25/ 3.50	500
Curacao free p. c. Curacao	3.75/ 4.00	About 3.25	500
St. Thomas	About 3.25	About 3.00	500

All above rates gross form charter.

Japan Coal Enterprise in Saghalien

A semi-official company with a capitalization of 80,000,000 yen, of which the Japanese Government will own one-half, is to be formed for the exploitation of the mineral deposits of Saghalien. The island is believed to have some of the richest coal deposits in the world, estimates of experts as to the extent of the deposits varying from half a billion to seven billion tons. The company will also improve ports and build railways needed for the marketing of the output.

Berlin Wants English Coal

Berlin industrial works and utility plants will be supplied with English coal, according to plans now in progress. English coal is now being delivered in Hamburg at 30s. per ton. Thence it will be transported by waterways to Berlin, where it is expected it can be sold to industries after payment of this extra freight and a small customs duty at between 330 and 450 marks (nominally $78.54 to $107.10, but actually $5.67 to $7.74) a ton. This figure is about 100 marks higher than the price of German coal, but, in view of the shortage in the majority of works, the owners have agreed to buy.

The principal cause of this situation is that of the Upper Silesian output—450,000 tons monthly—has to be delivered to the Entente. The unsatisfactory condition of railway transportation also contributes to it.

Coal Imports at Dunkirk During 1920

Figures furnished by Consul P. C. Squire, Dunkirk, France, show that during the year 1920 2,035,839 tons of coal arrived through the port. England supplied 1,266,356 tons, United States 649,947 tons, and Germany 119,536 tons. The heaviest importation from America, 215,001 tons, took place during the month of November, due to the British miners' strike of that period. During December American coal was quoted as low as $12.60 per ton c.i.f.

The following table shows importation of coal together with origin, by months, in tons:

Months	Great Britain	America	Germany
January	157,313	.....	14,744
February	122,812	.....	14,822
March	137,233	4,025	3,000
April	93,174	13,450	19,780
May	15,603	4,328	14,129
June	74,591	11,313	23,321
July	66,662	35,116	16,134
August	45,072	41,863	7,900
September	6,140	56,510	2,922
October	433,222	150,115	2,784
November	39,201	215,001	.....
December	75,333	118,226	.....
Total	1,266,356	649,947	119,536

BRITISH COAL AT THE PIT has lately been quoted at 30s. a ton and the fall in ocean rates makes for easier American competition. The recent arrival of a cargo of Pennsylvania coal consigned to the Gas Light & Coke Co., London's largest gas producer, caused some alarm in British coal markets. This coal, which was the first serious invasion of the British home market, was delivered in London cheaper than coal from Northumberland, Wales or Durham.

BITUMINOUS EXPORTS from the United States in 1920 amounted to approximately 34,000,000 gross tons with a valuation of $304,000,000. The value of the 18,000,000 tons shipped in 1919 was $84,000,000. Shipments to Canada were about 14,500,000 tons; South America, 3,500,000 tons; West Indies and others, 2,100,000; exports across the Atlantic totaled 14,000,000 tons.

TRANSPORTATION OF AMERICAN COAL arriving at Hamburg is permitted by railway only if its destination is not more than 100 kilometers (approximately sixty miles) distant, under a decision of the Imperial Coal Commissioner. Coal consigned to cities which may be reached by waterways will be excluded from shipment by rail.

IN VIEW OF THE SERIOUS SHORTAGE of coal in India, the Government of India has been compelled to issue very stringent orders restricting exports. The shortage is due partly to inadequate labor supplies and other local labor troubles, and partly to a deficiency in railway rolling stock.

BRITISH MINE OWNERS are disturbed over the fact that Belgium has so far recovered from the war as to be able not only to supply her own needs but to do considerable exporting. In France there is a glut of German coal, while America has entered into heavy contracts to supply Scandinavian countries, the contracts being carried out so expeditiously that very little British coal has been required or asked for.

Though Vitally Amended, Calder Bill Gives Broad Power To Trade Commission; La Follette Urges Enactment

By Paul Wooton
Washington Correspondent

MATERIALLY amended, the Calder coal bill has been reported to the Senate and every effort is being made to effect its enactment into law at this session of Congress. As this is written it is the belief of disinterested Senators that the bill has no chance to pass.

The sections of the original bill authorizing the Federal Government to fix prices, commissions and margins during emergencies or threatened emergencies; to control the production and distribution of coal; to operate a drastic licensing system and to fix a brokerage tax on dealers and jobbers were eliminated in the bill which was reported to the Senate. Senator La Follette, chairman of the Committee on Manufactures, reported the bill. He calls it a bill providing for "current publicity of information concerning the coal industry and trade." This doubtless is to be the keynote of the fight for the legislation, but opponents of the measure see in it far more than additional publicity requiring coal operators, jobbers and dealers to furnish information concerning ownership, tonnage produced, costs, sales, margins and profits.

The significant part of the measure is that it gives sweeping powers to the Federal Trade Commission, now operating under the act based on the Interstate Commerce clause in the Constitution, founded on the public health and general welfare of the people. This evidently is an effort to give constitutionality to the law and to put Congress on record as regarding the ownership, production and distribution of coal to be "charged with public interest and use." If this section should be enacted into law, it would be the cornerstone of federal regulation of all essential industries, many believe.

Operators Fear Obligatory System of Accounting

The power of the Federal Trade Commission has been thoroughly defined and limited in the Maynard case, wherein it was pointed out that the commission's power rests solely and exclusively in the commerce clause. Many see the main object of this bill to be an attempt to grant the Federal Trade Commission a broader foundation for its operations. Should this provision be enacted into law and that law upheld, it would mean that the Federal Trade Commission would have undisputed power to supervise every business activity in connection with coal. An immediate outcome of the passage of the law would be, in the opinion of coal operators, an attempt on the part of the Federal Trade Commission to set up its cost accounting system in each mine and in each wholesale and retail selling establishment. It probably would prescribe the method by which depreciation would be determined and would indicate what items should be charged to current expenses and what to capital assets.

The vast amount of information which the Federal Trade Commission will be empowered to gather under the bill is to be furnished under the compulsion of a penalty clause, which provides a fine of $100 for each day the reports are delayed after they are due. The bill provides that the information is to be furnished so that the Federal Trade Commission may calculate separately the costs and profits on (a) the investment actually and currently used in the business, on (b) the investment in land and property held for future use and development and on (c) other investments not directly used in the business.

The commission also is authorized to investigate, whenever it sees fit, "the organization, business, conduct, practices and management" of all persons and corporations engaged in the coal industry. It is required from time to time to investigate and report as to all financial interrelations between owners, operators or dealers or any of them to the extent necessary to determine the full profits of owners, operators or dealers, and the existence of any combination or relationship which may tend to lessen competition or to create monopoly.

The reports and the information are to be "in such form as the commission may prescribe." The commission is to have the power to promulgate and to force all rules and regulations necessary to carry out the provisions of the act. In addition, authorized agents of the commission are to have "the right to copy any documentary evidence of any persons or corporations reporting or being investigated." The commission is authorized and directed to classify persons and corporations required to make reports and "to make reasonable exemptions from requirements to report." This, some hold, grants a power that would be subject to abuse and probably goes beyond any legislative right of classification.

While the bill provides that the identity of individual companies submitting the information is not to be disclosed ordinarily, the commission is empowered to make public full facts in regard to those who have charged unreasonable prices for coal. It is left entirely to the commission to determine what price is regarded as unreasonable. In addition, the commission may use its own judgment as to placing the information obtained under the act at the disposal of "any private or public board, state or federal department, agency, commission or other group engaged in the . . . settlement of any labor disputes" arising in mining operations."

Senator La Follette Submits a Report

In submitting the bill to the Senate, Senator La Follette made the following report:

"The Committee on Manufactures, to whom was referred the bill (S. 4828) 'to promote the general welfare by gathering information respecting the ownership, production, distribution, costs, sales, and profits in the coal industry and by publication of same, and to recognize and declare coal and its production and distribution charged with public interest and use, and for other purposes,' having considered the same, report favorably thereon with the recommendation that the bill receive early consideration, and do pass, with an amendment, at this session of the Congress, as a necessary, preliminary, and emergency measure.

"The committee does not offer this bill as a complete legislative solution to prevent the recurrence of the deplorable conditions to which the consuming public has been subjected, more especially during the past year. The problem is so vital to all the people and to the industries of the United States that comprehensive final legislation should only be attempted after more thorough and complete study of all the facts and factors.

"The committee believes that this bill takes a first and important step in providing for the immediate setting in motion of existing agencies of the government for the gathering and dissemination of full facts, without which proper, effective, and just legislation cannot safely be attempted.

"In our present state of society coal is one of the universal basic necessities, both to life and industry. To-day, by reason of distances and congestion, coal to move transportation and as the chief power generator in the manufacture or conversion of food, shelter, and clothing, as well as the common household heating fuel, has become almost if not quite the subbasic necessity, and therefore it must be recognized as vital to the public health and general welfare and charged in the highest degree with public interest and use.

"Because coal is such a universal public necessity to the health and very life of nearly all of the people of the United States, it follows inevitably that anything which seriously affects the coal supply, either in unreasonably raising the price thereof or in cutting off the actual supply in any portion, approaches a public calamity.

"The evidence taken by this committee and by the Senate's Special Committee on Reconstruction and Production proves

beyond dispute that during the past year there was both (*a*) a serious danger of absolute cutting off of supply in substantial portions of the country, and (*b*) unconscionable profiteering in price, with the resulting suffering that must follow. This situation began almost immediately upon the release of price control by the Federal Fuel Administration on April 1, 1920. It continued to grow more acute throughout the season until well into the winter, when various factors, including priority of right for the transportation of coal, and increased production, coupled with an unusually mild winter, replenished the coal supply and made stocks last longer, thus lessening somewhat the evil consequences that must otherwise have resulted.

"There is conflicting evidence and great divergence of opinion as to the cause of the shortage and disturbance of supply, but whatever are the facts as to the cause, the committee finds that no cause constituted either justification or legitimate excuse for the great advance in prices which occurred, most largely in the spot market, which the evidence clearly shows was participated in by operators, wholesalers, and retailers, aggravated by the entrance into this field of quick and easy profits of a horde of speculators, who have had no defenders before the committees.

"It is fair to say that not all operators, wholesalers or retailers increased their prices unduly; many operators, particularly of the larger class, had a large proportion under contract at prices prevailing prior to the termination of the Fuel Administration. However, when it is recalled that those least able to buy and the householders very generally are dependent on the spot market rather than on contract coal, it is at once apparent that those who could least afford it suffered most. The testimony shows that margins realized for the year 1920 generally were far above the margins of any previous year. There was an effort on the part of the operators and their representatives appearing before your committee to blame chiefly the small operators, or high-cost mines, for the excessive prices. The testimony before the committee, however, is uncontradicted that many concerns well above the average in size participated in such high prices and realizations.

Coal Industry Asserts Crisis Will Not Recur

"The representative of the coal industry opposed the bill referred to the committee, asserting that the crisis is past and that it will not recur. This contention was based largely on assertions of a claimed ability to produce under normal conditions more bituminous coal by a substantial tonnage than the country annually consumes. Such assertions are, however, qualified by two factors: First, that there always will be adequate transportation moving; and, second, that substantially full capacity of production can be relied on at all times.

"On the other hand, there is in the record testimony of high authority representing the coal industry that while the market for a few months will be favorable to coal buyers and consumers, the market for several years to come will be most favorable to coal producers and sellers.

"Whatever may be the opinion of coal operators and coal dealers, the suffering and sacrifice which the people have been compelled to endure demands that at least a beginning shall be made at the present session in dealing with this great problem.

"In the opinion of your committee it is the manifest duty of Congress at this time to enact legislation which will secure full publicity as to costs of coal production, distribution, and profits. The unfortunate experience of the past year has demonstrated beyond doubt that it is necessary that this data should be gathered by the Government for the information and protection of the public.

"As stated at the outset, it is the judgment of your committee that to completely and scientifically meet this problem requires further study of the entire situation and industry. There is, however, one branch of necessary, preliminary, and helpful legislation to which no serious objection has been or can properly be made. Legislation should be enacted at once providing for the acquisition and general dissemination by impartial Government agencies for the use of the public of complete information relating to the coal industry and trade. Such legislation is not only of a preliminary character to more complete legislation but at this time it also partakes of the nature of emergency legislation. This latter is true, because what is known as the "coal year" begins April 1, around which time contracting for coal supply generally occurs and wage readjustments are likewise entered into. Therefore, it is highly important that the gathering of facts and public dissemination thereof be begun at once, so that the public as well as those self-interested may have the facts.

"Heretofore, with some exceptions, the meager information which the Government has been able to furnish the public has been supplied by the coal trade. Such information is not required by law. It is purely voluntary. It follows without question that the coal trade will report nothing detrimental to its interest. Much information has been assembled by and retained only for the use and information of the trade itself. To what extent such information suppresses competition or advances prices cannot be determined, because of lack of full information. The buying public has been dependent upon whatever the industry has determined to make public. It seems axiomatic that the public as the buyer and consumer of coal is fairly entitled to at least equal information with those from whom it must buy.

"The bill as reported proposes broadly two things: (1) The formal declaration and enactment by Congress that coal is a basic necessity, essential to the public health, and therefore charged with a public interest and use. (2) It provides for the procurement, assembling, and doing this currently, when it is of value. It provides that this shall be done by existing governmental agencies under proper power to compel the furnishing of accurate statistics, with penalty for failure to furnish same or the furnishing of misleading or false statistics.

"The committee believes that no valid objection will or can be urged against these proposals and this bill, and recommends its speedy enactment."

Senator Reed Objects to Rushing Bill Through

The fact that the Manufactures Committee of the Senate passed on and reported the Calder coal regulation bill without a quorum of the members in attendance developed in a Senate debate provoked by Senator Reed, of Missouri, a member of the committee, who objected to hasty consideration of the measure, and announced his intention of thoroughly considering the bill. "The Senate will not gain time by this sort of proceeding," he asserted, declaring he had no notice of meetings of the committee. Senator Walsh, of Massachusetts, said he had not been present at any meeting of the committee leading up to the report of the bill, and Senator Fernald, of Maine, said he had supposed the full committee would get together on the measure. Senator Reed obtained consent of the Senate to submit a report to the Senate embodying his views on the bill.

During the debate Chairman La Follette admitted that repeated meetings of the committee were held on the bill without a quorum. Senator Reed in the discussion referred to "wild statements" that had been made in connection with the coal situation and asserted that "more misrepresentation had been made in regard to the coal situation than any other." He also declared the attorneys for the Calder committee were "all on one side of the case," and that the committee should study the bill in the light of the testimony that had been adduced. He answered the argument of Senator La Follette that hasty action was necessary in order to start the statistics on coal with the beginning of the new coal year, April 1, by saying that wage agreements did not expire until April, 1922, and that consumers made their contracts in the light of their own judgment and not according to figures which might be produced.

Senator Reed indicated his line of attack on the bill when he said the first section of the measure put the coal business in the same class as railroads as regards public interest, which would provoke discussion. Answering a statement that he had taken up time of the committee, Senator Reed said that he had never asked questions with so much satisfaction as he did on this bill, when the "real viewpoint of some gentlemen who appeared as experts was disclosed."

"We shall have to take enough time to find out what is in the bowels of this measure before we get through with it," declared the Missouri Senator.

Grand Jury Indicts 226 Indiana Mining Companies and Miners, Charging Conspiracy and Monopoly

SPECIAL CORRESPONDENCE

AFTER having examined scores of witnesses, the Federal Grand Jury in Indianapolis Feb. 25 returned an indictment in five counts against 226 bituminous coal operators, coal operators' associations, coal-mining companies and coal miners, charging conspiracy to violate the Sherman Anti-Trust law. All the defendants except twelve are already under indictment on charges of conspiracy to violate the Lever Act. One of the corporations indicted is the National Coal Association, and John J. Lewis, president United Mine Workers, and William Green, secretary-treasurer, have again been named.

The indictment charges in the first count, restraint of trade; in the second, restraint of commerce; in the third, restraint of trade and commerce; in the fourth, conspiracy to monopolize, and in the fifth, monopolizing. The case is drawn solely under the Sherman Anti-Trust law and is a separate case entirely from the one now pending against 125 operators and miners charged with violation of the Lever Act. The indictment covers the last three years and goes into a detailed history of the bituminous coal industry and of the methods by which, it is charged, the operators and miners have worked together to restrict the production and distribution of bituminous coal.

The charge is made that at various joint conferences held in the last ten years it was agreed that the miners and operators were partners in mining, producing and distributing coal, and that they would aid one another in plans to increase wages, increase prices, to create a shortage and to otherwise limit production and distribution. It is charged that the agreements entered into between the miners and operators provided that coal should not be sold at any time for a price that did not yield a profit to the operator; that increases of wages to miners should be added to the price of coal; that competition among the operators should be eliminated; that no coal should be sold below cost of production and that the means of increasing cost and production in the price of coal should be by closing and keeping idle the coal mines.

CHARGES COLLUSION BETWEEN OPERATORS AND MINERS

It is further charged that the operators established a uniform cost accounting system for the operation of the mines, and that by agreement a greater number of miners were employed than were reasonably necessary properly to operate the mines. It is averred that the agreements entered into at the conferences between the miners and operators have been continuous from one conference to another up to the filing of the indictment.

The indictment goes into detail regarding the joint conference at Washington, Sept. 25, 1917, at which time, it is averred, the wages of miners were increased 10c. a ton and the wages of day operators also were advanced.

It is pointed out that the Washington agreement was ratified in September, 1919, at Cleveland. It is charged that John L. Lewis, president of the United Mine Workers of America, at that meeting recommended that the Washington wage agreement be terminated by November, 1919, and that unless another agreement was made a strike be called. It is charged that in accordance with this recommendation a strike order was issued by Lewis and other officers of the United Mine Workers of America on Oct. 15, 1919.

The indictment charges that following the suspension of the national fuel regulations in February, 1919, the operators agreed not to contract for the future delivery of coal and not to sell coal unless they were able to obtain a price equal to or above the price that had been fixed by the U. S. Fuel Administration.

It is charged that they thereby "created high and fictitious market prices." It is also charged that "by concerted plan and policy they made various reports to the mine bureaus of the several states and to the government that there was no market for coal; that this plan caused the price to be increased until it was higher than the prices fixed and maintained by the national Fuel Administration prior to its suspension."

The charge is made that the National Coal Association is engaged in marking out zones and territorial limits into which coal may be shipped. It is said that reports are made on the production and the kind of coal and the price pertaining to each zone is distributed to the operators through the various coal trade bureaus and associations, in order that the operators may act in concert in governing the supply and price of coal.

Operators are charged with promoting strikes among miners through failing to collect penalties supposed to be assessed against miners who engaged in strikes not authorized by the miners' union. It is averred that the defendant operators have refused to demand these penalties and have thereby encouraged frequent strikes. It is charged also that they have violated agreements setting forth that mines should remain in operation pending disputes with the miners.

The indictment goes into detail as to methods said to have been employed by operators to avoid delivery of coal on contract. It is averred that uniform contracts were made by all operators and that these contracts were made subject to increase according as the wages of miners were increased and without reference to the actual cost of production, even though an increase of contract price was not necessary to meet the cost of production plus a just and reasonable profit.

ALLEGED TO HAVE RESTRICTED PRODUCTION

The indictment charges that in the plan to restrict production and distribution and to increase the price of coal, the operators refused to sell coal to any one who was not a member of the Retail Coal Dealers' Association and allied organizations, and they refused to sell coal to anyone for purposes beyond his own immediate needs, thus preventing storage of coal for future use. It is charged that the operators also refused to ship coal direct to consumers wherever local coal dealers objected to such shipment. The charge also is made that the operators, acting together, planned that mines should be idle at various times during each year in order that the price of coal might be increased.

One of the plans for increasing the price of coal, it is charged, was to sell it through sales agencies, which were separate in name only from the operating and producing companies. By pretending to sell through such supposedly separate organizations, it is charged, the operators increased their profits. The charge also is made that the operators created the so-called "spot" market by agreeing to sell coal only for immediate delivery at prices agreed on at the time of delivery. In the carrying out of their plan to cause a scarcity of available coal, the operators, it is charged, published broadcast in 1920 articles pointing out that there was a shortage of coal, and urged the people to purchase.

The indictment names and identifies the defendants as having been engaged during the three years covered by the indictment in the mining, production, purchasing, selling, distribution or transportation of bituminous coal. It is averred that certain of the said defendants were engaged in two or more of these occupations, and that certain of them were officers and agents of various named organizations, including coal companies, coal trade bureaus, coal trade associations and other similar concerns. Many of the associations are not made defendants for the reason that they are unincorporated societies or partnerships incapable of being sued or prosecuted as such. Others of the defendants are identified as having been during the three-year period officers and members actively engaged in the management of the United Mine Workers of America and local unions and

district boards, committees, wage-scale committees and joint conferences of miners and operators.

All the defendants, it is averred, were engaged during the three years in the pursuit of their various occupations, and in their several dealings with each other and with the public in general, save and except as all conspired to restrain interstate trade and commerce in bituminous coal. It is pointed out that the operators owning and engaged in the production of bituminous coal, own and are now able to produce sufficient coal each year to supply all the needs and demands of the various users and consumers of bituminous coal in the United States.

After naming the National Coal Association and various voluntary, unincorporated organizations of coal operators, such as the coal trade bureaus and coal operators' association, as being supported, maintained and used by the coal operators for their use and benefit in the conduct of their business, and after detailing the organization of retail coal dealers' associations which, it is averred, co-operated with and assisted the coal operators' association and bureaus in the conduct of their business with retail dealers, the indictment recites how as a general plan of co-operation the operators named what was known as scale committees to meet in joint conferences with similar committees composed of coal miners.

The indictment says that of approximately 600,000 miners and mine workers engaged in the mining of bituminous coal in the United States, about 400,000 are members of the miners' union. This organization, it is averred, is now a voluntary, unincorporated organization. It is recited that the assessments paid by the miners to the local unions and distributed to other divisions of the national organization amounted during the three years to approximately $2,000,000. This money, it is averred, was disbursed on account of the expense of sickness and death and for other purposes, including that of "supporting and maintaining said miners while they were abstaining from and refusing to work in the mines by reason of strikes and for the further purpose of organizing, promoting and maintaining strikes among said miners, extending their organization and promoting so-called sympathetic strikes."

The indictment recites how wage-scale agreements were reached at conferences between the scale committees representing the operators and the miners. It is pointed out that during the time covered by the indictment the initiation fees, dues, assessments and fines levied by the union against the miners were "checked off, withheld and collected from and out of said wages of said miners by the coal operators, owning and operating the various mines where said miners worked and earned wages."

It is charged that statements of the assessments so checked off and collected were approved by representatives of both the miners and the operators, and that the money so collected was paid to the officials of the union.

How Taxpayer May Protect Himself if Tax On Realty Sales Is Unconstitutional

By Harry Lefker*

ON DEC. 16, 1920, a decision of far-reaching importance was handed down by the U. S. District Court in the matter of Brewster vs. Walsh. In this suit the plaintiff first invokes the Sixteenth Amendment of the Constitution, which provides: "The Congress shall have power to lay and collect taxes *on incomes* from whatever source derived."

With the amendment as a basis, the plaintiff contends that the section of the income tax statute which specifically imposes a tax upon net income which "shall include gains, profits, and income derived from . . . sales or dealings *in property* is unconstitutional in so far as it taxes as income the increased value of investments when realized by sale, and that such a tax is a direct tax upon capital or property not authorized by the Sixteenth Amendment and not a tax upon income. In other words, that such gains do not come within the definition of income as the word is used in the Sixteenth Amendment.

*Lefker & Sohmer, certified public accountants, 220 West 42d St., New York City.

The Court in an opinion signed by U. S. District Judge Thomas, entered judgment for the plaintiff.

It remains now for the U. S. Supreme Court to adjudicate the principles involved in the above case. The question whether profits upon the sales of capital assets are income will be definitely and permanently settled within the near future. It does not appear, however, that decision will be made before the returns are due to be filed. Under these circumstances the taxpayer may follow one of two methods in order that his rights may not be prejudiced if the decision should prove to be favorable to the interests of taxpayers:

(1) He may report and file under protest any profits derived from sales or dealings in property, such protest to set forth in detail the reasons for believing that the tax on such profits is unconstitutional. This would enable the taxpayer to file a suit at some future date.

(2) He may exclude such profits from his return and attach a statement which will show the detail of the profits so excluded as well as a definite explanation for the exclusion. This procedure will protect the taxpayer from a penalty for negligence.

There is little doubt on the part of the intelligent observer that income taxes are becoming more onerous with each succeeding year. Discussion and speculation is rife today as to whether the tax laws will be modified. The question has assumed larger proportions since the recent repeal of excess profits taxes by Great Britain.

The 1920 depression threatens to deprive our government of 50 per cent or more of its expected revenue. Meanwhile the expenses of government must be met, the interest on Liberty and Victory Bonds is a fixed charge that must be provided for, and these same bonds must be amortized and funded each year so that the obligation may be liquidated at maturity.

All of which point to a stricter application of the tax laws rather than a modification thereof.

U.S. Supreme Court Declares Profiteering Clause of Lever Act Void

DECLARING invalid the "profiteering" and "hoarding" sections of the Lever Food Control Act, the U. S. Supreme Court in an opinion delivered Monday, Feb. 28, nullified at one stroke virtually every effect of the nation-wide anti-profiteering campaign conducted in 1918-1919 by Attorney General Palmer.

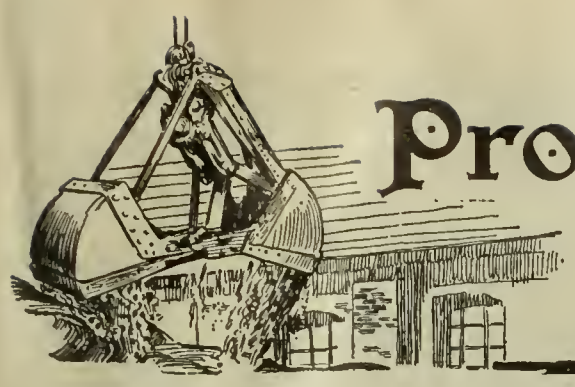
The opinion of the Court was unanimous. Justices Brandeis and Pitney, who failed to sign it, explained that they subscribed to the findings, but dissented "from the reasoning" by which they were reached.

Ten cases involving the Lever Act were consolidated before the court, but that of the L. Cohen Grocery Co. of St. Louis was taken as the "key case." Here the government appeared as appellant from a decree of Federal District Courts in Missouri sustaining a demurrer to the indictment of officials of the company on charges growing out of the sale of fifty pounds of sugar for $10.07, or slightly more than 20c. a pound. The Supreme Court affirmed the decision of the courts below and relieved the grocery company from further prosecution.

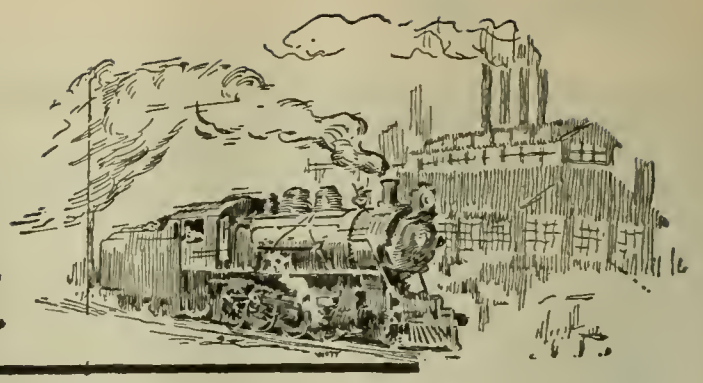
Hundreds of other cases, inaugurated in courts throughout the country as a result of the Palmer campaign, either already certified to the Supreme Court or progressing in the Appellate division, were cleared from the judicial slates by the decision. In all, there are about 2,500 cases in various stages that are nullified by the decision.

The declaration of the court that vital sections of the statute were unconstitutional were based solely and flatly on their construction, it appeared from the opinion which was read by Chief Justice White. Failure of the lawmakers to provide any "specific or definite act" was declared to bring their work under the inhibition of the fifth and sixth amendments.

In an opinion by Justice McKenna, the Court sustained the Indiana law making mandatory the application to coal-mining companies in that state of the workmen's compensation law. A coal company had appealed the constitutionality of the law on the ground that it was mandatory as to only one industry, coal. The lumber price information case was ordered re-argued.



Production and the Market



Weekly Review

SLIGHT upward tendencies in the spot coal market are recorded this week, brought about by two unrelated causes. In the Middle West a previously good demand for prepared sizes of bituminous coal had been responsible for the output of larger tonnages of screenings than industrials required, and prices of fine coals were depressed from oversupply. Within the past ten days and just prior to the recent cold wave the retail trade largely withdrew from the market, being well supplied with prepared sizes. This resulted in many mines which had been shipping prepared coal closing down, which also curtailed the output of screenings. The demand for industrial steam coal was thereby reversed and prices took an upward turn. Following this the cold wave reacted on the householder and prices of prepared sizes advanced. Further curtailment of mine operation will follow after this temporary demand is over.

In the Chicago spot market smokeless coal has advanced as a result of a general clean-up of supplies previously forwarded in anticipation of sales. West of Chicago production is at low levels, demand for coal from Kansas being measured by meager household requirements, and in Colorado the market at this time of the year, mainly from retail dealers, is soft.

Conditions in the markets reached by Kentucky coals are essentially identical to those described for Chicago, "no market" being the ruling cause of extreme curtailment of production. Ohio, both north and south, is generally down, the only hope ahead appearing to be early opening of the Lake season.

General uncertainty prevails in the Pittsburgh field, with no immediate prospect of settlement of alleged inequalities in freight rates to lower Lake ports resulting from the last general rate advance. Shippers are holding back in commitments for the Lake season. Efforts of independent steel intersts to open the market for their products by sharp price cuts are being watched by the trade in the hope that new life may be put into the demand for coal.

Whereas a few weeks ago the Tidewater yards were well filled with unsold coal and shippers were taking chances with the Tidewater market, today little coal is either mined or shipped to the Atlantic ports that has not been sold. The result is reported to be a general clean-up of unsold coal and little "distress" coal on hand. Aside from old contract business, no coal is moving into New England, where such consumers as are operating are cutting into reserves accumulated last year.

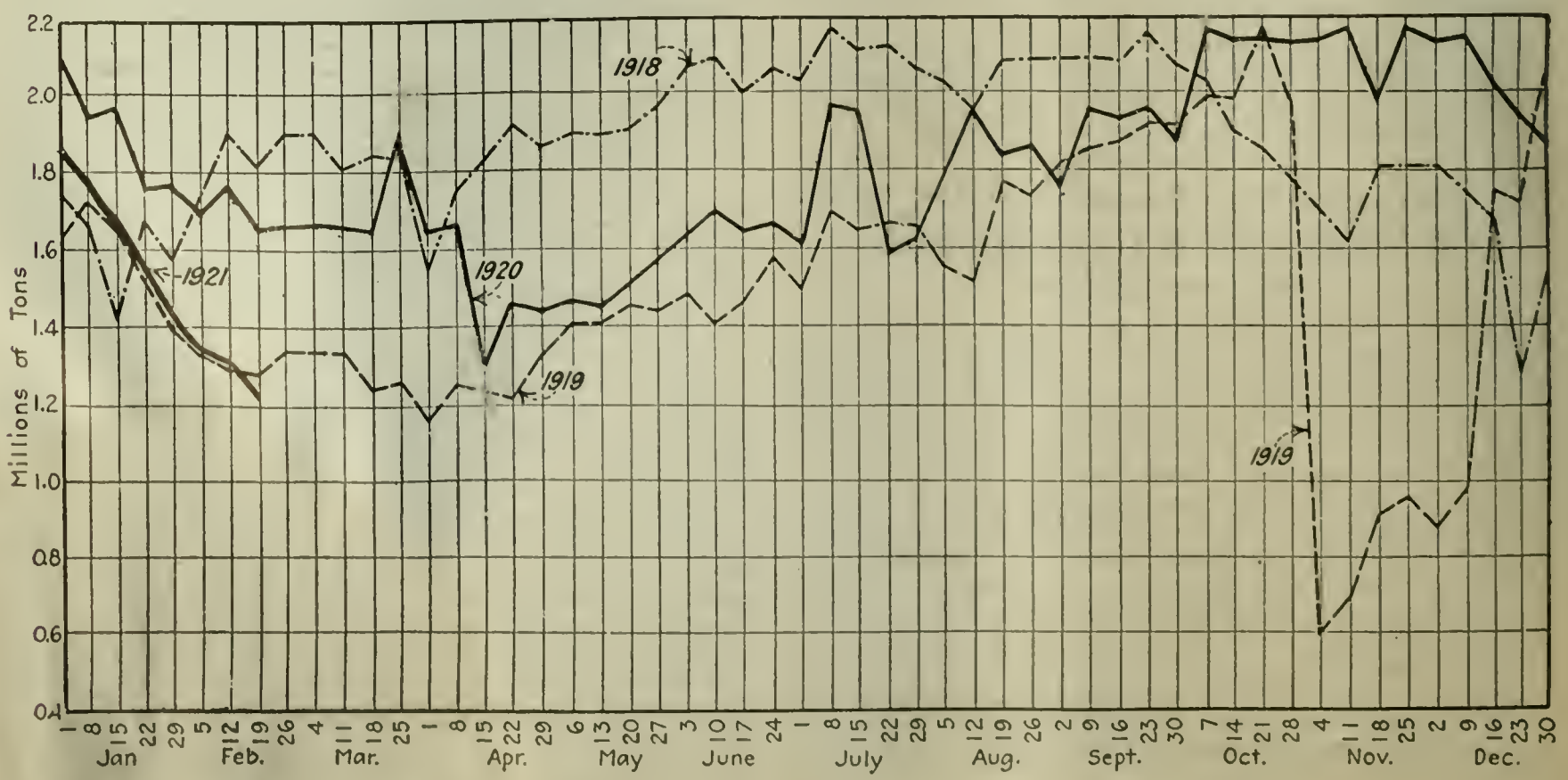
Some operators are persisting in forcing contract coal on wholesalers who have no coal sales contracts. The inevitable result is a depression on the market, for the coal must be sold at low figures.

Coal Age Index Indicates Spot Market Advance

These developments have caused the spot market to advance from what may prove to be the low point, as the *Coal Age* index of spot bituminous prices rose to 101 from 98 in the last week of February, as compared with a drop of one point from 99 to 98 in the preceding week.

Demand for anthracite domestic coals is declining rapidly. Last week's inclement weather had no bolstering effect on the market and independent coal touched the lowest level it has experienced during the coal year. The steam market grows steadily worse. Companies with storage yards are able to take care of their surplus, but the individuals are in sore straits. In regard to spring reductions, it is a foregone

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

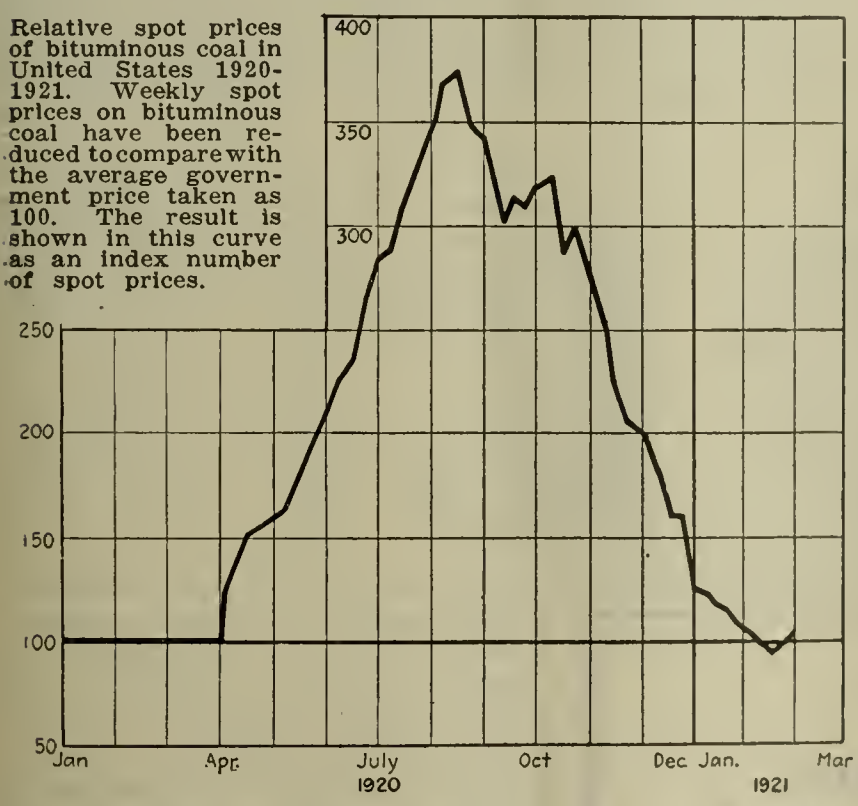
conclusion that there must be a cut in steam prices, for with bituminous at its present level, buckwheat at company price of $4.25 is simply being pushed off the market. Some observers consider it not unlikely that with a cut on steam, the family sizes will have to carry the burden of production cost, and to accomplish this the large producers will not make spring reductions.

Slowing down of activity at the coking plants of the furnace interests was marked last week. There is no change in the attitude of Connellsville producers. Plant owners have no disposition to make more coke than can be sold promptly at a fair margin, and simply intend to bide their time, which they have every confidence will come in due course.

BITUMINOUS

"No market" again cut the production of soft coal during the week ended Feb 19, when the output fell below the level of 1919 production for the first time since last December. The total production was estimated by the Geological Survey at 7,472,000 net tons, a decline, when compared with the preceding week, of 5 per cent, or 395,000 tons. As stated before, lack of demand is causing additional curtailment of mine operations and production during the last week of February registered a further downward trend. Of course Feb. 22, Washington's Birthday, caused some holiday losses, but "no market" losses over the country as a whole were close to 50 per cent of capacity.

Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.



Coal Age INDEX OF SPOT BITUMINOUS PRICES ADVANCED FROM 98 FOR THE WEEK ENDED FEB. 22 TO 101 DURING THE LAST WEEK IN FEBRUARY

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total bituminous, including coal coked

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date
Feb. 5[b]	8,132,000	467,825,000	10,010,000	407,480,000
Daily average	1,355,000	1,790,000	1,668,000	1,553,000
Feb. 12[b]	7,867,000	475,692,000	10,484,000	417,964,000
Daily average	1,311,000	1,779,000	1,747,000	1,557,000
Feb. 19[c]	7,472,000	483,163,000	9,513,000	427,477,000
Daily average	1,245,000	1,768,000	1,585,000	1,558,000

(*a*) Less 2 days' production during first week in April, to equalize number of working days covered for the two years. (*b*) Revised since last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Coal Year to Date	1920 (*a*) Week	1920 (*a*) Coal Year to Date
Feb. 5	1,985,000	77,617,000	1,451,000	78,960,000
Feb. 12	2,048,000	79,665,000	1,822,000	80,782,000
Feb. 19	2,010,000	81,675,000	1,504,000	82,286,000

(*a*) Less 2 days' production during first week in April, to equalize number of working days covered for the two years.

BEEHIVE COKE

Week Ended Feb. 19[a] 1921	Feb. 12[b] 1921	Feb. 21 1920	1921 to Date	1920(*c*) to Date
219,000	228,000	426,000	1,724,000	3,275,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Car and labor supply at present are ample. The Kansas disturbance was of short duration and miners are again working to the limit of a sluggish market. The Alabama strike has finally been called off, although this will have no effect of production in that field, as for some time it has been easily possible to produce more coal than could readily be sold.

Weekly production in the northern and middle Appalachians registered a further decline to 4,440,000 net tons in the period ended Feb. 12. This is a decline of some 200,000 tons as compared with the preceding week and less than the corresponding week in any of the past five years.

TIDEWATER

Coal continues a drug on the market, with only 200,000 gross tons dumped at Hampton Roads during the week ended Feb. 19. High-volatile coal ranges $5@$6 per ton, with low-volatiles approximately $1 higher. Baltimore reports the situation as rather uninteresting. For the first twenty-four days of February only fifteen ships were loaded

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Coal	Market Quoted	Gov't Price	Jan. 27 1921	Feb. 22 1921	Feb. 29 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$4.00	$3.50	$3.50
Pocahontas lump	Columbus	2.60	5.85	6.00	*5.75*
Pocahontas mine run	Chicago	2.35	3.25	3.00	**3.50@4.00**
Pocahontas lump	Chicago	2.60	4.50	3.90	**4.50@6.00**
Pocahontas mine run	Boston*	....	6.90	6.00	*5.60@6.00*
Pool 1	New York	2.35	3.75	3.40	**3.35@3.75**
Pool 1	Philadelphia	2.35	4.00	3.20	**3.50@3.60**
Pool 1	Baltimore	2.35	4.00	3.15	3.15
Clearfields mine run	Boston	2.95	2.85	2.60	2.15@3.00
Somersets mine run	Boston	2.95	3.60	3.15	2.50@3.75
Pools 10, 11	New York	2.95	2.65	2.85	*2.50*
Pools 10, 11	Baltimore	2.95	....	2.50	*2.25@2.50*
Pools 10, 11	Philadelphia	2.95	2.65	2.45	**2.25@2.75**
Pool 18	New York	2.95	2.25	2.00	.....
Pool 18	Philadelphia	2.95	2.20	....	2.00
Pool 18	Baltimore	2.95	2.25	2.10	.....
High-Volatile, Eastern					
Pittsburgh mine run	Pittsburgh	2.35	2.50	2.35	**2.25@2.50**
Pittsburgh sc'd. gas	Pittsburgh	2.35	3.25	2.70	**2.75@3.00**
Kanawha mine run	Columbus	2.70	2.75	2.60	*2.50*
Kanawha lump	Columbus	2.95	4.85	3.50	**3.75**
Hocking mine run	Columbus	2.50	2.50	2.25	2.25
Hocking lump	Columbus	2.75	4.00	3.65	*3.50*
Pitts. No. 8 mine run	Cleveland	2.35	2.75	2.40	2.25@2.50
Pitts. No. 8 lump	Cleveland	$2.60	$4.15	$3.85	*$3.50@4.00*
Pool 34 (54, 64)	Philadelphia	2.50	2.25	2.25	2.25
Pool 34 (54, 64)	New York	2.50	2.25	2.15	**2.15@2.40**
Pool 34 (54, 64)	Baltimore	2.50	2.20	2.10	**2.15**
Midwest					
Franklin, Ill., mine run	Chicago	2.35	2.75	2.75	2.25@3.25
Franklin, Ill., lump	Chicago	2.55	3.80	3.80	3.50@4.15
Central Ill., mine run	Chicago	2.35	2.25	1.85	1.50@2.25
Central Ill., lump	Chicago	2.55	3.25	2.60	2.00@3.25
Ind. 4th Vein, mine run	Chicago	2.35	2.50	2.20	**2.50@2.75**
Ind. 4th Vein, lump	Chicago	2.55	3.60	3.30	2.50@4.15
Ind. 5th Vein, mine run	Chicago	2.35	2.45	2.15	**2.00@2.75**
Ind. 5th Vein, lump	Chicago	2.55	3.55	3.10	2.40@3.75
Standard mine run	St. Louis	2.35	2.00	1.95	1.90@2.00
Standard lump	St. Louis	2.55	2.50	2.60	2.50@2.75
West Ky., mine run	Louisville	2.35	2.35	2.15	**2.00@2.50**
West Ky., lump	Louisville	2.60	4.00	3.25	*2.75@3.50*
South					
Big Seam mine run	Birmingham	2.45	3.25	3.10	*2.90@3.25*
Big Seam lump	Birmingham	2.75	....	3.25	3.50@4.00
S. E. Ky. mine run	Louisville	3.00	2.80	2.75	2.50@3.00
S. E. Ky. lump	Louisville	3.25	5.25	4.00	3.75@4.25

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

on export account. Although water rates to New England are going begging the movement continues rather light, tonnage moved being almost entirely confined to contract.

All-rail movement to New England totaled 3,377 cars in the week ended Feb. 19. This was but 13 cars less than during the preceding week, although well ahead of the corresponding week in either 1919 or 1920.

ANTHRACITE

Hard-coal mines continued to work close to capacity. Shipments during the week ended Feb. 19 were reported by the Geological Survey at 2,010,000 net tons, or within 38,000 tons of the output for the preceding week. Cumulative production for the present coal year has reached 81,675,000 tons, or two-thirds of a million tons less than the corresponding period of the preceding coal year. Heavy shipments have broken the independent market for domestic coals and these prices now range on a par with company schedules. Steam sizes are a drug on the market and price concessions are necessary to move any tonnage.

COKE

Beehive coke production continued to reflect the lack of demand during the week ended Feb. 19. The output was estimated at 219,000 net tons, or a decrease of 9,000 tons when compared with the week ended Feb. 12. Cumulative production for 1921 now stands at 1,724,000 net tons, or but little more than half of that during the same period of last year.

Lower Prices Bid for Shipping Board Coal

FOR the third time the Shipping Board, on Feb. 28, opened bids for bunker coal at Atlantic Ports and the Virgin Islands. The second bids were opened on Jan. 14, 1921, and one award, to Dexter & Carpenter, Inc., for 300,000 tons, was all that has been made so far.

The bids opened this week were in nearly every instance lower than those submitted in January. In all, sixty-seven companies submitted bids of which thirty-eight were companies not included among those submitting bids in January. An indication of the lower prices offered at Hampton Roads is shown by the bids of the C. & O. Coal & Coke Co. which revised a bid from $9 down to $7.25, the Lake & Export Coal Corp., from $8.25 to $7.10; Central Pocahontas Coal Co., from $7.80 to $7.65, and W. C. Atwater & Co., from $8 to $7.35. There were a few upward revisions as that of the Maryland Coal & Coke Co., for delivery at Philadelphia, from $6.88 to $7.25.

Massachusetts Institutions Accept Bids of From $7.75 to $9.44 for Coal

AWARDS were made on Feb. 24 for 44,780 net tons of coal on bids submitted Feb. 18 for hospitals and other institutions, account of the Department of Mental Diseases of Massachusetts. The mine and delivered prices are both shown in the accompanying list of successful bidders on coal for Massachusetts hospitals:

Institution	Net Tons	Bidder	Mine or Mines	Vein	Price f.o.b. Mines	Price Delivered
Danvers State Hospital	4,100	Imperial Coal Co	Diamond Smokeless	"B"	$2.89	$8.17
Foxboro State Hospital	1,730	Dexter & Carpenter	Peerless No. 1	"E"	2.99	8.27
Gardner State Colony	1,775	Imperial Coal Co	Diamond Smokeless	"B"	2.89	8.31
Grafton State Hospital	3,000	Imperial Coal Co	Diamond Smokeless	"B"	2.89	8.03
Medfield State Hospital	4,000	Imperial Coal Co	Smokeless, Nos 1 ("B") and 2 ("B")		2.78	8.06
Northampton State Hospital	2,460	Carbon Coal & Coke Co.	Cymbria	"D"	3.18	8.32
Taunton State Hospital	2,350	E. B. Townsend Coal Co	Loyal Hanna No. 3	"B"	3.05	8.19
Westborough State Hospital	6,500	John Tredennick	Knickerbocker	"B"	3.20	...
Monson State Hospital	2,000	Imperial Coal Co	Diamond Smokeless	"B"	2.89	7.75
Massachusetts School for Feeble Minded, Waverly, Mass.	2,500	Imperial Coal Co	Diamond Smokeless	"B"	2.89	8.17
Massachusetts School for Feeble Minded, Gardner, Mass.	90	John Tredennick	Shaft and No. 7	"B"	3.00	8.42
Wrentham State School	1,900	Dexter & Carpenter	Peerless No. 1	"E"	2.99	8.27
Boston Psychopathic Hospital	800	City Fuel Co	Knickerbocker 3 and 2	"B"	3.25	9.37
Boston State Hospital	7,000	City Fuel Co	Knickerbocker 3 and 2	"B"	3.25	9.37
Worcester State Hospital (Bloomingdale)	5,000	Claflin-Sumner Coal Co	Loyal Hanna No. 3	"B"	3.08	9.44
Worcester State Hospital (Summer Street)	580	Claflin-Sumner Coal Co.	Loyal Hanna No. 3	"B"	3.08	9.44

Reports From the Market Centers

New England

BOSTON

Market Very Quiet—Contract Situation Marking Time—Hampton Roads Accumulation Absorbed—Prices Remain Easy—Anthracite Shippers Look for Orders.

Bituminous—Steam coal trade is virtually at a standstill. There is spot buying in scattered instances, but the aggregate tonnage is small, and there is only slight interest in quotations. Current prices are settling into grooves, more and more shippers being willing to consider a range that they would not have looked at a few weeks ago. If reserves were not at so high a level there would certainly be some buying at competitive figures, but consumers who have coal on hand that will last them through August and also have contract fuel still due them are in no position to enter the spot market. A very quiet March is looked for.

The proposals submitted on Feb. 18 to supply certain Massachusetts state hospitals were of much interest to the trade. In each case where there were alternate bids for coals of higher grade the commission awarded contracts to those offering the lower priced fuel. On "B," "D," and "E" vein coals from central Pennsylvania and from Somerset County the range was $2.89@$3.18 per gross ton f.o.b. mines. No award was made on Pocahontas or New River, or in fact on any coal by water. This discloses the fact that even at present rates, all-rail as compared with those by water for inland points, the advantage at current prices still rests with the rail shippers.

In the contract situation there is apparently little doing. Many operators having tried to interest buyers in this section have about concluded to wait until the April 1 wage basis is nearer a decision. There has been some scaling down on existing agreements, but this is by no means general and is still confined to a very few large distributors.

In order to avoid expensive accumulation at the Tidewater piers production has had to be held down. This is shown by the very largely decreased offerings of "distress" coal at the terminals and afloat. On the other hand, there is no hardening of prices.

The excessive tonnages available at Hampton Roads a month ago have now been cut down to reasonable limits. The smokeless districts are also curtailing and much less is heard of forced sales. Prices continue on an easy basis, because both the Western and offshore markets are extremely dull. There is an entire lack of inquiry from Europe, at least in the open market, while from South American ports there is only a mild interest in the current market. Quotations are shown in the Weekly Review.

Anthracite—On all sides there has

been a most pronounced easing up on domestic sizes. Steam sizes faded away completely months ago, and pea and chestnut, at least, bid fair to follow suit. Egg and stove are about the only sizes at all in demand, and these only for small tonnages to care for trade the balance of the winter season. Such business is being gradually narrowed down to those in position to sell at "company" figures; the "independents" are hard put to it to secure orders at any basis materially over the old-line circular. Retail trade is extremely quiet.

Tidewater—East

HAMPTON ROADS

No Improvement in Demand—Loadings Decline—Prices Soften—Not Many Clearances.

Coal continues a drug on the market, with only 200,000 tons dumped during the week ended Feb. 19 and with a decrease in the accumulations at Tide. The price of high-volatile coal ranges $5@$6 per ton, with low-volatile as approximately $1 higher.

The belief exists here that new contracts, both for present needs and for the next fall and winter supply, will give much stimulus to the trade. It is believed the price will also be stronger, since the present level is below the figure at which operators are willing to turn the coal out of the mines.

Norfolk & Western officials report the largest number of empty coal cars in the history of the road now standing on their tracks, with indications from the coal fields "far from encouraging."

Only eleven cargoes of coal have cleared from this port during the last week, no French cargoes being included in this number. Clearings were:

Ital. SS. Leonita, for Gibraltar, 4,078 tons; Jap. SS. Kinkasan Maru, for Gibraltar, 6,345 tons; Am. SS. Ancon, for Cristobal, 10,100 tons; Am. SS. Crlstobal, for Cristobal, 9,636 tons; Ital. SS. Piave, for Dakar, 6,514 tons; Ital. Bark Mortara, for Genoa, 2,521 tons; Dan. SS. Erik II. for Kingston, 2,673 tons; Am. SS. Dakotan, for Alexandria, 7,520 tons; Br. SS. Ronalee, for Amsterdam, 4,501 tons; Swed. SS. Gothia, for Cienfuegos, 2,700 tons.

NEW YORK

Independents Sell at Company Circular—Steam Prices Easy—Bituminous Market Quiet — Prices Slightly Stronger.

Anthracite—Demand for the domestic coals is on the toboggan. Last week's snow storm had no effect upon the market except to interfere with retail deliveries. Company coals are coming forward in sufficient quantities to take care of immediate needs with the result that there is less buying of independent coals at anything like premium prices.

There were some quotations as high as $9 last week but as low as $8.50 for stove and $8.25 for chestnut were heard. It was also said that some grades of independent coals were being quoted at company prices.

Retail dealers are not anxious to have much tonnage on hand on April 1 unless they are assured there is to be no spring reduction. With the retail prices remaining where they are now it is not likely that consumers can be induced to place orders early for next winter's supply.

Pea coal is no more active than the larger sizes and good grades of independent coals were quoted as low as $6, f.o.b. mine. The cheapness of bituminous together with the lack of demand, is having its effect upon the steam coal situation. The market for these coals is practically nil. Some of the companies are storing these sizes. Good grades of buckwheat were quoted around $3, although as high as $3.50 was reported for the better grades. Rice quotations ranged $2@$3, and barley 75c.@$1.25.

Bituminous—Demand shows no material increase but quotations indicate a stiffer market. Operators continue to withhold heavy shipments unless they have a market for the coal upon its arrival at destination.

The making of contracts has not yet gotten into full swing and no activity is expected until the middle of March. Buyers have not shown any enthusiasm along this line and producers are not anxious to tie up tonnage for the next year at anything like present market prices. There has not been any change in the attitude of various shippers to make contracts at much less than $4.25.

Boat owners complain of slow business. There are many idle boats and comparatively few loaded bottoms. The bunkering situation is slow, more than 200 vessels of all descriptions being tied up in this harbor one day last week, many of them waiting for cargoes.

South Amboy reported one day during the last of the week as having on hand 273 cars of Pool 9, and 135 cars of Pool 10, while at Pier 18 the same day, the reports showed 94 cars of Pool 10, 75 cars of Pool 11, and 80 cars of Pool 9.

Quotations for some of the pools, f.o.b. this Tidewater ranged about as follows: Pool 9, $6@$6.15; Pool 10, $5.80@$5.90; Pools 1 and 71, $6.15@$6.25, and Pool 11, $5@$5.25. Mine quotations will be found in the Weekly Review.

BALTIMORE

Storms Have Brief Bolstering Effect—Export Movement Light—Piers Idle Some Days—Small Spurt in Hard Coal.

Bituminous—The soft coal market here received a brief boost in the price-quotation line from a couple of snow storms and some snappy weather. The spurt brought some quotations for consumers in a hurry for fuel around $3.50 for best steam coals, and ended also for a brief time some too active competition in selling of high grade coals that had brought them in many sales 50c. below the recognized market level.

At present high-grade coals are procurable around $2.75@$3 as a general thing, while active competitors in the market are in some cases again selling Pool 9 coal, for instance, down to $2.50 and possibly even a bit less at times. This means that the poorer coals are almost forced out of the trading, as consumers are not even allowing shipment by pools but are demanding specific mine products. The trade realizes that all in it are not blameless, as some consumers in the past have undoubtedly gotten poor coal at times through substitution on a "Pool order."

The situation at Tide remains rather uninteresting, and at times the piers do not even work. For the first twenty-four days of February fifteen ships were loaded here on export account, with a total of 68,874 tons cargo and 8,780 tons bunker.

Anthracite—A spurt has come to the hard coal trading—small but none the less acceptable. Several dealers reported a fair late business in small lots. It would seem that a number of consumers who received but part of their orders early in the year, or spread over January when a good rush of coal came from the mines, have been hoping to skate through without filling out the full amount. The colder weather evidently caused some anxious inventories of cellar bins with the result that a number of small orders were placed to cover up. Receipts are light but plenty of reserve in most cases to make all needed deliveries.

PHILADELPHIA

Anthracite Breaks — Snow Storm Braces Retail Trade—Steam Sizes in bad Condition—Bituminous Remains Quiet—Prices Firm—Little Activity in Coke.

Anthracite—Big changes have taken place in the anthracite situation recently. For a couple of weeks the shipping houses were cognizant of a softening in the demand for pea coal. Now this has begun to spread to the other sizes. The individuals who have had the lowest prices all along on prepared coal have not as yet cut their figures, but the highest priced shippers have come down precipitately. One concern in particular has now dropped to $8.25 for egg, stove and nut, which is quite close to company figure of $8@$8.10. Company price of $6.40 on pea coal is frequently heard. We have also heard of sales of prepared coal on certain grades of ordinary anthracite at $7.95. Some shippers are endeavoring to move pea by quoting under $6.40, if a car of stove or nut is taken around $8.75.

The big snow storm the past week stirred up the retail trade just at a time when many yards had laid off help on account of the slowness. Due to the change in weather all yards have been active, although ordering from the consumers was confined to their barest needs.

In reference to spring price reductions, it is well to recall that the

miners' wage agreement has over a year to run and on account of this it is difficult to see just how the companies will be able to reduce their figures on family coal. It is a foregone conclusion that they will have to cut the price on steam, for with soft coal at $3 and under, buckwheat at company price of $4.25 is simply being pushed off the market. It has been intimated that with a cut on the steam sizes the companies will feel that the family sizes will have to carry the burden of production cost.

The steam trade grows steadily worse. The companies with their storage yards are able to take care of their surplus, but the individuals are in sore straits. A figure of $2.75 continues to be frequent on buckwheat, with the other sizes in proportion.

Bituminous—The movement is close to the minimum, the only favorable feature being that prices hold firm. Some shippers actually report a slight betterment in sales and this is probably traceable to some consumers awakening to the fact that the bottom has now been reached in prices. Recent quotations are shown in the Weekly Review.

Contract trade is practically at a standstill. Most manufacturing interests are waiting to see just how business conditions are going to be in the spring and are satisfied to buy at market prices, rather than contract at a price which seems somewhat out of proportion to market figures. Some business on good steam coals has been closed around $4, and we have also heard of some $3.60 business. This will not mean much when the spot market strengthens very materially.

BUFFALO

Bituminous Prices Still Sagging—Consumers Are Indifferent—Anthracite Is Plentiful.

Bituminous — Even lower quotations than last week are now given out by shippers, who are mostly doing only a small business. Nobody sees any sign of improvement and predictions of it have about been dropped. Coal will not sell freely again till the general business of the country revives.

All that can be done is to keep in sight what trade can be controlled and wait. A few contracts survive. They were called "poor stuff" in the boom days of the trade last fall, but they now represent about all the business that is done at a profit.

At the same time quite a good many mines are still running, for the loss is usually not so great as it would be to shut down. Then it is easy to be in line when the demand returns. The situation is a significant commentary on the effort in Congress to cut down the profits of people in the coal trade. It is a fact that those who sold coal at bonanza figures last fall are worst off now.

Bituminous quotations are still hard to make, but one leading jobber gives out the following figures: $3.50 for Youghiogheny gas, $3 for Pittsburgh and No. 8 Lump, $2.50@$2.75 for mine run, chiefly Allegheny, and $2 for slack.

Anthracite—Retailers are in position to meet all demands. With winter already waning no further difficulty is looked for. Production is so good that all premiums on independent anthracite are about off and they will not be likely to return right away.

Prices are not very steady. The independent price is not only somewhat higher than the schedule, but the larger companies do not always sell at uniform figures. The variation is not more than 50c. a ton, but it gives occasion to much speculation. Some have it that the new season's prices are to be put up every month ten cents or so, but the companies are saying nothing and it all may be mere guesswork. It is likely that there will be coal for Lake shipment soon and it is time that loading was begun if an average shipment is to be made.

Northwest

MILWAUKEE

Overstocked Coke Brings Sharp Decline—Coal unchanged in Price—Complaints of Poor Quality Anthracite.

The closing days of February witnessed a break in coke prices to the extent of $1.50 per ton, making the second reduction during the month, the total cut amounting to $2.75. Egg, range, and chestnut sizes now sell at $14.50 and pea at $11.50. Domestic sizes were held at $17.25 during January. The coke yards are piled high and demand is slow because of warm weather and half idle industries.

A brief spell of near zero weather, accompanied by a cold wave prediction which did not materialize, galvanized the coal market into a state of near activity during the past week. However, now that February is gone dock men and dealers can see nothing to look forward to and a spirit of dejection prevails.

Coal is moving slowly, both in the city and to the interior. Hard coals and Pocahontas now come by rail and anything that would check railway deliveries would cause a famine in these grades. The coal price schedule remains unchanged, though another drop in bituminous is expected during March.

MINNEAPOLIS

Wintry Weather Bolsters the Falling Market—Keen Competition to Clear Away Dock Supplies.

Just a hint of winter has been felt lately. But the last week of February is too late to hope for much in the weather line for the benefit of the coal business. As it was, the cold spell did steady things for a day or so. In a retail way, there was a rush of small orders coming from people who were running as close to the edge of their stocks as possible and who were holding off for still lower prices.

In a jobbing way, there was less effect shown, for the dealers can hardly run as close to the vanishing point in stocks as do the consumers, although they do their best to that end. But there was a little pickup here also. In the steam trade there was a steadying for a day or so. Screenings which have been almost impossible to move found more demand, and demurrage coal which has been hanging around like a poor relation also moved. No one hopes that the improvement is for more than a brief time, but every little bit helps.

Even the few days of cold weather have encouraged the dock trade to hope for a closer cleanup of stores than it had been counting on. As compared with former years, the dock situation is practically bare of hard coal at this time. The carry-over will probably be rather less than last year, which was down to a very small quantity. It is more on soft coal that the danger of loss is, and here there has been a good chance of a fair total held over. It will be less than for many years, probably less than last year, when it was around 2,500,000 tons. But a slump of $1 or more a ton on anything like that tonnage will hurt. Of course not all the held-over would take such a loss. Some companies held their prices down and have not reduced very much, possibly 65@90c. a ton at present. Others have reduced from $2@$3. Hence every reduction of stocks now looks very good to the trade.

There is some argument that the new season will not show any great reduction from this season's list prices, at least those now ruling.

This is something that the future can determine. Statistically there seems to be considerable to back up such a claim, but values in a falling market do not always follow the statistics.

Inland West

COLUMBUS

Cold Weather Slightly Increases Demand—Steam Market Steadier—Prices Better—Contract Market Quiet.

Lower temperatures have prevailed and consequently the dealer is coming into the market. There is still considerable distress coal to be had at low quotations, but on the whole more steadiness characterizes prices.

Retail conditions are not expected to be helped to any great extent during the present season. Dealers are content to buy from hand to mouth, and as a consequence it is a sort of hit and miss proposition. A larger amount of Pocahontas is now coming into this market.

Steam trade is showing more steadiness with a better demand for screenings. The reduction in lump production still continues and consequently there is a reduced supply. Manufacturing plants are now starting up more and more and fuel requisitions are larger. Extreme low prices are giving way to those ranging $1.75@$2 at the mines, and in some cases even higher.

Some discussion of contracting is going on but so far few have been closed. Neither the buyer nor the seller is willing to enter into agreements at present unsettled conditions. Speculation has it that mine run will sell on contract around $2.50@$2.90 and screenings around $2.25.

Production is still low and the tendency is toward less tonnage week by week. The report of the Southern Ohio Coal Exchange for the week ended Feb. 12 shows a production of but 135,348 tons out of a capacity of 568,933 tons from 352 mines reporting. Of the shortage no markets caused 354,627 tons.

CHICAGO

Retail Prices Drop—Steam Situation Improves—Railroads Showing Contract Interest.

In order to meet the present situation one of our biggest retail coal companies made some very sweeping reductions on all grades and kinds of coal, and consequently other dealers have been put in a position where they are forced to meet these prices. Enough time has not elapsed to find out whether or not these price reductions have stimulated buying.

The retailers, as a rule, are quoting the following prices:

Southern Ill. prepared coals	$8.25@$8.50
Southern Ill. mine-run	7.25
Springfield, Ill., or Ind., domestic coals	7.00@ 7.25
Pocahontas mine-run	10.00
Coke	14.00
Antaracite egg and range	15.00
Anthracite chestnut	15.40
Anthracite pea coal	12.80
Anthracite buckwheat	11.00

The steam coal market is perhaps a little brisker. This, however, is not on account of any improvement of the industrial situation, but because production is dropping off fast and those who have coal to offer are no longer willing to sell it at a ruinous price.

Some of the railroad purchasing agents, with headquarters in Chicago, have been inquiring relative to contract prices for their 1921 requirements. Quotations given show very little tendency on the part of the operator to cut prices, as the figures are made on the basis of cost, plus a small margin of profit. As a result of these quotations no contracts have been closed, but it is expected that the railroads will make their fuel arrangements within a short time.

DETROIT

Lack of Buying Demand Continues—Prices Stable—Receipts Are Light.

Little visible progress toward improvement has been made during the week, either in steam or domestic. While reports are circulated of improving conditions in industrial lines, the effect on coal sales so far seems negligible.

Steam plants with their fuel consumption greatly cut down are in many instances relying wholly on their reserves for supply. With reserves being depleted and production cut off, some jobbers are forecasting the development of another period of soaring prices. This might be avoided, they say, if users of steam coal were to adopt a policy of buying which would enable mines to continue at least part-time production.

West Virginia or Kentucky block is quoted at the mines at $4.50, lump $4, mine run $2.75@$3 and nut and slack at $2. Ohio lump is $4, mine run $2.75 and nut and slack $1.75. Pocahontas mine run is $4.50. The quotations given, it must be explained, are those named in contract negotiations and can not reflect the actual market. Incoming shipments of bituminous have been reduced to a small tonnage and jobbers say there is not very much coal to be found on tracks. Speculative shipments are few.

ST. LOUIS

Demand Trifle Better with Colder Weather—Country Call Light, with Little Tonnage Moving North

Local conditions are somewhat better this week on account of the weather. Three or four days of below freezing weather has put a little edge on business, and the retail call is fairly good in the city, with some country demand.

For the same reason steam has improved, especially in the Standard field, with the top of the market on screenings $1.25 as against 85c. a week ago. However, many mines have unbilled cars on hand of all sizes, for the demand for any one size is not enough to clean up the entire field.

Retail prices with several dealers were cut 25c. a ton the last week. This leaves Standard selling $6@$6.25, Mt. Olive $6.75@$7 and Carterville $8@$8.50 delivered.

CLEVELAND

Demand Slightly Improved Due to Early Movement to Lake Ports—Price Tendency Lower—Production Receding.

Bituminous — The contract for the City Hospital calling for 12,000 tons of steam slack has been closed on a basis of $5.80 a ton delivered. This price compares with $7.08 carried in last year's contract. It also represents a reduction from $6.60, which has been maintained for delivered slack for some weeks.

Reports from the coal fields indicate declining output as a result of smaller industrial consumption. Each week brings additional promises of more plants to open, but so far revival has traveled little beyond the prospective stage. Where plants are operating stocks are being used and in cases where no stocks exist hand-to-mouth buying prevails. The opinion seems to hold that prices have not yet reached a sufficiently low level.

Bituminous coal receipts at Cleveland for week ended Feb. 19 are the lowest in many months, being: industrial 825 cars, domestic 359 cars.

The prices of Pittsburgh No. 8 lump and slack have fallen within the last week. Slack is now quoted on a spot basis at the mines $2@$2.25 and lump $2.75@$3.75. The falling off of demand for and production of lump coal is likely to reduce the supply of slack.

Pocahontas and Anthracite—The recent cold snap has quickened a dead market somewhat, but while orders are more numerous they are for exceedingly small quantities. Ample supplies of coal are on hand in dealers' yards. No price changes at retail have occurred.

Now that anthracite has become more free in this section, dealers are reported to be stocking up in anticipation of storage demands on the part of householders in addition to present needs.

Lake—The movement of coal to the Lakes is growing. This fact has helped the wholesale demand for Pittsburgh No. 8 coal slightly. A number of steamers are being loaded at the various docks and the season will open in a few weeks.

Retail prices of coal delivered are:

Anthracite — All grades $14.90. Pocahontas—Shoveled lump, $11.60; mine run $10.50. Domestic Bituminous—West Virginia Splint, $10; No. 8 Pittsburgh, $8.15; cannel lump, $12.15. Steam Coal—No. 6 and No. 8 slack $5.80; No. 6 and No. 8 mine run $7.75 and No. 8§-in lump $7.50.

CINCINNATI

Market at Standstill—No Contracting—Retail Trade Sluggish Despite Cold Snap.

Despite the present cold weather, trading remains at a standstill with but very little prospect of improvement in the near future. The present cold snap is not enough to warrant any material change in the market conditions.

That it will probably be no less than six months before conditions in the market show signs of improvement, coincident with the reopening of many of the manufacturing plants in the city is the general opinion of the trade.

Many plants still have on hand a sufficient supply of coal to last for some time. Attempts on the part of wholesalers to arrange contracts with those firms now operating are meeting with but little success.

Mine quotations remain about the same. Bituminous lump was quoted $3.50@$4, while nut and slack brought $150@$2. Smokeless lump was $5.50@$5.75 and mine run $3.75@$4. The following quotations were made by dealers: Bituminous lump, $9.25@$10; mine run, $8.50@$9; smokeless lump and egg, $10.50@$11; mine run, $9.50; anthracite egg, $15@$16.25; domestic egg coke, $14.50@$16.

Southwest

KANSAS CITY

Demand Slumps with Warm Weather—Mines Resume—Prices Firm.

Cold weather which started a week ago lasted only two days and spring-like weather again prevails. The few days' suspension in mining operations last week on account of the trial of Howat is over and miners have returned to work. All mines are running that have a place for their coal.

There have been no changes in prices; Kansas lump is quoted at $5.50, nut $5, slack $3.75@4; Arkansas lump $6, mine

run $4.50, slack $3.50@4; north Missouri lump $4.50, mine run $4, raw slack $2.80@$3.15.

South

LOUISVILLE

Cold Weather Tightens Prices — Operators Quoting High on Long Contracts —Prospects Looking Better.

Unexpected cold weather over the week end of Feb. 19, resulted in a temporary demand for steam and prepared sizes on the mines. Demand has been generally better and has brought higher prices for the time being.

For some time past operators have been sacrificing their screenings to sell lump, and this in turn has ruined the mine run market. With a slack market for lump coal and not much coal being screened, slack will get scarce, advance in price, and mine run will come back in demand. That this condition is true is shown by some of the larger operators and jobbers who will not take screenings contracts for less than $2.75@$3.

Prices have improved materially. Hazard mine run is quoted $2.50, and block $3.75@$4. Elkhorn prices compare with Hazard except on mine run, which is $2.65. Jellico is quoted at about 15@25c. under Harlan and Straight Creek, these two grades being quoted at $4.25 for block, $3.75 egg, $2.90 mine run, and $1.70 for nut and slack.

There has been no large increase in demand from any one industry or section, but a slight improvement in industrial demand is perceptible, coming from general sources.

BIRMINGHAM

No Steam Market — Domestic Also Slows Down — Production Further Decreased.

Conditions show practically no change over a week ago. In fact, some claim the situation is slightly worse, due to continuity of the dullness which has affected the industry since the Christmas holidays. There is virtually nothing doing in the way of spot buying, and the opinion has been offered that the trade would probably not approach anything like a normal stride prior to late summer or early fall. In the meantime there is no effort to force buying and prices remain fairly firm. Quotations at the mines are so follows:

	Mine Run	Washed	Lump
Carbon Hill	$2.85@3.35	$3.35@3.85	$5.25@5.50
Black Creek and Cahaba	4 00	4.00@5 00	5 00@6.00
Pratt.....	3.35@4.00	....	....
Corona.....	3.50	....	6.00

Protracted mild weather has created a soft domestic market and there is a surplus of some grades, though it is a great deal easier to find a customer for lump coal than for steam. However, this is due partly to the fact that the output of domestic coal is necessarily restricted and when a normal demand exists there is a shortage, particularly of the better grades.

Production has been slowed down and is now off from 80,000 to 100,000 tons per week as compared with the output of a month ago. The calling off of the strike will have no effect whatever in labor circles, as full working crews have been the rule at all mines for the past two or three months.

West

DENVER

Lower Prices Encourage Trading — Retail Prices Shaky.

Indications of a firmer market are apparent for the first time in many weeks. The situation is far from encouraging, however, for sales attributed to lower prices are in fact only the weak responses of consumers endeavoring to get along with as little coal as possible for the remainder of the winter.

In June, 1920, operators maintained a price of $4.50 for lump lignite. In October, it went to $6, and now is down to $5.25. The cheaper grade lump sold for $3.50 at the mine last June, $5 last fall and today is back to $3.50. This condition has prevailed in the face of increased maintenance costs and higher wages, and operators are at a loss to know which way to turn for relief.

The recent cut on Louisville lump lignite of 65c., and of 90c. for second grade lignite, was due in part to meet extremely far-fetched reductions of certain retailers. This competition forced first grade to $9@$9.25, and second grade to $6.75@$7.25. Shoveled lump is $7 or less for second grade lignite.

Bituminous lump in Routt and Southern fields is $6.50 and nut $6. This makes Routt $12.50 and $12, respectively, on the Denver market, and Southern $11.50 and $11. Bituminous steam is steady at $3@$3.50 f.o.b. mine, and $6.75 retail, while lignite steam is $2.40 f.o.b. mine and $5.30 retail.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Market Remains Stagnant—Late Opening for Lakes—Operators Firm on Contract Prices.

While the operators who are willing to sell spot coal at competitive prices make up only a very small percentage of the total capacity there is enough represented to make prices very irregular. The spot market is shown in the Weekly Review, but the price is frequently if not usually shaded. A shipment of 95 cars of consigned coal to Canada had to be sold and brought $1.75, seller to pay demurrage, this amounting to $28 on the first car unloaded, and making the amount realized $1.05 per ton.

While demand is extremely limited, there are fair shipments on many classes of contracts, particularly those to public service corporations. The Pittsburgh Coal Co., which has much business of that sort, is now shipping at about 80 per cent of its average rate during the second half of 1920. Taking the district as a whole, production is at about 40 per cent of rated capacity.

Operators are considering the matter of prices on contracts for the coal year beginning April 1, but consumers are showing no disposition to open negotiations. The Pittsburgh Coal Co's. prices are unchanged since the reduction of Jan. 17. Two large independent operators state that they will not sell at less than $3.75 for mine run and one smaller operator, having only gas coal, states that he will adhere to $4 for ¾-in. gas, all three being disposed to close their mines entirely if they cannot secure their prices.

The Lake shipping season will probably be late in opening. Iron ore shipments will begin quite late and it would be difficult to arrange for much coal shipment early in the season on account of the lack of a return haul. Finally, the coal operators who ship in the Lake trade are joined in an effort to secure a readjustment of the rates on cargo coal relative to bunker and local shipments. The old rate from the Pittsburgh district was $1 for local and bunker coal, cargo coal being 78c. The present rate is $2.05½, the cargo rate being $1.86, or 90½ per cent as much, and the effort is to have the rate made 78 per cent, which would be $1.60.

CONNELLSVILLE

Trade Remains Stagnant—Furnace Interests Decrease Operations—Merchant Operators Resigned to Inaction

The coke trade remains absolutely stagnant. There is not much further decrease in operation of blast furnaces dependent on coke purchased in the region, but that is simply because nearly all such furnaces went out long ago. The furnace interests that have ovens in the region are decreasing their operations further and are down to a very low rate while the Steel Corporation has begun to decrease its operations sharply, with corresponding decrease in coal and coke operations in the region.

Merchant coke operators in general are making no effort to do business, feeling that the case is hopeless as the furnaces cannot sell pig iron at any

price. One or two operators, having ratio contracts, have some hope that by revising contracts they can aid the furnaces in selling pig iron and getting into operation again. One operator who has ratio contracts at 5 to 1 on basic pig iron, which is now down to $25, valley, but with a contract minimum of $5.75 on coke, has an open price on coke of $5.50 and would furnish this at a still lower price to holders of contracts.

Spot furnace is quotable $4.50@$5, these being simply asking prices. Heating coke has brought $4, but there is only limited absorption even at this price. Spot foundry is $5.50@$6.50, depending on grade, with a small movement daily in carload lots.

The *Courier* reports production in the week ended Feb. 19 at 113,910 tons by the furnace ovens, and 21,410 tons by the merchant ovens, making a total of 135,320 tons, a decrease of 10,820 tons.

CENTRAL PENNSYLVANIA

Production Touches Low Level — Outlook Is Not Improved.

At the present rate, production will reach the lowest level during February for the last five years. Based upon the first eighteen working days of the month, the output for the entire period will not exceed 3,000,000 tons.

Reports indicate that conditions are much worse than in the month of January, that there is no sale for coal and but little evidence of improvement on the surface. The daily average production in the entire district is 2,300 cars while in normal times it is 3,600. This does not indicate the real condition, however, as much of the present output is being stored in order to give the miners part-time work.

UNIONTOWN

Inquiries for Future Deliveries Appear —Talk of Wage Reductions—Railroads Negotiate for Contracts.

Submission of inquiries for fairly large coal tonnages by Eastern consumers and exporters has renewed the optimistic spirit which has continued to prevail during the present readjustment period. Operators admit that there is nothing definite in the inquiries. What they are pinning their hopes on, however, is the fact that large consumers are again looking toward their fuel supplies.

Perhaps the most accurate status of the market may be described as "what you can get." Sales of steam coal have been made in small lots as low as $1.60 @$1.75. Other operators are holding tonnage on track for $2. Byproduct coal is sharply quoted at a range of $2.25@$2.50, with some tonnage moving. For future delivery there are few operators who will discuss terms, but it would appear that for contract, the price must be something above $2.50 before any coal will be mined. Negotiations are understood to be under way by several large railroads for their supply for the fiscal year commencing April 1 but price views of purchasing agents would make it appear as unlikely that any contracts will be placed in this territory. The maximum offer of the railroads seems to be $2.50.

The wage reduction talk again made its appearance with the retrenchment policy of the H. C. Frick Coke Co. which is gradually curtailing production at all plants. Sentiment here among independent operators has about crystallized in the belief that new wage schedules will be put into effect early in the second quarter. In Pittsburgh negotiations are under way for several large coal contracts with wages as of 1919, approximately 35 per cent less than the present scale, indicating that a reduction is being anticipated in closing contracts.

EASTERN OHIO

Prices Weaken with Prolonged Sluggish Market — Production Lowered — Lakes Tonnage Light.

Production touched new low figures for the week ended Feb. 19, output being estimated at 259,000 tons. This represents a decrease of 26,000 tons under the preceding week and is only about 42 per cent of potential capacity. Figures given out by the Pittsburgh Vein Operators' Association show that while their mines worked but 40 per cent during the week, output was on a basis of 47 per cent rated capacity of mines reporting.

Mines on the New York Central continue to work four days per week and excepting the smaller operations there is no increase in the number of mines totally closed down. The labor situation is quiet but notwithstanding restricted opportunity for work, the district is not entirely free from occasional disturbances which result in some operating time being lost.

While some additional steamers have been lined up for coal loading, the movement to Lake has been comparatively light and has not been perceptibly felt as a bolster to production. There are as yet no signs of improvement in demand although jobbers contend that in anticipation of an early opening of the Lake season there will very soon be felt a stiffening in the market. Industrial plants are running with hand-to-mouth fuel supplies and seem content to take care of their needs in the spot market.

Mine prices on spot coal have softened slightly, the range being somewhat as follows: Slack, $1.75@$2; mine run, $2.25@$2.50; 3-in. lump, $2.75@$3; 1¼-in. lump, $3@$3.50; domestic lump, $3.50@$4.

FAIRMONT AND PANHANDLE

Dullness More Pronounced—Low Contract Offers Refused—Production Continues Downward Trend.

Fairmont

Dullness was most pronounced during the week ended Feb. 19 and production declined further as the result of "no markets." Toward the end of the week there was a marked decrease in railroad shipments, the B. & O. taking hardly any coal at all. Although Curtis Bay shipments held fairly well, there was no demand at Tidewater. Contract offers by railroads and large buyers, in some cases as low as $1.75, of course precluded further negotiations.

Northern Panhandle

Owing to dwindling markets the only change in conditions for the third week of February was in the direction of lowered production. Prices apparently cut no figure in moving spot coal, as the demand for fuel simply did not exist at any cost. Because of the general suspension of contracts and the inactive spot market, production was less than one-third of capacity.

Middle West

SOUTHERN ILLINOIS

Prices Firm—Demand Is Sluggish—Production at Low Level.

Prices in the Standard field are the same as last week, with the exception of screenings, which have stiffened slightly. Mines are working one and two days a week, with some idle for several weeks. Railroad mines are gettin about three or four days a week. A little of this coal is moving to Chicago and some to the Northwestern market.

In the Mt. Olive field somewhat similar conditions prevail, although the railroad tonnage is heavier. Movement to the North and Northwest is also heavy. The prices here are unchanged.

In the Carterville field there has been no change since last week. The mines are working about three days, with "no bills" of all sizes on hand.

MIDWEST REVIEW

Curtailed Production Strengthens Prices—Demand Still Very Weak—Contract Market Lagging.

Every day brings more announcements from operators both in Indiana and Illinois, to the effect that they are closing their mines until conditions change. Most of the mines closed have been producing steam coals rather than high-grade domestic. There has been no improvement, so far as the coal trade is concerned, in the industrial situation, nor has the weather been in our favor.

Coal production dropped off last week and it will drop off some more this week. While the demand for coal remains very unsatisfactory, prices obtained during the last few days have been an improvement over those prevailing recently. The factor responsible for this condition is as follows: The domestic trade, for the time being, is completely out of the market and consequently very little lump, egg and nut coals are moving. Having no place to put prepared coals, the operators have had to stop running and this has brought about a strengthening in the market for screenings. In some cases.

prices advanced 50c.@75c. a ton within a few days. Spot prices are shown in the Weekly Review.

Taking into consideration the different producing fields, it is safe to say that even the best of them are not running in excess of 50 per cent of the time, while the less favored fields are running from 40 per cent down to 20 per cent, if they are running at all. As a rule, the mines in Franklin County are running on a basis of 50 per cent, and in order to do this, they have put in storage a very considerable amount of their tonnage. The Franklin County Mines are undoubtedly doing more than any of the others.

Usually at this time of the year, a number of the larger coal contracts have been closed, but this is not the case this season, as we have heard of no large agreement which has been signed. It is to be expected of course, that there will be a natural shifting of business this year. Buyers, who have relied during the past years on certain operators, have become discouraged over the treatment they received last year, and consequently are casting about with the idea of placing their business with other firms. This rather general readjustment will take time, and we feel safe in predicting that the contract season will be later than usual this year.

WESTERN KENTUCKY

Mines Operate on Better Schedule—Prices Ranging a Little Higher — Demand a Trifle Stronger.

There is a considerable range to prices just now. Averages last week for prepared sizes were $3.15, based on a range of $2.75@$3.30; mine run, $2.65; range, $2.60@$2.85; screenings, $1.95; range, $1.70@$2.25. Mine run, which has been quoted down as low as $1.85@$2 is now $2.25@$2.50; nut $2.75; nut and slack, $1.75@$2; pea and slack, $1.25@$1.50. On prepared sizes prices appear a little stronger, while screenings are not gaining very rapidly.

Movement is now a little better on all grades, mines operating two days or more a week, with some fair demand for lump. Mine run is a little dull, screenings are easy.

Railroads are taking more coal, and there is also a better movement into the Southern markets. Prospects are considered fair.

INDIANA

Contract Orders at Minimum—Domestic Call Easing Off—Contract Offers too Low.

At the present time railroads are not making more than 50 per cent of their contracted coal and are buying none on the outside. The small tonnage moving is mostly on industrial contracts that have been greatly curtailed or on a few open market spots that are quickly covered with many offers.

A fair demand for domestic at $3.25 @$4 has caused a surplus of screenings which have been sacrificed as low as $1. In the last ten days screenings are showing decided signs of strengthening but with a declining domestic demand the shippers' realization will probably be about the same as that prevailing the past six weeks.

The producer is naturally reluctant to contract at this time, as, with a greatly depressed market, it is hard to interest a consumer unless the price quoted is below the cost of production.

DUQUOIN

Coal Mined with Difficulty—Production Being Steadily Curtailed.

Market conditions remain unchanged and no relief is seen for the near future. Very little coal moved last week and a sudden blizzard failed to have any material effect on the demand. Domestic fell back to a level with steam coal and lump dragged heavily. Many dealers throughout the Northern districts are filled up and absolutely refuse to buy coal under present conditions.

Production did not average over 50 per cent throughout the past week with still more mines shutting down indefinitely. Railroads are reducing forces in the mining centers.

Middle Appalachian

LOW-VOLATILE FIELDS

Producers Refuse Low Contract Offers — Output Further Curtailed — Much Unsold Tonnage Still To Be Absorbed.

New River and the Gulf

Greater dullness has not been experienced in the New River field in 10 years than existed during the week ended Feb. 19, as reflected by a daily average production of not more than 11,000 tons. This was almost entirely moved on contracts which have been cut to the bone. Production is being steadily reduced as operators have largely discontinued making forced sales.

Heavy snows hampered production on Feb. 21 although all orders were easily filled thereafter. There is still much unconsigned coal at Tide and west of Cincinnati.

Winding Gulf operations were down close to 30 per cent. Practically the same conditions existed as in the New River section. Operators are prepared to further curtail tonnage if necessary until the market justifies resumption.

Pocahontas and Tug River

Pocahontas production dropped to about 200,000 tons, the lowest point for some time. One day's operations held good for most mines. If anything, conditions had changed for the worse and producers could not see any improvement until the surplus Pocahontas coal on the rails had been absorbed.

Reduced contract requirements further curtailed Tug River production. Slack was impossible to move and proved a serious bar to production as such unsold loads were side-tracked and further cars denied producers.

Very little future business developed as a result of growing contract inquiries, as prices could not be agreed upon. Heavy snows temporarily retarded production, although all orders were easily filled.

HIGH-VOLATILE FIELDS

Production Being Steadily Lowered — No Market Losses Grow—Contract Requirements Almost at Minimum.

Kanawha

Conditions were even more dull in the week ended Feb. 19. Buying curtailment increased and contract orders continued to scale down. The few mines still in commission were able to run only about one day. Comparatively little tonnage was moving to the piers. Production did not exceed 20 per cent of normal.

Logan and Thacker

The apathetic market continued in the Logan region. Although the spot trade was practically nil several contract inquiries developed during the week, few of which materialized because of low prices. While some producers were still shipping on consignment the practice was becoming less general because of the poor prices secured.

No market losses increased in the Williamson field. Only one mine lost any time because of the strike. It was not possible to sell in the open market and contract tonnage was being pared down, as in other fields.

Northeastern Kentucky

Production was limited to 21 per cent chiefly by no markets, as it was almost impossible to move spot coal except at ruinous figures. Domestic demand was also slipping and curtailment of production was naturally becoming greater.

Virginia

Conditions remained practically unchanged during the week ended Feb. 19, mines producing about 50 per cent of capacity. Larger operations were confining their tonnage to contracts, as the spot market had disappeared, or what few offers were made carried a price which producers would not readily consider.

West

UTAH

Temporary Stimulation with Colder Weather—Prices Holding Firm.

Colder weather has bolstered the demand, temporarily, at least. Producers are not looking for any great improvement, however. Retailers are fairly well stocked and the coast trade is not at all brisk.

Prices hold firm and there is no rumor of any early reduction at the mines. In the opinion of producers and retailers, it will not be possible to cut prices with the present existing costs, and freight rates must come down before prices can be changed appreciably.

MINE And COMPANY NEWS

ALABAMA

Mine rescue work by airplane was inaugurated in the Birmingham district by the **Montevallo Mining Co.** in conjunction with the mine rescue station at West End and the Dixie flying field recently, when rescue apparatus was transported 30 miles by airplane in answer to a hurry call from the mine.

Reid and Lowe, Birmingham, have been awarded the contract to do the piling and other work on the **coal terminal at Port of Cordova** on the Warrior River, and the Manhattan Rubber Manufacturing Co. has been awarded the contract for the conveyors, belting and other coal handling equipment. The Cordova bins are to cost about $70,000, and will add greatly to the capacity of the river for handling bunker and export coal to Mobile and New Orleans.

ILLINOIS

The Gillespie Coal Co. has sold its mine and acreage to John Henderson of the West Virginia Coal Co. of St. Louis. This mine is local on the rail of the Illinois Traction System and is being worked on the old unworked acreage of the St. Bernard properties which were abandoned many years ago.

It is generally understood that the mine of the **Scranton Big Muddy Coal Co.**, owned and controlled by Scranton, Pa., people, has been sold for something like $350,000 to the **Lake & Export Coal Co.**

The Block Coal Mining Co., with capital stock of $65,000 has been incorporated. The incorporators are Harry Tanner, Ben Cudder and Carl H. Preihs.

The organization committee of the **Little Grove Coal Mining Co.** is making excellent progress in its work. Production will be started about May 1.

The Cantrall mine of the **Sangamon Coal Co.**, has been closed until demand for coal has become better.

The annual report of the **Illinois Department of Mines and Minerals** shows that Williamson County ranks second in the production of coal in Illinois, being surpassed only by Franklin County.

The relative rank of counties producing 1,000,000 tons or more of coal for 1920 follows:

Franklin	11,299,280
Williamson	9,631,386
Macoupin	6,887,547
Sangomon	6,884,049
St. Clair	5,280,768
Saline	4,539,853
Madison	3,882,620
Vermillion	3,248,946
Christian	2,606,491
Perry	2,408,900
Fulton	2,331,975
Randolph	1,278,283
Peoria	1,244,013
Clinton	1,092,882

INDIANA

Four men were killed Feb. 16 by an explosion of gas in the **New Liberty** coal mine, situated near Oakland City. The blast occurred just after the four had reached the bottom of the shaft, where they were to enlarge the landing. No other workmen were in the mine at the time.

KENTUCKY

The Scanlon Coal Co., Louisville, is featuring Carbocoal, produced by the Sun Glo people, having secured state distribution for this coal. This coal is produced at Clinfield, Tenn. the first car arriving in Louisville a few days ago.

The Christie-Sowards Mining Co., of Pikeville, capital $200,000 has been chartered by J. J. Christie, E. H. Sowards and John A. Sowards.

The situation regarding railroad consumption is not improving much. **The Louisville & Nashville R.R.** has started buying a little coal in western Kentucky again, but in small lots. It is reported that the L. & N. now has 700,000 idle cars on its tracks. At the same time there are large contracts for cars in the shops of the American Car & Foundry Co. and other independent shops. Under the wage scales paid by the railroads and forced upon them by the Railway Board, it has been found cheaper to lay off shopmen and contract for cars to be built outside, than to build them in railroad-owned shops.

State Senator Thomas B. Watts has announced that he is leaving for a six weeks trip to California, and that he is positive there will not be a special session of the State Legislature this spring to consider **coal taxing on the tonnage basis.**

The Ridley Ice & Coal Co., Louisville, capital $40,000, to handle coal, grain feed, etc., and operate a cold storage plant, has been incorporated by C. W. Inman, H. C. Inman and E. G. Boone. C. W. Inman is head of the Inman Co., operating the Inman Veneer & Panel Co., and Inman Furniture Co. He organized the big local combine known as the Merchants Ice & Cold Storage Co., selling his interest some years ago, under an agreement to keep out for ten years, the time now having expired.

MINNESOTA

The Northwestern Coal Dock Operators' Association of Minneapolis, is due for another investigation, at the hands of a committee from the Minnesota legislature. This is almost a certainty. It has been done at intervals in the past, without uncovering anything that would justify even a yellow sheet in getting out an extra, but the legislators simply cannot rest without it.

The St. Paul Coal Co., of St. Paul, has received applications from a number of interior Minnesota cities to open yards in the different cities, so their citizens may buy at the prices named to St. Paul. The management states that the extension of facilities to the country will be made as soon as it seems feasible. The same range of low prices is promised for the country when the extension is made.

OKLAHOMA

The B. & A. Mining Co., Okmulgee, is planning for the installation of new electrically operated coal-mining machinery, including hoisting equipment, etc. Bids will be taken until early in March.

OHIO

Commander James C. Hilton, United States Navy and Howard W. Amell, Washington, Assistant United States Attorney General arrived in Cincinnati recently to aid Assistant United States District Attorney Allen Roudebush in the trial of the suit of the **C. G. Blake Co.**, against the United States, in the Federal Court. The Blake company seeks recovery of approximately $22,000 alleged to represent the difference between the price paid by the Government and the price charged for coal supplied during the war period to the Navy Department. It is alleged by the company that the Government offered only $4 a ton, whereas the price charged by the company was $5.61. The amount actually paid by the Navy Department was $3. This is to be made a test case as to the right of the Navy Department to set its own price for coal.

The Crab Orchard Mining Co., has started the erection of a modern power plant at Freeport to develop a large coal acreage. The property is located on the Baltimore & Ohio and is in the southwestern corner of Harrison County. It is planned to put in an electrical plant for an output of 500 tons daily.

It is reported that former State Auditor **A. V. Donahey** has purchased 116 acres of coal land near New Philadelphia, in the Middle District, where he will engage in the coal mining business.

The Belmont-Fairmont Coal Co., of Fairmont, W. Va., will open a tract of Pittsburgh No. 8 coal land in Belmont County, Ohio, near Flushing, on the Baltimore & Ohio R.R.

Stockholders of the **Hanover Coal Co.**, operating mines near Burgettstown, Pa., met in Martins Ferry, electing the following officers; President, W. J. Sprow, of Sandusky; vice president, A. C. Beetham; treasurer, C. M. Wyrick, and secretary E. B. Graham. Announcement was also made that the company's offices which were formerly in the Kirby Bldg., Cleveland, had been removed to Pittsburgh.

In connection with the annual meeting of the **Climax Coal Co.** at Martins Ferry at which officers were elected, announcement was made of the intention of the company to improve its properties in many ways. Officers elected were: George D. Banfield, president; W. J. Cook, vice president; Charles Hartman, treasurer; F. W. Mahan, secretary. On the board of directors are President Banfield, Vice-President Cook, W. A. Williams, A. I. Negus, H. S. Bradley, Dr. O. O. Sink and T. Hays White. It is proposed to increase production by making improvements at the company's stripping mine as well as its deep mines, such improvements to be undertaken at once. The company has about 2,000 acres at Smithfield station in Jefferson County, Ohio, together with a modern tipple, stripping shovels, etc. An additional siding will be built from the Pittsburg-West Virginia R.R. and additional tipple equipment will be installed. The company began operations in 1918 and its property is at present valued at about $1,000,000.

The Ohio State University was allowed the sum of $125,000 by the Ohio State Emergency Appropriation Board for the first half of 1921, of which sum $71,500 is to be spent for coal.

The Bremer Coal Co. is planning for the development of about 225 acres of coal property near Cambridge, and will install machinery and operating equipment for this purpose.

Wheeling people for the most part are interested in the newly organized **Yorkville Coal Co.** capitalized at $50,000. Though organized as a West Virginia concern its mines will be at Yorkville, Ohio, those principally interested in this company being Clarence Adams, of Buffalo, N. Y.; J. E. Morgan, O. J. Miller, D. C. Hunt and James M. Noble, all of Wheeling, W. Va.

PENNSYLVANIA

A large section of State Street, in the Larksville section of Wilkes-Barre, has dropped into the mines of the **Hudson Coal Co.**, and only the concrete pavement held up. The Hudson Coal Co. has been expecting subsidence in the vicinity of the cave, and recently purchased twenty houses which are likely to be damaged or destroyed.

The inspector of the **Twenty-fourth Bituminous District** has just filed his report with the State Department of Mines. The district includes 73 mines in and around Johnstown, Scalp Level, Windber, Miller, Run, Arrow, Cairnbrook, Central City, Haskins No. 3 and other small places. Five mines were not operated and three were reported containing gas. The 1920 output was 5,603,820 tons or 2.5 per cent less than in 1919. The installation of safety devices reduced the fatalities in the district to eleven, a reduction of 39 per cent. There were 61 non-fatal accidents. About half the coal was mined by hand and the other half by electrically driven machinery. An average of 4,756 persons were employed in the mines and 1,243 outside. Nine new mines opened during the year and none was abandoned.

The Lehigh Valley Coal Co. has resumed operations at its Oneida, Derringer and Tomhicken mines, following a brief suspension of work due to excess stocks at the collieries.

The Buck Ridge Colliery, near Shamokin, has been acquired by new interests, headed by **W. J. Fallon.** The new owners are reported to be planning for general expansion for increased output. The mines have been giving employment to about 500 men.

The State Legislature is considering a bill, introduced by Representative Schaeffer, Schuylkill County, fixing **standard sizes of anthracite**, and requiring inspectors of weights and measures to make tests.

Nearly one million tons of coal were saved for the miner's pick when Judge Henry, of Lebanon County, set aside an injunction granted several years ago against the **Thomas Colliery Co.**, which can now mine vast tracts under Shenandoah, which was prevented for years. The case has been before three judges in ten years. The plaintiffs alleged mining would endanger buildings on the surface.

Reports have been received that coal options have been exercised by the **H. C. Frick Coke Co.** for the surface of three farms at Ginger Hill, near Monongahela, as a site for a new mining town. There are also rumors that the company plans to remove coal from its vast Greene County acreage through an underground system to the river for shipment to the steel corporation's byproduct ovens. Application for a charter for construction of a railroad to the surface involved in the options has been made.

With the razing of the old **Storrs breaker** of the Delaware, Lackawanna & Western R.R. Co., just above the city line in Dickson City and of the **Marvine breaker** of the Hudson Coal Co., in North Scranton, two of the oldest landmarks of the mining industry in the valley are disappearing. Both structures, their usefulness outlived, are giving way to modern inventions and machinery and are being torn down as a result of the completion of two steel and concrete breakers erected nearby.

The report of the inspector of the **First Anthracite District** which has been forwarded to the Department of Mines shows that 2,764,121 tons of coal were mined in the district during the year. The district comprises mines in Lackawanna, Wayne, Susquehanna and Sullivan counties. The report follows:

Hudson Coal Co.	556,768
Hillside Coal and Iron Co.	409,309
Mt. Jessup Coal Co.	277,171
Connell Anthracite Mining Co.	253,642
Scranton Coal Co.	241,505
Lackawanna Coal Co.,Ltd.	227,394
Northern Anthracite Coal Co.	209,209
Robertson Coal Co.	176,623
Racket Brook Coal Co.	141,865
Temple Coal Co.	89,219
Barton Coal Co.	72,615
Carbondale Coal Mining Co.	25,165
Staples and Bell Coal Co.	20,443
Grove Hill Coal Co.	18,608
Northeast Coal Co.	12,037
Bernice Anthracite Coal Co.	11,578
Bright Coal Co.	10,490
J. W. Kirby & Sons, Inc.	10,480
Total	2,764,121
Production by Counties:	
Lackawanna	1,301,098
Susquehanna	419,789
Wayne	568,805
Sullivan	474,429
Total	2,764,121
Number of persons employed inside and outside	4,589
Number of fatal accidents inside and outside	16
Number of non-fatal accidents inside and outside	45
Number of tons of coal produced per fatal accident inside and outside	172,751
Number of wives made widows	11
Number of orphans	30

Production of coal in the **Seventh Anthracite District** was greater during 1920 than in any year since the district was created. The district comprises the upper portion of Luzerne County and part of Lackawanna County. There were thirteen fatal accidents and thirty-nine non-fatal mishaps. The production by companies follows:

Delaware, Lackawanna & Western R.R. Co.	1,150,257
Pennsylvania Coal Co.	655,919
Hillside Coal & Iron Co.	111,367
Suffolk Coal Co.	227,321
Jermyn & Co.	344,241
Scranton-Taylor Coal Co.	43,942
Dennington Coal Co.	37,547
Total	2,570,599
Production by Counties:	
Lackawanna	1,858,376
Luzerne	712,223
Total	2,570,599

Fire that did several thousand dollars damage broke out recently in No. 5 breaker of the **Susquehanna Collieries Co.** at Nanticoke. The top of the structure was burned, but the flames were kept from spreading to the machinery. Carpenters were immediately placed at work repairing the damage.

A force of men is engaged in the reconstruction of the **Union Connellsville Coal Co.'s** mine. Officials plan an expenditure of $200,000 in the rebuilding of the mine, which was practically wrecked as a result of a recent fire.

TENNESSEE

The Palmetto Coal Co., operating mines at Cartwright, has announced a 25 per cent reduction in wages of miners, which has been accepted by most of the employees.

UTAH

As soon as definite surveys are completed and arrangements made for assembling material, active work will be started on a new railroad which will traverse Gunnison valley. The road will start at the coal fields in Salina canyon, and will pass through Axtell, Centerfield and Gunnison, skirting Rocky Point, and continuing north, connecting with the Los Angeles & Salt Lake Route at Juab.

A legal battle waged since 1907 ended recently when the Secretary of the Interior ruled that 600 acres of coal land in the Sweet school section of Carbon County, valued at more than $500,000, purchased by the **United States Fuel Co.** really belonged to Le Roy Eccles, Geo. H. Davis, W. A. Wright and the estate of the late G. H. Tribe, all of Ogden. The land was originally purchased by Arthur Sweet from the State. After a controversy in which the Federal Government claimed the property in that title to coal land did not pass to the State, the fuel company purchased the land from Sweet. After a reversal of the decision which again gave title to the United States, Eccles and others purchased the property. In the ensuing legal tilt in which the coal company sought to regain possession, the Secretary of the Interior awarded the land to the Ogden individuals.

VIRGINIA

In connection with the electrification of its coaling piers Nos. 2 and 3, the Norfolk & Western Ry. Co., will install a new coal dumper with capacity to handle 120-ton cars. The work and installation is estimated to cost about $650,000. The company will also install a new trimming machine for handling coal cargoes, estimated to cost about $150,000. Arrangements are being made for the purchase of 1,000 new coal cars, each of 120-ton capacity, to cost about $5,750,000.

WEST VIRGINIA

Practically all the books and records of both the **Randall Coal Co.** and the **Jarvis Coal Co.** were lost in a fire which destroyed the office building of both companies in Morgantown as well as a store building which had been completed a short time ago. The loss amounted to between $15,000 and $20,000.

Development of Marion County coal land will follow the organization of the **Vassar Coal Co.** capitalized at $75,000, which will have its headquarters in Fairmont. Conspicuous in the organization are: Bruce H. Fanus, Austin T. Marcum, John Russo, Jr., Anthony Shuttle and Petter Ferretti, of Fairmont.

Mining in Mingo County will be undertaken by the **Shumate Coal Mining Co.** which has just been organized with a capital stock of $50,000. Largely interested in the new company are: Elizabeth Shumate, Charles Tarney, Walter Lyle, Mary Tarney and Mary Lyle of Naugatuck, W. Va.

Eighteen mines will be developed in McDowell County by the **United States Coal & Coke Co.** of Gary, a subsidiary of the United States Steel Corporation. Several hundred thousand tons of coal will be the annual output.

An accident at the Windsor mine of the **American Gas & Electric Co.** near Beech Bottom, on Feb. 2 cost the lives of three miners. Mine timbers were unable to stand the strain and when they snapped the three men were crushed beneath tons of earth. Although miners who escaped injury made every effort to dig out their fellow workers the latter were dead when their bodies were recovered.

H. J. Booth, glass manufacturer and coal producer of Pittsburgh, has transferred to the **River Seam Coal Co.** in which he is interested, the holdings of the **North Fairmont Coal Co.** recently acquired by him, the money involved in the transfer amounting to $595,000. The plant of the company will be near Round Bottom, and at the same time it is likely that a producer gas plant and a glass plant will be built near the coal operation.

Development work has been started at the newly completed Byrer plant of the **Fairmont-Kittanning Coal Co.**, four miles from Philippi. Kittanning coal will be produced. The president of this company is J. E. Gaskill of Fairmont.

The Nelson Fuel Co. of Lewisburg, the **Imperial Smokeless Coal Co.**, the **Greenbrier Smokeless Coal Co.**, the **Marguerite Coal Co.** and the **Frances Coal Co.**, the last named being controlled by W. E. Deegans and associates, will soon be operating in the Meadow River territory, one of the few remaining undeveloped fields in the New River region, there being nearly 200,000 acres in this section, only about 10,000 of which will be developed at the outset. The property to be developed has been leased from the **Gauley Coal Land Co.** The outlet from the Meadow River territory will be by way of the Greenbrier & Eastern Ry., now nearing completion.

Further development of Monongalia County coal land will follow the organization of the **Acme Coal, Oil & Gas Co.** which has a capitalization of $100,000. Officers of the company will be in Morgantown. Active in the formation of the new company were: E. H. Eddy, Charles C. Robb, G. B. Simpson, J. Minor Dunham and Oscar L. Wilson.

The Stone Mountain Coal Co. which was the first company affected by labor troubles in Mingo County, resumed operations early in February, it being one of the last to do so. It was as a result of the questioning of the right of Baldwin-Felts detectives to evict the miners of this company that the fight at Matewan occurred, in which 10 were killed.

The Coalton Coal Corporation, recently incorporated with a capital of $200,000, has plans under way for the development of a tract of about 500 acres of land in the vicinity of Williamson. An aerial tramway will be constructed at the property. J. T. Jones, Cambria, Va., is secretary and treasurer.

BRITISH COLUMBIA

Several reports are in circulation regarding the development of **new coal areas on Vancouver Island.** One is that 50,000 acres, situated on the island has been acquired by American interests for $1,750,000. It would appear, however, that the deal has not been finally closed, its issue depending upon the results of exploration, prospecting, and some drilling now in progress under the supervision of engineers. W. S. Henderson, president of the Gem Coal Mine Co. and Jewel Collieries of the Drumheller area, Province of Alberta, has been on the Pacific Coast recently and it is stated that he is making investigation with a view to taking over British Columbia coal lands. John Arbuthnot of Victoria, with whom he spent some time, holds promising coal rights near Nanaimo.

Survey of 2,000,000 acres of mineral lands owned by the **Canadian Pacific Ry. Co.** on Vancouver Island is to be started soon. The work will be carried on by the smelter at Trail, a railway company holding. The company plans to open a smelter on the island and will develop immediately every coal discovery.

The Frazer Lake Collieries, Ltd., has been incorporated with a capitalization of $600,000, its headquarters being in Prince Rupert. This company has been formed to develop and operate coal property situated near Fraser Lake in northern British Columbia. The coal is so close to the surface that a steam shovel may be used in its recovery.

ALBERTA

It is likely that the post of **Director of Coal Operations** in District 18, U. M. W. of A., which includes the coal fields of eastern British Columbia and of the Province of Alberta, will be continued after the forthcoming session of the Dominion Parliament. The intention was to abolish the office but representations are said to have been received both from the miners and the operators protesting against this decision. W. H. Armstrong, the present incumbent, is likely to be called on to continue his duties.

The 1920 output of the Province of Alberta is placed at 6,650,000 tons as compared with 5,022,412 tons for the previous year. This is a new record in the history of the province. A marked increase in the shipments to the Western and Eastern provinces has been a feature of the year's developments.

Personals

E. J. Weimer, who has been in the lead mines in Missouri until recently, has been appointed mining engineer for the large Kathleen mine, at Dowell, Ill., owned and operated by the Union Colliery Co., of Chicago and St. Louis.

C. E. McCarthy, engineer for the Scott-Smith Coal Co., operating a strip mine at Duquoin, Ill., has resigned his position with that company. He has accepted a similar one with a company in northern Indiana.

C. L. Beidenmiller, chief engineer of the Glogora Coal Co., with headquarters at Huntington, has been promoted to be general manager of the same company. This company is preparing to begin production of coal at its new plant on Big Coal River in the near future.

Ernest Deem has been appointed traffic manager of the Amherst Fuel Co., with headquarters at Amherstdale, Logan County, W. Va.

A recent visitor in Eastern markets was **D. A. Quinn,** sales manager of the Central Fairmont Coal Co., with headquarters at Clarksburg.

Colonel C. W. Watson, head of the Consolidation Coal Co., with headquarters in New York City, spent a day or so in southern West Virginia about the middle of January.

J. G. Bradley, president of the West Virginia Coal Association, was a visitor in Eastern cities during the latter part of January.

J. J. Barry, general sales agent of the C. D. Robinson Coal Co., with headquarters in Fairmont, who has been confined to his home by illness for some time, is able to be at his desk once again.

Charles A. Alden and **E. C. Melville,** both of whom are prominently identified with the New England Fuel & Transportation Co., were in Fairmont during the latter part of January.

E. G. Agee, auditor of the Marion Gas Coal Co., who has his headquarters at Greensburg, Pa., paid the Fairmont region a visit during the final days of January.

T. H. Huddy, who recently assumed charge of the operations of the Williamson Coal & Coke Co. at Williamson, was a recent visitor in Charleston.

A visitor at the Cincinnati office of the Chesapeake & Virginian Coal Co. in the last week of January was **George D. Miller,** of the Huntington district office of the company.

J. H. Murray, president of the Clear Creek Coal Co., of Huntington, is spending the winter months at Miami.

D. E. Spangler has resumed his official connection with the N. & W. as general superintendent transportation.

W. B. Gathright, assistant manager of the Louisville division of the St. Bernard Coal Mining Co., of Earlington, Ky., has been made manager of the Louisville division, succeeding **S. H. Newbold,** who becomes agent. Mr. Gathright has been with the company fifteen years at Louisville, and Mr. Newbold for thirty years.

G. C. Weitzell, vice-president of the Pittsburgh Coal Co., and **Albert Brenholtz,** president of the General Hocking Fuel Co., accompanied by their wives left recently for a vacation trip to Panama.

A. B. Rawn, general manager of the Solvay Collieries Co. with general headquarters at Huntington, W. Va. was attending a rate hearing in Charleston, last week.

Traffic News

Public hearing on cancellation of bituminous coal rates from **B. & O. R.R. Tariff, Coal and Coke Series, I C. C., 1923,** of Western Maryland stations, Meyersdale, Pa., to Indian Creek, Pa., and Chiefton, W. Va., to Wyatt, W. Va., as origin stations, was heard at Pittsburgh, Feb. 24.

The Charles Boldt Paper Mills Co., Cincinnati, in a complaint to the I. C. C. attacks as unreasonable the rates on coal from Harveyton, Ky., to Red Bank, Cincinnati.

A hearing has been set for Louisville on March 7, by the I. C. C. on the complaint of the West Kentucky Coal Traffic Bureau, vs. the Illinois Central R.R., and connections, involved through rates from I C., Western Kentucky mines to he lower peninsular of Michigan, the basis sought being 25c. a ton over the rate contemporaneously in effect from Southern Illinois. The Illinois Coal Traffic Bureau will intervene in the case, in an effort to block the granting of the rate, which would result in competition of the two fields.

No decision has yet been announced of the result of the I. C. C. hearing on **rates from Western Kentucky to southern territory,** in which the West Kentucky Coal Bureau endeavored to show that rates should not exceed by more than 10c. a ton, those from southeastern Kentucky.

In the **Indiana rate case** the I. C. C. has decided that intrastate rates in that state, except rates on coal for distances of 30 miles and less, must equal the interstate rates.

Complaints have been filed with the I. C. C. by the **A. W. Hillebrand Co.,** of New York, against a combination rate of $2.69 on coal from Casselman, Pa., to St. George, Staten Island, N. Y., and asking for a rate of $1.65; against unreasonable rates on coal from mines in Pennsylvania on the B. & O. to Weehawken, N. J., Erie delivery, shipped in 1918 and 1919; and against unreasonable rates on coal from points in Western Pennsylvania to Weehawken.

In the case of the **Hillsboro Coal Co.,** an examiner recommends that the failure of the railroad to class and treat the mine of the coal company as a joint mine while classing and treating other mines at Hillsboro, Ill., as joint mines, subjected the complainant to prejudice and disadvantage.

In the complaint of **Richard Griffith** the I. C. C. holds that the **Jennings Railroad** is a common carrier; that their method of distributing coal cars during a period of car shortage to shippers on their line was not sufficiently systematic to warrant approval as reasonable for the future, but not shown to have injured complainants or to have resulted in unreasonable or unduly prejudicial distribution of cars; and that rates on coal moving from complainants mine to Worth, Pa., were not unreasonable.

For the time being at least no dead freight is to be moved by the Chesapeake & Ohio on Sundays. By dead freight the road means coal, coke, pig-iron and other fuels and metals. This also means a cessation of Sunday shifter service in the various yards of the system.

Association Activities

Sewell's Point Coal Exchange

A meeting of the members of the exchange was held in New York recently, when the old members of the board of directors, with one exception, were re-elected. The one exception was Frank Ellison of the C. G. Blake Co. who resigned and withdrew his tonnage from the exchange. In his place a Mr. Houston of Norfolk was elected as a member of the board, as a trans-shipper.

Smokeless Operators' Association of West Virginia

At the monthly meeting of the association, held in New York, in the second week of February, general conditions in the industry received the attention of members. Although frankly stating that conditions were far from satisfactory yet those in attendance were sanguine of a return to normal conditions within the course of the next few months.

The committee to which was referred the question of the Cincinnati freight differentials reported that it was making progress and would be able to make a definite report within a short time. The same report applies to the question of bunkerage at Hampton roads.

Knox County Coal Operators' Association

The association recently carried in the largest papers of Indiana an extensive advertising campaign in which they went into the question of coal mining in a detailed way. The idea was to give the general public information as to coal production, distribution and costs. Another question regarding coal production and costs dwelt on was the percentage of running time and charts showing the increase in cost corresponding to the decrease in hours of mine operation. The association declared that as far back as November, 1919, it was recognized that the business world could not indefinitely forestall the inevitable period of liquidation and joined with the bituminous coal producers of this and surrounding states in refusing the miners' demands formulated at the Cleveland convention. They predict that coal prices will never return to pre-war level and what is more, coal can not be mined and sold at lower levels than the average contract prices for 1920 as long as the present wage scale for mining prevails. The organization also goes into freight rates, showing the rapid increase from 1916 to the present time, the increase amounting to 127 per cent.

Obituary

Charles Davidson, aged 70 years, widely known in industrial circles, especially in the manufacture of coke, died recently in his home, Connellsville, Pa.

William D. M Elhinny, 53 years of age, formerly general manager for the Central Coal & Iron Co., located in Louisville for some years, and general manager of the operations at Central City, Ky., died in New York, Feb. 16.

John A. Carter, president of the Carter Bros. Coal Co., East St. Louis, and president of the Wholesale Coal Dealers' Association, died suddenly Feb. 10.

Recent Patents

Machine for Handling Coal. James C. French, Chicago, Ill., assignor to Frederick C. Austin, Chicago, Ill., 1,357,318. Nov. 2, 1920. Filed Jan. 26, 1918. Serial No. 213,869.

Mine Car. O. J. Zook and John C. Marshall, Butte, Mont., 1,358,678. Nov. 9, 1920. Filed June 7, 1920. Serial No. 387,023.

Mining Machine. Nicola Pedulla, MacDonaldton, Pa., 1,358,984. Nov. 16, 1920. Filed Dec. 22, 1919. Serial No. 346,465.

Coal-Cutting Machine. Alexander Stevenson and Arthur Logan, Glasgow, Scotland. Nov. 16, 1920. Filed Nov. 13, 1919. Serial No. 337,845.

Miner's Lamp. Sam Caserto, Stollings, W. Va., 1,359,330. Nov. 16, 1920. Filed Jan. 7, 1 20. Serial No. 349,865.

Tie for Mine Railways. Frank C. Mayer, Bridgeville, Pa., 1,359,413. Nov. 16, 1920. Filed July 30, 1920. Serial No. 400,118.

Regenerative Coke Oven. Louis Wilputte, New Rochelle, N. Y., 1,360,610. Nov. 30, 1921. Filed Sept. 30, 1918. Serial No. 256,201.

Agitating Coal-Feeding Hopper. Robert S. Riley, Worcester, Mass., 1,360,789. Nov. 30, 1920. Filed April 29, 1920. Serial No. 377,640.

Coming Meetings

The National Coal Association will hold its next annual convention at White Sulphur Springs, W. Va., May 18 to 20. For information regarding hotel reservations, etc., address W. B. Reed, secretary, Commercial National Bank Bldg., Washington, D. C.

New England Coal Dealers' Association will hold its annual meeting March 23 and 24 at Boston, Mass. President, W. A. Clark, Boston, Mass.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Windsor Hotel, Montreal, Quebec, Canada. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Canada.

The annual meeting of the **Pittsburgh Vein Operators' Association,** which was scheduled to have been held in Cleveland on Feb. 14, has been postponed to March 14.

Congressional Echoes on Coal Affairs

BEFORE THE HOUSE COMMITTEE OF APPROPRIATIONS in consideration of the river and harbor appropriation bill, General Harry Taylor of the Army Engineers Corps, criticised the New York, New Haven & Hartford R.R. for buying up in 1907 the boat lines in New England and tying them up so as to force all the coal business onto the railroads, which action, he declared, resulted in congestion. He said the road should have turned over the coal trade to the boats, leaving high-class freight for the road. Representative Rogers of Massachusetts, said the railroad was now urging a maximum development of New England waterways for handling coal to relieve rail transportation. Representative Dempsey, of New York, in charge of the bill, and Representative Small, of North Caroline, said the railroads should as far as possible leave the transportation of raw materials to water transportation.

Representative Rogers produced letters from the president of the New Haven road endorsing the Geological Survey's superpower project to save coal, on the ground that it would be an economy in the transportation of coal. General Taylor referred to the coal bunkering facilities at New Haven, Providence, Fall River and other New England ports capable of handling water-borne coal commerce. Representative Small also said that the development of the Connecticut River would enable it to handle coal traffic.

The committee considered the price paid by the army engineers for coal used in operation of their vessels, and it developed that the price was decreasing very rapidly. The committee went into the matter of coal prices for the last two years to show what was paid for coal during the war and what was being paid now. Colonel J. C. Oakes, army district engineer at Norfolk, Va., said the stringency in the coal market was caused by foreign buyers offering high prices—as much as $22.75—which he had refused to pay, obtaining coal for delivery at Beaufort, N. C., at $13.75. He said he was always able to get coal from Norfolk dealers at reasonable prices, the lowest bid last year being $11.75 a ton for Beaufort delivery.

Representative Dempsey said manufacturers in western New York told him they were paying $9.75 a ton for coal which before the war cost $1.75 or $2, and he did not see hope for some time of reduced transportation costs on account of wage increases. Representative Small did not see a prospect of reducing transportation costs on coal to the consumer except through a larger use of waterways. Mr. Dempsey thought coal in North Caroline should be cheaper than in New York, as it was nearer the coal fields. Colonel Oakes expected the price next year would be between $8 and $8.50. He referred to the increased wages of miners, saying they were receiving three times as much as they did three years ago. Coal formerly mined and delivered at Louisville at $1.10 a ton now cost $4 and $5. Colonel Oakes did not think the high price of $22.75 should be considered as applying to all the country, as he did not think everybody paid that price. He thought industries obtained their coal for between $11 and $13, saying the foreign buyers were the only one buying at high prices, and they offered to pay any price.

Secretary Purse of the Savannah Board of Trade said that that port expects to go heavily into the export coal trade. The Savannah Coal & Oil Co. of the Tidewater Coal Co., of New York, is constructing coaling stations with four units of 7,500 tons each daily capacity and another coal company was erecting three chutes for handling about 10,000 tons a day. French people were interested in the Tidewater Coal Co.

Representative McDuffie, of Alabama, said the government was building a coal terminal at Mobile on the theory that it can be made one of the greatest and cheapest coal ports of the country. The Warrior River tapped some of the very fine coal beds in the Birmingham district, which coal would go to Mobile.

REPRESENTATIVE BLACK, OF TEXAS, has introduced resolutions directing the Interstate Commerce Commission and the Railroad Labor Board to review the decisions of last summer raising transportation rates and wages of rail employees, with a view to their reduction in line with reduction of other commodities and wages in other industries. In a speech in the House urging rate and wage reductions Mr. Black said the cost of coal to the railroads must be reduced, it being one of the largest of the items of rail expense and coal prices remaining out of proportion to the general readjusted prices of the country. "The price of coal to the railroads is entirely too high," he declared. He said there were some coal operators who took the position that it was no affair of the public what the railroads had to pay for coal, but he insisted it was of public concern.

REPRESENTATIVES OF THE SMITHSONIAN INSTITUTION told the House Appropriations Committee that its estimate for coal last year was $6.95 a ton but it had to pay the Government Fuel Yards $10.03 a ton. Chairman Good said public utility representatives had told him that the bottom had dropped out of coal prices and they were getting coal cheaper than last year.

Treasury Department officials said the quality of coal was not as good as formerly, and more coal was required, it containing 20 per cent of ash.

Coast Guard officials said they paid in some cases three times the amount formerly paid for coal and could not obtain contracts. Most of the ships are coal burners, but the new ships are oil burners. It was said the service was at a point where it would soon be unable to operate because of lack of coal, although steps had been taken to reduce fuel consumption, even to the extent of cutting out cruises. Price comparisons were given as follows: Portland, Me., $5.40 a ton in 1915, $12 in 1920; Boston, $4.32 to $18; Pensacola $3.50 to $18; Key West, $4.72 to $19.

The Coast Guard formerly obtained coal from the navy, but the navy of late has been unable to supply coal on the ground that it could not spare it. Chairman Good said he could not understand the navy's attitude in refusing coal to a similar service. He thought the navy was in league with "interests boosting fuel prices" and criticised it for not "co-operating with the small branches of the service in order to break down this gigantic price combine that seems to have the entire public by the throat." He said the navy had a million dollars for developing Alaskan coal but would not put in a coal-cleaning plant until Congress directed it to do so three years later. Mr. Good also criticised the navy for delay in opening up the vast store of coal in Alaska, which he declared to be of good quality.

SENATOR MCCUMBER, OF NORTH DAKOTA, has introduced an amendment to the deficiency appropriation bill to pay a claim of $26,400 of the Philadelphia & Reading Coal & Iron Co., which has been awarded by the Court of Claims.

DEPARTMENT OF LABOR CONCILIATOR WILLIAM C. LILLAR has suspended his work in seeking an adjustment of the Alabama coal strike situation following complaint to the President by Governor Kilby of Alabama against his alleged biased attitude. The protest was sent to the Department of Labor, which considered the matter in conference Feb. 8, and the result will be that government conciliation will be suspended.

THE CITY COUNCIL OF PORTLAND, ORE., has petitioned the House for regulation of coal prices by the Interstate Commerce Commission.

MARINE CORPS PURCHASES of coal were discussed before the House Appropriations Committee by General McCawley of that organization. He compared prices in 1920 with those in 1919, as follows: Norfolk, anthracite, $7.75, against $6.60; Paris Island, S. C., bituminous, $4, against $2.60; Philadelphia, anthracite, $7.50, against $6.35; bituminous, $4, against $3.10. At the Quantico (Va.) station, wood had been cut and used in place of coal at a saving of $20,000 a month. Coal was not obtained from the navy, but from the mines under contract, and some times lower than navy prices.

Chairman Good said that in the last month or six weeks coal prices had declined, especially bituminous, and the prices at the mines were now between $2.75 and $3 and reports were that a great many mines were shutting down because they could not get orders even at the reduced prices. General McCawley said the last bituminous coal bought at Quantico cost $4.25 a ton.

CAPTAIN WILLIAMS, OF THE NAVY, complained of failure to obtain coal deliveries from a contractor for the Great Lakes (Ill.) naval station. He said it was impossible to require the contractor to deliver more than the daily consumption even during moderate weather, and that the contractor had fallen down on his deliveries. The station had only a ten days' supply and the quality of the coal had been inferior to that furnished last year. The station probably would have to purchase about 25,000 tons in the open market to complete the 75,000 tons needed until June 30 next. The current contract price was $3.47 a ton, or $1 more than the year before, and in the open market coal would probably cost $4.

BOTH SENATE AND HOUSE have passed a bill, which now goes to the President, for the sale of coal on lands of the Choctaw and Chickasaw Indians in Oklahoma.

PERMISSION FOR THE Rolph Navigation & Coal Co., of San Francisco, to sue the government for damages to its vessels for collision with government vessels is contained in a bill introduced by Senator Johnson, of California.

SENATOR WALSH, OF MASSACHUSETTS, has presented to the Senate a petition of the Massachusetts Legislature favoring the creation of a federal agency with power to ascertain the facts and disseminate information on coal and to regulate and control the production, sorting, grading, transportation and distribution of coal to the several states to secure a sufficient supply of coal of good quality at reasonable prices to the consumer.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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An Inevitable Decision

BETWEEN the decision of the Supreme Court that throws out of court prosecutions for profiteering in coal instigated under the Lever Act and the indictments at Indianapolis under the Sherman Law of 226 coal operators and coal miners there is a fundamental difference. From the first the provisions of the law under which it was being attempted to stop sales at high prices seemed of doubtful efficacy because of lack of definition of what constitutes profiteering. The fundamental difference between charging a high price on the open market and conspiring to bring about conditions under which high prices could be charged is the difference between the profiteering clauses of the Lever Act and the basic principle of the Sherman Law.

There never has been on the part of the coal trade an attempt to deny, much less condone, the high prices charged and paid for coal last year. It has been held that these prices were possible under the condition of supply and demand that obtained, and were legally, if not morally, warranted. As to this legality the recent decision of the Supreme Court has finally passed. The New York *Evening Post*, in commenting editorially on the decision, says in part: "It is unfortunate such a decision had to be made. It is safe to say that the unconstitutional section was seldom or never an instrument of oppression. It is clear that it has been of great value in intimidating many would-be profiteers and speculators. But the Supreme Court's decision is unanimous, it coincides with the opinion of various lower courts, and the reasons for holding that the section failed to fix an ascertainable standard of guilt are clear and forcible. The decision is a lesson to Congress upon the way not to draft a law."

The inference to be drawn from this statement is that such high prices as the government sought to characterize as unreasonable were, from the public's standpoint, morally wrong and that the law should have been so framed as to prevent their possibility.

However great the resentment of the consumer at high prices, at being so obviously "gouged," we believe the sober judgment of the public will in the end oppose governmental fixation of commodity prices while upholding the laws that prevent combination within the industry that would seek to effect the same purpose. There is, however, in the decision of the Supreme Court no indulgence for profiteers and no indication that they cannot be touched by law, only that the specific law—the Lever Act—was not definite in this regard.

At Indianapolis a Grand Jury has indicted for trial 226 coal producers and miners for alleged combination in restraint of trade and commerce in coal. These indictments were returned not because of prices charged but because of conduct which may have influenced the price of coal. On this charge the coal industry is on much surer ground. The Sherman Law is as sufficiently definite, because of the interpretive decisions of the highest courts throughout the past fifteen years, as the Lever Act was vague. The coal industry, as an industry, has obeyed that law, has leaned backward in following its mandates, though at times objecting to its limitation. These last indictments before Judge Anderson are not on a level with those of 175 men and companies a year ago under the Lever Act, for the government did not really press them for trial at that time, possibly anticipating the now accomplished fact of the annulment of the Lever Act, under which they were drawn.

How seriously the government entertains the belief that collective wage bargaining and the "check off" are crimes and that adding increased wage cost to the price of a product is reprehensible remains to be shown. We suspect the whole proceeding is more of a backwash of the political expedients used to end the bituminous coal strike in 1919 than a serious effort to correct alleged abuses in the coal trade.

Keeping Up Anthracite Production

GENERAL "summer discounts" in the mine price of domestic anthracite are not to be this year. A few companies may grant them, but it appears the majority will not. Thus is a time-honored custom, one to which is given credit for a large measure of stabilization of the hard-coal industry, once more discarded. In the judgment of the companies, the summer discounts either are not necessary this year or cannot be afforded.

A discount of 50c. a ton in the mine price in April, progressively decreased by 10c. each month until September, was adopted as a policy in the anthracite industry in the early nineties, and with but few exceptions has been announced each spring. In the first place, we may pause to consider the interest a discount of fifty cents a ton in April, 1921, would arouse in a householder who is now paying from $15 to $18 for his coal. His reasoning probably would be along this line: "Everything is going down in price, the average decline in wholesale prices of all commodities is around 5 per cent per month. Coal is the only important commodity that is staying up. It will take a tumble before next winter. A saving of fifty cents a ton now on $18 coal does not interest me because I can get it at something nearer pre-war price before I need it next winter."

But if 50c. a ton will not interest the consumer, what will? A dollar perhaps; maybe $2 is nearer the figure. But who is to absorb the discount, if such or any discount is necessary this year to move hard coal in the summer? With the price of steam sizes down and with sales infrequent, with culm washeries—the most profitable part of the anthracite business when business is good—all closed down, and no decrease of cost

of production in sight, many producers doubtless feel that they cannot afford to grant even a discount of 50c., much less one large enough to tempt the householders to early investment in coal. Seasonal freight rates, which might help toward such an end, are only a scheme so far. No one is left to consider but the retail dealer.

The retail coal merchant handling anthracite has certainly played safe on his margins this season. In the first place, buying at the mine and paying freight on the basis of a ton of 2,240 lb. and distributing in tons of 2,000 lb., he has an initial margin of 12 per cent. Nearly every retail dealer handles some "independent" coal, and obviously with coal from this source averaging perhaps $2.25 per gross ton above company circular, and consequently at least $1.50 above what is generally considered a fair price for other than company output, the retail merchant was obliged to raise his selling price to cover this increased cost to him. Now, a retail merchant is a retail merchant, whether of coal, sugar or haberdashery, and the retail trade is generally charged today with being the laggard in meeting new conditions arising out of the business depression. A large number of, if not all, retail coal merchants handling hard coal added all the traffic would bear when it was necessary to add anything to cover rising mine prices on independent coal. To scan the delivered prices of some, one would conclude that all anthracite is even today of that formerly high-priced brand. Margins, aside from the 12 per cent afforded by change in size of tons, have ranged from $3 to $5 and $6 per ton. The retailer can therefore this year take over in large part the summer discount. He has already done so in some communities—at Philadelphia, for instance, where $1 a ton is the inducement offered for early buying.

Over against consideration of who can or cannot afford to make a discount for early buying is the question of whether it is necessary—that is, whether the householder will not order his coal early irrespective of price present or prospective. The answer probably is that a sufficient tonnage will be put in cellars before September, which with company and local storage will enable the anthracite mines to maintain full-time operation. Full operation is needed lest we have repeated next fall from no-market losses the shortage faced last fall because of strike losses. Maximum output of domestic anthracite in the coal year 1921-22 is anticipated as a requirement of the market. No effort by producer or retailer should be spared to keep it moving steadily throughout this year.

The Waste of Too Many Mines

DEPRESSION, low prices and no sales have produced a condition not without some blessings. Those who were in the coal business before the war and who intend to be in it hereafter are inclined to be philosophical about these dull times and to remark that at least the present market will close out a horde of quick-growth coal operators and jobbers who came in with high prices and are going out with low prices.

It is not always easy to convey an idea of the "water" that is to be squeezed out in a time like this. With requirements for 500,000,000 or more tons of bituminous coal in 1921 we have mines equipped to produce in excess of 750,000,000 if not of 850,000,000 tons. Some idea of how this capacity has increased may be gathered from the weekly reports of production. In the week of Feb. 8, 1919, bituminous production was 7,947,000 tons, with mines operating 52.5 per cent of full time and losing 41.3 per cent because of no market. The indicated full-time capacity, neglecting the portion of the total not shipped as coal, was therefore 15,000,000 tons. In the corresponding week of 1921 production was 8,132,000 tons, operations were at 45.4 per cent of full-time, no market losses were 46.9 per cent. The indicated full-time capacity was nearly 18,000,000 tons. Thus in two years under almost identical conditions of market and labor and car supply—in each instance after a period of great pressure for output—we find an increase in mine capacity of nearly 3,000,000 net tons per week, or 18 per cent, but with no increase in national requirements.

This increase in capacity, which was obtained by gains in the number of mines rather than by increasing the size of already existing plants, was a concomitant of boom prices. Such an increase took place at the time we entered the war. On Jan. 1, 1916, there were 3,646 bituminous coal mines listed by the railroads with a rating of 43,524 cars per day. By Jan. 1, 1917—that is at the beginning of the boom—the number of mines had increased to 4,916 and the total rating to 55,158 cars per day. From the early days of 1917 until prices were fixed by the government in August, things were booming in coal and the record at the opening of 1918 shows 6,157 mines, a gain in 12 months of 1,241 mines or 25 per cent. The aggregate daily rating of these mines was 59,968 cars, a gain of less than 9 per cent. As for total capacity as represented by car rating, this represents the peak, for on Jan. 1, 1919, at the beginning of the dull period that followed the armistice, the total rating dropped to 45,180 cars per day, but the number of mines had increased in the year from 6,157 to 7,079.

By the first of January, 1920, the number of mines, as reported by the railroads, had increased to 7,543 with a total rating of 55,555 cars per day. One can only speculate as to what was the number of mines on Jan. 1, 1921, but it seems fair to assume that it must have exceeded 8,000, an increase in five years of more than 100 per cent.

The very rapid increase in the number of mines to be served by the railroads as compared both with the capacity of these mines and with the requirements of the country for coal shows only too clearly one of the greatest causes of waste in the bituminous coal industry. Every time there is a boom in coal prices more people get into the coal business, more mines are opened, the potential capacity of the industry is expanded, and the available transportation is necessarily distributed over a greater number of producing units. Whereas, to produce 579,000,000 tons of coal in 1918, the railroads were called upon to distribute cars among something more than 6,000 individual mines, in 1920 to produce 556,000,000 tons the railroads with essentially the same amount of cars and locomotives were called upon to serve more than 7,500 coal mines. One result is that with an equal or greater rate of production in any given period of car shortage in 1920, transportation disability—that is, car shortage—figured in terms of percentage, was greater than under corresponding conditions in 1918, because calculated on a larger base. The same is true of loss of working time today because of no market expressed as a percentage of full-time operation. The available orders for coal today are distributed over an inflated capacity, which has the obvious effect of increasing competition.

FIG. 1. GENERAL VIEW OF THE RED ROCK TIPPLE FROM LOADED TRACKS

Operating Conditions Encountered in Iowa

Iowa Is a State of Small Coal Operations—Irregularities in the Deposit, Heavy Grades and a Friable Roof Are the Chief Causes of This Condition—Coal Largely Consumed Within the State

By Donald J. Baker
Wilkinsburg, Pa.

LITTLE has been written as to the coal mines of Iowa, though within the boundaries of the state many mines are operating. Few of them, however, have a capacity exceeding 2,000 tons a day. This limitation arises partly from the fact that the operators of Iowa have to contend with unusually difficult natural conditions.

State departmental records show that the life of the average coal-mining operation in Iowa rarely exceeds ten years. In these days of speed, when thousands of tons are handled each day through a single shaft opening, immense acreages are quite usually purchased for the purpose of assuring to the mines a length of life that will warrant the investment of large amounts of capital in buildings and equipment. This is not the plan, however, in Iowa.

Many and varied reasons exist why Iowa mines are short-lived. In the first place, the coal beds are irregular in thickness and slope. The beds roll and pitch to such a degree that the average haulageways in the mines resemble in plan and profile a roller-coaster speedway. Furthermore, the beds are neither continuous nor contiguous. The coal lies in small disconnected basins. When one of these has been worked out —that is, the mine development carried to a point where the measure "tails" down to a thickness that will not permit of economical production—no other deposit lies adjacent and some miles may be traversed before another may be found.

In many instances quicksand overlies the deposit, the thickness of which varies from 100 to 200 ft. This measure, of course, does not lie directly above the coal, but it must, nevertheless, be taken into account in the sinking of a shaft. Almost without exception the roof encountered is a soft slate, highly susceptible to the variations of temperature induced by the changing seasons. This cover usually contains a considerable percentage of lime, so that during the summer months when globules of water are deposited upon it by condensation, it readily flakes off or "weathers" and quite as readily expands. Later it contracts and leaves large fissures. These cracks mark off large-sized slabs which eventually fall to the floor.

Sometimes Roof Falls Despite Cement Covering

Operators with varying degrees of success have tried covering the roof and rib with "gunite." The flaking process induced by the action of the water on the roof may be stopped, but this is not always the case with the contraction and expansion, and in many instances the roof will come down despite its cement covering, although not as readily as when it is left bare.

As a result large quantities of timber are used and retimbering becomes a frequent and expensive neces-

FIG. 2

Under the Tipple

This tipple at Melcher never experienced the effect of the general coal shortage. Cars always were obtainable. Timber construction is quite usual in Iowa, the uncertainty as to the persistence of the coal seam making it advisable, except where there is a possibility that the tipple may be erected somewhere else when its work at any one plant is completed.

sity. This work alone is of a character and extent that will justify the utilization of only the shortest of haulageways. When a long haulageway is maintained, the upkeep costs soon become excessive, and it proves more economical to sink a new shaft than to attempt the removal of the coal through an opening located some distance from the active workings. Of course, the sinking of a new shaft is justified only when the basin of coal under development is of sufficient size to warrant this expenditure.

Irregular and Heavy Grades Encountered

As stated, the beds roll to a remarkable degree and it is not uncommon for the measure to suddenly pitch up or down on a 40-per cent gradient. By reason of the natural obstacles to be overcome—and these can never be forecast accurately—it is well-nigh impossible to lay out a mine on paper and to follow the plan adopted, as is commonly done at large operations in states further east. Working the coal and developing the mine is pretty much of a "from-day-to-day" proposition.

The coal varies from 4 to 9 ft. in thickness, but may be prematurely pinched out altogether. Furthermore, faults are of common occurrence, and even with the aid of the large number of drill holes necessary to careful prospecting these faults cannot be forecast with any degree of certainty. Few of the operators of the state, therefore, care to purchase or lease coal. It must be developed on a royalty basis if the mine owner is to be induced to make an attempt at mining the elusive mineral, for the deposit thought to uniformly underlie a certain farm may be found wanting when development has been carried to a certain point underground.

I have mentioned some of the more pertinent reasons why large-capacity plants in this state are unknown. These embrace chiefly the nature of the roof and the deposit itself, which make a small plant the more economical. As soon as operations have progressed to some distance from the bottom, the cost of mining per ton begins to increase and in a short time it is seen that to sink a new shaft will be less expensive in the end than attempting to haul the coal long distances in small trips, over heavy grades and through entries that demand constant retimbering in order to be kept safe. In Iowa a plant producing 2,000 tons a day is unusual, although such developments are becoming more numerous. The life of the average mine is not, however, increasing.

Formerly nothing but wooden headframes and tipples were constructed. Now steel tipples are finding greater favor among companies which expect to continue in business for many years to come. After the mine has outlived its period of economical production the steel structure is torn down and shipped to some other section of the state to be reassembled and again put to work. With such repeated use the steel tipple is not an unduly expensive piece of equipment.

Fortunately the operators of the state do not have to contend with every conceivable ill to which mining is subject. The workings are free from gas and open lamps may be freely used. No great amount of water is encountered, which would entail serious pumping problems. Of late, at least, dust explosions have not occurred, yet no extensive sprinkling arrangements are provided to forestall them.

Railroads Co-operate with Coal Mines

To a large degree the railroads of the state as well as the interurban electric companies aid in the development of the coal by taking the product for their own use. If this co-operation did not exist, the operators would have to compete in a spot market with fuel from Illinois, and they readily admit that the Illinois producers are able to mine and ship coal into Iowa, selling it a lower figure than Iowa operators can reach. As it is, not every mine in the state is a success, and a number have been in the hands of receivers on more than one occasion. It is contended, however, that these failures have been the result of the directors having entrusted the reins of management to men who were experienced in mining in the East but unfamiliar with conditions in Iowa.

A short description of the more important features

of an average Iowa mine may be of interest. The plant of the Red Rock Coal Co., an operation four years old, located near Melcher, in Marion County, is a typical example. From information that I gathered elsewhere and from what I saw myself, I believe that the Red Rock mine is better than the average operation of the state from the standpoint of equipment. Furthermore, it has a greater output, being equipped for a daily capacity of 1,200 tons. The Red Rock firm purposes to develop an 1,100-acre tract of coal, but the officials are not making any predictions at present that their expectations will be fulfilled.

Undried Coal Gives 11,000 Thermal Units

The coal being worked is known locally as the "lower Iowa" bed and varies from 4 to 6 ft. in thickness. A proximate analysis of the product will run about as follows: Moisture, 16.6 per cent; volatile combustible matter, 28.4; fixed carbon, 45.4, and ash, 9.6 per cent. The sulphur content as separately determined is approximately 3.3 per cent. A sample of the coal taken from the face and dried before being analyzed had a heat value of about 13,020 B.t.u.; one taken and analyzed as it comes from the mine will show approximately 10,860 B.t.u. The Chicago, Rock Island & Pacific R.R. Co. takes 50 per cent or more of the daily output for locomotive fuel.

All the surface buildings at the Red Rock mine, including the headframe, are constructed of wood. The shaft is 275 ft. deep and is wood-lined to the bottom. Cars which, level full, will hold a ton of coal are used throughout the mine, but if conditions will permit they may be loaded so as to contain upward of 4,000 lb. of coal. Why such a small-capacity car is employed is obvious. The coal varies greatly in thickness and it would be impossible in many instances to get a high car or one built for a larger capacity into a room in which low coal is being mined unless the top is taken down, and, of course, this brushing would be expensive. As has been mentioned, the coal bed rolls heavily, and grades in certain sections of the mine which the

FIG. 3. MAIN HOISTING SHAFT HAS TWO COMPARTMENTS

Both men and materials are lowered through this shaft, which is used also for hoisting coal. This shaft is timbered to the bottom.

locomotives must traverse are so steep that only a comparatively small weight can be handled efficiently per trip.

Cars caged at the bottom are elevated to a dumping platform on the tipple 60 ft. above the shaft collar. Olson self-dumping cages are employed. These discharge the contents of the car onto a dump plate, whence the coal passes by gravity to a weigh basket by way of a hopper. All the preparation equipment on the tipple was built by the Eagle Iron Works of Des Moines. A single shaker screen is employed, provided with perforated plate and spaced bars. This is operated by an 8-hp. motor operating on a voltage of 220. By changing the perforated-plate section of the screen, as many as five distinct sizes may be made. Usually, however, a 1¼-in. nut and a 7-in. lump are prepared.

After sizing, loading is accomplished by gravity. By

FIG. 4

Boiler House

In the foreground is the timber yard. Any miner wandering round the yard and seeing the long props in the foreground would draw the just conclusion that it is a good place to work. Boilers and electrical equipment are all under the one roof but separated by a brick partition.

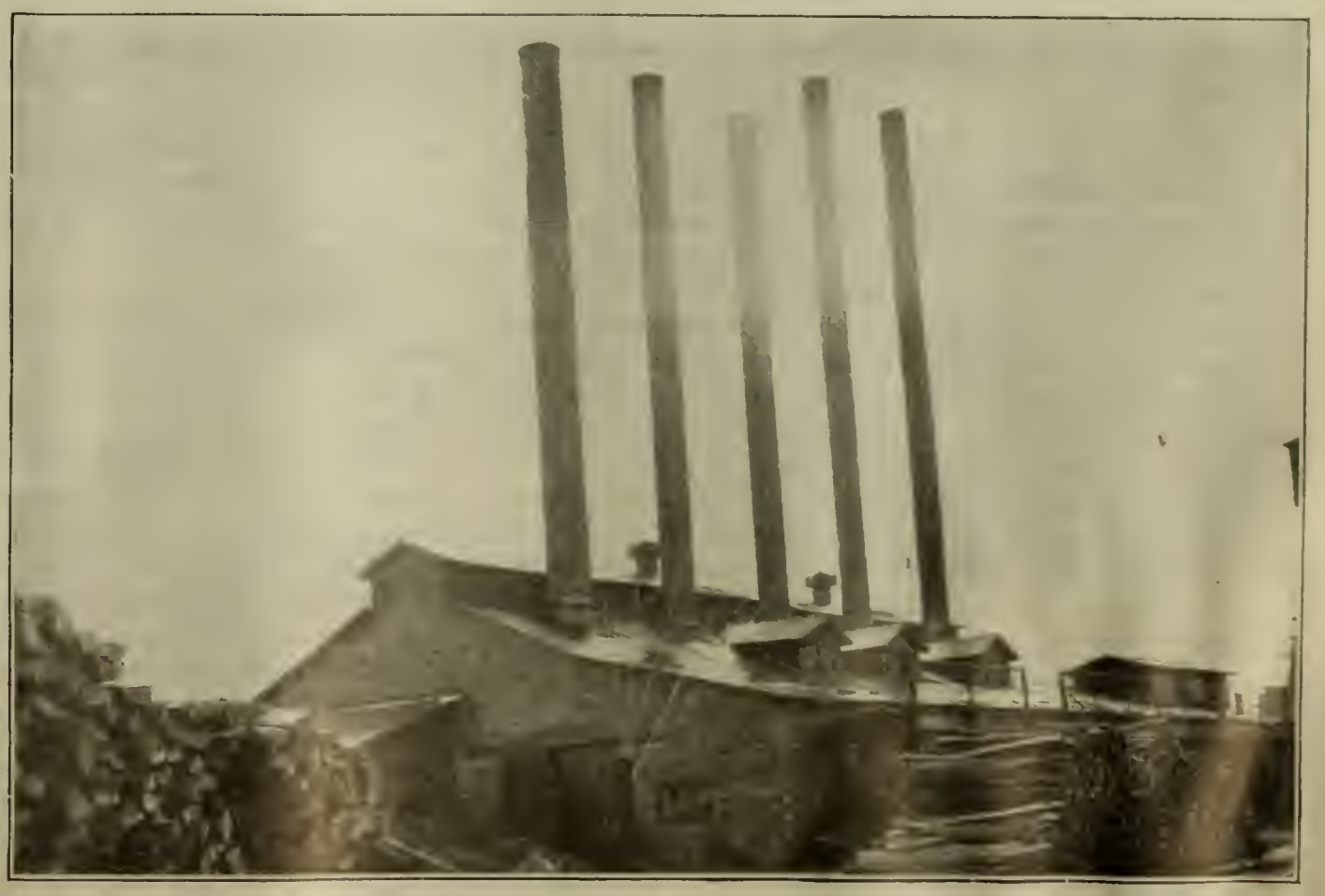


FIG. 5. TILE FAN HOUSE AND STEEL-ENCASED FAN

Normally the fan is operated by electrical energy. During the night, however, when the main generating unit is down, the ventilator is kept in operation by a small steam engine. The fan is a 6 x 3 ft. Jeffrey and is run at 240 r.p.m. The airshaft is relatively dry and the air does not have to be heated during the cooler months as at the Norwood-White mine at Moran, Iowa.

means of hinged drop plates, forming a part of the shaker itself, the screens may be veiled and the entire mine output loaded as a straight run-of-mine product into cars on either of three tracks that pass beneath the building. No attempt is made to pick the coal on the screen. All impurities that may find their way up the shaft are left in to be detected and removed by the man who trims the cars.

By raising a section of the screen that precedes the perforated plate and the bars, a certain amount of run of mine is directed into a chute leading to a storage bin which supplies the boilers with fuel and satisfies the domestic trade of the town of Melcher. A short wooden trestle connects the tipple with the boiler house, so that it is possible to fill mine cars at the storage bin and move them by hand to the boiler-house dump. No loading booms are in use. Ordinary chutes are used to discharge the coal into the railroad cars. However, little degradation results, as the coal is physically much stronger than the coal from the average bituminous mine.

Boilers and Generators in Same Building

The power-plant building shown in one of the accompanying illustrations is of wood. An Eagle Iron Works hoist engine having a 5½-ft. cylindrical drum and winding a 1¼-in. cable is used to raise the loaded cars from the bottom of the shaft. This unit is steam-driven. The generating equipment is situated in the same room as the hoist. This is a 200-kw. turbine-driven Ridgway unit, and delivers direct current of 275 volts. A small alternating-current generator is driven by the current from the large machine and furnishes energy for the lighting of the plant buildings as well as the town of Melcher. This unit is belt-connected from a motor situated in a wing of the building near the main generating unit.

The boilers are under the same roof as that housing the electrical equipment but are separated from these units by a brick partition. Four Galesburg boilers and one Kewanee, each having a rating of 100 hp., deliver steam for the operation of the hoist engine, the direct-current generator and an engine driving the fan. All the boilers are hand-fired from bunkers located in front of them. The coal, as already stated, is dumped directly into the building from mine cars running on a trestle parallel with it. The "shops" are all located in one building near the main shaft and the equipment, being simple, does not warrant any detailed description.

The fan house is situated a considerable distance from the main shaft. It houses a 6 x 3-ft. high-speed Jeffrey ventilator. Under normal conditions the fan is operated at about 240 r.p.m. so as to deliver approximately 65,000 cu.ft. of air per minute. It is driven by a 50-hp. belt-connected Westinghouse motor. The large generator situated in the power-plant building is run only during daylight hours or rather up until 11 p.m., after which the town is without lights. During the time when current is not available the fan is kept in operation by a single-cylinder steam engine. Consequently air is delivered to the mine at all hours. The utilization of steam for the operation of auxiliary fan drive is a common practice around gaseous mines, but at this operation no gas is encountered; the ventilator is operated at night merely to assure the underground workers of an abundance of fresh air when they return to work the following day. It is the only place outside of the power house where steam-driven apparatus has been installed.

Mine Operated by Room-and-Pillar System

On the surface the mine is not greatly different in layout and appearance from many of the older operations in other regions. The arrangement underground, however, is far more interesting, as it is here that unusual conditions are encountered. These, of course, result mainly from the character of the coal deposit and the stratum directly overlying it.

All entries are driven double and the coal is developed on the panel system. The loaded and empty storage tracks extend northeast and southwest from the shaft; the main haulageways are laid out square with the four points of the compass. Locomotives coming from any section of the mine eventually enter either a west or east main haulageway that leads to the storage tracks. If the trip is brought in on the west side of the shaft, the loaded cars are caged from that side.

the same condition holding true for trips that are brought in on the east haulageway. In either case the loaded tracks have been laid on a grade that will permit the cars to be run to the shaft by gravity, the empty tracks also lying on a grade in favor of the empty cars. This means of handling the cars at the shaft bottom has necessitated taking up the floor along the empty tracks in order to obtain the desired grade. A switch is provided near the landing so that the loads may be caged in either compartment of the shaft. The shaft "bottom," including both storage tracks, is heavily timbered.

Heavy Grades Found on Main Haulageways

As has been noted as typical of Iowa, the coal bed does not assume any uniform dip and almost any slope may be encountered. For example, there is a section of the west haulageway that lies on a grade of 8½ per cent for a distance exceeding 400 ft., while on the main east roadway a slope of 7½ per cent is maintained for over 500 ft. Both of these grades, fortunately, are in favor of the loaded cars.

A trip of average size is composed of twenty cars. These are handled by a 6½-ton Goodman locomotive, two of which are now in use in this mine. Just how to get the loaded trips to the bottom over the grades above mentioned proved to be quite a problem until the device now in use was given a trial. In near-by mines it had been the practice to sprag the wheels of a trip when it was passing down a steep slope. This was tried but did not prove economical, as it soon flattened the car wheels so that they had to be replaced. Furthermore, this treatment was injurious to the car itself and made frequent repairs necessary.

Skid the Car Trips Down the Long Hills

Fig. 6 shows what might be called a car skid. This device, designed to prevent flat wheels, is built at the company shops. These skids are about 3 ft. long and built of an old piece of angle iron, one leg of which is cut down and flattened out so as to act as a flange under the car wheel, as shown in the illustration. Four of these skids are employed in moving a trip of loaded cars down the grades on the east and west haulageways. Two are put under the rear car of the trip and two under the third or fourth car from the front. A somewhat similar skid has been used on a steeply inclined road between the tipple and a drift mouth at Mageath, Wyo.

The locomotive is then able to control the cars to the bottom of the slope. The skids are adjusted under the wheels at the top of the hill and removed at the bottom by the trip-rider. When the locomotive returns with a string of empties, the skids are picked up by the rider and thrown off at the top of the slope to be used on the next returning trip.

The coal under development at Red Rock is more or less faulted and in many instances is thrown either upward or downward from 2 to 3 ft. A larger fault plane than those mentioned has been found in test drill holes that have been put down, but so far this has not been encountered in the mine. The roof is a friable slate that has been laid down with great irregularity. In many places the coal may be pinched down to 6 in. in thickness, after which it may or may not quickly regain its normal height.

When such conditions are encountered on the main haulageways the entries are, of course, driven through the slate. In a room, however, when such a pinch is met the place is, of course, abandoned. An attempt is later made to drive other rooms toward the one abandoned. Sometimes the coal is picked up, so that but little is lost, and at other times the pinch may extend over a considerable area. This accounts for the irregularity of some of the panel sections in this mine. An attempt is made, however, to space all face entries 750 ft. apart. Perhaps the only bed in the State of Iowa that can be regarded with any degree of certainty is the Mystic bed in Appanoose and Wayne counties, and even this contains old river channels.

FIG. 6. MINE EQUIPPED WITH SKID

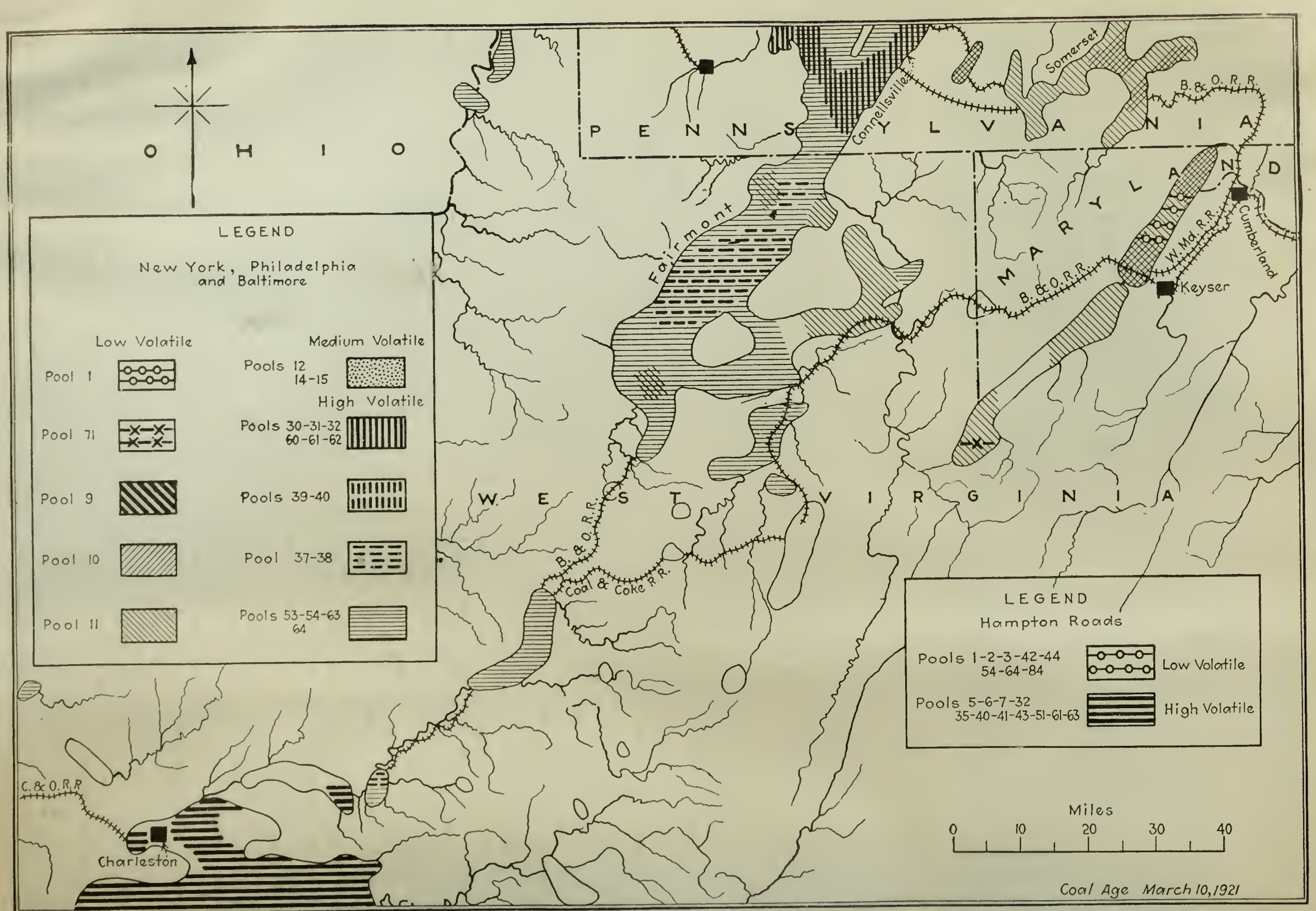
One of the skids shown in the illustration is placed under the wheels of two cars in each trip, thus making spragging unnecessary. The skid will last about a month, but it will save a number of wheels from wearing flat.

Automatic Motor Starter Has Accurate Time Limit Acceleration

AUTOMATIC motor starters are now being manufactured in larger and smaller sizes. The Cutler-Hammer Manufacturing Co., of Milwaukee, Wis., which recently redesigned its automatic starters, has replaced its air dashpot by one working with oil. However, an air dashpot can still be provided to those who desire it. The solenoid, plunger and rocker arm have been retained.

The new starter is made in capacities from ¼ to 10 hp. at 115 volts, and up to 25 hp. at 230 and 500 volts. The 500-volt sizes are more compact than formerly. The oil dashpot is completely covered, so as to be splash proof, and is adjustable for time by an external screw. When this is once set, the starter will always cut out the resistor in the same length of time. A non-freezing dashpot oil is used, so that temperature conditions will not affect the length of time required for starting. The fingers on the rocker arm are of standard C-H drum construction and, like the contact buttons, are renewable. The starter can be controlled from any remote point by a single pole knife or snap switch, pressure or vacuum regulator, float switch, or by three-wire push-button control. Low-voltage release is inherent with two-wire control and low-voltage protection with three-wire.

The starter is mounted on a slate panel carried on a pressed-steel wall frame, with the starting resistance self-contained. A starter of this type (time-limit acceleration) is particularly adapted for starting direct-current motors carrying loads that are likely to vary between wide limits and where remote control is desired, such as with pumps, fans, compressors and similar devices.



MAP SHOWING PRODUCING DISTRICTS IN NORTHERN WEST VIRGINIA FROM WHICH ARE SHIPPED COALS IN THE TIDEWATER POOL CLASSIFICATIONS AT THE PORTS OF BALTIMORE, PHILADELPHIA AND NEW YORK

Where Classified Tidewater Coals Come From

Fifty-three Recognized Pools Include Twenty-nine Mine-Run Classifications, Seven Slack and Seventeen Lump—Although Pools Overlap in Field, There Is a Definite Geographic Distribution

By Dr. Henry M. Payne*

THE idea of pooling bulk shipments of commodities in order to avoid demurrage in loading probably originated at the grain elevators of the West, where grades were established and grain inspected and classified, and then pooled according to grade. During the war, in order to conserve railroad equipment, expedite loading of vessels, and minimize demurrage on both vessels and railroad cars, the same plan was applied to coal taking transshipment at Lake Erie and at North Atlantic ports.

The Ore & Coal Exchange at Lake ports was started in June, 1917. This proved so satisfactory that the Tidewater Coal Exchange was put in operation at New York, Philadelphia, Baltimore and Hampton Roads on Aug. 1, 1917. By Nov. 11, 1917, its advantages were so obvious that pooling was made compulsory, under government operation, which arrangement continued until Feb. 28, 1919. The Exchange then became a voluntary organization and was so operated until Feb. 25, 1920, when compulsory pooling was again enforced up to April 30, 1920, after the roads had reverted from the Railroad Administration to their owners.

In response to a general demand for the perpetuation of the machinery of pooling, the Tidewater Coal Exchange, Inc., was then chartered under the laws of Delaware, to operate at the ports of New York, Philadelphia and Baltimore. Independent exchanges were created at Hampton Roads for the piers at Sewall's Point, Lambert's Point and Newport News, served by the Virginian, Norfolk & Western, and Chesapeake & Ohio railroads. The Baltimore & Ohio, Western Maryland, Pittsburgh & Lake Erie, Cumberland Valley, Cumberland & Pennsylvania, Pennsylvania, Monongahela, Philadelphia & Reading, New York Central, Buffalo, Rochester & Pittsburgh, Cambria & Indiana, and Pittsburgh & Susquehanna railroads serve the three northern ports and share with the coal shippers the expenses of operation of the exchange up to a predetermined maximum. A new exchange recently was organized for the port of Charleston, S. C., served by the Southern Railway from mines on its own lines and the Louisville & Nashville, and Carolina, Clinchfield & Ohio railroads.

The various grades of low, medium and high volatile bituminous coals were originally grouped as correctly as the information at hand would permit, and upon this basic grouping has been developed the present set of classifications, recognized both in the United States and abroad as the most complete descriptive tabulation of Eastern American coals ever prepared.

Under this classification it is attempted to so regulate the variance in any one pool that the difference between the best and the worst coal in that pool shall not exceed the difference between the best and worst coal shipped by any mine classified in such pool. While certain lines of demarcation naturally segregate the low from medium, and medium from high volatile coals, and similarly, sulphur and ash content regulate the gradations from gas to steam coals, yet certain tolerances must always obtain, such as calorific values, fusing point of ash, etc.,

The three maps accompanying this paper show in graphic form the developed areas in the coal fields of the East from which come the coals of each important classification or pool. There are in all 53 recognized pools, of which 29 are "mine-run" classifications, 7 slack or screenings, and the remainder are lump coal or modified mine-run. For instance, mine-run coal from certain mines is pool 44, but if the product of these same mines is screened, the slack is shipped as pool 45 and the lump as pool 43. On the maps are shown the developed coal fields and in pattern the areas from which come the better grades of coal included in 20 mine-run classifications in 11 groups. That is, pools 1, 2 and 42 in the smokeless fields of southern West Virginia are shown in one pattern covering the entire producing area, although mines classified in pool 4, a lower grade coal, also are scattered throughout the same area. Likewise the area in which is located all mines producing pools 5, 6, 7 and 40, mine-run, coal is shown as one pattern, although including mines producing pool 8.

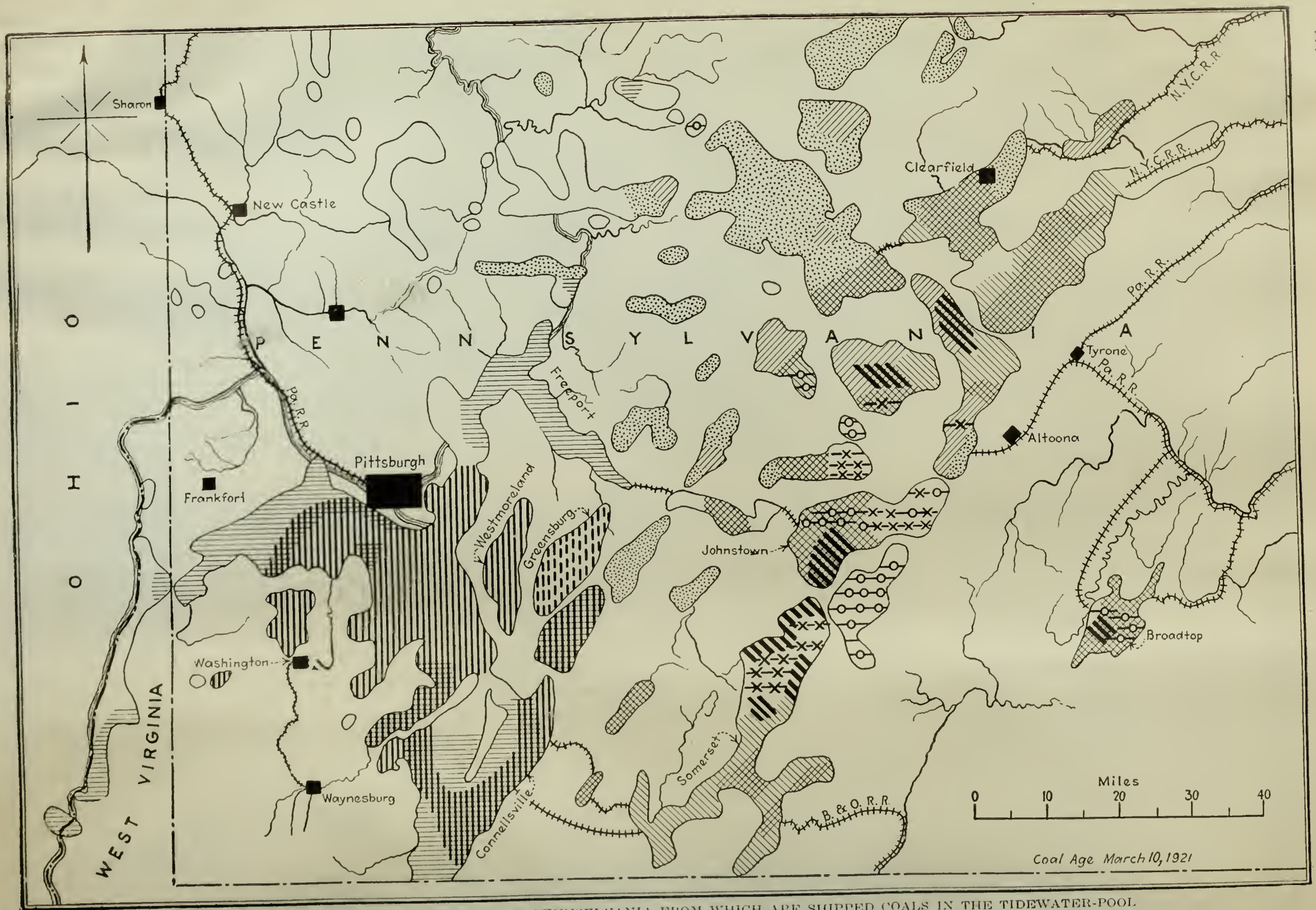
Mines on Navy List Classified as Pool 1

In the Northern fields are 34 mines on the navy acceptance list, classified as pool 1, for each of which an individual symbol is shown, as are also shown mines in pool 71, the supplemental list of the navy. The portions of fields from which comes coal classified in pools 9, 10 and 11—the mine-run pools for high-grade low-volatile coal reaching the northern ports—are each shown by distinctive pattern, which in some locations overlap. It will be noted that with the exception of pools 1 and 71 the patterns in the maps show low-volatile coals with diagonal lines, intermediate or medium volatile coals with a stipple and high-volatile coals with horizontal or vertical lines.

To prevent confusion in the graphic presentation on the small scale necessary no attempt has been made to show the areas producing the lower-grade coals, as pools 18 and 34. In this way 10 of the 53 pools in the list are omitted and 43 shown. In some instances in the northern fields, particularly in Pennsylvania, no pattern is shown on sections of the fields in which there are producing mines. Such areas are those left blank within the lines marking the outlines of fields, the coals produced in these areas being either classified in one of the lower grade pools or not classified. The several areas shown on the maps were determined by locating all mines of a given classification and covering the areas thus indicated by suitable pattern.

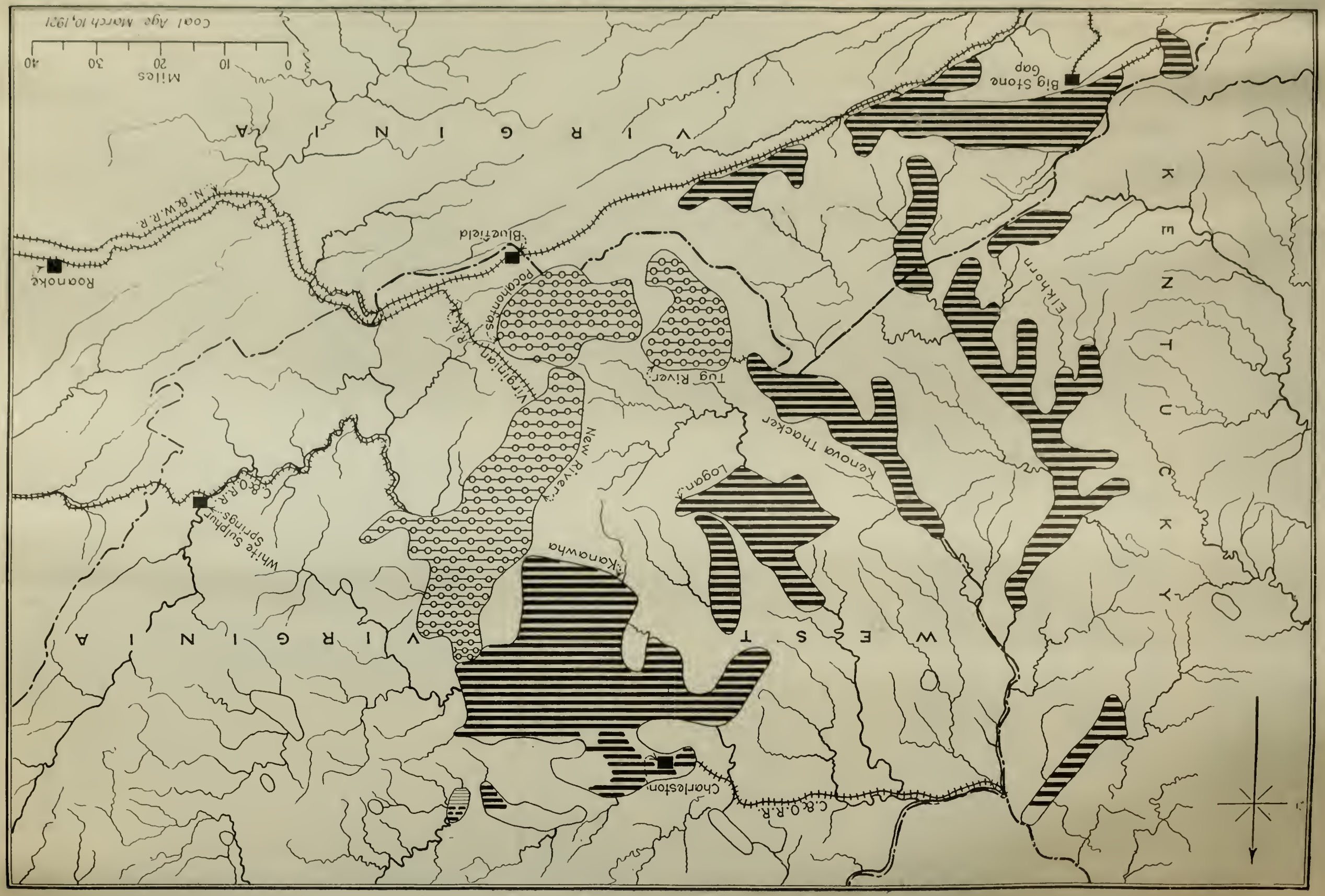
Next week there will be published tables of analyses with descriptions of the pools, giving names of coal beds from which each grade is mined, railroads originating each classification and other information serving to distinguish the various grades of coal.

*Consulting engineer, Andrade-Eyre, Inc., 300 Madison Ave., New York.



MAP SHOWING PRODUCING DISTRICTS IN PENNSYLVANIA FROM WHICH ARE SHIPPED COALS IN THE TIDEWATER-POOL CLASSIFICATIONS AT THE PORTS OF BALTIMORE, PHILADELPHIA AND NEW YORK

MAP SHOWING PRODUCING DISTRICTS IN SOUTHERN WEST VIRGINIA, VIRGINIA AND EASTERN KENTUCKY FROM WHICH ARE SHIPPED COALS IN THE TIDEWATER-POOL CLASSIFICATIONS AT THE PORT OF HAMPTON ROADS



Some Unusual Mining Methods Practiced at Weston Colliery Near Shenandoah

Ventilation Almost Wholly Natural—Pumps Used Only for Local Dips—Crop Stripped to Prevent Dirt Entering Mine—Drag Scrapers Draw Coal to Rock Holes—Method of Working Two Seams with Three-Foot Interval—Barney Has Telescoping Gage—Thaw Sheds for Mine Cars

By Dever C. Ashmead
Wilkes-Barre Pa.

IT IS rather unusual for an anthracite mine to be worked exclusively from a tunnel. Most of them require the sinking of a shaft. The coal deposit being worked by the Locust Mountain Coal Co. at its Weston mine, near Shenandoah, Pa., lies in such a shape that it was possible by driving a tunnel for a distance of approximately 3,800 ft. to reach what is practically the bottom of the coal basin. It is true, however, that the coal in one or two local dips is lower than the lowest point reached by the tunnel.

As already has been described in a previous article, the coal measures lie in a basin on the top of Locust Mountain. Five workable measures exist on this property. Of these, the Mammoth, Skidmore and Seven-Foot beds are readily extracted by means of stripping. The Buck Mountain and Little Buck Mountain beds, however, are operated by underground mining methods, except in one case, where even they can be and are stripped.

Fig. 1 shows the outcrop of the bed in the main mountain basin. As might be expected, the lower measures outcrop at widely-separated points. Under existing conditions, it is found that at no point is it necessary to work the Mammoth bed by underground methods. The next underlying measure, the Skidmore, is stripped toward the eastern end of the property, but to the westward the measures pass below greater cover and accordingly are mined from underground. The next bed lower down is the Seven Foot, which extends in one continuous basin from one end of the property to the other. It is possible to strip the eastern end of this coal measure, but not the western end. All of the Buck Mountain and Little Buck Mountain deposits are worked from underground, except at the western end, which is stripped over a limited area.

The upper beds do not lie in one continuous basin but in several basins, two of which are far more important than the others. In Fig. 1 the road to Ringtown will be noted. To the east and west of the point where this road crosses the property the coal measures spoon out, both the Mammoth and Skidmore outcropping at this point, while the Seven Foot outcrops nearby.

Rock Holes Driven Up from Bed to Bed

Again referring to Fig. 1, it will be seen that practically all the main levels lie in the bottom of the Little Buck Mountain bed. The original plan for working this coal was to drive rock holes up from these headings to the overlying measures, three breasts being driven in each bed from one of these rock holes. These breasts

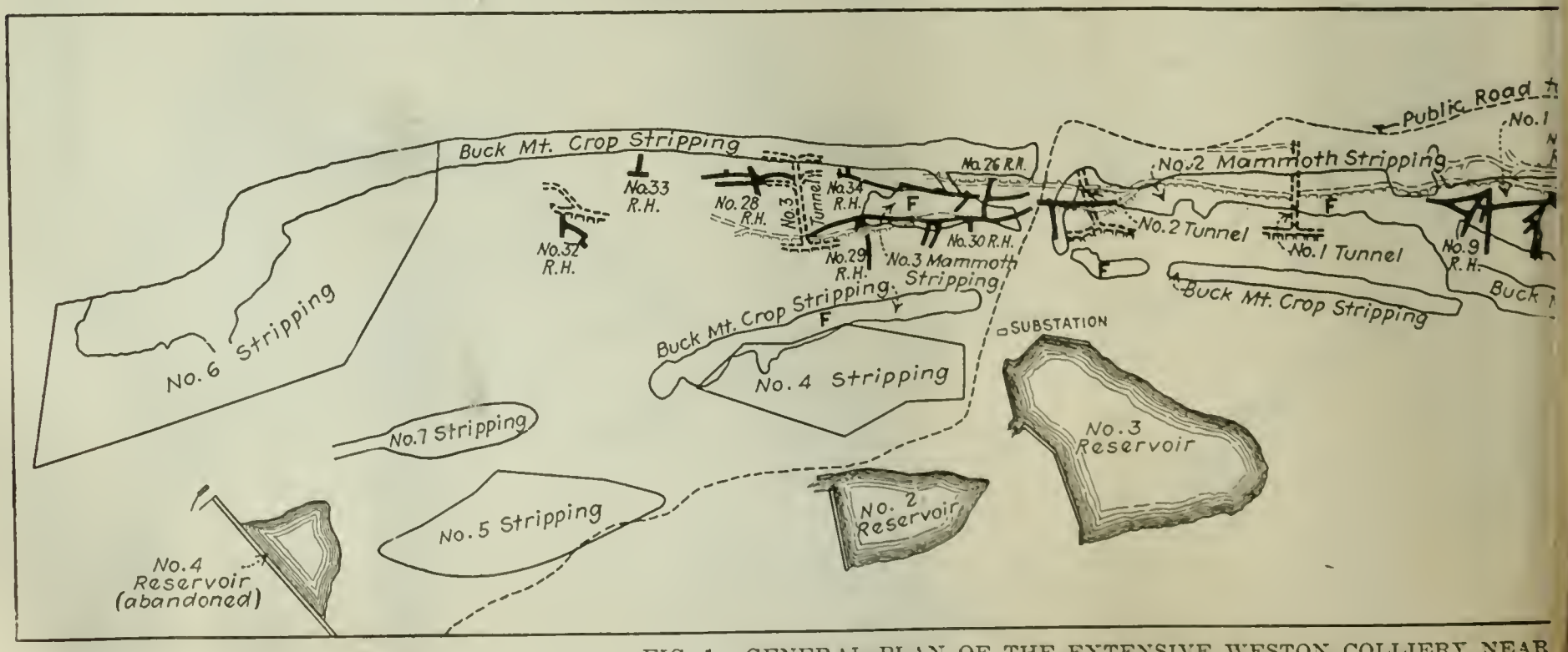


FIG. 1. GENERAL PLAN OF THE EXTENSIVE WESTON COLLIERY NEAR

One of the most interesting features is the Main Water-Level Tunnel, near the center of the illustration. As it is driven so as to strike between 200 and 240 ft. below the surface it practically drains the whole area. Occasionally the Little Buck Mountain seam descends to greater depths and so creates a trifling pumping problem, but as compared with other anthracite operations the Weston colliery is greatly favored. It escapes almost entirely all hoisting, pumping and ventilation problems. In the area marked "East Basin Stripping," note Tunnel No. 6, which, of course, is far below the bottom of the strip pit. A long tunnel driven in what is here a worthless seam—the Lykens—will ultimately connect Tunnel No. 6 with the Main Water-Level Tunnel draining the former, the counter levels now connecting these points being at too high an elevation to perform that service. The locations of

FIG. 2

Dragline Excavator

This machine, which is being used to uncover the outcrop of the coal, has a 125-ft. boom and a 3½ cu.yd. bucket. It is the universal experience that all coal which does not crop on the slipping sides of a hill but comes up abruptly to a level surface will be found in good condition clear to the top.

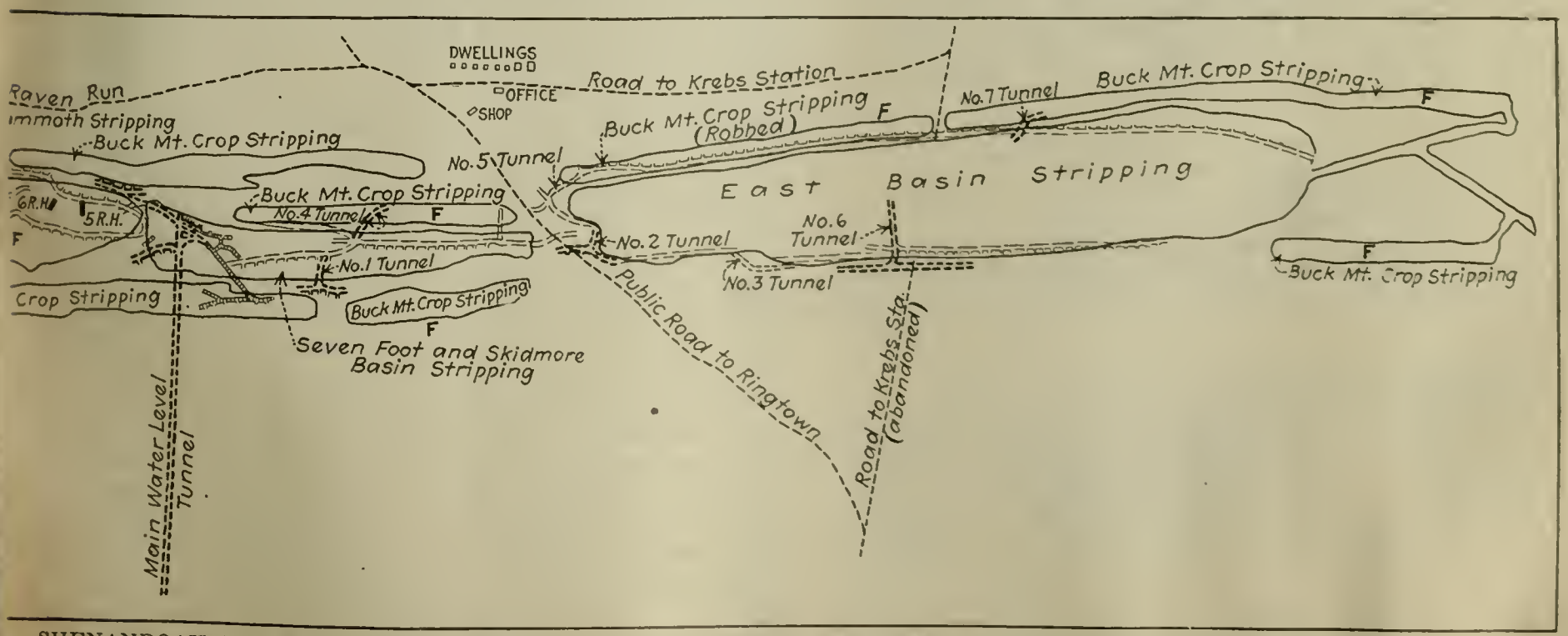
were to be extended to the surface as soon as those in the upper measures were completed. Then robbing was to commence, and the rock holes were to be finished as soon as possible and abandoned. This method was successful and economical except for the fact that all loading had to be done on a single gangway, and this limitation tied up the transportation facilities overmuch and did not furnish sufficient working and loading places.

When this plan was abandoned, the idea of driving fewer rock holes was adopted. From such as were driven a counter or buggy gangway was excavated in each bed. From this roadway in turn breasts were driven to the surface. By this method one rock hole could be made to serve as many as ten or more breasts in each bed, as against three by the original plan. In each of these gangways was placed a small buggy of the end-dump type capable of holding one-third as much as a mine car. This was used to transport the coal from the breast chutes to the rock hole. A common horn dump was employed to discharge this car.

Strip Crop to Keep Dirt Out of Coal

In order to keep the coal free from surface dirt when the breasts broke through to daylight, particularly in the case of the Big Buck Mountain bed, it was considered advisable to strip the surface along the outcrop. For this purpose a Bucyrus dragline excavator with a 125-ft. boom and a 3½ cu.yd. bucket was employed. Fig. 2 shows this machine at work on the outcrop of the Big Buck Mountain bed. The bucket is here shown in the act of dumping.

As soon as the dragline finishes the work on which it is now operating it will be converted into a shovel.



SHENANDOAH, PA., WITH ITS STRIPPINGS AND UNDERGROUND WORKINGS

the rock holes are shown by the letters R. H. In many places will be noted the words "Buck Mountain Crop Strippings." These lengthy strippins are not made so as to permit the coal to be loaded out by the customary surface methods, for the coal thus uncovered is to be extracted by underground mining. The surface is removed, so that when a room reaches daylight the loose sand and gravel will not enter and mix with the coal, to the great discomfort of the force at the breaker and at a great expense for the transportation of this material. By making this stripping all the coal can be removed and still there will be no loss by reason of the entry of surface material. The solid material of the top of the mountain has been covered by a troublesome deposit of glacial drift, which has to be reckoned with when the workings approach the surface.

FIG. 3

Boom, Dipper-Arm and Bucket

The new 85-ft. boom and its dipper arm and the 3½ cu.yd. bucket that will convert the excavator in Fig. 2 into a steam shovel, as soon as it finishes the work of uncovering the crop.

Fig. 3 shows the new boom and dipper arm, also the bucket. This boom will be 85 ft. long, while the new bucket will have a capacity of 3½ cu.yd.

When the surface over the Buck Mountain bed has been stripped and the breasts have been driven through to the stripping it will be possible to look down to the main or counter gangway from the surface. By means of this stripping of the crop the coal is kept free of all surface material, thereby appreciably reducing the work of the breaker. More complete extraction will be effected, as no supports need be left to hold up the surface soil. In drawing pillars the upper measures are removed first and thus no coal is lost in any bed because caves have occurred in a measure below it.

Only in the Little Buck Mountain bed is mechanical haulage in use, for all the coal in the measures above is sent down to that bed by means of the rock chutes already mentioned, where it falls into mine cars which have been placed in the gangway to receive it. As the locomotive does not have to enter working places to get its quota of mine cars, the gathering of the coal is much simplified. There are a few exceptions to this general statement—these will be mentioned later.

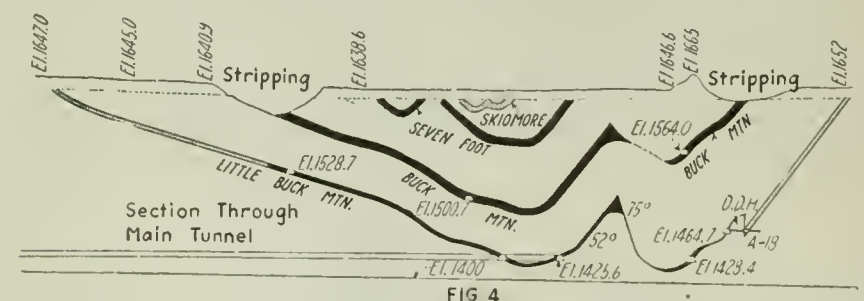


FIG 4

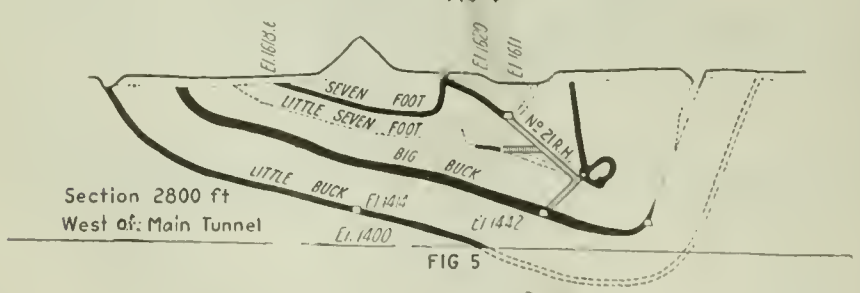


FIG 5

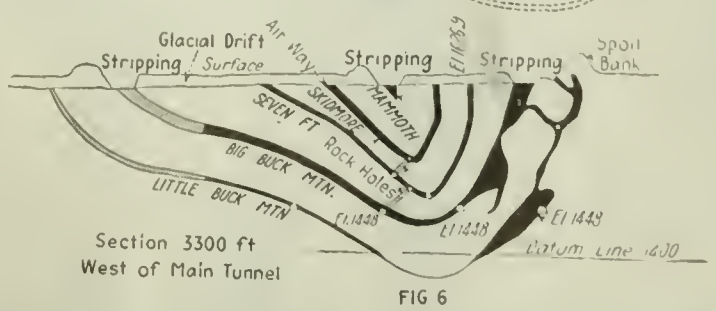


FIG 6

FIGS. 4, 5 AND 6. THREE CROSS-SECTIONS OF THE MEASURES AT THE WESTON COLLIERY

Note how rock movements have pinched out the coal in places and bunched it in others, and in one place have caused real veins of coal to be formed in the rock between the beds, the plastic material, being squeezed up into crevices. In all soft measures, as peats and clays, severe folding invariably resulted in transference of material from its "locus of deposition," if that term may be excused.

Pumps Are Used Solely to Drain Local Dips

This mine is somewhat unusual inasmuch as no pumps are employed in its dewatering, except one or two small units to void the water from small local dips. The conformation of the measures is such as to render it possible to drain by gravity the entire mine with the exceptions above noted. Furthermore, the ventilation is natural, and except in one or two small sections no fans are employed, and even these will be abandoned as soon as proper connections can be made.

Along either edge of the basin the coal measures attain their steepest slope, as is shown in cross-sections, Figs. 4, 5, 6 and 7. At the bottom of the basin the measures are practically horizontal. In the western end of the property also, as is well shown in Fig. 7, the measures lie practically flat.

Some highly interesting problems are encountered in mining, as may be seen from sections, Figs. 4, 5 and 6. Taking Fig. 4, which is a cross-section of the measures through the main tunnel, it will be noted that a number of "wants" or absences of coal occur. All of these tend to complicate the mining methods. Fig. 5, which is a section 2,800 ft. west of the main tunnel, shows some peculiar twists in the coal beds, and in Fig. 6, showing a section taken 3,300 ft. from that tunnel, will be noted some extremely large pockets that have been formed by the bed being pinched out in one place and thickened in another. One more than usually remarkable feature is the cross chute of coal which extends from the Little Buck Mountain bed to the Big Buck Mountain.

In this latter cross-section also will be seen the rock holes driven up from the lower measure to the higher ones. The main gangway here happens to be in the Buck Mountain bed instead of the Little Buck Mountain. At this point also is found one of the few places where the bottom of the measure is below the level of the water tunnel. A pump is used to drain the lower headings. They are worked by means of a short slope.

In driving the headings in the Little Buck Mountain bed to the east of the main drainage tunnel a want is encountered, so that at this point there are no workings along the southern end of the bed. Along the northern side the coal is free of partings and all of it lying above the heading has been taken out as far as a point almost opposite the end of the main strippings.

Between the south and north headings in the Buck

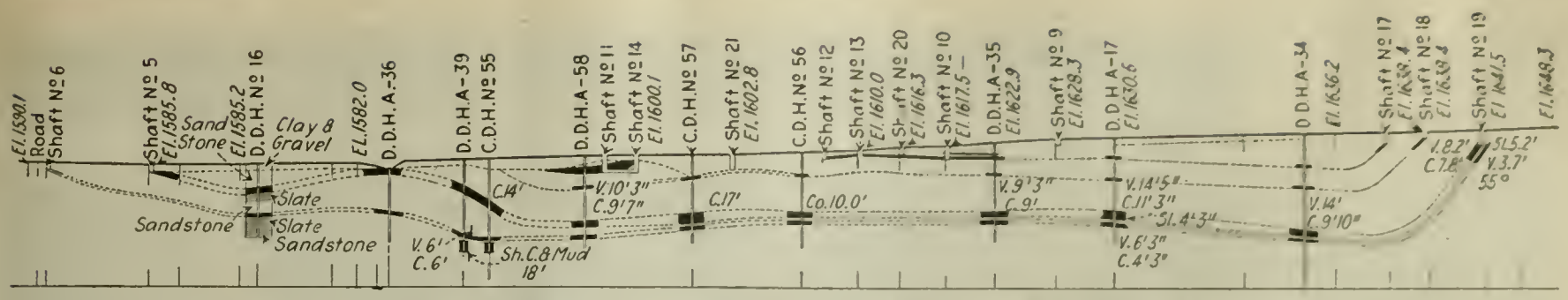


FIG. 7. AT THE WESTERN END OF THE PROPERTY, WHERE THE DIPS ARE GENTLE

This illustration will give an idea of the care with which the property is drilled and tested by small shafts. D.D.H. in the drawing is the legend for "diamond-drill hole"; C.D.H., for "churn-drill hole." V represents the whole seam thickness and C the net thickness of the coal.

Mountain bed lies a large body of coal that is below the level of these headings. In order to reach this the company is now driving a rock tunnel from a point on the Main Water Tunnel. It will reach the bottom of the measure at about the No. 6 tunnel which is shown in Fig. 1. The present headings cannot drain this because the levels in the Buck Mountain and Little Buck Mountain beds are not driven along the bottom of the measures, but are really counter-levels.

At present, therefore, all the coal that is obtained from this level has to be lowered down a gravity plane to the Main Water Tunnel. This new rock tunnel is being driven in what is known as the Lykens bed of coal, which in this area is not workable, being only 2 ft. thick and extremely dirty. It is much easier, however, to drive the headings through this measure than it would be through solid rock. At the present time this heading has been driven about 1,200 ft., but it will be extended to 4,200 ft. before it is finished.

Three Scrapers in Rooms, One in Gangway

Three methods of mining, each peculiar to the locality in which it is employed, are followed in this operation. An almost level block of 4-ft. coal lay tributary to No. 7 rock hole. The first idea was to mine this by longwall with a face about 185 ft. in length. The coal was to be undermined, brought down and then removed by means of scrapers, which would drag it to the rock hole. Unfortunately, it was discovered that the roof would not stand such a method of working. For this reason the plan was abandoned and another method adopted.

A gangway was driven along the lower end of the block, in which was installed a scraper line to drag the coal to the rock hole. At right angles to this gangway three rooms were driven, and a drag scraper was installed in each. This made a total of four scraper lines. Those in the rooms drag the coal from the face to the heading. Here in turn it is picked up by the heading dragline and brought to the rock chute.

Flush Coal Out of Rooms by Use of Water

This system is not recommended as being the most economical that could be devised, but it seemed to be the one best suited to the conditions existing and to the thickness of the coal. Had there been more coal in this section it is probable that some other method would have been used, but under existing circumstances the present system gives good results.

In parts of the mine the beds are too flat to permit the coal to run on sheet iron, yet too steep to allow the handling of mine cars. Accordingly, a pump has been installed and the coal is washed down the sheet-iron chutes by means of water, the water being pumped from the gangway ditch. This method is much more economical than the installation of buggy roads or conveyors of any kind.

In another portion of the mine the coal bed lies at an angle of about 14 deg. This is a difficult angle, as it is too flat to permit the use of sheet-iron chutes and too steep for mine cars to be used economically. In order to handle the coal from this locality a plane was driven up the steep portion of the pitch, as shown in Fig. 8. Every 60 ft. a room was turned off, these rooms being driven staggered on opposite sides of the heading.

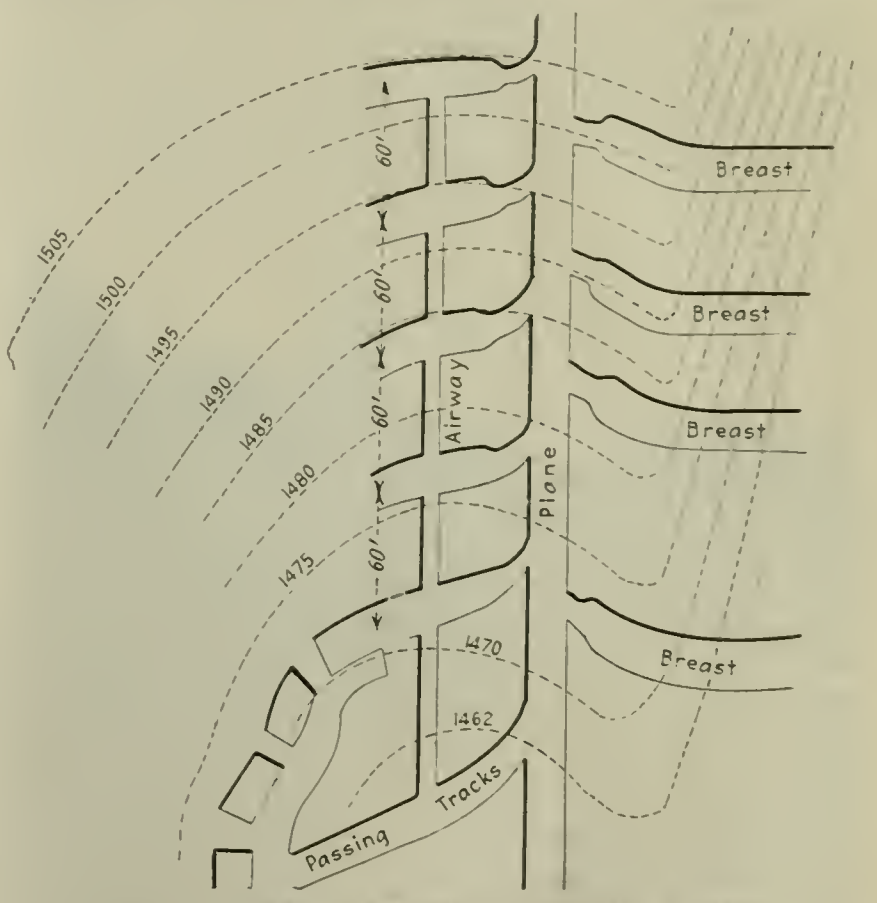


FIG. 8. PLAN OF AN UNDERGROUND PLANE

Too steep for a locomotive to haul cars up or lower cars down it, it is not so steep that locomotives cannot pass along it unloaded, making gathering trips from room to room. The locomotive does not bring cars beyond the room neck. The cars are handled from that point by the plane machinery. Note that the rooms open uphill.

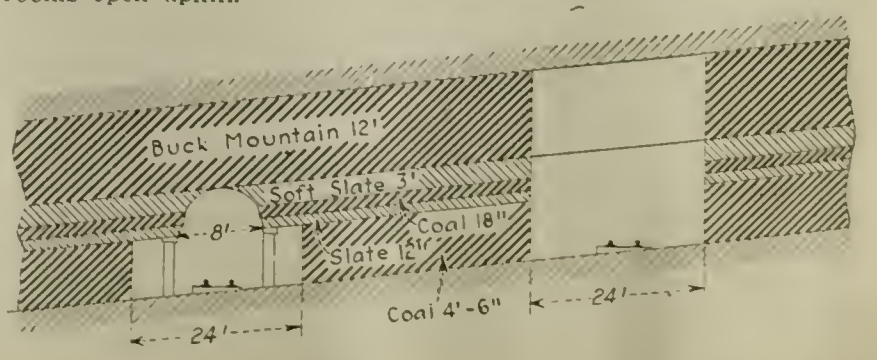


FIG. 9. CROSS-SECTION OF TWO ADJACENT ROOMS

The room on the left is being driven up in the bottom bed of coal. In the center the roof is broken and arched to the bottom of the thick upper bed. When the room is finished the upper and middle seams are taken out for the full width, as shown on the right. The slate however, is gobbed, but this the draftsman has failed to show. The pillar is then split by a room like that on the left, and on the return the balance of the coal right and left is taken, leaving the roof free of any support and ready to cave.

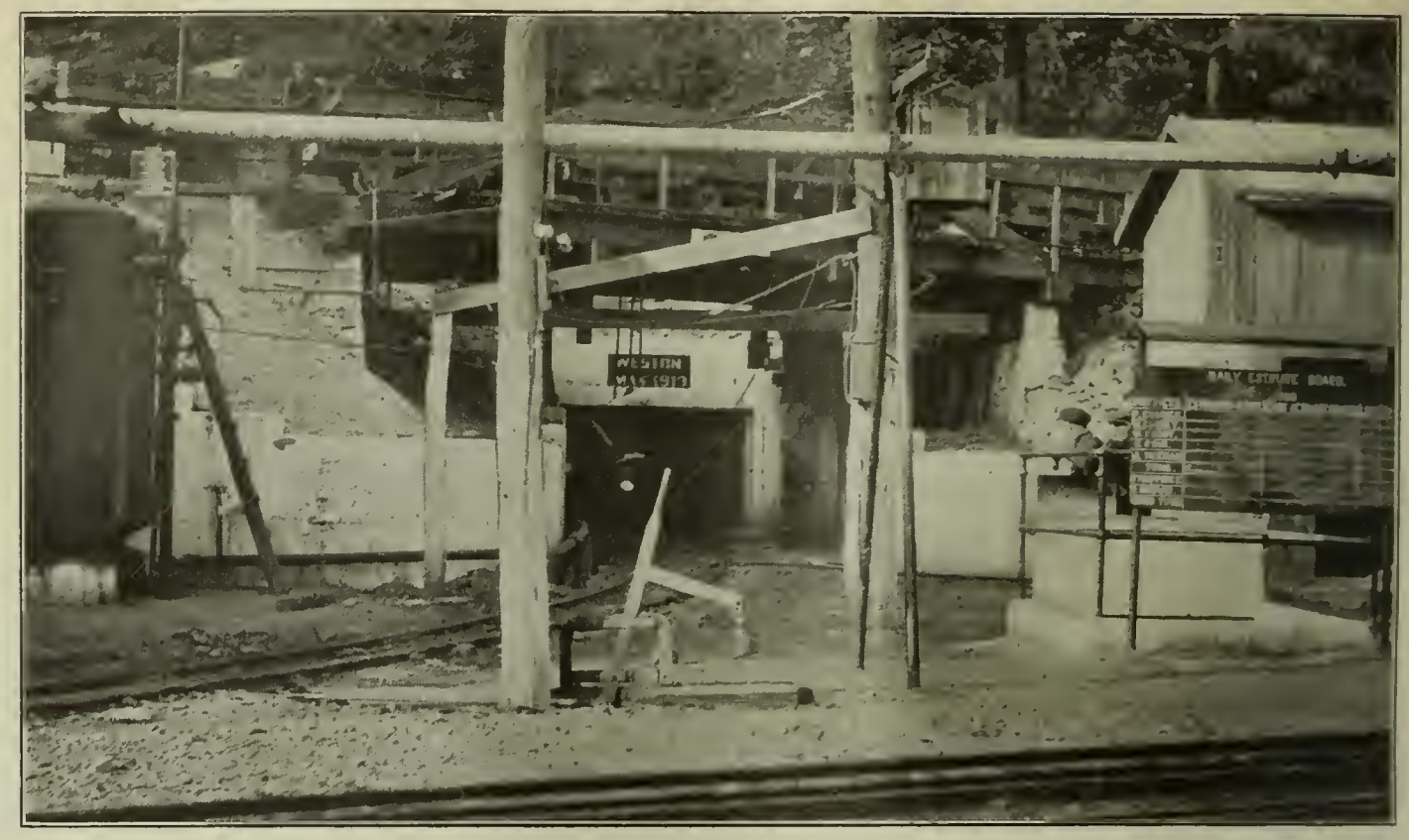


FIG. 10

Entrance to Main Drainage Tunnel

To the right of the tunnel is the daily estimate board, or, shall I say, the "prediction board," on which the foremen post the expectations for tomorrow, which expectations they make it a point to reach and excel. Above the mine portal is the road by which the empties go to the foot of the plane.

This spacing was adopted to the end that in removing the pillars they might be first split with breasts as wide as those used in first mining. The rooms were driven on the contour of the coal, and the longest, when finished, will be about 1,200 ft. long. The grade of the plane is such that a locomotive without loads can traverse it without difficulty in either direction. When the machinery of the plane leaves a car on the track in a room neck, this locomotive is able to place it at the working face. It can, of course, bring back a loaded car as far as the room neck, but it must leave it there, as it cannot handle it on the plane. The machinery of the plane pulls it out onto the slope and lowers it to the foot of the incline.

FIG. 11. BARNEY WITH TELESCOPING WHEELS

Usually the barney has either the gage that is standard for the plane and travels on the car rails or a gage narrower than the cars and travels on its own little road laid between the car tracks. Here the barney is so arranged that when it is on the plane proper it travels on the regular rails, but as it nears the pits the wheels are brought closer together and it travels on a narrow track which leads it down into the barney pit, where the cars travel over the top of it.

The Buck Mountain and Little Buck Mountain beds are mined simultaneously. The method employed is shown in the cross-section, Fig. 9. The Little Buck Mountain bed at this point consists of 4 ft. 6 in. of coal, on top of which is 12 in. of hard slate, surmounted by about 18 in. of coal. About 3 ft. of soft slate intervenes between the Little Buck Mountain and Big Buck Mountain beds. The rooms are 24 ft. wide, but in driving up only the bottom bench of the Little Buck Mountain coal is removed for the full width.

The dividing rock between the two beds is cut through for a width of about 8 ft. and the top arched. The rock taken down in this operation is gobbed under the dividing rock and acts as a support for the soft slate. By this method the rooms are driven until they reach their maximum length. On the return the Buck Mountain and upper bench of the Lower Buck Mountain seams are widened out to their full width of 24 ft. The Big Buck Mountain bed at this point is 12 ft. thick. On the return while widening the rooms the soft slate which separates the two measures is taken down and gobbed behind, so that the 18 in. of coal that otherwise would be lost is recovered.

In order to draw the pillars they are first split by driving breasts through them. These breasts are of the same character as those driven in first mining, but in this case, when returning, the full width of the pillar is taken instead of merely the coal in the breast. When rooms reach the foot of the steep pitch, they are driven up the pitch in the regular manner.

Fig. 10 is an illustration of the entrance of the Main Water Tunnel of this mine. All the coal produced underground is brought to the surface through this tunnel. One interesting detail of this operation is the "daily estimate board," shown in this illustration. Each day every section foreman makes an estimate of the amount

of coal that he expects to produce the following day. In case he does not attain the amount estimated he is required to give some extremely good reason for his failure. Opposite the amount estimated is shown the quantity of coal actually produced. In this way it is possible to predict with fair certainty the output for the following day.

Dynamo Is Driven by Descent of Cars

Immediately above the tunnel a bridge is shown with empty cars on their way to the foot of the plane which leads to the strippings. In the foreground is the loaded track from the same plane. This incline is operated mainly by gravity, but at one point it is necessary to use power in order to pull the empty mine cars, as the grade is so gentle that the loads will not drag the empties up the slope. This plane is so arranged that the surplus power generated by the loaded cars going down is used to drive a dynamo. Thus more power is actually generated than the handling of the empty cars consumes.

This plane is of the barney type, and the barney itself is of unusual construction. It is so designed that the wheels are of the same gage as that of the mine cars. In order that the barney may be able to enter its pit, the wheels are so arranged that they will telescope. This is accomplished by means of a latch and suitably arranged guard rails at the foot. When the barney approaches its pit, the wheels approach each other and are brought to a narrower gage than that of the car track. This narrow track then descends into the pit, allowing the barney to get out of the way of the cars, which then pass over it. As will be noted in Fig. 11, there is no narrow gage on the inclined track. That illustration shows the barney just about to enter the pit with its gage shortened to suit the narrower track.

FIG. 12. NEITHER SHOOTING GALLERY NOR SKATING RINK

The long building is a thaw shed for taking and keeping the frost out of loaded cars in wintry weather.

At the top of the incline a long double-tracked thaw shed has been built. This is used in winter to protect the contents of the mine cars from freezing. This shed has a capacity of forty cars. Only cars from the strippings are run through this building. None is allowed to stand outside over night. This thaw shed and the tracks are shown in Fig. 12. The shed is provided with a number of steam pipes that keep it at a temperature calculated to prevent freezing.

It is almost impossible to obtain a picture of the whole plant, but Fig. 13 shows the general outside arrangement. In the foreground will be seen the breaker described in the issue of *Coal Age* of Jan. 27. In the rear of the trestle that leads to the breaker will be noted a second car shed. This keeps the mine cars coming from the mine from freezing in case they have to stand loaded over night. Immediately behind the

FIG. 13. GENERAL VIEW OF WESTON COLLIERY AND ITS LENGTHY THAW HOUSES

The loaded mine cars are not allowed to freeze during the long wintry nights to which the anthracite region is subject. In the morning the cars are ready for dumping and the breaker can start work without annoyance. In most mines it is customary to work the preparation plant—breaker or tipple—till all the coal from the mine has been loaded into the railroad cars. But though this is the rule cars are always apt to be left in the portal or at the shaft foot, and if this is an intake the coal is frozen solid. The thaw house corrects this. The buildings in the foreground were built by the Lehigh Valley Coal Co.

exit from this shed will be seen the top of a hoist that raises the cars to a sufficient level to permit them to move to the mouth of the tunnel by gravity.

About midway the length of the thaw shed will be seen the top of another car haul that raises the empties from the tunnel level to a point such that they may proceed by gravity to the foot of the incline, thence to be sent back to the strippings.

The foreman is given a bonus when tonnage averages a certain amount each month. The size of the bonus depends on the tonnage produced in excess of a minimum, thus the greater the tonnage, the larger the bonus. This of itself tends to bring the output to the highest possible point, but it would not be likely to decrease the cost of mining except in so far as increased tonnage means decreased overhead per ton produced.

A second incentive, however, has the effect of decreasing the cost of mining. Every man in the company's employ each year is allowed to subscribe to a certain amount of stock, and a large number of the men, particularly the bosses, take advantage of this opportunity. Consequently any decrease in the cost of mining tends to increase the size of every man's stock dividend.

DRILL IS EASILY HANDLED, BEING A LIGHT WEIGHT FOR ONE MAN

This machine weighs only 35 lb. and no great effort is needed to hold it to the face, whether the hole is high or low, near the rib or remote from it.

This Air Drill Is Easily Portable and Can Be Operated by One Man

AIR drills are no longer the expensive and heavy mechanisms of earlier days, to be used only where there is a lot of extremely heavy work to be done. They are now made to suit every kind of work, light or heavy, and are turned out in such numbers and so comparatively light in weight that they are not purchased only for exceptional work but for the daily round of drilling, wherever it has to be done.

The Denver Rock Drill Manufacturing Co. makes three drills, which are known as the Waugh "nineties." One is a dry drill intended for use in coal and other soft formations. It is 17½ in. long exclusive of the steel puller and 20 in. long over all. It weighs 35 lb. Another drill is a combination wet-and-dry machine, intended for rock drilling either above or below ground. This drill is 18¾ in. long exclusive of the steel puller and 21¼ in. long over all. Its weight is 39 lb.

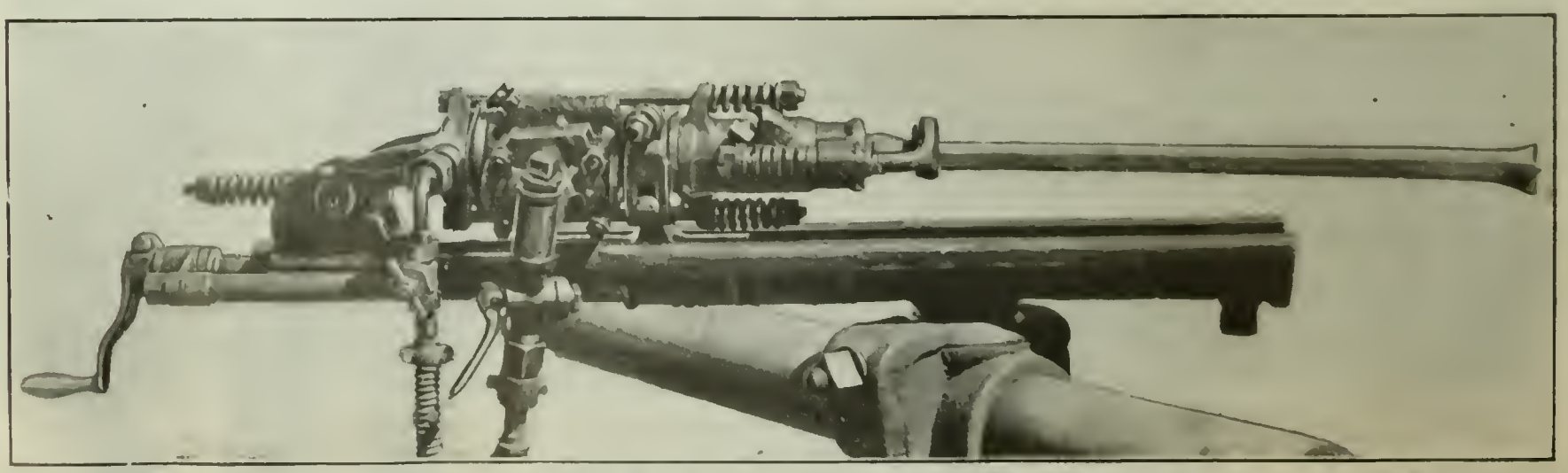
A third drill is similar to the latter except that it is intended for dry drilling only. It is, therefore, particularly adapted to work above ground. This machine is 17½ in. long exclusive of the steel puller, 20 in. long over all and weighs 35 lb. All these drills are equipped for using ⅞-in. or 1-in. hexagon drill steel with collared shank 3¼ in. long. Air hose of ¾ in. inside diameter is preferable with these drills.

As will be observed from the above, all these machines are sufficiently light to be carried about and operated by one man. Instead of being built valveless, they are fitted with a new spool valve positively actuated by the air. Rotation of the drill bit is positive. Four pawls and an odd number of ratchet teeth upon the rifle-bar ratchet render backlash small. The stresses imposed upon these parts accordingly are light.

Lubrication is effected from an oil reservoir at the side of the cylinder. Pulsations of air when the drill is in operation gradually feed the oil into the main air supply, which distributes it to all parts of the machine.

A simple slide guide has been devised which makes it possible to mount any of these drills upon either a column or a bar. On this guide two hinged jaws act as a front support. These jaws are held together by a bolt provided with a spring, thus averting the possibility of distorting the drill cylinder. The rear support consists of one movable and two stationary jaws.

A helical spring on the movable jaw serves to take up the recoil of the machine, reducing the effect of that recoil to a minimum. This guide is built for the combination wet-and-dry drill but an adapter renders it suitable for either of the others.



WET DRILL FOR USE IN SANDY ROCK, WHICH WHEN DRILLED DRY FORMS A DUST INJURIOUS TO THE LUNGS

The bit on this drill is hollow and water which enters by the smaller hose is driven through the bit washing out the drillhole. This drill is mounted on a guide shell for tunnel driving.

Problems of Operating Men

Edited by James T. Beard

Cigarettes, Sparks and Firedamp

Though the Practical Test May Show That An Explosive Mixture Taken from the Mine Is Not Commonly Ignited by the Smouldering End of a Cigarette or a Lighted Pipe, the Conclusion Is That These Sources of Danger Must Be Kept Out of the Mine

AFTER reading the interesting letters on the subject of the ignition of gas by cigarettes and sparks, I cannot refrain from writing on this matter myself and giving my own conclusion which is that safety in mines requires that all such sources of ignition of firedamp should be kept away and never taken into the mine.

When a boy I have listened many times to old miners telling how shots were fired in gassy mines, in their days. The fireboss then acted as shotlighter and carried with him a thin piece of wire, which he stuck through the mesh of the gauze of his safety lamp. When the wire was red-hot he would pull it out and touch off the fuse without fear of igniting the gas. Few regarded a tobacco pipe as dangerous in gas.

However, while the same belief prevails among a large class of miners today, it is seldom that one is found willing to put his claim to a test in a body of gas in the mine. No level headed person with a knowledge of mine gases, would dream of undertaking such a foolhardy task, knowing well that it might cost him his life.

The Practical Test

Since this subject was brought up in *Coal Age*, it has caused considerable discussion hereabout and two or three of us young students decided to try the experiment on samples of gas taken from the mine. For that purpose we carried two soft-drink bottles filled with water into a place where much gas was being generated and only safety lamps were in use.

Emptying the bottles of the water allowed them to fill with the firedamp mixture in the place. The bottles were then sealed with fireclay and taken home. In trying out the experiment a towel was first wrapped around one of the bottles as a precaution. When this bottle was unsealed and a lighted match applied to its mouth, the contents exploded with a loud report.

The second bottle was then wrapped in the towel and unsealed. We had prepared a clay pipe having a stem about 20 in. long. While one of us drew vigorously on the stem, the bowl of the pipe with the glowing tobacco was applied to the mouth of the bottle with no other result than possibly a brighter glow of the burning weed.

Although this experiment was crude, it is interesting. Being simple, it can be tried by anyone; but it should be remembered that the fact the gas fails to ignite when a glowing cigarette or pipe is applied to it, furnishes no proof that smoking a pipe or cigarette in a mine is safe when gas is present.

Will Sparks Ignite Gas?

Mention has been made, in this connection, of the possible ignition of firedamp by sparks. Whether ignition will take place in this case depends wholly on the intensity and duration of the spark. It cannot be denied that sparks have been seen to fly when a pick struck a sulphur ball or hard rock, and no ignition of the gas resulted though the atmosphere was explosive and safety lamps were in use.

Although there seems to be a diversity of opinion on the question of the ignition of gas by sparks, it is my belief that terrible mine catastrophes have resulted from this cause. It will be remembered that a few years ago a disastrous mine explosion occurred in this vicinity, and a prominent mining engineer ascribed the ignition of the gas to a spark struck by the falling of hard rock on other rock of a similar nature.

In that case, however, when the mine was opened up and explored, evidence was found of a blownout shot, in a place that was known to have contained gas previous to the explosion. Unfortunately, those who would have been able to throw some light on the matter did not live to tell the tale.

Explosion Caused by Spark When Brushing Gas

Just now I recall an incident that happened sixteen or eighteen years ago in a Lancashire mine when one man was killed and another badly burned by an explosion of gas. A bratticeman who survived the accident, stated that he had accompanied the fireboss when that official was making his rounds the morning of the explosion.

Reaching a place where gas had accumulated they decided to brush it out. For that purpose, the man took off his jacket and started to whip the gas while the fireboss fanned it with a large shovel. In a moment, the shovel striking the roof rock caused a spark that set off the gas.

Going back, now, to the early days of mining when the increasing number of explosions of gas created the desire for a source of light that would not ignite gas, we find the "steel mill," as it was called, invented by James Spedding, in 1760. This device threw a shower of sparks that gave sufficient light to enable the miner to work but did not ignite the gas.

According to Sykes' Local Records of Northumberland and Durham mining, faith in the steel mill was badly shattered by the explosion that occurred in the Wallsend Colliery, June, 1785, which was attributed to the ignition of gas by the steel mill.

However, some doubt still remains in the minds of many miners that the use of the steel mill could ignite gas, notwithstanding the assertion of John Selkirk, who was grinding the mill at the time and witnessed the ignition of the gas by the sparks from the mill.

In all of these instances, however, regardless of whether or not the ignition of gas by sparks or by smoking is possible, it is certain one is toying with death when he takes the risk. As another has expressed it, he is "flirting with a tombstone."

Stephen Davies.
Midlandvale, Alta., Can.

ABSTRACTS FROM OTHER LETTERS

SMOKING cigarettes and pipes involves the habit of carrying matches or other means of lighting on the person of the smoker and should, in my opinion, be prohibited by law in all coal-producing states, in respect to mines generating gas or where safety lamps are in use.

Having read the different letters in *Coal Age* bearing on this subject, I am not surprised to note that all the writers, without exception, agree that smoking in mines generating gas is a dangerous and indefensible practice and a menace to safety.

Though I do not know of any authentic case where the glow of a cigarette or a pipe has been claimed to have ignited gas and caused an explosion, I would hesitate to make such a test with a dangerous accumulation of gas in a mine.

Allowing that it is true that the glowing embers of tobacco will not ignite gas, it must be acknowledged

that the real menace to safety actually hinges on other facts that are always associated with smoking.

That it should be hard to eliminate the habit of smoking in the mine, which one writer says exists to a large extent among miners, is a surprise to me, but shows the need of drastic laws and regulations regarding the practice. The inability to eliminate the practice of smoking in a mine generating gas shows a lack of discipline.

I have worked in mines where smoking or carrying smokers' articles, such as pipes, tobacco and matches, was not permitted. The discipline was such that each man knew and felt that he would be severely dealt with if caught violating this rule. Indeed, the guilty person would be summarily discharged and could consider himself lucky if he was not arrested and prosecuted for his act.

Where the penalty is sufficiently severe and violators are promptly punished, the practice of secret smoking will not long survive among the workers in a mine.

Thomas, W. Va. "SAFETY FIRST."

READING the discussion on cigarette smoking in gassy mines, led me to do a little experimenting on my own hook. For that purpose, I used a tank sealed at both ends, except for leaving a small hole through which to insert a lighted pipe or cigarette.

Tests were made with gas-charged air taken from the mine where the Wolf safety lamp showed the mixture to be at or near the maximum explosive point. Acetylene gas was also used for the same purpose.

OTHER MINERS APPLY THE PRACTICAL TEST WITH LIKE RESULTS

Having filled the tank with the explosive mixture obtained in the mine, I first inserted into it a lighted pipe that had a bright red glow; but this failed to ignite the mixture. Repeating the experiment with a lighted cigarette, however, an explosion followed that blew out one end of the tank.

In the course of my experiments, I should state, it developed that all tobaccos are not alike, some have a higher burning temperature than others. At times, little white sparks would develop. One writer on this subject, *Coal Age*, Jan. 13, p. 70, has stated that much of the tobacco now on the market contains saltpeter. This may explain the little white sparks I observed in the burning of the cigarette that caused the explosion of the gas in the tank and also ignited the acetylene gas when this tobacco was smoked in a pipe.

There is no need to emphasize further the danger of smoking in a gaseous mine and Rule 32 of Art. 25 of the Bituminous Mine Law should be rigidly enforced. Any violation of that rule should be punished as the law provides.

As suggested by the editor commenting on this practice, in the issue of Dec. 23, p. 1289, I hope that the Bureau of Mines will undertake to make exhaustive experiments covering this matter and publish the results together with their recommendations. It appears to me as an idle suggestion that any discussion of this question is foolish. To my mind it has proved most instructive and a benefit to all engaged in the coal-mining industry.

———, Pa. "SAK."

MY INTEREST has been growing ever since this discussion was started. At first, I was inclined to think that the actual fact of whether or not a lighted pipe or cigarette could ignite gas had better not be enlarged upon.

In the same manner, I thought that the incident cited by a Scranton superintendent, *Coal Age*, Jan. 13, p. 70, had better not have been printed. However, lately I changed by mind and have come to the conclusion that if we have the foe to fight the better way is to get out in the open and tell him the truth. In other words, educate the miner who, whether in ignorance or otherwise, persists in the dangerous practice of smoking in a mine where safety lamps are in use.

SAFER TO INSTRUCT THE MINER REGARDING CONDITIONS

Many mine officials think that the less a miner knows about conditions, the better it is for all concerned. My opinion is, however, that our mines will be safer and the work more efficiently performed if we educate the miner to know all about the conditions that surround him in the mine, rather than keep him in ignorance and leave him to form his own conclusions, which are generally far from the truth and harmful.

For a number of years I have served as mine foreman and, in Illinois, as mine examiner (fireboss). The experience has made it difficult for me to understand how any practical mining man can regard the question of smoking in a gassy mine, in any other light than dangerous. Certainly none but a fool would care to run the risk of setting off gas in a mine when he is fully acquainted with the possibilities and their results.

Hillside, Ky. OSTEL BULLOCK.

Training Men for Safety

Preaching safety is one thing, but acting in accordance with safety rules and regulations is quite another thing. The first is recognized by all, but the honest practice of the second is greatly limited.

MY ATTENTION was particularly arrested by a heading contained in the letter of Richard Bowen, *Coal Age*, Dec. 9, p. 1192, which reads: "Train men to work safely."

This idea set forth by Mr. Bowen expresses my views precisely. The greatest problem in the coal-mining industry today is, to train men to act safely. In the majority of cases it seems hard to impress on the minds, even of operators and mine officials, the need of applying the most simple rules of safety to their own actions in the mine.

Mechanical devices, as Mr. Bowen has pointed out, will accomplish little if the men who operate them fail to practice safety themselves. Unless men can be taught the meaning of safety and the importance of its daily and hourly practice, safety devices will be useless.

In support of my reference to the fact that mine officials often fail to observe the safety rules and regulations that they make and exact of their men, allow me to refer to a local explosion that occurred in a mine operated by one of our large coal companies, and which caused the sacrifice of four lives through the reckless disregard of ordinary safety rules by two of the officials of the company.

FAILURE OF TWO MINE OFFICIALS TO PRACTICE SAFETY

The mine inspector employed by the company, together with the mine foreman and two trackmen, entered the mine about 8 o'clock one morning and proceeded toward a place that had been abandoned for some time. On the way, they met the fireboss, who cautioned the inspector against entering the abandoned place without a safety lamp.

Disregarding the fireboss's advice, however, and in violation of the rules, the four men proceeded on their way, the inspector saying by way of excuse that they could not see with safety lamps. It was not more than three hours after the meeting with the fireboss that a local explosion of gas occurred in the place where the four men had entered and where their bodies were found a little later by rescuers.

Reflecting on this incident, we cannot but believe that both the mine inspector and the foreman knew better than to go into the place with a naked light, especially after the warning given them by the fireboss. The two trackmen undoubtedly knew better also, but probably thought that the inspector and the foreman were as big as the fireboss and ought to understand what they were doing.

It may be of interest to state here, what is not generally known, that this inspector had failed to answer correctly some of the questions in the examination he took, but was enabled to secure his appointment to that position by reason of a "pull." The fact of the explosion reflects on the competency of the inspector, and the sequel would seem to support such an opinion. For this delinquency, however, the inspector paid with the sacrifice of his life.

PREACHING AND PRACTICE

Truly, it is one thing to preach safety, but how much more important is it to act safely. The incident, also, teaches a lesson for all examiners whose duty it is to pass on the competency and fitness of men to fill positions of responsibility for the lives of others.

Men who have worked hard to gain a practical knowledge and experience of mining must often give place to one who, like this inspector, has a "pull."

Not infrequently, we observe a mine foreman holding a first-class certificate when his practcial experience is extremely limited, perhaps far less than the men in his charge.

Not long since, a mine superintendent who had eleven years of practical experience in mines was refused his papers, because he had failed to give satisfaction on the safety-lamp test. Being one of my own personal acquaintances, I do not hesitate to say that those years of experience had taught him more in regard to the safety lamp and its use than the men whom he failed to satisfy on some technical point regarding the lamp, which probably had little bearing on its practical use.

My own impression is, that the question of mine safety is up to the older mine officials who so repeatedly perform their duties with a seeming contempt for having to conform to the restrictions they place on their men to insure their safety. There is but one way to impress this need of safe action in the mine, upon the men and that is through the example of every mine official.

WILBUR L. BENDER,
Pittsburgh, Pa. Carnegie "Tech."

Inquiries Of General Interest

Ohio Coal Seams and Strata

Giving a Portion of the General Geological Section of the Coal Formations in the Ohio Coal Fields, From the Upper Kittanning Seam Down to the Pottsville Conglomerate, Which Underlies These Formations

WE are anxious to obtain some reliable information regarding the coal measures that underlie the Middle Kittanning which is more familiarly known as No. 6 seam in this locality. Up to the present time we have been operating in the No. 6 seam, which is now nearing exhaustion on our properties.

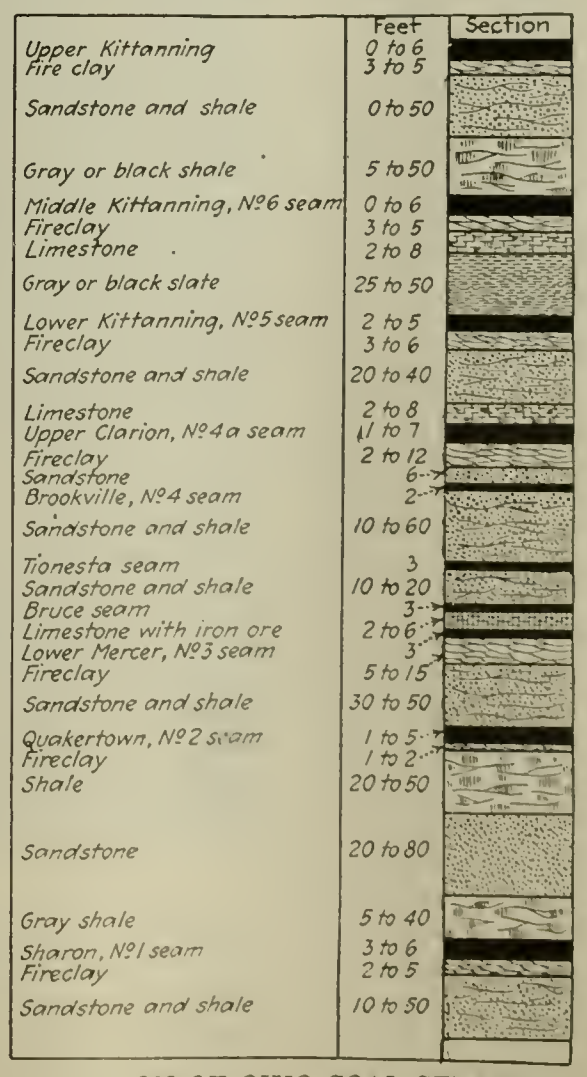
I have been told that there are other workable seams of coal that underlie the No. 6 seam, but information on this point is very vague and unreliable. If it is true, as said by those who claim to know, that there is another seam of coal that will average 6 ft. in thickness, at no great depth below the seam in which we have been working, knowledge of that fact would mean much to us in the present emergency.

My information is that this lower seam has never been worked in this locality, although the fact of its existence has been known for a long time. The reason may be that the outcropping of the seam in the river has caused the fear that some trouble would be experienced in mining the coal, owing to the presence of much water. Definite information in relation to the coal measures that underlie No. 6 seam will be greatly appreciated. OPERATOR.
Coshocton, Ohio.

In reply to this inquiry, we reproduce, in the accompanying figure, that portion of the geological section of the coal measures extending from the Kittanning group of coal seams to the Pottsville conglomerate.

This columnar section and its description giving the thickness of the several strata is taken from the publications of the Geological Survey of Ohio and is the work of the state geologists, R. M. Haseltine and W. G. Burroughs.

This section is, of course, of only general application. The thickness of each strata is given as varying from a minimum to the maximum thickness found in different localities in the state.



SECTION OF OHIO COAL STRATA

It will be observed that some of the strata show a variation from zero to the maximum thickness, which indicates that they thin out and disappear in some localities.

In reference to the question of their being workable seams of coal underlying the Middle Kittanning or No. 6 seam, a study of the chart suggests the probability that a good thickness of coal can be found at a lower depth.

It is stated in the report that the Lower Kittanning or No. 5 seam can be traced from Mahoning County, southwest across Ohio, to Lawrence County. Coshocton from which this correspondent writes lies but a little to the north and west of the line joining the two counties just named and about midway between them.

This knowledge, of course, does not establish the fact that No. 5 seam has a workable thickness in Coshocton County. Proof of the existence and thickness of that seam at this point can only be obtained by prospecting the property by careful drilling, which is the only safe rule of guidance in any case and should always be done.

The geological report, however, goes on to state regarding the No. 5 coal seam, that the bed lies nearly flat and is notably persistent, being found in nearly every county within the coal fields of the state. The thickness of this coal, however, is generally said to be less than three feet, though in places a thickness of four and five feet has been found.

A promising feature in this connection, however, is expressed in the statement made in the report that the No. 5 bed reaches a good development in Columbiana and in Tuscarawas County where it reaches its greatest thickness. The latter county adjoins Coshocton County on the north and east.

In commenting on the development of No. 5 seam the report says that this has been somewhat retarded by reason of the more valuable Clarion and Quakertown or No. 2 seam. This statement, however, is probably of little practical importance, except in the extreme southwestern portion of the Ohio coal field, where the two seams, now nearly exhausted, reached their maximum thickness.

The report gives the following general proximate analysis of the No. 5 coal: Moisture, 5 per cent; volatile matter, 38 per cent; fixed carbon, 48.4 per cent; ash, 8.6 per cent. The ultimate analysis shows an average of 3.3 per cent of sulphur in the coal. The heating value of the coal is estimated at 12,800 B.t.u.

Working An Overlying Seam

The question of good roof support in the upper seam depends on the pillars in that seam being located vertically over those in the seam below, unless the interviewing rock is sufficiently thick and strong to distribute the pressure.

AT OUR Beard's Fork plant we are working two splits, No. 2 Kanawha seam, separated by 40 ft. of hard slate and shale, with some so-called "bastard sandstorm," though it is nothing more than a hard sandy shale.

There has been some little discussion as to how the entries in the top split should be located in reference to those

in the split 40 ft. below. While the superintendent claims that the entries and rooms above should be vertically over the pillars in the lower workings, it is my belief that this is wrong.

It has always been my understanding that the pillars in both seams should be in the same vertical plane, in order to have a solid pillar or line of support from the floor of the lower split to the roof of the upper one.

The coal is weak; the thickness in the lower seam averaging about 4½ ft. and that in the upper seam a little less, say 4 ft. Each seam is overlaid with a weak roof shale.

We would much appreciate learning the opinions of *Coal Age* and its readers in respect to this question. If the upper workings are laid out so that the center lines coincide with those below the lines of support are continuous; otherwise they are staggered and broken.

J. C. R. TAYLOR,
General Manager,
Page, W. Va. Loup Creek Colliery Co.

In the working of two seams that are separated by a few feet of rock strata, as in this case, there is only one safe rule to adopt. There must be provided continuous lines of support extending unbroken through both seams.

This means that the center lines of all pillars and openings must lie in the same vertical planes. In this respect the arrangement of pillars in a mine is similar to that of the main walls and pillars in a house.

The weight of the overburden, in mining, acts vertically downward and must be transmitted without break to a solid foundation, which is only found in the floor of the lower seam.

Examination Questions Answered

Examination for Mine Foremen, Sixteenth Anthracite District

(*Selected Questions*)

QUESTION—*What will be the length of a tunnel between two veins dipping* 38 *deg. if the dividing rock is* 100 *ft. thick, square with the dip?*

ANSWER—The thickness of the dividing rock (100 ft.) is represented by a normal line drawn perpendicular to the strata, while a horizontal line may be taken as representing the tunnel, which is practically level. These two lines form with the line of the strata a right triangle in which the perpendicular is 100 ft. and the hypotenuse the required length of the tunnel. The angle of dip (38 deg.) being the angle between the strata and the hypotenuse or line of the tunnel, the length of the latter is $100 \div \sin 38° = 100 \div 0.61566 = 162.43$ ft.

QUESTION—*How much stress would there be in a hoisting rope, on a slope having a 24-deg. dip, if the car and load together weigh 8,000 lb.?*

ANSWER—The stress in the hoisting rope on a steep slope is equal to the sum of the grade and track resistances. The grade resistance is found by multiplying the weight of the loaded car by the sine of the grade or slope angle. The sine of 24 deg. is 0.40674, and $8{,}000 \times 0.40674 = 3{,}254$ lb., which is the resistance due to the grade of the slope.

The track resistance may vary from 10 to 30 or 40 lb. per ton of normal pressure on the plane, according to the style of bearings on the cars and condition of the track. The normal pressure due to a load of 4 tons is $4 \times \cos 24° = 4 \times 0.91355 = 3.65+$ tons. Assuming 20 lb. per ton, the track resistance is $20 \times 3.65 = 73$ lb. and the tension on the rope is, therefore, $3{,}254 + 73 = 3{,}327$ lb.

QUESTION—*How would you build a mine track to insure the best transportation? Name all the points entering into the question.*

ANSWER—As far as practicable the grade of a main haulage road should be altered to make it more nearly uniform. A profile should be carefully made to ascertain where it is possible to make improvements that will pay by increasing the safety and reducing the expense of haulage. Having done this and having cut down the hills and filled the swags wherever this seemed advisable, the roadbed should be prepared with broken rock or cinders. Good track ties of suitable size are laid on this bed and spaced at equal distances apart depending on the kind of haulage to be employed and the weight of rails and loaded cars used.

The track should be well lined and the rails firmly spiked to the ties and joined with splice bars securely bolted. A good drainage ditch must be made at the side of the road to prevent any accumulation of water on the track. Care must be taken to avoid sharp curves and maintain a uniform track gage. If conditions are such as to permit the laying off of a main haulage road on such a grade that the tractive effort will be the same when hauling either loads or empties, this should be carefully investigated. There should be not less than two feet of clearance on at least one side of the road, which is particularly important in mechanical haulage.

QUESTION—*Under ordinary conditions what size props would you use in veins of the following thickness*: 6 *ft*., 8 *ft. and* 12 *ft., respectively? State how you would secure the props at top and bottom and how you would stand them relative to the pitch of the vein.*

ANSWER—A good rule in mine timbering is to make the diameter of the small end of the post, in inches, equal to its length in feet, which would make the required diameter of these timbers, at the small end, 6 in., 8 in. and 12 in., respectively.

In a seam practically level if the bottom is soft the post should be stood on a footboard. Where both top and bottom are hard a good plan is to stand the post on a little mound of dirt, in order to prevent the burring of the top of the post when it takes the weight. A good cap-piece should be inserted over the post to distribute the pressure on the roof slate and bind the top of the post together. This cap-piece should be of soft wood. Where the seam is more or less inclined a foothold should be cut in the floor of the seam to keep the post from slipping down the pitch. The upper end of the post should be inclined at a slight angle up the pitch from the normal. In mining language, the post should be "underset" an amount varying from a fraction of an inch to one-and-one-half inches for each foot of length of the post, depending on the angle of pitch. For example, a 6-ft. post on a 30-deg. pitch should be underset 5 or 6 in. The purpose of this is to overcome the effect of the tendency of the roof to slide down the pitch, which would cause a post set normal in the seam to fall out at the first slip of the roof.

QUESTION—*What is a blownout shot and what are some of its causes? Why should such shots be avoided?*

ANSWER—A blownout shot is one that has blown its tamping, instead of breaking down the coal. This may be due to any one of several causes, which are the following: The line of least resistance lying in the direction of the hole; an overcharging of the hole so as to permit of insufficient tamping; or the charge may be right but the hole not tamped to its mouth. A so-called "windy shot" is often mistaken for a blownout shot. It is distinguished from the latter, however, by the shattering of the coal or crevicing the seam, without suitably breaking down or dislodging the coal from its place in the seam. In that case, the force of the powder is largely expended on the mine air. Such a shot is produced by an overcharge of powder or may result when the charge is not properly located in the coal or a soft stratum in the seam affords an opportunity for the shot to "seam out." A windy shot is also at times the result of using combustible tamping such as coal dust.

Blownout or windy shots should be avoided because of their liability to produce a local gas or dust explosion that may or may not be extended throughout the mine with serious or fatal consequence. They should also be avoided because proper results are not obtained in the use of the powder and the coal produced is not only less in quantity but of poorer quality and much fine coal and dust is produced.

Mining Engineers Hold Annual New York Session—II*

Harrington Condemns Using Air from One Set of Workings to Ventilate Another —Lanza Declares Respirators Useless and Dangerous—Arguments Advanced in Favor of Employment Departments—Technical Session Followed by Sightseeing

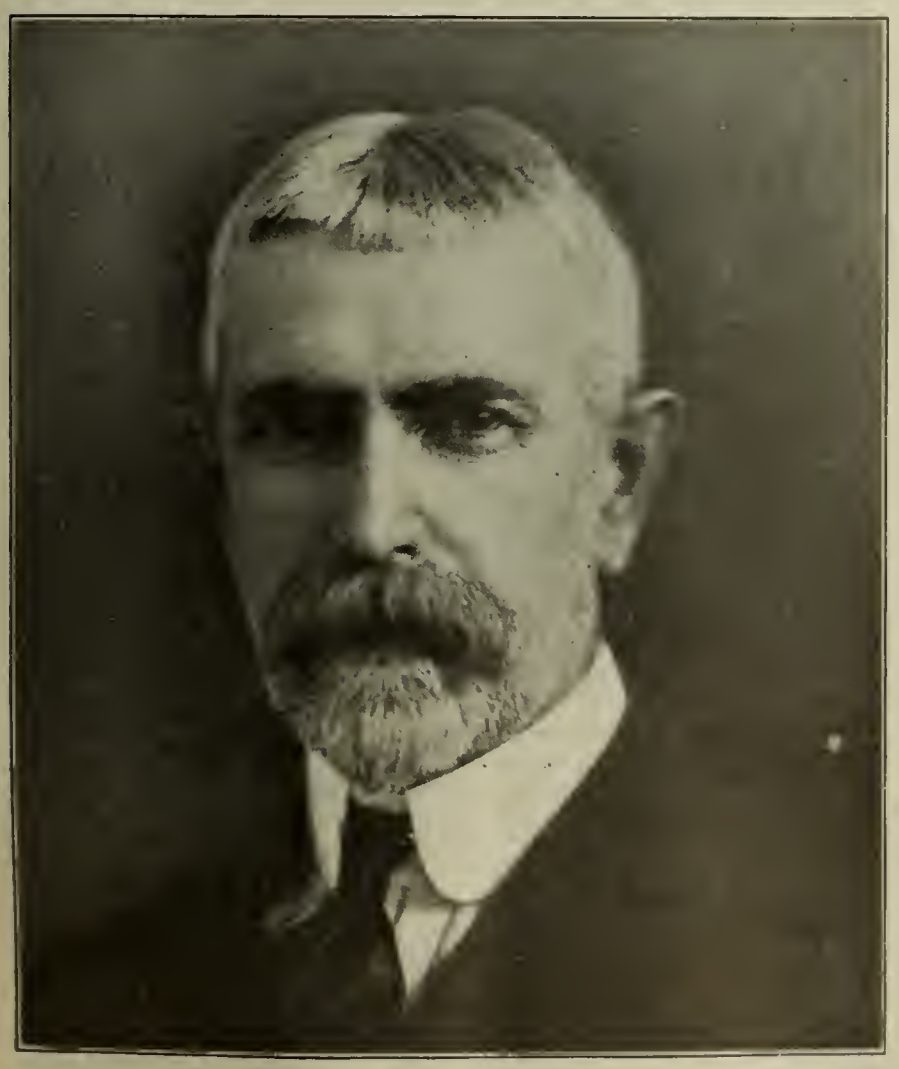
D. HARRINGTON in "Dust Ventilation Studies in Metal Mines" gave some interesting observations about coal mines. He said "The general metal-mine practice and frequent coal-mine practice is to ventilate one mine through another. While this is cheap and convenient; it is inefficient and dangerous, as the mine receiving air from another usually has hot, humid, vitiated air, frequently impregnated with gases, dangerous dust and fumes from explosives. Owing to a reversal of air currents fumes from the fire in an adjoining mine have caused many deaths in metal mines, as well as in coal mines, and these have occurred even when under ordinary ventilation conditions the mine with the fire had been on the return air.

"All doors under ground should be held shut by a latch, a system of weights and pulleys, etc. At the time of a fire a door held shut only by the air pressure is dangerous, as air currents are likely to be reversed, either naturally or mechanically."

Dr. Lanza declared that it was useless to wear respirators as a preventive against silicosis. Only grains of 10 microms and less get in the lungs, and no respirator will exclude these. If it would, it would prevent breathing almost entirely. The men not only *would* not wear them but *could* not. Larger particles than 10 microms are arrested by natural methods before the lungs are reached. Respirators are positively dangerous if they give men confidence to work in the presence of siliceous dust, as they afford them absolutely no protection.

Parke Channing read a paper by J. N. Hauser, general manager of the Tennessee Copper Co., on the employment bureau, which in that company is known as the service department. This force acts as a clearing house of information for the men. If a man is discharged and denies the charges made against him the service department investigates the matter.

The argument that followed seemed to favor the hiring and discharging of men by the foreman without any power of revision on the part of the employment bureau. That department, however, it was thought, should present men to the foreman for his approval but should not induce or compel him to accept them, for he had to make good with the men under his care. His right of discharge also was unquestioned, but often the service department was able to act as an intermediary whereby some slight misunderstanding between two men of different temperaments might be rectified. Besides there was always an opportunity to place such men where the temperaments of the boss and the employee would not clash. Usually such shifts resulted in satisfaction being obtained by both the company and the man thus shifted.



EDWIN LUDLOW

Newly-elected president of the American Institute of Mining and Metallurgical Engineers. Born at Oakdale, Long Island, N. Y., 1858; graduated at Columbia; civilian engineer U. S. Engineering Corps under General William Ludlow, his brother; in 1881, reconnaissance engineer of Mexican National R. R.; later an engineer for Mineral Railroad and Mining Co., at Shamokin, Pa.; superintendent Union Coal Co., for which company he installed first water-tube boilers and chain cutters used in the anthracite region; in 1889, manager in coal fields of Choctaw Coal & Railway Co., Oklahoma; later general manager Mexican Coal & Coke Co. in Sabinas field, for which he built a modern battery of Koppers ovens; in 1911 vice-president and general manager, New River Collieries Co.; from 1912 to 1919 occupied same position for Lehigh Coal & Navigation Co. In 1919 he entered consulting engineering practice.

*For prior account of meeting see pages 405, 406 and 407 of the issue of March 3.

Best Foremen Have Mine and College Training

Parke Channing declared that in his belief as good foremen could be obtained from men of college education as from men who had learned their trade in the field. Both were often good and often bad. The best man usually was a college man who had served some time in the ranks.

H. G. Davis declared that he always had been opposed to the removal or lessening of the right of the foreman to hire or discharge men and asked the chairman to call on W. G. Whildin, general manager of the Lehigh Coal & Navigation Co. Mr. Whildin said that for five years the L. C. & N. Co. had maintained an employment bureau. This department had been initiated because 63 to 64 per cent of the men left the employ of the company every year and had to be replaced. In addition 96 per cent changed their working places.

Now only 28 per cent of labor turnover per year is experienced. This is a reduction of 8 or 10 per cent from the figures in 1919. The head of the department was a former general superintendent. He was well liked by the men and had a good knowledge of the underground conditions and personnel. He spent from 8 a.m. till noon in the office and in the afternoon got in his automobile and visited the mines, inquiring as to the wants of the foremen. He covers the mines once a week. Many calls for men, however, were not received on trips to the mines but over the telephone.

The head of the employment bureau did not have anything to do with housing but attended solely to employment. Under the new arrangements the company is obtaining the kind of men it needs. It would not make a change in the method of hiring under any consideration. A few weeks ago three Spaniards were hired, and they induced seventy-six others to seek positions with the company. When they were put to work the mine workers went out on strike. The shutdown lasted about four weeks, at the end of which time the men returned to work without having the object for which they struck conceded to them. Apparently the mine workers felt that too much power had been lodged in one man's hands.

R. D. Hall said that in the bituminous mines, unlike the anthracite, it was customary to engage foremen from districts other than those in which they were at work. These

foremen usually did not know the men in the district and were likely to get the wrong kind of employees. An employment manager who was from the district could make a better selection. It was easier to get one man having that peculiar knowledge than to provide that every foreman would have that special equipment for his job.

John G. Smith, manager, Elkhorn division of the Consolidation Coal Co., said that, located as that company was far from other fields, it was necessary to import men. Consequently at his mines an employment bureau had been created. This department had been able to locate men just where they would prefer to live in relation to friends, church and schools.

Parke Channing briefly described the work of the Young Men's Christian Association in enabling college and university students to get in touch with workmen during their college years. By teaching foreigners English, civics and history and other studies it was possible for the student to get an understanding of the elements of "human engineering," as that form of knowledge had been well termed.

H. H. Stoek said that he had not found it possible to introduce social courses into the curriculum at the University of Illinois because of the many subjects which demanded attention. Even mathematics had to be somewhat slighted. However, he tried to inject a little regarding human engineering into every course of training, remarking to his pupils that much more than 50 per cent of the cost of operation arose from labor and that nevertheless they were being taught mainly about material and its handling. They must never overlook the fact that mining is more than 50 per cent a labor problem.

On the evening of Wednesday the institute members and guests attended a banquet at the Waldorf-Astoria at which W. L. Saunders acted as toastmaster, introducing Herbert C. Hoover, the retiring, and Edwin Ludlow, the incoming, president. Mr. Hoover spoke about the institute's deficit and its speedy correction by an appeal for contributions. He mentioned the value of the institute as a means of informing the public as to the position of the coal industry. Still no one can see that any solution has been found for what Mr. Hoover regards as its peculiar evils; if found, it has not been applied, or again, if applied, has been found wanting.

He referred also to the great work done by the institute in establishing the Federated American Engineering Societies and called attention to the fact that the institute has now over 10,000 members. Edwin Ludlow's inauguration address related largely to the open shop, which he regarded as a necessary condition for national prosperity and development. There were no other speakers. The banquet was followed by a dance.

The next day was spent in sightseeing. Visits were paid to the Museum of the American Indian, Heye Foundation (private view), the Hispanic Society's Museum, the Museum of the American Numismatic Society, now housing Mrs. Sheridan's somewhat incongruous exhibit of busts of Bolsheviki and British statesmen; and the American Geographical Society of New York. These visits were made quite interesting by reason of the courteous attention given to the visitors by the presidents of the respective societies, who saw that the time was well utilized and that the leading points of interest were duly explained.

Lunch was served at the Mayflower and the visitors then journeyed to the buildings of the New York University, including the celebrated Hall of Fame. Later in the afternoon Mrs. Hoover tendered a tea to the visiting ladies at the Cosmopolitan Club.

G. E. Smith Advocates Long-Term Credits for Export Trade as Solution of Unemployment Problem

THE solution of American labor's greatest problem, unemployment, is the exporting of American time sheets to bring back American payrolls. The products of American workmanship under our present credit system can go only part of the way in reaching the foreign buyer. To reach the foreign buyer, to keep American goods flowing, American industries running, and to bring back work for the four million pairs of American idle hands, there must be provided at once adequate machinery for granting long-term credits in our export trade. Until these long-term credits are available American cargoes will be halted in mid-ocean, caravans loaded with American goods will be stopped in the middle of their journeys, and a great barrier will remain in place in all parts of the world, checking the flow of American time sheets for the solution of filling American payrolls.

These are the views expressed at the meeting Feb. 18 of the N. Y. Conference of Business Paper Editors by George Ed. Smith, president of the Royal Typewriter Co., a member of the Organization Committee of the Foreign Trade Financing Corporation, the largest of the corporations formed under the amendment to the Federal Reserve Act known as the Edge law, which permits the formation of banking institutions for financing the exports of American goods over such periods of time as will enable the rest of the world to do business with this country.

"For more than two years," says Mr. Smith, "the business men of the country watched and waited while the time approached for providing some means for preventing the complete disruption of our export trade. Since the armistice a $4,000,000,000 trade balance has piled up, and now a further balance finds difficulty in being financed. The National Chamber of Commerce, the National Foreign Trade Council and the National Association of Manufacturers all agreed long ago that something should be done to solve this great problem. The opportunity came when Congress passed the Edge Act and when a committee of the American Bankers Association formed the plans for the Foreign Trade Financing Corporation, which by its very size and its nationally representative character is expected to make real headway in remedying the chief obstacle now in the path of American exporters.

"Foreign buyers need American goods more than ever; American manufacturers, business men and farmers need more than ever to supply what the foreigner wants. They have the demand. We have the goods. By supplying that demand we could get rid of that great surplus, could keep busy six days a week instead of four, and could pave the way toward a new position for the United States in the international commerce of the world.

Limit Reached on Granting of Short-Term Credits

"Why can't this be done now?

"Because the commercial banks of the United States cannot go on extending long-term loans, and further because the American dollar is at such a high premium in foreign countries that foreign buyers cannot afford to do business with us on the short-term basis customary in this country. In granting short-term credits the limit has about been reached. It is only by giving the foreign buyer more time in which to pay for his goods that we can compete successfully with the rest of the world and sell our surplus products abroad.

"Now, what is the reason for this four billion dollar trade balance, and why is it threatening to put us out of business with the rest of the world?

"Foreign buyers since the armistice piled up this four billion dollar trade balance as a result of purchases which would ordinarily have been stretched out over a period of years. Normally they would have purchased what they needed, and the balance of trade kept practically level, although it was turning in our favor; but instead of taking a sufficient amount of time so that demand would balance demand, or so that we would absorb direct securities from

the other side, as England and France did in the past, this balance piled up through immense one-sided purchasing on the part of foreign buyers in a short time.

"Such a thing would not have happened if this balance of trade had gradually grown in our favor instead of being dumped upon us. We would have had a gradual balance of trade to even up, and as it was gradual, we would have absorbed securities as the natural way to balance up that trade. It was not possible to educate the people of this country as to the advantage of absorbing foreign securities direct, for they had been a debtor people so long that they do not know what to do as a creditor.

Absorption of Securities to Rectify Exchange

"Therefore, there had to be a medium through which to absorb these securities, first investigating their worth, and then pooling them and issuing debentures based on them to the people. It has been felt that the big jump in the balance of trade, with its consequent disruption of exchange, would undoubtedly not have come if securities had been absorbed to correct it. Therefore let us consider a proposition which will absorb these securities in sufficient volume to have some effect on the balance of trade. This is the reason for the immense size of the corporation.

"Let us see whether we want securities or not. In the first place, if we do not get securities in payment for goods we have sent abroad, we are going to get other goods. Do we want a tremendous amount of imported goods dumped in on us? We want raw materials that we do not produce. We want many things, such as coffee, rubber, sugar, etc., cheaper, so that we will get more of the good things of the world that we do not produce for less of our individual effort. We want imports of certain goods, but we do not want four billion dollars worth of manufactured goods dumped into the country when we are now able to produce more of manufactured goods than we can consume.

"Wouldn't it be better to absorb good securities and have foreign people pay us interest. In the last analysis, we must import goods, gold or securities to settle our trade balance. We do not want the goods—we have taken all the gold foreign people can spare—and now we stand up against a wall because we cannot absorb securities. For the present we have taken more than enough from Europe that is movable. We do not want any more. We must become—as we would have become under normal conditions—a rich investing nation, as every rich exporting nation in the past has always become.

"The question then is whether this country will back up its export trade. It is not a question of whether the Foreign Trade Financing Corporation itself will succeed or will not succeed. The question is, whether we can get behind the proposition and by group thinking and concerted action solve one of the biggest problems that has ever confronted our country. Put another way, the question is whether we have to depend upon a crisis to show the country that it ought to have done what the brains of the country are now telling us we ought to know.

Create a Dollar Market to Sell U. S. Goods

"The problem is one which it will take an immense institution to handle. We will say now that we want to solve one particular problem, and I will put it before you concretely.

"There is in Australia today a market for American automobiles. We are not shipping them. Why? Because there is not a dollar market in Australia at this moment, and for that reason many of our men in Detroit are not working, and we are not producing the automobiles. We must create a dollar market in Australia in order to sell our goods there and keep our men working. How are we going to do it? By long-term credits. Is it right that we should have unemployed workmen in the country when we can by right action revive our market abroad? This is not being done out of charity of our hearts to help people who cannot help themselves. It is not an effort to make the League of Nations work. It is to develop the market for American products outside the United States. Why not take our dollars—put them to work—go on paying our workmen and keep up the prosperity of the country?

"We manufacture a tremendous amount of goods in America beyond the amount that is needed for home consumption. Naturally we cannot sell them in America. We need outside markets to dispose of them. When we cannot do this, there is unemployment for the men who manufactured these goods. When all is said and done, when we export we export labor. Labor is the biggest part of all goods we export. Take the automobile. The manufacturer of this article does not make 10 per cent profit on his turnover. If he did, he would be many times a millionaire. No, he makes nearer 5 per cent. Fifteen per cent of his cost goes to buying raw materials. The remainder goes into labor. In the end, more than 75 per cent of his cost goes to the workman. What, therefore, we are trying to do is to take the time sheets out of the factories of America, export them, and bring back payrolls for our American workmen.

"When you finance foreign trade, you finance only the time of our American workmen a bit further to its ultimate consumer.

"Let us take the automobile again. Suppose that you grant three months' credit. Where will that three months take the automobile? Make it simple. Probably to the top of the Andes Mountains, or half way across the Pacific Ocean. In three months the automobile has not reached the ultimate consumer. You haven't got it far enough toward the payroll for your workmen's time sheets.

"Some time ago, we, as manufacturers, sat back and said to the parties in the other countries: 'Come to our factory and get the automobiles, and pay us cash.' The farmer said: 'Come and get my corn from the farm or the local elevator, and pay cash.' When our exports began to decline, our producers relented a bit, and financed their goods to the port of shipment, letting the buyer take and pay for them there. Now our exports have shrunken so far, and our available financial machinery has become clogged so much, that we cannot carry the goods any further along to the ultimate consumer. It is impossible for the foreign buyer to take goods on the terms made available by our commercial banks, and therefore we cannot sell the goods.

Must Expand Machinery of American Trade

"The explanation is very simple. We haven't the machinery to carry our work to its ultimate consumer. We used to say to the buyers 'you come and take our goods and use your own money to finance them.' Now that we can no longer do this, we must either stop selling or find some way to carry our goods further along to the people who use them and consume them.

"This is not the bankers' problem alone. It is the people's problem. It requires *group* thinking, *group* action.

"Look at the people of Great Britain. They eat, sleep, work and live in export trade. There are forty million people thinking of export trade. Look at what they have done in export trade. Then wouldn't we rather have forty million people solidly back of the proposition to finance our exports than a hundred million people uninterested and unconcerned? This same thing is true of France and Germany.

"I think that having a hundred million people, all wearing the same hats, the same clothes, the same ties, the same shoes, all eating the same things, is a tremendous advantage for any nation. It gives a standardized market for the products of the country. That gives us a great advantage in going out and selling these standardized goods in the world's markets. But this great body of one hundred million people is unorganized, and you know that an unorganized majority in many cases will not do what an organized minority could.

"The answer is this: We must educate the people. We must bring about group thinking, making the people realize that what we are doing is putting machinery in operation which will back their payroll. We must make them understand that it is their problem. If all of us sit aside and wait for somebody else to act, the task will never be done.

"I am thoroughly convinced that what we need in this country is to think together, work together, act together, in a real spirit, and then the financing of our foreign trade will go over and be one of the greatest propositions of the world."

National Coal Association Narrates Calder Raid; Inclusion in Record Opposed

OBJECTION by Senator La Follette prevented the embodiment in the record of the hearings of any comprehensive narration of the raid made on the offices of the National Coal Association by the agents of the Calder investigating committee. At the request of Senator Reed, however, the National Coal Association prepared an account of the affair, to be printed as an exhibit in the record of the committee's investigation. Some objection has been offered even to that procedure, and it still is questionable whether this statement will be printed as a part of the committee's proceedings.

The statement, which was proffered to the committee by the National Coal Association, states in part:

"The wholly illegal manner in which the files and records of the National Coal Association were seized by the investigators for the Calder committee has not heretofore been told, but before the chairman or any member of the Committee on Manufactures passes on the question of publication of the names of these companies it should be told, and we think in justice to ourselves it should appear in the public record of this committee. . . .

"It is to be noted that the information contained in the statistical reports sent in to the National Coal Association is of a character similar to the information furnished to the Treasury Department, and that the confidential character of such report to the Treasury Department is recognized by the acts of Congress which prohibit the disclosure, even to other departments of the government, of the names of the particular companies making such reports, except upon executive order of the President himself. It is further to be noted that the Federal Trade Commission Act and the practice of the commission thereunder regard and protect as confidential information secured concerning the business secrets of any company reporting to such commission. The request of the association's officers that those reports, in so far as the individual names of the companies making them and the detailed figures of the companies reporting, should be treated as confidential, is, therefore, in accord with the practice that has heretofore been recognized both by Congress and by the department of the government above mentioned.

"Nothing was kept back or attempted to be concealed by the officers of the association. The safe of the association was opened and its contents freely disclosed; the corporate records of the association from the time of its organization were submitted to the representatives of the committee; all of the financial records were gone over; the voluminous correspondence files were examined; the records of the statistical bureau were scrutinized; and, in short, a most searching examination of all the papers, documents and records of the association was made by representatives of the Senate committee, including in their number Franklin T. Miller, special assistant to the committee; W. T. Chantland, special counsel for the committee; D. L. Wing, formerly in the employ of the Federal Trade Commission; Mr. Durand, in the employ of the Federal Trade Commission, and one or two others.

"On Monday morning following the officers of the association, upon coming to the office, found that . . . a very large number of files were missing and could not be found. The extent to which the files of the association had been removed did not at first occur to any of the officers of the association, but by the close of business hours on Monday it became evident that a large number of documents, including hundreds of original letters addressed to the association and carbons of replies thereto, had been removed from the offices of the association during the preceding night in the absence of any representative whatsoever of the association and without any authority or permission having been granted by any representative thereof and in direct violation of the conditions made by Vice-President Morrow when he first consented to give the representatives of the committee access to the files.

"Subsequently, at the close of the hearing Wednesday afternoon, Dec. 22, some of the documents were returned to the association and others were returned at later date covering a period of weeks. As late as Feb. 4, 1921, a document which was found to be missing from the files of the association was finally located in the possession of the committee after the representatives of the committee had insisted that they did not have such document. The officers of the association, under the circumstances above stated, have been utterly unable to make any definite check of the documents removed and cannot now, and never will, be able to determine whether all of the documents that were removed have in fact been returned.

"That there was no shadow of legal authority for the removal of the files and papers of the association by the representatives of the committee is admitted even by the committee itself, and no defense or excuse for the action of such representatives has ever been advanced."

Milton H. Smith Dies; Was President of Louisville & Nashville R.R. 30 Years

MILTON HANNIBAL SMITH, president of the Louisville & Nashville Railroad Co., died at his home in Louisville, Ky., Feb. 22 after a heart attack. He had been ill for several months and his death was not unexpected. Mr. Smith was 84 years old and had been president of the Louisville & Nashville since 1891.

Mr. Smith was born in Greene County, N. Y., Sept. 12, 1836. His first position was as telegrapher with the Mississippi Central R.R. When the Civil War began he entered the military railroad service and was appointed master of transportation on all the military roads in the occupied districts of the South.

At the close of the war Mr. Smith entered the employ of the Louisville & Nashville R.R., at that time operating less than 300 miles of tracks, as freight agent at Louisville. His service with the Louisville & Nashville continued with but one interruption until his death. In the yellow fever epidemic of 1878 he retaliated on Montgomery's quarantine of trains by an embargo on all Montgomery traffic. On appeal from Montgomery his superiors revoked the embargo order and Mr. Smith resigned.

He then became general freight agent of the Baltimore & Ohio R.R., a place he held for three years. His next post was general agent for the Pennsylvania lines at New York, which he held until he went back to the Louisville & Nashville as chief operating officer, with the title of vice president Jan. 1, 1882.

Italy's Railways to Buy Coal Through New York Office

THE Italian Discount & Trust Co., of New York City, announces that all purchases of coal by the Italian Railway Administration will hereafter be made from its New York office, which is in charge of Comm. F. Quattrone. By the end of 1921 it is expected that the water-power plants of Italy will be furnishing about 1,800,000 hp., which, it is estimated, will supply as much mechanical energy as would be obtained from 5,500,000 tons of coal. Even with this application of water power, however, the kingdom would still be compelled to import 6,000,000 tons of coal every year to cover the industrial requirements of the country.

THE MERCHANTS' ASSOCIATION OF NEW YORK has appointed a special Coal Shortage Committee to study the legislation proposed by Senator Calder's investigating committee. Its members are J. F. Bermingham, president, Delaware, Lackawanna & Western Coal Co.; Michael F. Burns, of Burns Brothers; Percy C. Madeira, of Madeira, Hill & Co.; F. W. Wilshire, vice-president Consolidation Coal Co.; Reeve Schley, former Fuel Administrator for New York; Frank deK. Huyler, president of Huylers; Walter Kiddie, W. H. Nichols, Jr., president of General Chemical Co.; James H. Post, president National Sugar Refining Co., and Burton F. White of the Hotel Bossert. Frank A. Horne, president of the Merchants' Refrigerating Co., is chairman of the committee.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

READJUSTMENT during the last month, according to a bulletin of The Mechanics & Metals National Bank of the City of New York, has followed the course generally expected and predicted by the best-informed observers. "Those commodities which had not previously been affected by the general decline in prices, or which had actually moved contrary to the general tide," the bulletin continues, "are now beginning to decline. In the last few weeks have come price reductions in crude petroleum and gasoline, iron and steel, paper and coal. Reductions in wages of from 10 to 25 per cent continue to be announced from an ever-widening circle of industries.

"These price and wage reductions may be looked upon by many as unfavorable factors. Really, from the point of view of the country as a whole, they are quite the reverse. Business cannot start again upon a new level until prices and wages generally have reached that level. The longer the readjustment of the wages and prices that have been out of line is deferred, the longer the revival is deferred.

"The relation of the price of one article to the price of another is not determined by accident. When students of the situation assert that the price of coal is out of line with the price of cotton, they do not make this assertion simply because they have been accustomed to a different relation in the past. They mean that the ratios of the prices of coal and cotton, or of coffee and gasoline, or of all commodities together, must in the long run correspond with the ratios of their respective costs of production.

"Special conditions of demand and supply in each industry may for short periods make prices depart from these ratios; but for just as long as they do, production will be unbalanced, and readjustment must continue. In those industries in which profits are too low, production will diminish, throwing men out of work; in those in which profits are abnormally high, production will tend to increase; but it will be a long period, involving a great deal of suffering to individuals, before the men thrown out of work in one industry are reabsorbed in another. What applies between different industries applies between different stages of the same industry—between the respective profits earned by wholesalers and retailers, for example. It would be far better for the revival of industry if the present readjustment could be made by everyone simultaneously. Dragging it out can only put off the day of real revival."

Begin Work on New Ford Plant

Work is to be started at once on a $10,000,000 plant for the manufacture of tractors and other motor products for Henry Ford on Green Island, opposite Troy, N. Y. The State Land Board on March 2 approved of a grant of fifteen acres of land under water above and below the Federal dam at Troy, the Federal Power Commission at Washington having granted a license Feb. 28 to develop water power at the Troy dam for the project. The plans approved by the Federal Commission's engineers call for a hydro-electric power plant and equipment costing $250,000. The Fords have announced plans for an industrial and residential development at an estimated cost of $750,000 on 150 acres of land on Green Island purchased in August, 1918.

Form $3,000,000 Cotton Company

Articles of incorporation were filed Feb. 28 at Little Rock, Ark., by the Arkansas Cotton Mills Co., capitalized at $3,000,000 and organized, according to the papers, to erect and operate a chain of mills in that state. The mills will be the first in Arkansas to manufacture cotton into cloth.

N. Y. Central Shops Reopen

The New York Central locomotive repair shops at Elkhart, Ind., employing about 700 men, and those at Collinwood, employing more than 1,300, both of which were shut down two weeks ago, resumed operations March 1. On the same date the locomotive shops at West Albany reopened. The shops were closed down a week ago, throwing approximately 1,400 men out of employment. All of these men returned to work with the opening of the shops, it was stated. The locomotive shops at Avis, Pa., which were closed on Feb. 19, also resumed full operations on March 1.

Standard Oil Reduces Work

It was announced March 2 at the plant of the Standard Oil Co. at Bayonne, N. J., that on account of overproduction a cut would be made in the hours of labor of the 5,000 men employed. Men with less than five years' service with the company will work four days a week; those of between five and ten years' service will work five days a week and those with more than ten years' service will work the full week. It was said this cut probably would affect the company's plant at Bayway, near Elizabeth, and the Eagle plant at Jersey City.

Chevrolet Plant Resumes

The Chevrolet Motor Co. of Texas announced Feb. 27 that production would be resumed at its factory in Fort Worth March 1. The plant had been closed since Nov. 1.

Wages Cut, Carpet Workers Strike

Refusing to accept a wage cut of 20 per cent, announced Feb. 25, employees of the Bigelow Hartford Carpet Co. at Thompsonville, Conn., went on strike Feb. 28. The company's estimate of the number out is 800, while the strikers put it at 1,000.

Woolen Mill to Operate Full Time

The Worcester Woolen Mill Co. announced Feb. 27 that it would begin operating at full capacity as soon as its working force could be increased to its old size of 300 hands.

U. S. Steel Curtails Output

In the Chicago territory, ingot production of the United States Steel Corporation had fallen to 60 per cent of capacity and in the Pittsburgh district to 65 per cent of capacity, according to the *Iron Age* of March 3. This despite the fact that independents generally appeared to have booked sufficient orders to maintain their recent scale of operations. On March 1 the United States Steel Corporation had fifteen fewer blast furnaces in operation than on Feb. 1.

Foreign Markets and Export News

Belgian Coal Production in 1920

Belgian production of coal, coke and briquets during 1920 is shown in the following table:

Month	Coal, Tons	Coke, Tons	Briquets, Tons
January	1,889,640	112,030	229,180
February	1,683,750	110,140	237,800
March	2,006,160	121,670	267,020
April	1,900,750	131,960	250,580
May	1,737,080	147,120	218,270
June	1,887,235	153,040	239,163
July	1,911,490	165,430	258,220
August	1,856,070	169,500	256,450
September	1,909,050	164,620	257,760
October	1,966,580	173,840	256,830
November	1,633,990	170,460	184,020
December	2,051,740	181,470	267,070

The *Colliery Guardian* announces the creation by royal decree of a National Institute of Mines, at Frameries, with the object of studying all matters concerning the better utilization of Belgian mineral products, the improvement of mechanical appliances and methods of working in mines, as well as the amelioration of the conditions of labor in mines. The Frameries testing station is placed at the disposal of the institute, which will be required to submit reports to the Government and to carry out such researches as the latter may think fit.

Prices of Belgian coals remain at the old figure, although German coals have now been reduced by 15 fr. From Jan. 1 to Jan. 24 the Belgian Co-operative Society of Coke Makers received 67,483 tons of German coking coal, and the point has almost been reached when the deliveries are in excess of requirements.

GERMANY HAS REFUSED the application of the Westphalian Coal Syndicate for permission to increase the price of coal by 12 mk. per ton, and that of the coal owners of Lower Saxony for an advance of 18.40 mk. per ton, whilst granting increases of 3.70 mk. per ton on coal and 12.70 mk. on briquets in the Mid-German and East Elbe districts.

SCARCITY OF COAL, experienced in the central part of Chile since last May is over, temporarily at least. American coal has been freely offered since the middle of December, 1920, at prices lower than any made since the war began. Valparaiso is well supplied and the ability of the state railways, the chief consumer, to obtain native coal from the South because of better labor conditions has lightened the import demand. Antofagasta and Iquique, nitrate ports of the North, take about 30,000 tons, depending on the activity of the nitrate industry. As the latter is facing a period of dull demand, it is likely that coal imports will be small during the coming year.

Exports of Bituminous in January, 1921, Nearly a Million Tons Greater Than a Year Ago

Exports of bituminous coal from the United States in January, 1921, are reported by the Bureau of Foreign and Domestic Commerce as 2,248,448 gross tons, compared with 1,249,167 tons for the corresponding month of 1920. Shipments to France, Italy and Sweden represented considerable increases, while there was a decrease in the tonnage shipped to other European countries, as the Netherlands and Switzerland. Exports to Canada in January of this year were almost three times as great as in January, 1920. In Central America, Panama and Mexico, as well as the British West Indies received larger amounts this year than last, and Cuba considerably less. Excepting Chile, South American countries, particularly Argentina and Brazil, took less of our coal a year ago.

Exports of anthracite, which go mainly to Canada, decreased from 306,069 gross tons in January of last year to 209,340 tons for the same month of this year. Exports of coke declined from 58,026 to 37,745 gross tons. A summary of these figures is contained in the following table:

EXPORTS OF COAL AND COKE, JANUARY, 1920, AND JANUARY, 1921, IN GROSS TONS

	Jan., 1920	Jan., 1921
Coal and Coke:		
Anthracite	306,069	289 340
Bituminous	1,249,167	2,248,448
Exported to:		
France	50,337	143,440
Italy	128,502	185,907
Netherlands	112,846	76,538
Sweden	4,035	17,707
Switzerland	33,438	.....
Canada	458,994	1,177,519
Panama	34,067	51,402
Mexico	6,197	32,176
Br. West Indies	19,720	23,792
Cuba	99,620	55,003
Other West Indies	3,492	10,273
Argentina	145,455	107,135
Brazil	48,205	35,651
Chile	3,311	66,277
Uruguay	11,405	11,065
Other countries	89,543	254,505
Coke	58,026	37,745

European Freight Rates Soften; Little Change in Other Markets

European freight rates have declined a trifle, according to W. W. Battie & Co.'s weekly coal trade freight reports. South American rates stiffened slightly. West Indies rates will be governed by the sugar market homeward.

Freight rates by steamers were quoted as follows:

	Feb. 21, 1921	Feb. 28, 1921	Tons Discharged Daily
Malmo	About $6.00	About $6.00	1,000
Copenhagen	About 6.00	About 6.00	1,000
Stockholm	$6.50/ 6.75	$6.50/ 6.75	800
Gothenburg	About 6 00	About 6.00	1,000
Antwerp/Rotterdam	3.85/ 4.00	3.75/ 4.00	1,000
Hamburg	About 4.50	About 4.75	1,000
Fr. Atlantic ex. Rouen	About 4.25	About 4.35	700
Lisbon	About 5.00	About 5.00	700
Algiers	About 5.75	About 5.75	800
West Italy	About 5.50	5.50/ 5.75	1,000
Marseilles	About 5.50	5.50/ 5.75	1,000
Piraeus	About 6.50	About 6.50	1,000
Trieste/Venice	About 6.50	About 6.50	1,000
Port Said	About 6.00	About 6.00	1,000
Alexandria	About 6.00	About 6.00	1,000
Constantinople	About 6.75	About 6.75	500
Gibraltar	About 5 00	About 5.00	1,000
Teneriffe	About 5.50	About 5 50	500
Pernambuco	About 6.50	About 6 50	500
Bahia	About 6.50	About 6 50	500
Rio	About 6.00	About 6 00	750
Santos	6.50/ 7.00	6.50/ 7.00	450
Buenos Aires or LaPlata or Montevideo	6.00/ 6.25	6.00/ 6 25	500
Para	About 6.50	About 6 50	500
Rosario	6.50/ 7.00	6.50 7 00	750
Nitrate Range	About 5 25	About 5 25	500
Havana	About 2.50	About 2 50	500
Sagua or Cardenas	2 75/ 3 00	About 3 00	300
Cienfuegos	2 75 3 00	2 75 3 00	400
Caibarien	About 3 00	About 3 00	300
Guantanamo	2 75 3 00	2 75 3 00	500
Manzanillo	About 3 00	About 3 25	300
Bermuda p. c. and dis. free	About 3 25	About 3 25	300
Kingston	About 3 25	About 3 25	400
Barbados	About 3.25	About 3 25	500
St. Lucia	About 3 25	About 3 25	500
Santiago	About 3 25	About 3 25	500
Port of Spain	About 3 25	About 3 25	500
Curacao Free p. c. Curacao	3 00 3 25	3 00/ 3 25	500
St. Thomas	3 00/ 3 25	3.00/ 3 25	500
Vera Cruz or Tampico	3.25/ 3.50	3.25/ 3.50	500

N.B.—The above rates to South American ports are based on Welsh form. We would quote considerably less on July form.

All above rates gross form charter

Shipping Board Coal Bids of Feb. 28 in Some Instances Are $3 Less Than Those of December

THE U. S. Shipping Board is considering the following bids from coal companies, received Feb. 28, for supplying coal at Atlantic ports and the Virgin Islands in 1921. This is the third set of bids to be received, those offered in December, 1920, and Jan. 14, 1921 (with one exception), having been rejected as too high. The last bids are uniformly lower than those received in January, and in some instances almost $3 under those of December.

In order to gain some idea of the comparability of the three successive bids for these coals, at approximate intervals of a month and on a declining market, the average (without weighting in accordance with tonnage) of all bids for each of the four forms and for each port is shown in the following table:

	Prices Bid 1	2	3	4
NEW YORK				
Dec. 10, 1920	$8.70	$9.98	$8.79	$9.33
Jan. 14, 1921	7.79	9.21	7.98	8.03
Feb. 28, 1921	6.86	8.42	7.02	7.27
PHILADELPHIA				
Dec. 10, 1920	8.99	9.34	8.30	9.13
Jan. 14, 1921	7.45	8.59	7.45	7.69
Feb. 28, 1921	7.33	8.17	8.05	7.19
BALTIMORE				
Dec. 10,1920	$8.70	$9.98	$8.79	$9.33
Jan. 14, 1921	7.21	8.27	7.25	7.39
Feb. 28, 1921	6.90	7.82	6.83	7.06
HAMPTON ROADS				
Dec. 10,1920	$9.70	$10.45	$9.41	$8.95
Jan. 14, 1921	8.15	9.88	8.26	8.48
Feb. 28,.1921	7.37	....	7.18	....
BOSTON				
Dec. 10, 1920	....	$15.00	....	....
Jan. 14, 1921	....	12.20	....	12.95
Feb. 28, 1921	....	11.15	....	....
CHARLESTON				
Dec. 10, 1920	$9.55	$12.55	$8 92	$10.00
Jan. 14, 1921	8.17	9.31	7.92	8.32
Feb. 28, 1921	7.60	8.72	6.91	7.58
JACKSONVILLE				
Dec. 10, 1920	$10.90	$11 86	$9.95	$11.20
Jan. 14, 1921	9.29	9 83	8.19	9.20
Feb. 28, 1921	8.58	9.49	7.62	9.04
SAVANNAH				
Dec. 10, 1920	$9.95	$10 84	$8.93	$10.00
Jan. 14, 1921	8.23	8 92	7.91	8 22
Feb. 28, 1921	7.52	8.06	7.16	7.31

BIDS SUBMITTED FEB. 28

Company	Prices Bid 1	2	3	4
BALTIMORE				
Imperial Coal Co	$7.55	$8.35	$7.25	$7.60
Geo. D. Paris	....	....	5.97	....
H. P. Prydon & Bro	....	....	7.09	....
Burtner Coal Co	7.77	8.78	7 65	7.88
Ainsworth Coal & Iron Co	6.68	7.71	7.48	6.71
D. Lewis Fuel Co	....	....	7.00	7.00
Dexter & Carpenter	6.49	7.44	....	....
Quemahoming Coal Co	6.64	7.41	6.60	7.00
Equitable Fuel Co	....	....	6 82	....
W. C. Eakins	6.31	7.39	6.16	6.39
Hall Bros. Co	....	8.07	6.97	7.27
Stearn Coal & Coke Co	6.66	7.43	....	6.64
Belle & Harriman	7.10	....	6.95	....
Pennsylvania-Virginia Coal Co	....	....	5.98	....
P. & S. Coal Co	....	....	6 88	....
BOSTON				
Maritime Coal Co	....	$11.50	....	....
Stearn Coal & Coke Co	....	10.80	....	....
CHARLESTON				
American Export Co	....	....	$6 90	....
Harriman Coal Co	$7.35	$8.30	6 90	$7.50
Consumers Coal Co	8.25	9.25	7 25	....
U. S. Fuel Corp	....	....	7 62	....
L. O. Scott	....	....	6 05	....
Taggart Coal Co	7.00	8.60	6 75	7.65
Stearn Coal & Coke Co	7.79	....	....	....
JACKSONVILLE				
Southern Coal Co	$9.50	$10.25	$8.50	$9.80
American Export Co	....	....	7.50	....
Harriman Coal Co	7.85	8.75	7.25	7.90
U. S. Fuel Corp	....	....	7.78	....
L. O. Scott	....	....	6.30	....
Logan Coal & Supply Co	8.95	9.47	8 40	9.43
Belle & Harriman	8.03	....	7 63	....

Company	Prices Bid 1	2	3	4
HAMPTON ROADS				
White Oak Coal Co	....	....	$7 36	....
Crozier-Pocahontas Coal Co	....	....	7 36	....
Wm. C. Atwater & Co	....	....	7 35	....
Lake & Export Coal Co	....	....	7 10	....
Pocahontas Fuel Co	....	....	6 00	....
Fort Dearborn Coal Co	....	....	7 85	....
Central Pocahontas Coal Co	....	....	7 65	....
C. G. Blake, Inc	....	....	7 28	....
Leckie Coal Co	....	....	7 95	....
Dexter & Carpenter	$7 49	....	....	....
Chesapeake & Ohio Coal Co	....	....	7 28	....
Smokeless Fuel Co	....	....	7 30	....
Chesapeake & Potomac Coal Co	....	....	6 85	....
Interstate Coal & Dock Co	....	....	7 25	....
W. C. Eakins	....	....	6 69	....
Relsah Coal Corp	....	....	7 15	....
Maryland Coal & Coke Co	....	....	7 25	....
Hall Bros. Co	....	....	7 38	....
Berwind-White Coal Co	....	....	7 25	....
Chesapeake & Ohio Coal Co	....	....	7.25	....
Jewett Bigelow & Brooks	7 25	....	6.95	....
Reed Coal Co	....	....	6.75	....
Consolidated Fuel Co	....	....	7.05	....
P. & S. Coal Co	....	....	6.72	....
NEW YORK				
Imperial Coal Co	....	$9 85	....	$8 30
Johnson Coal Co	....	....	$7.41	....
W. M. Hallenback	....	....	7.44	....
George D. Paris	....	....	6.56	7.06
H. P. Prydon & Bro	....	....	7 68	....
W. C. Mason & Co	....	....	....	7 25
Spring Coal Co	....	....	....	7.35
Ainsworth Coal & Iron Co	$6.99	7.24	6 79	7.02
Dexter & Carpenter	....	....	....	7.39
H. B. W. Huff	....	....	7 61	....
Riverside Coal Co	....	....	6 85	7.40
W. C. Eskins	6 87	8.19	6.72	6 97
Stearn Coal & Coke Co	....	8.40	....	7.36
Nonpariel Coal Co	....	8.44	....	7.34
Pennsylvania-Virginia Coal Co	....	....	6.35	6 85
Penn Fuel Co	6.73	....	....	6.93
P. & S. Coal Co	....	....	6.80	....
PHILADELPHIA				
Peerless Coal Co	$7 88	$8 68	$8.12	$7 69
Philadelphia Export Co	8 80	9 50	8.50	....
Imperial Coal Co	7 65	8 45	7 30	7 60
W. M. Hallenback	....	....	7.26	....
Geo. D. Paris	....	....	6.04	....
H. P. Prydon & Bro	....	....	7.16	....
Burtner Coal Co	7 77	8 78	7.65	7.88
Ainsworth Coal & Iron Co	6 75	7.73	6.65	6.88
Dexter & Carpenter	6 57	7.52	....	....
Geo. Patchell & Co	7 22	8.30	7.22	7.45
W. C. Eakins	6.18	7.03	6.13	6.38
Hall Bros Co	....	8.14	7.04	7.24
Stearn Coal & Coke Co	....	7.52	....	6.64
Belle & Harriman	7 10	....	....	6.95
Pennsylvania-Virginia Coal Co	....	....	6.05	....
P. & S. Coal Co	....	....	6.45	....
SAVANNAH				
Godly & Griffin	....	$8.10	....	....
American Export Co	....	....	$7.05	....
Harriman Coal Co	$7.55	8.55	7.05	$7.75
U. S. Fuel Corp	....	....	7 78	....
L. O. Scott	....	....	6.20	....
American Coal Co	7 39	7 89	7.39	7 14
Taggart Coal Co	7.38	7.68	7.28	7.03
Belle & Harriman	7.75	....	7.35	....

VIRGIN ISLANDS

Willard Sutherland	At current Prices
Berwind-White Coal Co	$13.45 delivery
West Indian Coal Co., Ltd	Coal handling, $3.50
Pendleton Bros	$13.22 delivery
Wm. Corey Mann George Co	99 d. trimmed in bunkers

1. Trimmed in bunkers U. S. Shipping Board's ships (owned or controlled) taken under the chutes, at the wharves or piers of the supplier, in lots as required.
2. Trimmed in bunkers U. S. Shipping Board's ships (owned or controlled) at anchor within harbor limits, from supplier's lighters or barges, in lots as required.
3. F.O.B. (under chutes at wharves or piers).
4. F.A.S. (ships at anchor within harbor limits from supplier's lighters or barges).

Answer Charge of Violating Injunction

ON March 8 Sid Hatfield, chief of police of Matewan, W. Va.; Ed. Chambers and Charles Kiser, now being tried in the Federal district court at Huntington, in Mingo County, for murder, were to present their answer to the charge of contempt of court for alleged violation of an injunction issued by Judge Edmund Waddell, Oct. 20, 1920. On Feb. 1 Judge Waddell cited the three men named as well as officials of district 17 to appear before him after complaint was made by the Red Jacket Consolidated Coal & Coke Co. that their employees had met with interference in trying to perform their duties.

Tidewater Exchange Sets Termination of Emergency at Oct. 15, 1920

OCT. 15, 1920, is the date determined as representing the termination of the emergency in coal of last year and beyond which assessment under Rule 33 of the Tidewater Coal Exchange will not be collected. It will be remembered that a committee of members, headed by W. M. Richardson, had protested this rule as having been outside the powers of the directors of the exchange to make, and a compromise between those opposing the rule in its entirely and the majority of the exchange has been sought through setting a limit on the period through which this rule should be effective. Rule 33 provides for penalties of 10c. per ton to be paid into the treasury of the exchange for coal held at Tidewater beyond certain time limits, and was designed primarily to prevent holding of coal in cars at the piers for speculative purposes during the period of high prices and car shortage last summer.

The Interstate Commerce Commission was addressed on Feb. 16 by a special committee of the exchange for the purpose of having the commission formally define the determination of the emergency. It is understood that the commission took the position that inasmuch as it had not taken formal cognizance of Rule 33 of the Tidewater Coal Exchange, Inc., it would not be embarrassed by having a date for the termination of the emergency announced by the exchange and it was willing to leave the matter entirely in the hands of the exchange. It is understood that the committee from the Board of Directors of the exchange is now negotiating with the Committee of Complainants, representing about two dozen of the members, in an effort to reach a settlement in the matter of payments to the exchange due under Rule 33 by these members.

The classification committee of the exchange has decided to publish a general classification of all mines shipping to the Exchange pools. This classification book is now ready for distribution, and will be sent to the railroads, members of the Exchange and consumers without charge. A supplement will be issued monthly and a charge of one dollar a year will be made to cover the expense of its printing and distribution. Extra copies of the classification books will be distributed at 25c. each.

Engineer Office at Philadelphia Asks for Bids on 9,000 Tons of Coal

SEALED proposals will be received by the U. S. Engineer Office at Philadelphia, Pa., until 12 m., March 28, 1921, for approximately nine thousand tons of bituminous coal for use on the floating plant in the Philadelphia Engineer District during the period April 1 to Sept. 30, 1921.

It is estimated that 9,000 gross tons will be required. The right is reserved, however, to increase or decrease the estimated quantity required without change in the prices named in the accepted bid. For purposes of proposals and payments the floating plant will be divided into classes 1 and 2. Class 1 shall include all dock scows and barges and class 2 shall include the tugs Vidette, Camden and Philadelphia and vessels of similar type. It is believed that about 7,500 tons will be required for vessels of class 1 and about 1,500 tons for vessels of class 2.

The coal must be a good free-burning, non-coking run-of-mine semibituminous steam coal, fresh-mined and clean, free from bone, slate, shale, stone, refuse, excessive dust or other objectionable matter. It must be of a quality that will not unduly clinker or clog the grates, and must be well adapted for successful use in the particular furnace equipment for which it is purchased.

The general form of the contract, the details of the specifications, and the method of sampling appear to be identical with those recently advertised by the navy.

New York City Breaks Precedent, Asking Bids on All or Part of Coal Requirements

DEPARTING from its time-honored custom of buying all coal for municipal use through the multitude of retail dealers and in small lots the City of New York is today advertising for bids for its coal supply in such a way that the whole quantity may be supplied by one contractor. Requirements for the municipality of New York in the period April 1, 1921, to March 31, 1922, are given as 317,681 net tons of anthracite, divided as follows: Broken, 1,517 tons; egg, 21,578 tons; stove, 12,656 tons; chestnut, 1,616 tons; pea, 5,016 tons; buck No. 1, 146,315 tons; buck No. 2, 60,960 tons; buck No. 3, 68,023 tons. In addition to these quantities of anthracite the city will require 85,814 net tons of bituminous coal, of which 73,421 tons must be run-of-mine and 12,393 tons must be slack.

The bidder has the option of naming the price for the entire quantity of anthracite or of bituminous coal under class A bid, f.o.b. mines, the city paying the freight and insurance: f.o.b., the Port of New York; or f.o.b. barges, alongside dock or wharves in the City of New York. In addition, there are provided schedules for every single lot from five tons to several thousand tons, after the manner in which the city obtained its coal in the past.

To coal shippers who bid on the coal at the mine attention is directed to a provision that the supplier guarantees to provide and equip at the mines for the city's use a proper laboratory for analyzing coal at a cost of not more than $5,000. The city will station inspectors and chemists at the mine and in the laboratory and sample and test every car of coal as it is shipped, the city promising to submit reports on each car within thirty-six hours. The city further promises to take the maximum possible quantity into storage during the summer months.

No producer is eligible to bid on this contract who has not been engaged in mining and preparing coal for at least five years and who has not shipped during the past two years at least three times the quantity of coal required by this contract. The producer must have a mine or mines in a field from which the coal has in the past been of a quality falling within the city's specification. These specifications require analysis showing not more than 3 per cent of moisture, 9 per cent of ash, 25 per cent of volatile, and 2 per cent of sulphur and of not less than 14,000 B.t.u. for run-of-mine. Specifications for slack differ from those for run-of-mine in that the allowable limit of ash is 11 per cent and for heat value is 13,600 B.t.u.. Penalties are provided for deliveries exceeding the specifications. The successful contractor on this form of bid will be required to deposit with the city the sum of $3,000, which will be drawn against for the purpose of paying all traveling and other expenses incidental to any inspection made in connection with the contract.

In case the contractor does not control the operation of a mine or mines and cannot establish a laboratory for the city's use at the mine, inspection will be made of the coal in barges, and any demurrage due to inspection of coal which falls below the specifications' basic requirements shall be paid for by the contractor. In addition to calling for bids on the coal provision is made for bids for barging and for hauling the coal to the different wharves or docks and to the points of final delivery within the city.

THE BOARD OF DIRECTORS of the Panama Railroad Co. on March 1 rejected the bids received for furnishing the company with 750,000 tons of coal (*Coal Age*, March 3, page 415). The proposals will be readvertised, but no date has as yet been fixed.

The National Coal Association will hold its annual convention in New York City during the week of May 16 instead of at White Sulphur Springs.

Calder Coal Bill Dies with 66th Congress; Frelinghuysen To Push Commissioner Bill at Extra Session

By Paul Wooton
Washington Correspondent

THE sixty-sixth Congress died at noon on March 4 and the Calder coal bill died with it. The bill, as originally drafted, is regarded as one of the most impossible schemes ever placed seriously before the Senate. In a greatly emasculated form, it finally did reach the calendar, but its consideration never was undertaken. Such progress as the measure made was due entirely to the fact that Senator La Follette chose to concentrate his powerful influence as chairman of the Committee on Manufactures to advance the bill to the farthest possible point. Senator Reed, however, questions the regularity of Senator La Follette's action in reporting the bill.

The whole proceeding at the last session of Congress looking to the regulation of the coal industry was unusual. The Calder investigation was intended to be a probe of the construction industry. Its particular objective was to be to devise means whereby private industry could be induced to provide the housing needed by the country so as to obviate government construction of homes, as became necessary in England. Incidental to that investigation, it became necessary to look into the matter of car shortage. Car shortage in the building industry was due principally to the need of the bulk of the open-top equipment for the transportation of coal. The Calder committee went deeper and deeper into the subject and before many weeks had passed the tail was wagging the dog. The committee never did get back to a real investigation of the building situation.

Outside Inspiration Blamed for Calder Bill

Finally Senator Calder was induced to introduce a bill the inspiration for which is thought to have come from outside of his committee. The investigation of coal by the Calder committee paralleled and duplicated work which had been in progress for nine months prior to the Calder probe. The work had been done by a sub-committee of the Committee on Interstate Commerce, of which Senator Frelinghuysen, of New Jersey, was chairman. When the Calder bill was introduced, it should have been referred to the Interstate Commerce Committee. Evidently by request, the bill was referred to the Committee on Manufactures. It presumably was assumed that Senator Frelinghuysen was not in favor of the type of control suggested by the Calder bill. At the same time Senator La Follette was particularly anxious to press just such legislation. All arrangements had been made to challenge the reference of the bill, but Senator Cummins, chairman of the committee, was away and Senator Frelinghuysen had obligated himself to provide an outing for the President elect in Florida. As a consequence, no protest was made and the rest is history.

Senator Frelinghuysen, however, expects to press his Coal Commissioner bill at the extra session of Congress. While that measure hardly has the endorsement of coal operators, it is doubtful if they would make any serious attempt to oppose it, as it does not come at all within the drastic category of the type of control provided by the Calder bill.

Senators Calder and La Follette continued to urge action by Congress on coal in the expiring hours of the late Congress. Senator Calder reviewed the charges against the coal industry before the special Senate committee of which he was chairman and also before the Senate Manufactures Committee, and also touched again on War Department coal purchases. He was interrupted from his prepared speech by numerous Senators, who gave their views on coal, among them Senator Edge, who referred to the high coal prices in Washington—$15.90 as compared with $13 in New York and $12.50 in northern New Jersey—and said that the Washington situation should be investigated.

Senator Calder said anthracite was very closely held in the East, 80 per cent of the supply being controlled by seven companies. Senator Edge urged that the District of Columbia situation be looked into but Senator Calder said his committee had deferred further consideration after the Manufactures Committee began hearings on the coal bill. Senator Calder said there was a combination of interests in Washington which sought to prevent other than members of the Washington Retail Coal Association from entering the business. The matter was being investigated by the Department of Justice and he hoped the combination would be broken up. Senator Simmons, of North Carolina, said anthracite had been selling for $18 in that State, and Senator Calder said he was glad that the North Carolinian bore witness to profiteering on anthracite.

La Follette Promises Relief to Washington

Senator La Follette also referred to the Washington combination and stated that action instituted probably would afford relief to the city at an early date. He said anthracite prices in the country had ranged from $16 to $22 and bituminous from $12 to $15. He said he had been unable to obtain consent of members of the Manufactures Committee for the Senate to consider the Calder bill.

Senator Walsh, of Massachusetts, said there was strong sentiment in his state for regulation in the interest of reasonable prices, and added that while the sentiment of the country generally was against government interference in private business, such interference would be justified in the case of a commodity essential and indispensable to life as was coal. Senator Kenyon said there might be some doubt as to whether bituminous was monopolized, but there was no doubt about monopolistic control of anthracite. Senator Walsh said the committee had not discussed anthracite as much as bituminous, but thought anthracite was in the hands of a few owners who not only controlled production but distribution as well.

Senator La Follette said anthracite was completely controlled by a monopoly, and Senator Walsh said "unquestionably anthracite is a monopoly." Senator La Follette said seven coal and seven railroad companies controlled 80 per cent of anthracite. Senator Walsh said he had letters from New England objecting to government regulation of coal, as it would lead to other industries. Senator Calder said anthracite was very nearly monopolized and that bituminous was so held that it was possible to raise and lower prices at will. Senator King, of Utah, thought the conditions had been brought about by combinations of middlemen and brokers rather than by concerted action of operators, and Senator Calder said this was true to a great extent. Senator La Follette said there existed between the mines and the consumer of bituminous a control of price and delivery that in effect imposed almost if not as great a burden upon the public as could be imposed if the deposits of coal were more limited, and that coal could be "cornered."

During Senator Calder's analysis of the War Department coal purchases Senator Pomerene, of Ohio, said that Colonel Wentz should have bought coal for the department at the mines instead of through brokers.

* * * * *

Reversing the action of its Judiciary Committee, which had voted to retain the Lever Food and Fuel Control law, the Senate, immediately following the Supreme Court decision nullifying the Lever law, passed the war repeal bill, repealing the Lever law but permitting the prosecution of pending cases thereunder. Senator Walsh urged repeal of the law, saying that the government had not been able to use it to any appreciable extent to correct coal profiteering. The Senator said the Judiciary committee had allowed the Lever law to remain when it reported the re-

peal bill some time ago because it might be valuable for punishing profiteering in coal, but that under the Court decision the entire law should be repealed.

Senator Smith of Georgia, thought the Lever law would still apply to coal and hoarding, as the court decision was only on part of the law. Senator Reed, of Missouri, thought the decision was entirely destructive of all phases of the Lever law. He pointed out that if section 4 of the law were eliminated it would still contain drastic war powers under which coal mines could be seized and under which the President could fix coal prices and require licenses for doing business. He asserted the whole Lever law was "badly conceived" and should be repealed. Senator Walsh agreed with Senator Reed, and an amendment by the latter repealing the Lever law entirely was then adopted. An amendment by Senator Walsh permitting prosecution of pending cases under the act was adopted, and the bill as amended was finally passed.

Attorney General Palmer withheld comment on the Supreme Court's decision, but it is understood that the Department of Justice will withdraw its instructions to District Attorneys for prosecutions under the Lever law. The department based its prosecution of the 1919 striking miners under section 4, upon which the court based its nullifying ruling, but it is understood the decision does not affect the recent Indianapolis indictments, which were under the Sherman law and which included those indicted last year under the Lever law.

N. Y. Coal Merchants Sift Fuel Situation; T. H. Watkins Fears Shortage in Autumn

THE regional meeting of the New York State Coal Merchants Association held at the Hotel Pennsylvania on March 3 was attended by about four hundred coal merchants in New York City, Long Island and points as far north as Poughkeepsie. The principal addresses were made by W. H. Williams, vice-president of the Hudson Coal Co., and Thomas H. Watkins, president of the Pennsylvania Coal & Coke Corporation, who spoke on the anthracite and bituminous coal outlook respectively.

Richard J. Wulff, second vice-president of the New York State Coal Merchants Association, presided at the morning session. M. N. Clement, general manager of the Coal Merchants Mutual Insurance Co., spoke to the members on insurance. Theodore S. Trimmer, of William Farrell & Son, took up the subject of insurance problems, and J. M. Bacon, president of the Bacon Coal Co., Brooklyn, spoke on the viewpoint of a policyholder in the Coal Merchants Mutual Insurance Co. on these questions. Other speakers in the morning session were F. M. Carpenter, vice-president, New Rochelle Coal & Lumber Co., whose subject was "Credit or Cash," and Roderick Stephens, vice-president, Stevens Fuel Co., who spoke on "Avoidable Losses."

Edward Schmidt, Executive Committee chairman, New York State Coal Merchants Association, presided at the afternoon session. Railroad claims and the retailer were the subjects of an address by Stanley M. Houck, traffic counsel, National Retail Coal Merchants Association, and the matter of legislation was the subject of an address by John E. Lloyd, president, National Retail Coal Merchants Association. Mr. Williams, in speaking of the coal outlook from an anthracite standpoint, called attention to the increased cost of mining and also referred to the resizing of coal.

Mr. Watkins, who spoke on the same subject from a bituminous standpoint, told the members that he did not see how the price of bituminous coal could go below last year's prices without increased tonnage or without great loss. He said that the situation as a whole is rather a serious one—one in which the whole country is concerned. He said that wages have increased more than one hundred per cent, but wages are not alone responsible for the increased cost of materials running from 300 to 400 per cent. A large part of the labor engaged in the production of coal today finds its earnings reduced about 50 per cent because of lack of employment.

Referring to the regulation of the coal industry proposed in the Calder bill, Mr. Watkins said: "No matter what the activities may have been by speculators, by irresponsible operators, jobbers and retail coal men during the past year, all of the conditions surrounding the industry would be far worse if such men as Senator Calder had charge of regulating it."

Mr. Watkins said that what is wanted in the bituminous coal business is stability, business sense, and decent trade conscience, and he was glad to say that there is a growing knowledge on the part of the producers and the public generally of what it costs to produce coal, of what the industry needs in the way of a fair return on its capital and of what it needs to do in the fair treatment of its labor. He said he looked with confidence toward the future, believing that the conservative elements in the bituminous coal field will be able to exert a definite influence toward stabilization of production and distribution, at the same time giving the consuming public satisfaction.

Mr. Watkins said that in his judgment demand will increase from now on. He said he believed consumption to be greater than production at the present moment, and unless stocks are fairly well provided for in the immediate future, there may be difficulty in the fall and winter on the part of railroads in carrying what will be needed then.

The meeting concluded with a banquet in the evening attended by more than five hundred. Michael F. Burns, president of Burns Bros., presided, and Harry T. Peters, vice-president, Williams & Peters, was the toastmaster. The Rev. John L. Belford, of Brooklyn, spoke, and the other speakers included Thomas F. Farrell, president of Farrell Co. Ex-Governor Alfred E. Smith, who was to have spoken on "Industry," was ill and could not be present, and William E. Knox, vice-president of the Bowery Savings Bank, who was to have addressed the coal men on "Savings," was unavoidably absent.

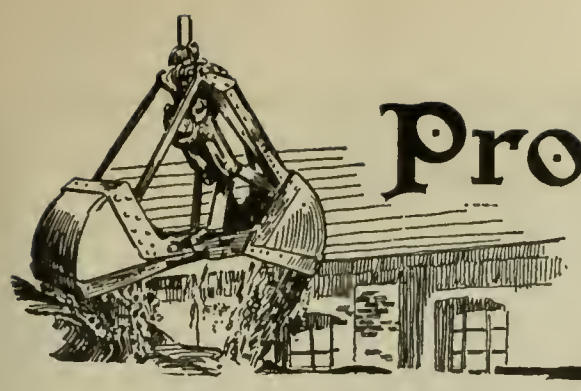
Hampton Roads-to-Rotterdam Coal Freight Rate Now $3.85; $21 a Year Ago

IN ITS report of business conditions for February the Federal Reserve Board says the downward trend of freights was emphasized when the North Atlantic United Kingdom conference lowered coal charters to $3.85 a ton from Hampton Roads to Rotterdam and to $5.50 a ton to River Plate ports. In February, 1920, the quotations were $21 to Rotterdam and $13 to Buenos Aires. Demand for bituminous coal, the board states, has fallen off considerably as a result of the mild weather, curtailment of operations by industrial plants and contraction in tonnage used by railroads. Mine prices reflect the market situation, but the Board says retail prices "have not followed."

Retailers attribute the situation to contracts previously made and to high freight rates. Dealers in the Richmond district do not appear to have large stocks on hand but are purposely limiting them because of price uncertainties. the Board adds. The coke market reflects the situation in the iron and steel industry, as prices have declined and operations been curtailed. There is a poor demand for buckwheat and many of the larger producers are storing this size with a view to marketing under more favorable conditions. Steam sizes generally are beginning to feel the competitive effect of the low price of bituminous coal, and sales are not as brisk as heretofore.

Holds Hearing on Cancellation of Rates on Slack Coal on Norfolk & Western

ON MARCH 2 the coal, coke and iron ore committee for Central Freight Association territory announced a public hearing on March 10 to consider cancellation of rates on slack coal from mines in the Pocahontas, Tug River and Clinch Valley districts of the Norfolk & Western Ry. to stations on the Scioto Valley division of the Norfolk & Western Ry. north of Kenova to Ironton, Ohio, inclusive, and from the same origin districts to stations on the Norfolk & Western Ry.—Hanging Rock, Ohio, to New Boston, Ohio, inclusive—leaving the higher rates which apply on other grades of coal to apply on slack coal. The hearing is being held in Pittsburgh, Pa.



Production and the Market

Weekly Review

SO LITTLE is stirring in industry that the railroads and the shippers of coal have less to do than at any time in the last six or seven years. Coal companies are figuratively tightening up their belts and sitting tight. The spot market is quotable more because of prices offered by shippers than by business closed. A fair sample of what is going on is found in the situation in the Fairmont district with respect to business in railroad fuel. The Fairmont region has always been the largest supplier of railroad coal and this year negotiations have been going on for early spring contracts. It is reported that the railroads are freely offering to contract for the coming year at $2.50 per net ton, but that producers are holding out for $2.90 on lower grades and $3@$3.25 for the best grades. There seems to be a very general feeling—possibly founded on hope—that the buyer is going to stay out of the market until the last minute and that when he does start to buy the rush will produce another sharp upward swing in prices with repetition of serious car shortage next autumn.

Opinion is not divided on the question of whether a strong demand next fall will produce a car shortage, but there is no unanimity in the views of different authorities as to whether the demand will materialize. It is being pointed out that the railroads, like the mines, are curtailing operations and releasing personnel and that if orders for coal and for coal cars are suddenly revived without warning, difficulty will at first be experienced in meeting the demand. In the Middle West the railroads are cutting expense by setting bad-order cars on the sidings without repair, the course dictated by the expediences of their purse but without regard to future difficulty.

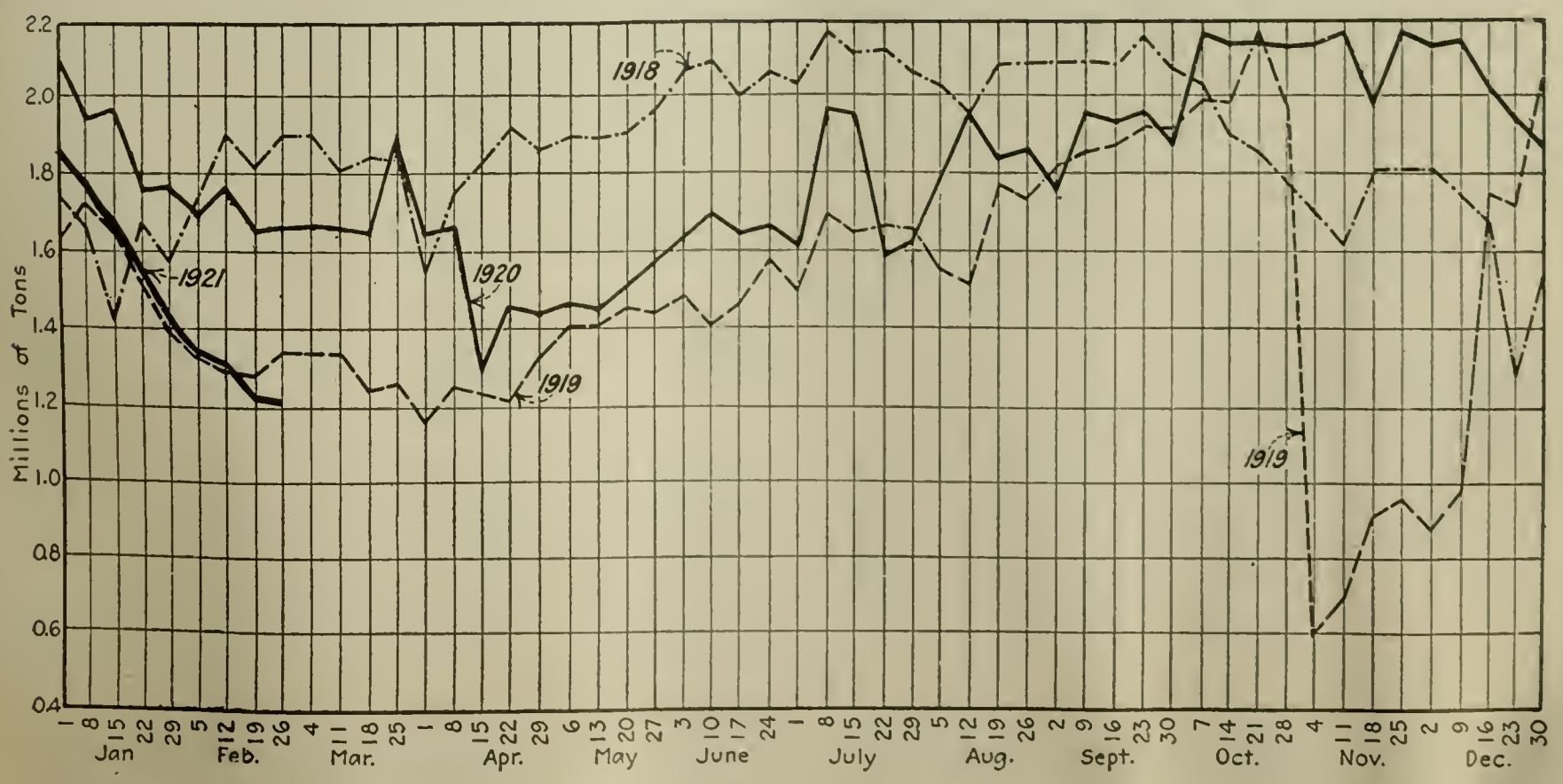
The Interstate Commerce Commission on March 3 permanently vacated Service Order 17, issued on Sept. 16, 1920. This order had to do with furnishing open-top cars to wagon mines. As the wagon mines are no longer in operation this particular order was of course without effect.

Bituminous Output Seems at Bottom

The production of bituminous coal, which for several weeks has been at a rate in excess of 7,000,000 tons, is considered to have reached bottom for the present, but lower figures are anticipated in April when many of the contracts on which coal is now being shipped will have expired. To a very limited extent some of the larger shippers have been able to renew these contracts but they report that consignees for the most part hold out no assurance of taking more than the barest minimum quantity for the next few months.

Anthracite shippers are not going to give summer dis-

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

counts both because they allege they cannot afford to do so because of their inability to move steam sizes at a reasonable figure and because they have the opinion that sufficient domestic sizes will be ordered by the consumers to keep mines in operation at a reasonable rate.

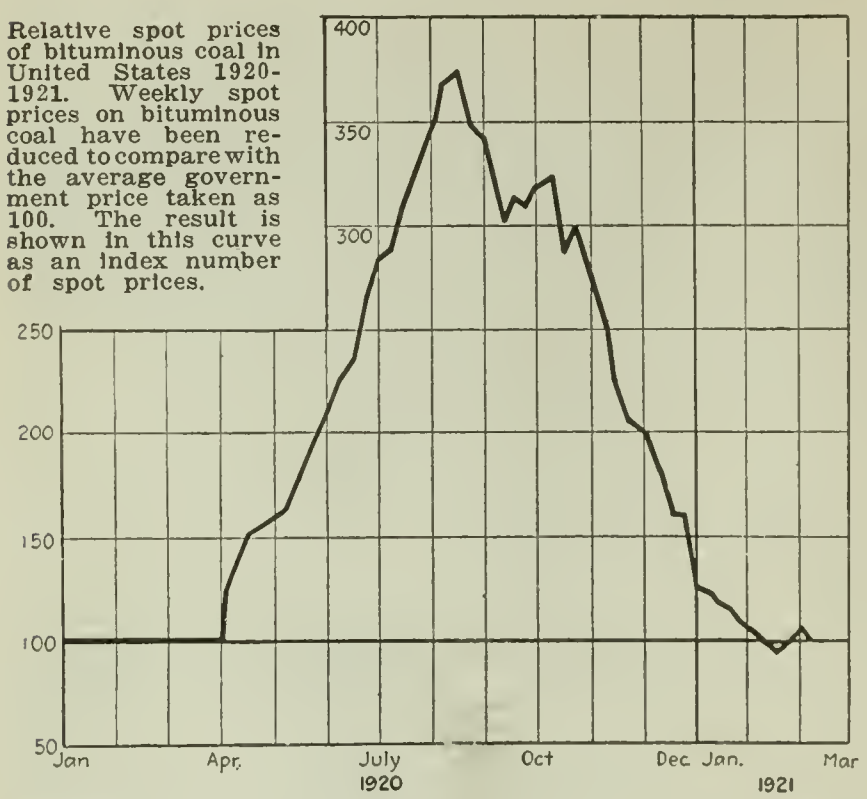
Beehive coke production is undergoing steady curtailment as demand from the iron furnaces falls off. The policy of the iron producers is to maintain operation of their byproduct plants and meet the lessened requirements for coke by shutting down beehive ovens.

BITUMINOUS

Washington's Birthday was observed as a holiday at many mines, although with little apparent effect on production, as no difficulty was experienced in filling all available orders on the remaining days of the week ended Feb. 26. The rate of production continued to decline during the week, total output being placed by the Geological Survey at 7,334,000 net tons, less by 159,000 tons than the figure for the week ended Feb. 19. Production is now at a lower rate than at any time in the last four years. Loadings on the first two days of the opening week in March indicate a further decline in production.

Taking the country as a whole, "no market" losses now exceed 50 per cent of full time operation of the mines and operating time is but 40 per cent. Central Pennsylvania, Westmoreland, eastern Ohio, Alabama and the majority of the Middle West operated with less than half time lost because of no market, with prospects for poorer market to follow.

Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.



Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date
Feb. 12(b)	7,859,000	475,684,000	10,484,000	417,964,000
Daily average	1,310,000	1,779,000	1,747,000	1,557,000
Feb. 19(b)	7,493,000	483,178,000	9,513,000	427,477,000
Daily average	1,249,000	1,768,000	1,585,000	1,558,000
Feb. 26(c)	7,334,000	490,512,000	10,120,000	437,597,000
Daily average	1,222,000	1,756,000	1,687,000	1,560,000

(b) Revised since last report. (c) Subject to revision.

ANTHRACITE

	1921 Week	1921 Coal Year to Date	1920 (a) Week	1920 (a) Coal Year to Date
Feb. 12	2,048,000	79,665,000	1,822,000	80,782,000
Feb. 19(b)	2,010,000	81,675,000	1,504,000	82,286,000
Feb. 26	1,825,000	83,500,000	1,767,000	84,053,000

(a) Less 2 days' production during first week in April, to equalize number of working days covered for the 2 years. (b) Revised since last report.

BEEHIVE COKE

Week Ended Feb. 26(a) 1921	Feb. 19(b) 1921	Feb. 28 1920	1921 to Date	1920(c) to Date
194,000	219,000	433,000	1,917,000	3,708,000

(a) Subject to revision. (b) Revised from last report. (c) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

FEW CONTRACTS CLOSED; CONSUMERS USE RESERVES

Practically no contract developments are reported. Negotiations are being held back by the differences in price views held by consumers and producers and by the extent of the reserves in the hands of consumers which enable them to eke out a considerable future supply by a brief entrance into the spot market.

Buying for the Lakes is dragging. Some little tonnage is being forwarded to the lower ports, but this business is mainly confined to producers having allied dock interests. The Northwest coal industry is in a highly competitive state

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Coal	Market Quoted	Gov't Price	Feb. 1 1921	Mar. 1 1921	Mar. 8 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$3.75	$3.50	$3.50
Pocahontas lump	Columbus	2.60	6.25	5.75	*5.50*
Pocahontas mine run	Chicago	2.35	2.75	3.75	.....
Pocahontas lump	Chicago	2.60	4.25	5.25	.....
Pocahontas mine run	Boston*	....	6.00	5.80	*5.50@ 6.00*
Pool 1	New York	2.35	3.75	3.55	*3.00@ 3.25*
Pool 1	Philadelphia	2.35	3.60	3.55	.....
Pool 1	Baltimore	2.35	3.25	3.15	*3.00*
Clearfields mine run	Boston	2.95	2.75	2.55	2.15@ 3.00
Somersets mine run	Boston	2.95	3.55	3.10	2.50@ 3.75
Pools 10, 11	New York	2.95	2.75	2.50	*2.15@ 2.65*
Pools 10, 11	Baltimore	2.95	2.80	2.35	**2.50@ 2.75**
Pools 10, 11	Philadelphia	2.95	2.80	2.50	2.25@ 2.75
Pool 18	New York	2.95	2.10	....	*1.85*
Pool 18	Philadelphia	2.95	2.15	2.00	2.00
Pool 18	Baltimore	2.95	2.10	....	*2.00*
High-Volatile, Eastern					
Pittsburgh mine run	Pittsburgh	2.35	2.50	2.35	2.25@ 2.50
Pittsburgh sc'd. gas	Pittsburgh	2.35	3.25	2.85	2.75@ 3.00
Kanawha mine run	Columbus	2.70	2.35	2.50	*2.25*
Kanawha lump	Columbus	2.95	4.80	3.75	3.75
Hocking mine run	Columbus	2.50	2.40	2.25	*2.15*
Hocking lump	Columbus	2.75	3.85	3.50	**3.65**
Pitts. No. 8 mine run	Cleveland	2.35	2.50	2.35	2.25@ 2.50
Pitts. No. 8 lump	Cleveland	$2.60	$3.75	$3.75	*$3.25@$4.00*
Pool 34 (54, 64)	Philadelphia	2.50	2.25	2.25	**2.25@ 2.50**
Pool 34 (54, 64)	New York	2.50	2.25	2.30	*2.00*
Pool 34 (54, 64)	Baltimore	2.50	2.25	2.15	2.00@ 2.25
Midwest					
Franklin, Ill., mine run	Chicago	2.35	2.75	2.75	*2.25@ 3.00*
Franklin, Ill., lump	Chicago	2.55	3.80	3.80	*3.50@ 4.00*
Central Ill., mine run	Chicago	2.35	2.15	1.85	1.50@ 2.25
Central Ill., lump	Chicago	2.55	3.15	2.60	.....
Ind. 4th Vein, mine run	Chicago	2.35	2.15	2.60	.....
Ind. 4th Vein, lump	Chicago	2.55	3.35	3.30	.....
Ind. 5th Vein, mine run	Chicago	2.35	2.15	2.40	.....
Ind. 5th Vein, lump	Chicago	2.55	3.10	3.05	.....
Standard mine run	St. Louis	2.35	2.00	1.95	1.90@ 2.00
Standard lump	St. Louis	2.55	2.35	2.60	2.50@ 2.75
West Ky., mine run	Louisville	2.35	2.50	2.25	**2.35@ 2.50**
West Ky., lump	Louisville	2.60	3.95	3.15	3.00@ 3.25
South					
Big Seam mine run	Birmingham	2.45	3.00	3.05	*2.70@ 3.25*
Big Seam lump	Birmingham	2.75	3.50	3.75	3.25@ 4.25
S. E. Ky. mine run	Louisville	3.00	2.75	2.75	2.50@ 3.00
S. E. Ky. lump	Louisville	3.25	5.00	4.00	*3.75@ 4.00*

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

as the docks strive to reduce their holdover as much as possible before the season opens. Producers hope for an early outlet for their tonnage in this direction but to date there has been little contracting at any fixed price.

While *Coal Age* index of spot bituminous prices dropped one point from last week and now stands at 100, it is two points above the low mark of 98, registered in the middle of February.

TIDEWATER

A total of 1,026,000 gross tons was dumped at all piers at Hampton Roads during the month of February. During the last week in February 204,000 tons were dumped, which was in itself a new low record. Prices remained approximately the same. Accumulations at Tide have been greatly reduced as has tonnage awaiting cargo. Coastwise shipments to New England are very light and beyond certain stable contracts there is practically nothing moving overseas. Even South American business is light.

All-rail coal to New England declined in volume during the week ended Feb. 26. Shipments through the five rail gateways amounted to 3,068 cars, a decline of over 300 cars when compared with the preceding week.

ANTHRACITE

Hard coal demand slackened considerably and both independent and company quotations contained on the same level, $8.10 for stove and chestnut while egg dropped to $7.60. Domestic sizes are accumulating while steam is an increasing source of worry to all producers.

It now appears unlikely that there will be any spring reduction on domestic sizes and that company circulars will stand unchanged from the winter schedules, although steam coals will probably have to come down. The Jeddo-Highland Coal Co., one of the largest independents, announces reductions as of Mar. 1 from mine prices in effect during the winter on egg, stove and nut from $9.25 to $8.75 and on pea from $7.50 to $6.75. Owing to the continuance of the high labor rates under the 2-year agreement expiring in March, 1922, no further reduction is contemplated, but the normal increase by Sept. 1 may be expected.

COKE

Beehive coke production continued its decline during the last week of February. According to the Geological Survey the output was 194,000 net tons or a decrease of 11 per cent when compared with the preceding week. The cumulative output for the calendar year amounts to barely half that of the corresponding period of 1920.

The Connellsville spot market is quotable at $4.50 for furnace and $5.50@$6.50 for foundry, with asking prices on contract $5@$5.75 for furnace and $6.50 and upward for foundry.

Reports From the Market Centers

New England

BOSTON

Very Dull Market — No Contract Developments — Accumulations Again at Tide—Anthracite Very Quiet.

Bituminous—Extreme dullness in the current market shows no abatement. Steam-users have for the most part such ample reserves and business is so unencouraging that even "distress" coal is absorbed only with the greatest difficulty. On the other hand, there is less coal offering than was the case a fortnight ago; shippers seem to have relaxed their efforts to move current output and there are fewer soft spots. Seldom, even in midsummer before the war, have we seen a situation so bare of significant features. The trade is simply marking time and waiting for better things.

There are practically no contract developments to be reported. The number of buyers who ordinarily take from 25,000 to 50,000 tons for delivery through the season and are now planning to make spot purchases later of perhaps 40 per cent, the other 60 per cent being now on hand or due in March and April, would surprise many operators who are not in close touch with the situation here. This factor will have an important bearing on the course of business in the next three months.

At several of the terminals, and notably at Hampton Roads, there are again some accumulations, notwithstanding strenuous efforts to keep down production. One difficulty is that three days' running yields much more than 50 per cent of one week's output and all the sales agencies face a most reluctant market in every direction. Tonnage at Norfolk and Newport News is not so great as a month ago, but it is enough to press the shippers. Coastwise shipments are very light, and offshore, beyond certain stable contracts, there is nothing whatever.

The proposals opened on Feb. 28 by the Shipping Board give some indication of prices on the smokeless coals during the season about to open. While most of the bids were well up to a basis that would bring $4 per net ton mines, the low figure was $6.50 at Hampton Roads, or $3.30 per net ton mines. One might infer from this that the contract price on commercial business would turn out to be very close to $6.50 f.o.b. vessel at Norfolk or Newport News.

Current quotations are shown in the Weekly Review. Pocahontas and New River are $8.50@$9 on cars Boston, Providence, or Portland.

Anthracite—All sizes, so far as delivery at March prices is concerned, are fast becoming a drug on the market. There is growing a well-defined opinion that the price basis is certain to be lower in April, and because the public is expecting a material reduction in retail prices the dealers are disposed to take chances and postpone taking coal until lower prices can be had. Nothing will so surely restore the demand as continued withholding of purchases.

Rates on anthracite in Reading barges were reduced on March 1 to $1.55, Philadelphia to Boston, the previous rate having been $2.10.

Tidewater—East

PHILADELPHIA

Anthracite Continues in Good Demand — April Reduction Unlikely — Pea Heavy, and Steam Coals Worse—Bituminous Unchanged—Prices Are Firm—Contract Situation Still Thick.

Anthracite—Despite price recessions by some independent shippers, these concerns are considerably above company prices and seem to be able to market their coal fairly well, at least so far as the large sizes are concerned. The independent prices at this time average about as follows: egg, $8.50; stove and nut, $8.85 and pea, $6.50, as compared with average company prices of: egg, $7.70; stove and nut, $8.05 and pea $6.30. It must be remembered that the so-called company prices show a variation of from five to ten cents a ton, as has been the case for the past several years.

All of the companies report no difficulty whatever to market their family coal; it is actually a fact that dealers largely dependent upon company coal have been quite anxious for stove and nut the past week and it has been this that has enabled the independents to get their coal moved at the present prices quoted. On the other hand we know of some egg, stove and nut being sold from 10 to 15c. below company circular. These sales are made by the concerns who marketed a good deal of $13@$14 coal during the past year and now find it necessary to cut quite sharply.

The consumer persists in his hope that coal will be reduced on April 1, but he is soon likely to be disabused of this idea; the retailer is already converted as this week one of the biggest shippers have had their salesmen notifying their trade that there will be no reduction on April 1. This coming from the

company that has been taking the lead in the past several years would seem to indicate the policy of the shippers.

All of the above has convinced retailers that the best investment around the first of April is a yard full of all sizes and they are really making efforts in that direction.

Steam coals are not at all improved and buckwheat of good quality can be freely bought for $3, rice at $2 and less and barley at almost any price. Many of the independent shippers are losing money by having many cars of steam sizes standing awaiting consignment.

Bituminous—Slack times continue in the soft coal trade, with very few inquiries. Many houses have actually taken their salesmen off the road for the time being. Manufacturers are only buying for their actual needs and as a large proportion of them have big stocks they continue to eat into these without replenishing. Most of the consumers admit that the bottom of the bituminous market has been reached and often say that they would buy coal as an investment at present prices were it not for the fact that they have their capital tied up in their business. Prices are quoted in the Weekly Review.

Some big buyers of fuel, such as utility plants, are showing some desire to get under contract for the coming coal year, but the general report is that there is little chance of agreement with the producer. Despite the fact that some large producers have closed business at $4.35, we hear of houses with very good coal even asking as much as $5 for contract. At this rate no business is being done, as the big buyer still prefers the spot market.

NEW YORK

Domestic Coals Accumulate Rapidly—Spring Cut Appears Unlikely—Independent Prices Reach Company Circular—Bituminous Market Dull—Little Buying and Prices Down.

Anthracite—With stocks of domestic sizes accumulating in retail yards and the public waiting for some definite announcement regarding prices after April 1, the situation has changed considerably during the past couple of weeks. There has been a pronounced easing up and all sizes are now plentiful.

The situation regarding independent coals is being reflected at many of the operations, most of them being either idle or working on a curtailed schedule. Premium coals have disappeared from the market, most prices being quoted around the company circular.

Steam sizes are weak. Stocks are accumulating rapidly and retail dealers have about taken in all they can comfortably care for. It is however, apparent that unless more of these sizes can be absorbed it may be necessary to curtail mining in order to keep down the supply. The following range of quotations indicate the trend of the market for independent coals: Buckwheat $2.75@$3; rice, $2.25@$2.75; barley, from 75c. up.

Bituminous—Curtailment of production has prevented a further slump in prices. There are no favorable signs and salesmen who have circulated among the trade, report there is no desire on the part of consumers to buy. Those who have coal in their bins are satisfied to consume it rather than make new purchases even at the present low prices, while those who must buy are only purchasing their immediate requirements.

There is a growing tendency on the part of consumers to ask for individual coals to the detriment of the pool coals. The export and bunker trade is depressed. Many boats continue to lie in the harbor. There is comparatively little demand for coal for export and very little new business is said to develop.

It will be May 1 before the contract business will get under full swing, some of the trade believe. There is no desire on the part of consumers to close contracts now, and operators continue to quote on an average of $4@$4.25, although it is said some shippers are shading these prices 25c.

On March 4 there were 2,222 cars inside the pools and 1,614 cars outside the pools at the various docks. Most of this coal was in Pools 1, 4, 9, 10 and 71.

Mine spot prices are shown in the Weekly Review. Quotations for some pools, f.o.b. Tidewater ranged about as follows: Pool 1, $6.50@$6.75; Pool 9, $6.15@$6.25; Pool 10, $5.85@$6; Pool 71, $6.25@$6.40; Pool 11, $5@$5.25.

BALTIMORE

Bituminous Trading at Lowest Point—Prices Very Soft—General Business Feeling After Inauguration Is for Early Betterment.

Bituminous—With the inauguration a thing of the past there is a general tendency in business as a whole to feel out the possibilities of early re-awakening. In the present market there is much cutting in selling and consumers are not only dictating prices but also are insisting on certain classes of delivery by specifying mines for production shipments.

In the trade, however, there is no idea that the consumer will dictate contract terms after April 1. As a matter of fact, contract quotations on best coals over any considerable delivery period are $4@$4.50, net ton f.o.b. mines. A little later the price is more likely to be around $5 than it is to sink to the level of the present spot market, in which general quotations are around $2.75@$3 for high-grade steam, with some jobbers and other interests here offering considerable quantities at times as low as $2.50. Lower-grade steam is down to $2@$2.25.

Gas coals are hardly quoted at all, and the majority of operations that usually ship here for export or coastwise movement are closed. Pool reserve continues more than ample and the dumpings light. The export movement from Baltimore for the entire month of February only totaled 84,249 tons cargo and 9,420 tons bunker.

Anthracite—Hard-coal men are about in the fix of that famous war song, "Where do we go from here boys." The majority look for little change in the average wholesale price, which will mean practically no change from the existing winter retail schedule.

HAMPTON ROADS

Tide Accumulations Disappear—Prices Unchanged—Market Stagnant.

A total of 1,026,000 tons was dumped at all piers in Hampton Roads during the month of February, which was around 100,000 tons less than for the same month in 1920. During the last week in February 204,000 tons were dumped which was, in itself, a new low record.

Prices remain approximately the same; high-volatile pools in many instances sell for as low as $5 and other pools range $6@$7. Accumulations at Tide have been greatly reduced, as has tonnage awaiting cargo. Shippers look forward to the new coal contract year, April 1, as promising a more stable market, not only for present uses but for fall and winter surplus.

The following cargoes cleared from this port during the week ended March 4:

Am. SS Franklin, for Italy, 7,303 tons; Du. SS Aurora, for Curacao, 1,335 tons; Jap. SS Etna Maru, for Rio de Janeiro, 8,148 tons; Jap. SS Thames Maru, for Montevideo, 6,676 tons; Braz. SS Parnahyba, for Italy, 7,690 tons; Am. SS Javary, for San Pedro, 451 tons; Am. SS West Mingo, for Tiburon, 6,829 tons; Nor. SS Haugarland, for Amsterdam, 9,448 tons; Nor. SS Kagera, for Rio de Janeiro, 7,125 tons; Br. SS Roath, for Havre, 6,369 tons; Br. SS Whahatone, for Auckland, 3,360 tons; Nor. SS Helder, for Dunkirk, 4,117 tons; Am. SS Panaman, for Alexandria, 7,701 tons; Russ. SS Irtysh, for Caldera, 5,037 tons; Dan. SS Progress, for Denmark, 6,206 tons; Br. SS Coquetmede, for Buenos Aires, 5,009 tons.

BUFFALO

Coal on Track Disappearing—Short Mining Will Put Strength in the Market—Anthracite Plentiful—Lake Loading Soon.

Bituminous—Careful observers say there is not nearly the amount of coal in transit that was the case a month ago. One coal man, who makes frequent trips over the Pennsylvania says that not long ago there was a matter of a thousand cars of bituminous standing on sidings and in yards not over 20 miles out of the city. He believes that there is not more than 20 cars now. This means of course that consumption is considerably greater than production and that if this state of things cotinues long the market must stiffen somewhat, in spite of the failure of business to improve. Coal piles in railroad and factory yards are not what they were, though some consumers are still over-loaded. These latter are mostly those who have kept up their contracts in loyal response to the action of the sellers who managed to do the same when prices were high.

The effort to obtain contracts does not succeed well. Both buyer and seller try to make them, but the consumer cannot be convinced that current prices mostly include a loss to the producer and so the offers are about half a dollar less than the operator will accept.

Spot bituminous prices vary considerably, but may be set down at $3.50 for Youghiogheny gas lump, $3 for Pittsburgh and No. 8 steam lump, $2.50 for all steam mine run, $2.25 for gas slack and $2 for steam slack.

Anthracite—There is no longer any shortage in the supply. The notion is abroad that prices are going to be lower through the summer and unless this can be discredited it is going to be hard to get consumers to lay in a winter supply early. Failure to buy early would be very risky, especially if the miners could not be kept at work through the summer.

There will soon be coal enough here to start loading into Lake vessels. It is expected that this work will begin within a week. At least two companies will be ready to take tonnage at the outset. This will insure a good start and ought to provide plenty of Northwest coal in the fall.

Coke—The supply locally is large, so that buying is light. Coke prices are weak and lower, on the basis of $5.75@$6 for 72-hour foundry, $5 for 48-hour furnace, $4.50 for off-grades and stock and $6.25 for domestic sizes, to which add $3.64 for freight to Buffalo.

Northwest

MINNEAPOLIS

Better Tone to Market—Some Industrial Resumption—Prices Fairly Firm.

There was a little better tone to the coal business during the past week, while cold weather was stimulating as heavy consumption as the winter has seen. Zero weather was on hand for several days, and it helped run down stocks in the hands of consumers, even if it did not register much in the way of new orders.

There has been some demurrage coal to be disposed of, but it is not enough to have any serious effect on the market. Sales below the market are for the purpose of getting rid of a temporary surplus and are not accepted as governing the market for any period.

Industrial consumption should show some improvement from now on, for a number of plants which have been down for some weeks have resumed operation, though sometimes upon a smaller scale. This will help steady the market on steam coal, which has been sadly demoralized. People in the local trade are inclined to predict a steady improvement in the market conditions. They point out that screenings are even now firmer. Where they sold as low as $1.25@$1.50 at the mine, prices have been made as high as $2.50 lately. Lump coal is expected to open at around $3.50 at the mines, for the better grades of Illinois, and some predict an advance during April, May and June of 25c. a ton each month to $4.25.

But while this prophecy may prove true for the new season, it is the remainder of the current season that is going to help or harm the showing for this winter. Despite a desperate dullness for current business, there seems to be a slightly better feeling in the trade, as though the worst were over. It begins to look as though the turn had come, commercially. The Northwest has begun to show better business in different directions. The Supreme Court decision favoring the farm loan bank means that there will be released for loans to farmers a great deal of money which will ease up the "frozen credit" situation of the rural districts. Once there is a loosening of the money situation, business will speedily improve in every direction.

MILWAUKEE

Another Cut in Soft Coal—Pocahontas Is Weakened by Heavy Receipts—Coke Inclines Downward.

Balmy weather continues to undermine the fuel market and the coal trade is practically dead. Retail deliveries are on a summer basis and shipments out by rail are only a shadow of what they usually are at this season of the year.

March brought another cut of $1 per ton in soft coal, making the second reduction since Jan. 1. If present conditions continue there will be still further shading, as the opening of navigation is only a little over a month away. Anthracite remains unchanged. The yards are barren of hard coal and the market is supplied by rail.

There is a surplus of Pocahontas on the market, owing to the fact that dealers banked on reasonably cold weather in February and ordered freely. As a result receipts are far ahead of the demand and many cars are on track between here and the mines. Pocahontas mine run now sells at $11.25, but egg and nut hold at $13.50. Pocahontas for steaming purposes is quoted at $10. Illinois and Indiana coal is now listed at $8. Gas coke has been cut to $13.50 for nut and $12 for small nut to meet the recent cut in solvay coke. This market is glutted.

Inland West

COLUMBUS

Coal Trade Settles Back Into Quietude—Increasing Interest in Contracts—Lakes Trade Not Encouraging.

After a week of rather good domestic business the trade has again settled down to inactivity. Everyone appears to be playing a waiting game and contracting is held up as a result. Quite a few inquiries have been received by operators on steam tonnage but prices have not settled down sufficiently to contract for large quantities. Resumption of manufacturing is still slow and consequently fuel requisitions are not large. Reserve stocks are still important and many users will not be in the market for some time.

The Lake trade does not loom up very encouragingly at present. A few vessels at Toledo and other ports have been loaded by concerns having their own upper docks, but this is only a drop in the bucket. Indications point to a late opening of the ore trade and consequently coal shipments will be delayed. It is believed that there will not be much movement before May 15. Practically no Lake contracts have been closed up to date.

The domestic trade is slow because of the mild weather. Retail stocks are still large. Prices are rather steady at former levels, with Hocking lump $7.50@$8, West Virginia lump $8.50@$9.25, and Pocahontas lump around $10.50.

Production is still low and the tendency is downward in all producing fields. Little change is expected in the present month.

CHICAGO

Cold Weather Aids Retailers—Small-Lot Buying Increases—Steam Coals Stronger.

One or two days of unexpected cold weather has done a great deal for the retail trade. On account of this cold snap dealers have been able to move some of the coal that has been bothering them recently.

Practically all retailers are very anxious to move their old stock so that they will be able to load up their yards with fresh coal, purchased at the present prevailing low prices. The public is buying in very small quantities. In fact it is no uncommon thing to have people come into a yard and buy 25c. or 30c. worth of coal. One dealer has informed us that such purchases have risen about 300 per cent. This is probably because a great many of our factories are down and labor consequently is buying in very small quantities in order to preserve its funds.

The steam market is in a little better condition, principally because the domestic trade is so stagnant that little steam coal is offered. Those operators who had foresight enough to put their steam coal in storage last month are now realizing 50c.@$1 over the prevailing prices of February.

DETROIT

Buying Revival Awaited—Prices Fairly Stable—Demand Is Weak—Receipts Are Greatly Reduced.

Buyers have apparently lost all interest in the offerings of wholesalers and jobbers. Very little business is being transacted in either the domestic or steam division. Conceding that the lack of demand for steam coal is a result of the general depression in manufacturing and industrial lines, the trade is making few efforts to force the market.

The opinion is expressed by some of the jobbers, however, that despite the apparent lack of buying interest and greatly reduced consumption, the actual amount used is greater than the volume of present production. Quite a number of the steam plants are using a small amount of coal, obtaining it from re-

serves or from stocks in retailers' yards. Continuance of this policy is very likely to lead to a shortage of supply later which may be reflected in another interval of higher prices. It is explained that development of such a situation may be prevented by the slowness of the business revival.

Lump coal from Ohio is quoted at the mines $3@$3.60. Mine run is $2.60 and slack $2.25, West Virginia and Kentucky slack bringing about the same price. West Virginia lump is quoted $4 for 4-in. and $3.75 for 2-in., with egg $3.50, mine run $2.75 and smokeless mine run $3.75.

ST. LOUIS

Market Is Slightly Better in St. Louis —Outside Call Dull—Contract Movement Lightens.

There has been a slight improvement in the market in the past few days, mostly in the demand for screenings. There has been no real cold weather, but a slight demand for lump helped to steady the market.

A noticeable call for screenings came from steam plants that up to the present have not been using much coal. As the screening market advanced, lump prices began to go down a trifle. Screenings are in good demand at around $1.25 for trunk line coal, that is, coal that will move out of St. Louis proper, while local screenings are somewhat less. Two-inch lump that was selling $2.50@$2.75, is down to $2.25 and hard to move.

The country call is unusually light right now. A survey of the situation develops that nearly all the flour mills in the Mississippi Valley are running about two days a week and other industrial plants are not doing much better.

Domestic call for Carterville coal is rather easy, as is usual at the tail end of each season. Again, there is a great difference in the mine prices asked between the independents and association operators. From now on it looks as if the St. Louis market would be heavy only on Standard coal, if it is heavy on anything at all.

The mine price on Big Muddy came down last week to $5 for 2½-in. lump. Screenings are selling as low as $2.25@$2.50, with very few takers.

There is no anthracite arriving and no smokeless, and no demand for either. Arkansas coal is out of this market entirely. Retail prices the first of March were: Carterville, $8.25; Mt. Olive, $7@$7.25; Standard, $5.75@$6.

Dealers are having a hard time making contracts stick. All contract consumers seem to think that they have a perfect right to violate them and buy on the outside at any price they can. There is some talk of bringing test suits against dealers who are inducing contract customers to violate their agreements.

CLEVELAND

Retail Prices Break — Production Continues Low — Outlook for Steam Coal Brightens — Small Buying for Northwest.

Bituminous—The only rift in the clouds of the coal market has arisen from the prospects for a better market for screenings. This is expected to come from the fact that an oversupply of lump has developed. With the curtailment of production of lump coal, the supply of screenings is falling off considerably and comparatively few lots of this fuel remain on the market. Restricted industrial consumption, together with the fact that factories almost universally are still using up their stock piles, will prevent any rush of buying, however, and the best that can be hoped for is some stiffening of the market. Spot prices are quoted in the Weekly Review.

Although many mines are not producing, authorities in the trade declare that at present prices a number of those still operating are doing so at a loss. They have adopted this policy in order to keep mines open and in readiness for business when it does improve. Observers point out that prices for some grades are at bottom, in view of the existing wage scales which have 13 months to run.

Arrivals of bituminous coal at Cleveland during the week ended Feb. 26 reached a new low figure, namely: Industrial, 618 cars; !domestic, 273 cars; total, 891 cars; compared with 1,184 care the previous week.

Pocahontas and Anthracite—A drastic revision downward has taken place in the retail market for Pocahontas grades, the result of ample supplies, warm weather and the approach of spring.

Lake—Buying for shipment to the Northwest is lagging. The large hold-over stocks at upper Lake points, industrial contraction and expectation of lower prices are all combining to hold buyers from the market. The season may be delayed, but it is expected that regular movements from the mine to lower ports will be under way to some extent by March 15.

Retail prices, delivered, are:

Anthracite—All grades, $14.50; Pocahontas—Shoveled lump, $11.40; mine run $10.30. Domestic Bituminous—West Virginia splint, $10; No. 8 Pittsburgh, $8.45; cannel lump, $12.15. Steam Coal—No. 6 and No. 8 slack, $6.60; No. 6 and No. 8 mine run, $7 50; No. 8 3-in. lump, $7.75.

CINCINNATI

Retail Trade Sluggish with Warm Weather—Spot Market Inactive.

Fulfillment of contract orders is practically all the business that is being transacted by wholesalers at the present time. Continued mild weather still retards the retail trade.

Regarding the future of the market for the fall trade, it is pointed out that everything hinges on just when the demands for coal in the Lake region are supplied. If this supply should be filled early this year, it will be an easy matter to get a plentiful supply of coal for the Cincinnati trade. But in the event that there is any delay due to rail conditions or other shipping trouble, the city may again be held up in the receiving of coal.

Bituminous lump at the mines was quoted $4.50 and nut and slack at $3. Smokeless lump brought $5.50 and mine run $4.

The following quotations are made by retail dealers; bituminous lump, $9.25@$10; mine run, $8.50@$9; smokeless lump and egg, $10.50@$11; mine run, $9.50; anthracite egg, $15@$16.25; domestic egg coke, $14.50@$16.

South

BIRMINGHAM

Market Continues Inactive—No Industrial Improvement—Requests for Railroad Fuel Bids.

The trade here is absolutely featureless and listless. There is virtually no sale for steam coal, consumers showing an utter indifference toward entering the market. With the general industrial depression consumers have sufficient stocks on hand to meet requirements in cases where operations are on a short-time basis or have contracts affording ample fuel for their current needs. As a general proposition all classes of contract consumers are taking as little coal as possible. Well-posted distributors are of the opinion that there will be little or no improvement within the next sixty to ninety days.

The receiver of the Atlanta, Birmingham & Atlantic R.R. has requested bids on fuel requirements for the next twelve or sixteen months. However, the request for bids is only an exercise of the authority under the receivership to abrogate any existing contracts provided more favorable ones can be executed, and is an effort to secure coal at a lower figure than is now being paid. They take approximately 20,000 tons per month from this field.

The almost total absence of any real winter weather this season has placed retailers in a hard row of stumps and the domestic demand is very light.

Quotations have fluctuated little of late and the principal producing interests have refrained from slashing prices below the line of a reasonable profit in an effort to stimulate trade and have met "no market" conditions by closing down mines or partially restricting output Prices are as follows per net ton mines

	Mine Run	Washed	Lump
Cahaba and Black Creek	$4 00@$4 50	$4 50@$5 00	$5 00@$6 00
Carbon Hill	3 25	3 50	4 25
Pratt	3 25@ 4 00	.....	.....
Big Seam	2 70@ 3.25	3 25@ 3 50	3 25@ 4 25
Corona	3 35@ 3 75	.....	6.00

Mine labor is plentiful and there is a surplus of both skilled and common workmen.

LOUISVILLE

Mild Weather Weakens Demand—Screenings Scarcer and Advancing—Consumption Is Light.

Light demand for prepared sizes as a result of mild weather is causing lower prices and smaller production. Higher prices for screenings have re-

sulted which is aiding in balancing the tonnage price of the mine.

Not a field of eastern Kentucky is quoting screenings under $2 this week, whereas they were quoted as low as $1.25 two weeks ago. On the other hand lump coal which sold at $4 and up is generally quoted at $3.75, and prices could probably be shaded under that figure. Mine run prices are remaining rather firm as a whole.

It is conceded by many operators that prospects are not good for an early revival of demand, although the Lakes trade should start early. However, with the present low industrial operation consumption is bound to be weak. Gas coal is in weaker demand than for a long time past, due to small operations of steel and metal-working plants, and lack of demand on the part of gas or byproduct plants.

Harlan and Straight Creek mine prices are firm. The Jellico field has a very fair Southern demand, and is quoting $3.85 for lump; $3 for mine run, and $1.95 for screenings. Hazard and Elkhorn prices are together at $3.75 for lump, $2.50 for mine run, $2@$2.10 for screenings.

Southwest

KANSAS CITY

Low Domestic Demand Creates Steam Call—Fuel Oil Cuts Into Coal Market.

A shortage of steam grades has developed in the Southwest due to the light production of domestic coal. Little activity is noted in other grades. No material changes in prices have been made for some time and operators state there can be no reduction until there is a like reduction in cost.

When fuel oil seeks a market coal cannot compete with it and fuel oil is now selling "on the open" at points like Wichita for 75c. a barrel. This is equal to $2.75 per ton for coal, delivered. Springlike weather continues and mine idleness, to say the least, has not grown any less.

West

DENVER

"No Market" Losses Severe—Lignite Prices Drop.

Lack of orders in both bituminous and lignite fields reached what is perhaps the low level for the winter during the week ended Feb. 19, when 109,331 tons were sacrificed because of "no market." The lack of activity represented an equivalent of fully 60,000 tons in bituminous, which, up to recent weeks, enjoyed a better general outlook than lignite.

Prices on bituminous, however, are holding up while the lignite sales have brought a decline, the latest being a 25c. cut on steam. The mine price dropped to $2.15 and retail is now $5.05. Louisville lump, after a 50c. cut made several weeks ago, is down to $5.25 at the mine and $9.25 retail, while Weld lump, after undergoing a similar cut, is $3.50 mine and $7.25 retail. Routt bituminous, despite several attempts to undercut the price, is generally holding at $6.50 in this and the southern Colorado fields, bringing $12.50 and $11.50 respectively in Denver. Bituminous steam is steady, $3@$3.50 at the mine and $6.25@$6.75 in retail lots.

Car distribution troubles, due principally to heavy snows on the Moffat road leading to the Routt County field, lessened production equivalent to 40,000 tons for the week ended Feb. 12, and 37,500 tons for the week ended Feb. 19, when actual production was 168,637 tons of a possible fulltime output of 268,861 tons.

Canada

TORONTO

Market Continues Inactive—Domestic Demand Light—Slight Improvement Indicated for Future.

The market remains very inactive. The weather generally continues unseasonably mild and dealers are well-stocked with anthracite, shipments from the mines coming forward promptly. Dealers note a slight improvement in bituminous, owing to the resumption of activity in some industrial lines and an increase in inquiries indicating a more active demand in the near future.

News From the Coal Fields

Northern Appalachian

UNIONTOWN

Further Tonnage Reductions—Railroads Increase Contract Offers—Spot Markets Are Extremely Sluggish.

A further cut in production was put into effect last week by the H. C. Frick Coke Co. Coke plants of the Steel Corporation's subsidiary are now operating at 60 per cent and coal plants at 65 per cent. The drop has been made in a two weeks' period, the corporation prior to that time having operated all plants virtually at capacity for several months. There is no indication that the Frick company has reached the low point of production. Each week sees a few more independent ovens added to the inactive list of the past few weeks.

The production status of the industry correctly reflects the market which is barely existing on the few spot orders being placed. It now appears that there is little possibility of any railroad fuel contracts being placed, mainly because of the price views of purchasing agents. The inquiries for railroad fuel, first having a firm figure at $2.50, now cover a range of $2.35@$2.60. Connellsville operators were not interested in the $2.50 bid and they are not showing a disposition to accept the $2.60 offer.

There is hardly sufficient tonnage moving to establish a market but some steam coal is being sold $1.60@$1.75, with other operators holding tonnage on track for $2. Byproduct is quoted $2.25@$2.75 with $2.50 as the figure at which most is sold. There is a minimum of spot coke in the market but here and there a car is sold for $4.50@$5. Foundry coke carries $5.50@$6 quotations but most sales are recorded at $5.75.

PITTSBURGH

Market Continues Stagnant — No Interest in Contracts—No Wage Developments.

There are scarcely even tentative negotiations on contracts for the coal year beginning April 1. Presumably sellers and buyers are far apart, although buyers do not seem to have expressed any definite views as to prices. As noted in previous reports, the Pittsburgh Coal Co.'s price on mine run steam is $3.25 and some large independent operators have stated their intention of adhering to prices of $3.50@$3.75, this being in the absence of actual negotiations.

As to the spot market, it is still very soft. Offerings are extremely light by comparison with the normal turnover in the market, but demand is lighter still. Practically the majority of sales are made at price concessions, due to one influence or another, much of the tonnage being demurrage coal. A few small operators, however, are evidently attempting to run on regular sales made in the spot market at such prices as are obtainable. The large operators all endeavor to restrict their output to contract requirements.

There is a distinct lack of definite developments as to wages. It has been said in some quarters for weeks past that the wage subject will be opened within a short time, on the basis that the scale signed to April 1, 1922, has become altogether out of line with general conditions, but no definite move is being made.

CONNELLSVILLE

Trade Marking Time — Consumption Decreases — Wage Reduction Expected.

There is no demand in the market except for small lots of foundry coke, and very light demand against contracts. While the total amount of furnace coke placed under contract for the

present half year was less than normal, actual shipments are far below this amount, simply because most of the furnaces involved are out of blast. Only one-fourth of the merchant blast furnaces in the Mahoning and Shenango Valleys are operating, and some of those now operating contemplate blowing out within the next few weeks. Merchant furnace operations in the country at large are only three-fourths as heavy as last September, and now many of the steel works furnaces are out. Coke production by the merchant ovens in the Connellsville region has been extremely light for weeks and now production by the furnace ovens, chiefly steel works interests, is decreasing from week to week.

Independent operators feel that there should be a heavy reduction in wages, but are indisposed to attempt to take action at this time, there being expectation that the H. C. Frick Coke Co., the Steel Corporation subsidiary, will revise wages in the coure of time, as part of a general wage reduction by the Steel Corporation.

The spot market is quotable at $4.50 for furnace and $5.50@$6.50 for foundry, according to grade, with asking prices on contract $5@$5.75 for furnace and $6.50 and upward for foundry.

The *Courier* reports production in the week ended Feb. 26 at 97,040 tons by the furnace ovens, a decrease of 16,870 tons, and 23,780 tons by the merchant ovens, an increase of 2,370 tons, making a total of 120,520 tons, a decrease of 14,500 tons from the preceding week.

EASTERN OHIO

Better Industrial Tone—No Improvement in Demand—Prices Firm—No Contract Interest.

While there has been some revival in general industry and the outlook is considered brighter than at any time during the past few months, production for the week ended Feb. 26 was less than that for any since the switchmen's strike during April, 1920. However, Washington's Birthday, resulting in a five-day week, contributed largely to this. Reports covering 170 mines indicate production of 224,000 tons, which is 44 per cent of a five-day potential capacity, or 37 per cent, based on a six-day week. Decrease in production compared with the previous week was 36,000 tons.

No improvement is discernible in the demand for steam coal. In exceptional cases prices have been shaded in spots in order to keep mines running. The opinion is expressed that present prices are so close to actual mining costs it is preferable to close the mines rather than lower prices any further.

Certain Canadian contract shipments which had been suspended temporarily have been resumed. A slight recovery is also reported in the domestic trade, no doubt caused by exhaustion of the hand-to-mouth supplies of householders and a slight recession of retail prices. There is as yet no indication on the part of industrial consumers to negotiate for new contracts.

Spot mine prices are about as follows:

Slack	$1.75@$2.00
Mine run	2.00@ 2.25
¾-in. lump	2.75@ 2.90
1¼-in. lump	3.00@ 3.25
Domestic lump	3.25@ 4.00

CENTRAL PENNSYLVANIA

February Production Low—Operations Further Curtailed.

Production for the month of February offers but little of an encouraging nature of a return to normal conditions. Records show a total of 56,300 cars loaded or approximately 3,000,000 tons. The January record was 67,037 cars and for December, 1920, 94,018 cars, while the output for February, 1920, was 3,635,195 tons.

Producers say they are making little or nothing and that their only object in operating at all is to keep their organizations together. Many of the mines are working but half-time and with those closed production is down to about 40 per cent of normal. Many complaints are heard from operators relative to the high freight rates now prevailing. It costs from $3 to $4 a ton to ship to the Eastern consumer, and makes the cost too high. This hurts the manufacturing industry and reflects back to the coal fields.

FAIRMONT AND PANHANDLE

Slight Awakening of Buying Interest—Spot Sales Are Few—Production Maintained.

Fairmont

Aside from slightly increased Tidewater shipments there was little change in the situation during the week ended Feb. 26. The nature of inquiries made by buyers indicated that they expected to contract for coal at prevailing prices and practically no business has been done to date. Curtailment of operations continues as there is no spot demand to speak of. The prices offered by buyers were too low to receive recognition, ranging $1.75@$2.50. Offers of railroad contracts at $2.40@$2.50 were generally opposed by producers.

Northern Panhandle

There was no hardening of prices nor any appreciable growth in production as a result of slightly increased sales, the coal sold evidently having been taken out of storage piles. Although less than a month away, no new contracts have been closed so far as could be learned.

Middle West

MIDWEST REVIEW

Trading Is Quiet—Screenings Stronger—Credits in Northwest in Bad Shape—Contract Inquiries Increase.

There appears to be a slight resumption of industrial activity in the Middle West and this, to some mild extent, has strengthened the market on steam coals, but the main factor in the improved condition is the fact that operators are having a great deal of trouble in moving their domestic sizes and consequently are unable to produce the steam coal required. This is perhaps putting it a little strong, because there is more than enough steam coal to go around. It would perhaps be better to say that the market is no longer flooded with cheap screenings and that those who have screenings for sale are getting better prices.

If for any given reason it becomes necessary during the next sixty days for the mines of this country to produce their maximum tonnage it would find the railways woefully unprepared. An executive official of one of the largest railways serving this territory told us that they were making no repairs whatsoever and had closed all of their repair shops. When asked why, he replied that labor was getting so much money that his road was forced to take this step as a saving precaution, especially in view of the fact that the returns had been shrinking materially since November, and that the road anticipated that later on wages would be more reasonable, as soon as the general public understood the situation. Equipment on his line is in pretty bad shape, but as there is practically no traffic, they are retiring for the time being their bad-order equipment and letting it stand on side-tracks until such a time as they will have a chance to repair it at a reasonable cost.

In the Northwest the situation continues in the doldrums. A sales agency covering that part of the country reports that it will no longer take checks from its customers, as in a number of cases, checks had been received from customers whose accounts were good, but were drawn on banks in the Northwest which failed before the agency had a chance to cash them. In a great many cases, shippers are insisting that coal shipped into that territory be paid for with money orders, or cash.

Those purchasing coal are sending letters broadcast requesting contract quotations but we have not heard of any case of contracts being closed for a substantial tonnage, although some small contracts have been signed. Those who are in a position to know what they are talking about, do not predict any material improvement in the near future in the coal industry. They do, however, believe that by July the demand for coal will be up to normal and by October and later on, the call will be very strong and market conditions good.

SOUTHERN ILLINOIS

Mine Idleness Is General—Prices Pared Down—Railroad Tonnage Diminishes.

The Standard field situation is an aggravated one. With the mildest winter on record some mines have been idle now for many weeks and in many places miners are actually in want. Commercial mines work one and two days a week as a rule. Mines with railroad contracts sometimes get as many as four and five days.

The bulk of this coal is going into

St. Louis, and prices are not as a rule above the cost of production. Domestic demand is easing, and operators are trying to find an outlet for their fuel in other steam markets.

Two days a week seems to be about the average working time at the commercial mines throughout the Mt. Olive district. In Mt. Olive and Standard over 800 acres of coal were left unbilled Feb. 28.

The prospects are that the working time will get down to one day a week at many commercial mines. Price for St. Louis shipment on domestic sizes is $3; country shipments range $3.25@$3.50, with most of the steam going on contract.

In the Carterville field of Williamson and Franklin Counties the situation is far from satisfactory, and is generally accounted for by the unusually mild weather. Working time ranges down to one day a week.

Railroad contracts have helped out wonderfully, but this tonnage is beginning to diminish on account of roads using up their storage coal. Some mines are idle an entire week at a time, on account of inability to move all sizes. Several operations are putting steam sizes on the ground, figuring that spring and summer buying of domestic is going to be slow and that steam coal will be in good demand.

Independent mines are getting anywhere from $3@$3.50 for domestic sizes, $2.50@$2.75 for mine run and $1.75@$2 for screenings. These prices are about the same as are being secured in the Duquoin field.

WESTERN KENTUCKY

Steam Demand Only Fair—Market Generally Draggy and Operations Very Light.

Operators are not pessimistic over the present situation, as it is believed that following a short period of dullness there will be a very fair demand from the North and Northwest, where western Kentucky mines have developed markets.

It is realized that during the period of shortage it was possible to sell coal in markets where freight rates were against the operators. However, the West Kentucky Coal Bureau is working steadily on getting adjustments in rates to Michigan, Arkansas, South Atlantic points and elsewhere, where there is a good demand for fuel.

Demand for lump is expected to be good enough after a few weeks, and the principal question is in developing outlets for steam coal, especially screenings. With demand for eastern Kentucky lump slumping and screenings becoming scarce as a result, it is believed that there will soon be a readier market for western Kentucky screenings.

Principal quotations made this week are quoted in the Weekly Review. Average for the field last week showed lump, $3.40—range, $3@$4; mine run, $2.60—range, $2.25@$3; screenings, $1.75—range, $1.40@$2.50.

Middle Appalachian

LOW-VOLATILE FIELDS

No Improvement in Market Conditions —Spot Trading Extremely Light—Few Contract Negotiations.

New River and the Gulf

Gulf operations were confined to about two days during the week ended Feb. 26. There was really no improvement in market or operating conditions. It was simply a question of having or not having contract orders. Standing orders were diminishing and accounted for the 33 per cent production in the region as a whole. Operators seem resigned to their fate in the hope the business would pick up after the opening of the new coal year.

Production in the New River region was just about on a par with the preceding week. Scarcely any tonnage except distress coal was being disposed of in the open market. Shipping of coal on consignment was curtailed both by the action taken by railroads and through the pinching administered to those who had been called upon to let their coal go for a song.

Pocahontas and Tug River

Mines in the Pocahontas region were only producing 40 per cent or less. The output was slightly under 200,000 tons with losses running over 300,000 tons. The market appeared to have settled down somewhat and there was a feeling of optimism among operators that the present basis of conditions will facilitate an early recovery. Very little had been done toward closing new contracts.

Although there was a slight increase in Tug River production, the output reaching 57,350 tons, yet the slightly heavier loadings meant very little by way of improvement in general conditions. Much less coal was being absorbed by the railroads.

HIGH-VOLATILE FIELDS

Operations Confined to Contracts — Sluggish Trade Reflected in Mine Idleness—No Spot Market.

Kanawha

Maximum production on any one day was not in excess of 13,000 tons, dwindling to 9,000 tons at the close of the week ended Feb. 26. Warm weather and industrial inactivity precluded any recovery from the slump in demand. The only mines still in operation were those with contract holdings, while curtailment of contract shipments was still in order to some little extent.

But little contracting was being done. Tidewater and Inland markets were equally dull, the volume forwarded on consignment was steadily diminishing.

Logan and Thacker

Logan loadings were slightly larger than during the previous week, climbing up to about 140,000 tons due to the temporary need of regular customers for larger tonnages. Certainly the increase was not due to a heavier spot demand which if anything, was even lighter than heretofore. One grade was in as little call as another. Mines in general were not operated more than two days at the most.

There was a rather perceptible decline in the Thacker region, 50 per cent of capacity being the average worktime. Contracts had undergone a very pronounced curtailment, yet few mines, in view of such conditions were shut down entirely.

Northeastern Kentucky

February ended with a slight improvement in production, regarded, however, as being of a temporary nature. The output reached 51,000 tons or 25 per cent of potential capacity, mainly due to "no markets." The increase in demand was not reflected at the mines except as to prepared sizes.

Virginia

Mines were managing to hold on to contract business although production was gradually diminishing, being close to 50 per cent. But little coal was being mined except on a contract basis.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Markets Continue Dull — New Lake Rate Established—Operating and Traffic Conditions Good.

But few inquiries are coming in from consumers. In order to sell coal now it is necessary to hunt out the buyers and offer them the best coal in the field at a very low price. The near end of the winter has put the domestic coals on the market in large quantities and prices are steadily falling. However, this is having the effect of forcing the price of steam coal upward, as it is impossible for the mines to operate on $1.50 nut and slack unless they can get as much as $4.50 for block.

Quotations run $4@$4.50 for block, $3 for mine run and $3.25@$3.50 for gas-producing egg. The L. & N. R.R. has voluntarily re-established the competitive Lakes rate from this field, which means a great deal to the operators.

West

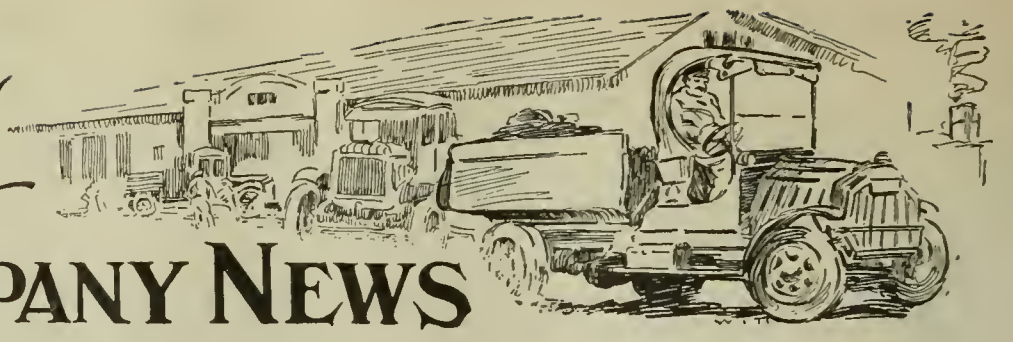
UTAH

Mine Idleness Growing — All Demands Are Weaker.

Mines are working 45 per cent of capacity and leading producers see no immediate improvement. Many industrial plants are working part-time or have closed down entirely, while the Coast trade is not good. Colder temperatures have abated and the domestic demand is inactive.

Operating conditiors are ideal, as cars are plentiful and labor is working at topmost efficiency.

MINE And COMPANY NEWS



ALABAMA

The Alabama Supreme Court has overruled a motion for a rehearing in unlawful detainer cases brought by union miners in the Alabama fields in the lower courts and appealed to the Supreme Court, which recently affirmed the decisions in the circuit courts sustaining the right of operators to eject strikers from their houses under the provisions of the house leases which terminated the right of the striking employees to occupy such houses at the expiration of twenty-four hours' notice to vacate the premises. Striking miners are now vacating houses throughout the district and taking up their abode in tents provided by the United Mine Workers.

Car No. 5, of the United States Bureau of Mines, with headquarters at Butte, Montana, is in the Birmingham District, and will make a tour of the coal fields of Alabama and give instructions to mine workers in mine rescue and first aid work. This is an all-steel railroad car eighty-three feet in length and weighs eighty-five tons, being one of eleven similar cars now in use in the coal fields of the states. The car will remain in the district several months.

ALASKA

Shipments to be made to Alaska this year by the Alaskan Engineering Commission will include machinery for washing coal produced on the Matanuska branch of the government railroad in the North. The coal washing plant will be erected near the Eska coal mine, which is located about 60 miles north of Anchorage. It will be used in cleaning Alaska coal for railroad and local consumption.

COLORADO

Members of the Colorado legislature were given the producers' viewpoint of the cost of mining and shipping coal, at a dinner given by the **Colorado-New Mexico Coal Operators' Association** recently in Denver. The gathering, while not directly leading to the discussion of proposed coal legislation, was supposed to give the operators' side of the situation. Fred Farrar, former attorney general of Colorado, now general counsel for the Colorado Fuel & Iron Co., said the company's wage bill for 1920 was about $8,957,000 or an average of $2.158 per ton. The company produced about one-third of the 12,000,000 tons mined. Gross returns to the company averaged per ton of coal $3.427 on which the average net profit was $0.244 per ton. In 1919, he said, the company lost $0.078 a ton, and in 1918, it made a profit of $0.099 a ton.

David W. Brown, president of the Rocky Mountain Fuel Co. and head of the association, presided at the dinner meeting, which was well attended.

Three men were instantly killed and two others are missing and a sixth had a narrow escape from death as the result of an explosion in the M. &. P. slopes of Mine No. 2, located a mile and a half west of Oak Creek, owned and operated by the **Moffat Coal Co.** of which S. M. Perry of Denver, is the president.

Recent surveys for branch lines of the Denver & Rio Grande R.R. hold the prospect of **opening up a new anthracite field** near Somerset. The only Colorado anthracite field now served by railroad is the Crested Butte territory. The proposal, as considered by railroad officials, is said to include a proposed line from Somerset to the Glenwood Springs branch of the main line, a distance of thirty-five miles, standard gage, and a twenty-three mile standard gage line to replace the narrow gage line from Crested Butte to join the Glenwood Springs branch.

ILLINOIS

From present indications Franklin County is to have a new coal mine located at Mulkytown near the line between Six Mile and Tyrone Township. A new company is being formed to take over four sections of coal land from **C. H. Pope** of Herrin, lying between that village and Little Muddy River.

Two men are dead and a third is expected to die from the result of an explosion in Mine No. 8 of the **O'Gara Coal Co.,** at Eldorado. The explosion was caused by gas being ignited in a room in which the three men were working. The mine was in full operation at the time of the accident and over four hundred men escaped accident. The mine is about four hundred feet under the surface and is subject to more or less gas.

The Consolidated Coal Co., of St. Louis, has recently let contracts for the construction of a $500,000 electric power plant to be built at Mine 15 near Mount Olive. The plant will furnish power for several of the company's mines in that vicinity. A new steel tipple which will cost in the neighborhood of $50,000 is also an improvement which is now being planned for the mine. The new power plant will be equipped with four 600 hp. boilers and three turbine engines to be connected directly with large generators.

After a shut down which lasted over two and one-half months, the mine of the **Assumption Coal & Mining Co.,** at Assumption has been re-opened. The mine is one of the deepest in the vicinity.

Seven men have been given up for lost in the fire which was discovered in the Kathleen mine of the **Union Colliery Co.** at Dowell, six miles south of Duquoin. The mine is controlled by the Union Electric Light and Power Co. of St. Louis.

Three shot-firers are believed to have been killed by an explosion in Mine No. 5 of the **Centralia Coal Co.,** two miles south of Centralia, which wrecked the northeastern section of the mine. The body of Harry Warren was recovered.

A new company known as the **Newcastle Coal Co.,** of Edwardsville, has been formed and will re-open and operate the Henrietta mine, in Madison County, which has been idle for the last eighteen months. Work has been started on cleaning up the mine preparatory to operation and pumps have been set to draw out the water.

On account of the depression of the coal market for the last six weeks, the **Aladdin Coal Co.,** has shut down its No. 3 mine near Tamaroa. The company owns a number of mines in Perry County, and finds it difficult at this time to keep orders ahead to keep all of them running full time.

Mine No. 7 of the **Peabody Coal Co.,** located at Kincaid, recently broke its hoisting record when 4,705 tons of coal were hoisted in 8 hours time. A total of 1,411 dumps were necessary to hoist this large amount of coal. The last record of the company was made in March, 1920.

INDIANA

The McLaughlin-Young Coal Co. has been incorporated, following the purchase of a tract of coal land near Linton, where strip-mining operations will be conducted.

An order to pay the former employees of the **Shelby Coal Co.,** Terre Haute, wages totalling about $6,500, which were due them when the company went into the hands of a receiver, was approved by Judge Gleason in Superior Court No. 2 recently. Claims had been made by 40 or 50 men who were in the employ of the company and the court said that they would receive nearly the full amount due them.

Values are falling pretty fast when a coal mine can be bought for $10, but a deal for this amount was made at Brazil, Feb. 11. Thomas McGuire, who has been conducting a stripping mine north of the city for the past year or more, sold his mining property to **Hutson Bros.** for a ten dollar bill. The mine has produced a large quantity of good block coal. Slack orders and trouble with water in the pit caused McGuire to forsake the role of coal operator.

A company has been formed to operate the **Bellevue coal mine** in the Carlisle section. Operations were discontinued several years ago. About 200 men will be employed at the present time.

The C. R. Cummins Coal & Mining Co. of Ohio filed papers with the Secretary of State of Indiana, to qualify to do business in Indiana. The total of $1,500,000 of the company's capital stock is held by Indiana people. J. P. Watson of Oakland City is named as the Indiana agent.

Just before the property listed as delinquent in Sullivan County was put on sale recently by County Treasurer Ed P. Snow, the **Indiana Coal Co.** gave the county treasurer a check for $9,000 in payment of its alleged delinquent taxes, and the coal property was not offered for sale.

A petition asking that the name of the **Ferguson-Spears Coal Co.** be changed to that of the **Ferguson Coal Co.** was filed in the Circuit Court at Terre Haute recently.

The J. Woolley Coal Co., of Evansville, has moved a drilling outfit to Carlisle, preparatory to re-working the old Bellevue mine, three miles south of that city. The mine was operated by the Bellevue Coal Co. about ten years ago. The coal is of good quality, but the price paid then was only 85c. per ton and it was abandoned. It will be several months before operations can begin.

KENTUCKY

In spite of dull conditions in the fields several new coal companies have been chartered recently. Among this list were: **Hombre Coal Co.,** Hombre, increased capital from $55,000 to $100,000. **Bailey-Ferguson Coal Co.,** Prestonburg, $200,000, Marie Bailey, James G. Bailey and S. C. Ferguson. **Campbell Block Coal Co.,** Hazard. $50,000, J. G. Campbell, E. L. Campbell and R. H. Holliday.

MINNESOTA

Committees of investigation of the dock coal situation have been named from the House and Senate of the Minnesota Legislature, and are expected to work jointly with a similar committee from the Wisconsin Legislature. The coal trade views this step with amused boredom. Almost every legislature goes through something of the kind, and the net result is nothing. Whatever may be assumed to be wrong with the coal business, it is certain that the source of trouble is not in Minnesota nor Wisconsin and cannot be reached by a committee from the legislatures of either of the states.

OHIO

The Progress Coal Co., recently chartered at Columbus with a capital of $100,000 has taken over a mine near Nelsonville which was formerly operated by the Ohio Consolidated Coal Co. The property consists of 200 acres and has a rather modern plant. The product will be sold through the Ohio Consolidated Coal Co. Incorporators are H. H. Palmer, C. Baker, R. C. Kyle, S. E. Ranney and E. E. Learned.

The Crab Orchard Mining Co., which recently secured a lease on a tract of 240 acres of land in the southwest corner of Harrison County will soon start the erection of a modern plant, including a power unit of 100 kw. One seam is now being worked by hand. With the completion of the plant about April 1 it is planned to work the second seam from the top also. The seams are known as No. 6, No. 6A and No. 7.

A number of new operating concerns have been chartered in Ohio recently, which shows a renewed interest in development work, despite the slump in the trade. Among the number are: **St. Clairsville Coal Co.,** of St. Clairsville, capital, $30,000, A. W. Kennon, A. E. Host, T. H. Gaston, N. K. Kennon and E. N. Boggs. **Mapleton Land & Coal Co.,** Canton, capital, $5,000, A. N. Wade, A. M. Seebach, A. F. Wade, E. V. Crowe and T. B. Wade. **Forest City Coal Co.,** Cleveland, capital, $50,000, Fred F. Klingman, Milton C. Portman, Perry L. Graham, C. C. Townes and M. B. Bernage. **Klein, & Moore Coal Co.,** New Philadephia,

capital, $50,000, C. W. Klein, Gladys Klein, James B. Moore, C. J. Moore and R. G. Moore. **Honest Coal Co.**, Akron, capital, $10,000, J. W. McCoy, J. T. McCoy, V. R. McCoy, George Heincke and E. V. Maguire.

Organization of the newly incorporated **Bruner Coal Mining Co.** was perfected at a meeting held in Springfield. P. H. Bruner was elected president and general manager; Edward Schuler, vice-president, and Homer Cramrine, secretary and treasurer.

Effective Feb. 8, the name of the **Massillon-Belmont Coal Co**, McClymonds Bldg., Massillon, was changed to **The New Pocock Coal Co.**, and the following officers announced: Wm. F. Kutz, president-treasurer and general manager; Jas. E. Willison, secretary; Wm. Penman, first vice-president, and J. C. Haring, second vice-president. This company operates Bethel mine at Flushing in Belmont County, as well as other mines at Cambridge, Uhrichsville and Massillon.

The Ten X mine of the **Western Fuel Co.**, located near Orbison, which was flooded early in January has been put into operation, as the water has been pumped out. The mine was flooded by water breaking into it from the Pittsburgh Coal Co.'s mine which adjoins it on the north.

The annual stockholders meeting of the **Lorain Coal & Dock Co.**, was held recently. The board of directors elected at the meeting consists of Edward Johnson, F. W. Braggins, R. L. Windermuth, J. L. Johnson, E. M. Saunders of St. Paul; M. V. Seymour of St. Paul; C. R. Saunders of Cleveland and G. C. Miller, New York. No change was made in the list of officers who are: Edward Johnson, chairman of the board of directors; F. W. Braggins, president; R. L. Windermuth, vice president and general manager; J. L. Johnson, second vice president; Ray L. Phelps, secretary and treasurer and W. M. Amos, assistant secretary and treasurer.

PENNSYLVANIA

Production of coal during 1920 in the **Eighth Anthracite District** reached 3,230,363 tons, but this was more than one million tons below the production in 1919. The report shows that the several general strikes called by the Pennsylvania Coal Co. completely tied up the Pittston district. Out of the 8,743 men employed by the various companies, there were only 31 victims of fatal accidents. The non-fatal accidents numbered 36. The production by companies and collieries follows:

Pennsylvania Coal Co.—

Ewen	522,661
No. 9	586,320
No. 14	609,501
No. 6	462,341
Barnum	130,427
Hillside Coal & Iron Co.	648,449
Hudson Coal Co.	235,545
Hudson Coal Co. washery	6,898
Quin Coal Company	26,313

Charles W. Watkins, of Dorranceton, had signed contracts for the total use of his patented automatic mine-stops and railway brake to the **Hudson Coal Co., Delaware and Hudson Co.**, and the **Northern Coal & Iron Co.** He also signed agreement for use of his patented car-stop, car-holding ratchet for mine carhauls and cut-out switch for safety and efficiency with telephone service in mining to the **D. L. & W. R.R. Co.** and the **D. L. & W. Coal Co.**, and all departments.

The first report of the **Thirteenth Bituminous district**, which includes largely mines in Cambria County and which was established on June 1, 1920, has just been filed with the State Bureau of Mines and shows a big production for the period beginning June 1. The new district includes mines along the Cresson and Irvona railroad, Flinton, Fallen Timber and points in southern Clearfield County. Several large new operations are being opened. There are 98 mines, of which 94 were in operation and the total output for the period was 4,449,382 tons. There are 99 coke ovens in the district and the mines employ 5,968 men.

Total production in the **Twentieth Bituminous district** in 1920 was 5,562,265 tons. This was an increase of 178,385 tons over 1919. There were 22 new mines opened in the district during the year, bringing the total to 138, of which 134 were in operation during the year. These mines employed a total of 7,294 men, inside and out. The Twentieth district embraces mines in the rich fields of Somerset County and includes such big operations as the Consolidation Coal Co., which alone produced 1,350,677 tons, the Hillman Coal and Coke Co., The Quemahoning Coal Co. and others.

The West Bethlehem Coal & Coke Co. has been incorporated for $1,250,000 under the laws of the State of Delaware. Incorporators are: Wilbur A. McCoy, Pittsburgh, W. J. N. Lofland and T. Frank Jackson, of Dover.

A decrease in coal production of almost 250,000 tons in the **Twenty-fourth Anthracite inspection district** is shown in the annual report. Anthracite produced in 1920 totaled 2,510,165 tons, as compared with 2,759,719 in 1919. The district comprises thirteen collieries. Most of the fall-off in production is attributed to the unauthorized walkout of miners last September. Fatal accidents in 1920 were twenty-one, against twenty-three in 1919.

A low accident record was established last year in the **Tenth Anthracite district**, according to the 1920 report. There were only 15 fatal accidents among the 5,611 mine workers employed in the twelve collieries of the district. Production showed that during the year there were 211,000 tons mined to each fatal accident. The year was one of the best in the history of the district. Total production was 3,165,033 tons, an increase of more than 200,000 tons over 1919. Production by companies was as follows:

Hudson Coal Co.	1,011,051
Lehigh Valley Coal Co.	695,359
D., L. & W. Coal Co.	578,198
Haddock Coal Co.	170,637
East Boston Coal Co.	164,115
Traders Coal Co.	154,059
Wilkes-Barre Colliery Co.	141,219
Raub Coal Co.	87,499
Central Coal Co.	67,027
Conlon Coal Co.	66,009
Healey Coal Co.	29,860
Total	3,165,033

There was a decrease in the production of coal in the **Fifth Anthracite district** during the year 1920. This was due, to the fires raging in the Central and Continental workings and the water in the Sloan. The total output for all purposes was 2,353,740. In order to mine the vast amount of coal the services of 4,855 men and boys were required. There were twenty-three fatal accidents in the district, and fifty non-fatal.

TENNESSEE

The Federal Coal Co., of Chattanooga, has been added to the list of concerns engaging in the coal export business through Charleston. It is possible that the Federal Coal Co. may ship additional cargoes through Charleston, but no definite statement as to the future program is available.

UTAH

The Cameron Coal Co., Salt Lake City, has filed a protest against paying upon a valuation of $120 an acre for its land. The company claims that about 60 per cent of it is worked out, with no coal remaining.

The Standard Coal Co., Salt Lake City, has filed its annual returns with the state authorities showing real estate and improvements in Carbon County valued at $340,301.44. **The "National"** shows property in Carbon County to be worth $44,566.

WEST VIRGINIA

The Standard Tide & Inland Coal Sales Co. of which Geo. H. Ewald of Charleston is president and general manager and which was recently chartered with a capitalization of $50,000 expects to handle smokeless splint, gas and by-product coals and also eastern Kentucky coals.

Purchase of 975 acres of Sewickley coal in Cass District of Monongalia County on the east side of Dunkard Ridge has been consummated by **Frank Shriver** and the **Purseglove Coal Mining Co.**, the mining company paying for its share of the acreage purchased, the sum of $100,000. The acreage purchased by the Purseglove Coal Mining Co. is in close proximity to the coal property now under development by that company and the Morgantown & Cleveland Coal Co., owned by the Purseglove interests. This land was secured for development purposes and will be developed along with other properties of Scotts Run and Robinson's Run in Monongalia County.

Charles A. Winchester and others of Charleston have formed the **Duffield-Winchester Coal Co.** which will operate in the Kanawha field, this company having a capital stock of $25,000. Associated with Mr. Winchester in the new company are: W. E. R. Byrne, John H. Linn, J. C. Given and E. S. Bock.

Four tracts of coal land aggregating 70 acres of land have been sold by the Hue Coal Co. to the **Reed Run Coal Co.** This coal is in Morgantown district of Monongalia County and is in the Freeport vein. The consideration is $20,925.

As against a potential capacity of 21,538,238 tons, only 9,550,547 tons of coal were produced in the Logan region in 1920. Railroad disability and car shortage caused the loss.

Many West Virginia operators are hard pressed financially because they cannot collect for shipments made to the railroads during the latter part of 1920. The railroads are without funds to meet their fuel bills owing to the heavy drains made by high operating expenses. While it is of course impossible to even approximate the amount due operators, yet some idea of the accounts remaining unsettled may be conveyed when it is said that there is due one company alone by an Eastern railroad for coal shipped last November, the sum of between $60,000 and $70,000. A large New York concern which has mines and connections in West Virginia has been unable to collect more than half a million dollars due it by several of the biggest roads in the country for fuel shipped many months ago.

Clarksburg capitalists are behind the newly organized **Elk Hill Fuel Co.** of Clarksburg which is capitalized at $50,000. The company will operate in Elk district of Harrison County. Conspicuous in effecting a preliminary organization of the company were: Dudley D. Britt, Lynn S. Hornor, Benjamin R. Britt, Louis A. Johnson and Leo P. Caulfield of Clarksburg, W. Va.

Although Detroit is to be the general headquarters of the **Seminole Gas Coal Co.**, which is a West Virginia corporation just organized with the capital stock of $150,000, operations of the company will be in Harrison County. Leading figures in the new company are Edward H. Jewett, Walter Brooks, John D. McKay, of Detroit; Louis H. Stone and Edward L. Douglas, Cincinnati, Ohio.

A number of West Virginia companies have recently increased their capital stock. In that list are: the **Old Dominion Coal Co.**, Charleston, headed by W. R. J. Zimmerman, from $100,000 to $300,000; **Easley Coal Co.**, of Huntington; Fred Easley, president, from $75,000 to $300,000; **Cnp Run Coal Co.** of Charleston, H. C. Jones, president, from $100,000 to $200,000; **Low Volatile Collieries Co.**, Keyser, to $100,000; **Fairmont-Lowesville Coal Co.**, John Y. Hite, president, from $100,000 to $300,000; **Paint Creek Coal Mining Co.**, Cleveland, Ohio, organized as a West Virginia corporation, H. M. Hanna, Jr., president, from $500,000 to $1,000,000; **Jones-Winifrede Coal Co.**, Charleston, H. C. Jones, president, from $5,000 to $125,000; **Barnard Coal Co.**, W. O. Barnard, president, from $75,000 to $150,000.

Production has been begun at the recently completed plant of the **Monticello Coal Co.** at Herndon, Frank Lee being the president of the new company. This company owns a large tract of land and expects to be able eventually to produce coal at the rate of 1,000 tons a day.

Harrison County coal land to the amount of 135 acres has been sold by Thomas Love and W. A. Furlong to the **Thomas Love Coal Co.** for the sum of $216,000.

Coal land in Logan County will, by the **Parsons Coal Co.** of Huntington, be shortly incorporated with a $3,000,000 capital by A. F. Parsons, Frank H. Adams and E. I. Forbes, it was announced today.

Pennsylvania and West Virginia capitalists will be investing in a $3,000,000 company to be organized for the development of coal land in this state. **The Savaria Coal Co.** has been incorporated for the undertaking, the corporators being Alexander Baba, of Fayette City, Pa.; Louis A. Johnson and C. E. Tucker, of Clarksburg, W. Va.

WYOMING

Producers and retailers would be required to make frequent reports to the Wyoming Public Service Commission, giving prices, costs and profits, if the proposed legislation recommended by a special senate committee appointed to investigate alleged "practices of profiteering" is enacted into law by the legislature. In case the commission found prices excessive it would have power to bring suit against the companies and attempt to force a reduction in prices.

Personals

Carl E. Wendell, recently with the American Ore Reclamation Co. has joined the General Briquetting Co., New York City, as consulting engineer.

H. D. Pallister on March 1, became Professor of Mining at the Alabama School of Mines of the University of Alabama at Tuscaloosa.

Vernon B. Bickman has become associated with the Coalmont Moshannon Coal Co., Philadelphia, as sales manager. He was formerly in charge of the coal department of the National Sales & Trading Co. **E. E. Hackman** also comes from the latter firm as assistant to Mr. Bickman.

W. W. Odell has been selected to take immediate charge of the lignite investigation which is being conducted by the Bureau of Mines. The bureau is preparing to conduct experiments with North Dakota lignite. Mr. Odell, who has been doing coal gas work at the Urbana (Ill.) Station of the Bureau of Mines, is experienced in this type of work. He has been with the Bureau of Mines since 1917.

C. H. Mead, head of the Mead-Toliver Coal Co., with headquarters at Beckley, who is in Florida recuperating from a threatened break-down, has received word that Mrs. Mead has had to go to New York for an operation and that his son, Sabine is ill at Woodbury school.

A visitor in the Fairmont region during the second week of February was **F. J. Roye**, a coal operator of Brownsville, Pa.

C. A. Cabell, of Charleston, W. Va., general manager of the Carbon Fuel Co. which operates on Cabin Creek, has been seriously ill at his Charleston home.

J. J. Ross, general manager of the Logan Mining Co. with headquarters at Logan, W. Va., was a visitor in Charleston, during the second week of February.

C. V. Critchfield, of Cleveland, Ohio, vice-president of the Domestic Coke Corporation of Fairmont, was in the Fairmont region about Feb. 10.

H. R. Rich, Fairmon district representative of A. W. Marshall & Co., was in the New York market about the middle of last month.

John Hart of Charleston, W. Va., head of the Hartland Collieries Co., was out of town on business during the latter part of the second week of February.

L. A. Hall, general manager of the Coal Company of Fulton County, Gloversville, N. Y., was one of the many coal men who circulated among the wholesale offices in New York City recently in an effort to get a line on general conditions. Mr. Hall reports demand for the domestic coals quiet in Gloversville with plenty of coal on hand to meet requirements.

Wm. E. Rice of C. M. Moderwell & Co., Chicago, has joined the forces of the Hedstrom-Schenck Coal Co., also of Chicago, as city salesman.

F. W. Stevenson, formerly representative in Nebraska, for the Central Coal & Coke Co., has been appointed to take charge of the new office recently opened up in Minneapolis, by the Bell & Zoller Coal Co. of Chicago.

Geo. S. Brackett, new secretary of the Northern West Virginia Coal Operators' Association, Fairmont, W. Va., was a visitor in the eastern Ohio field recently.

George B. Hadesty, of the Philadelphia & Reading Coal & Iron Co. has been appointed general manager of the company, a position that has been vacant since Richards was elected president. The two men started out together as members of an engineering corps in Ashland in 1883, and have been closely allied ever since in working for the Philadelphia & Reading and the Lehigh & Wilkes-Barre Coal Co.

Traffic News

In the complaint of the **Rockford Lumber and Fuel Co.**, the commission decides that the reconsignment rule providing charges for diversion or reconsignment to points within switching limits before placement, heretofore approved in the Reconsignment Case are affirmed, and dismisses the complaint.

In the complaint of the **Reeves Coal & Dock Co.** an I. C. C. examiner recommends that the claim for reparation because of collection of certain demurrage charges for detention of a car of coal at Minneapolis be dismissed because the detention was caused by the complainant.

The Atlantic, Gulf & Pacific Steamship Co. has announced a reduction from $12 to $10 per ton on coal and coke from Mobile to Pacific Coast points. Normally there is a good movement of coke from this district to California and other Pacific Coast points.

The Montana R.R. Co. has asked authority of the I. C. C. to operate a railroad extending from Montana, Johnson Co., Ark., to the Johnson & King Coal Co.'s mine, the line extending through a coal region.

In the case of the **West Kentucky Coal Bureau** an I. C. C. examiner in a tentative report recommends that the rates on coal from western Kentucky to points in southeastern Missouri and northeastern Arkansas, via Thebes, Ill., be declared unreasonable because they exceed rates 33.5c. per ton greater than those applicable from southern Illinois; and via Memphis, Tenn., because they exceed rates based on the same scale as applicable from southern Illinois via Thebes to destination territory named.

The Harleigh Brookwood Co., of Philadelphia and Mahanoy Plane, Pa., in complaints to the I. C. C., attacks unreasonable rates on unprepared anthracite coal from Stanton Bank to the Lawrence Colliery; from Raven Run Banks to the same colliery; from Raven Run Banks to Kehley Run Colliery; between Lawrence Bank and Mahanoy Plane, Pa., from Harleigh to Hazle Brook, Pa., from June 25, 1917, to August 26, 1918, and asks for reparation for excessive rates during that period.

The Dewey Portland Cement Co., in a complaint attacks unreasonable rates on slack coal during Federal control from mines near Broken Arrow, Dawson, and other Oklahoma points, which it says were lower than rates from mines in the Pittsburg, Kan., groups to Dewey and Bartlesville and to Kansas cement mills.

The Driscoll Coal & Wood Co., of Pueblo, Colo., attacks unreasonable rates on lump, egg, run of mine, blacksmiths, nut, slack and pea coal from the Walsenburg and Trinidad districts to Pueblo on shipments after June 25, 1918.

The Reeves Coal and Dock Co., of Minneapolis, complains against unreasonable rates on coal from Hillsboro, Ill., to Elroy, Wis.

The case the **Utah Public Utilities Commission** has had before the I. C. C. for the past six months regarding an increase of 25 per cent in intrastate rates on coal and ore to correspond with the blanket increases granted on interstate rates has been decided in favor of the Utah commission.

The Kentucky & Tennessee Ry. has asked the I. C. C. for authority to construct and operate an extension of its line in McCreary County, Ky., for a distance of 2½ miles, which it is said will provide transportation for twenty million tons of high grade bituminous coal.

Association Activities

Northern West Virginia Coal Operators' Association

Election of new officers featured the annual meeting of the association held at Fairmont. A. Lisle White of Clarksburg was elected the new president. John A. Clark of Fairmont was elected treasurer and George S. Brackett, also of Fairmont, executive vice-president and secretary. Vice-presidents were elected from each of the subdistricts which constitute the association but such vice presidents were chosen by the members from the respective districts, the elections resulting as follows: V. E. Gocke as vice president of the Clarksburg district; E. Drennen of Elkins, as vice president of the Elkins district; A. Brooks Fleming, Jr., as vice president of the Fairmont district; J. V. Gibson, of Kingwood, as vice president of the Kingwood district; S. D. Brady of Morgantown as vice president of the Morgantown district; George S. Brackett as vice president of the Grafton district. The association as a whole elected the following directors at large: C. D. Robinson and W. C. Dobbie of Fairmont; J. A. Jenkins of Clarksburg; J. W. Devison of Grant Town; H. M. Crawford of Philippi.

A. Brooks Fleming, who was succeeded by A. Lisle White, was not a candidate for re-election. George S. Brackett was chosen by the directors a few weeks ago as executive vice president and secretary when George T. Bell resigned as such. His selection was considered such a wise one that the association affirmed the choice without debate or dissenting vote.

Southern Ohio Coal Exchange

A very important meeting of the exchange was held in Columbus, Feb. 15, when a number of matters of interest to the coal trade were discussed. Prominent among these were the recent decision of the I. C. C. relative to railroad rates on freight such as coal in which the railroads were given authority to charge higher rates in certain instances. The decision of the Ohio Utilities Commission, which saves the coal shippers 16c. on coal shipped from the southern Ohio field to northern Ohio points was also discussed. The Calder Bill pending in Congress came up for discussion and the members were unanimously opposed to the bill as it now stands.

One of the things brought up was the action taken at the Ohio State University for the practical testing of coal. Elaborate scientific machinery is being set up for a thorough testing of coal and its byproducts. This apparatus will be in operation about March 1.

Other questions considered were that of establishing washhouses for miners; railroad freight rates, polution of streams and matters now pending before the Ohio Legislature.

Industrial News

Cincinnati, O.—N. C. Hoyles, C. E., has been appointed manager of the Cincinnati branch of the Pittsburgh Testing Laboratory.

Terre Haute, Ind.—E. H. Goodman, F. J. Wolf and A. D. Torr have formed a partnership and incorporated as the Mine and Mill Supply Co., with headquarters and offices in Terre Haute. They will deal in all kinds of mine and mill supplies.

Pittsburgh, Pa.—The Star Car and Foundry Co. has opened a local office in charge of S. G. Little, formerly engineer and Pittsburgh manager of the Mine Car Department of the Hyatt Roller Bearing Co.

New Orleans, La.—The Equitable Equipment Company has just completed its organization for the purpose of handling locomotives, cars, railroad equipment, rails and rail accessories, etc. The new company is located at 411 Whitney-Central Building.

Coming Meetings

Canadian Retail Coal Association will hold its annual convention April 6 and 7 at the King Edward Hotel, Toronto, Ont., Canada. Secretary, B. A. Caspell, Brantford, Ont., Canada.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill., May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The National Coal Association will hold its next annual convention at White Sulphur Springs, W. Va., May 18 to 20. For information regarding hotel reservations, etc., address W. B. Reed, secretary, Commercial National Bank Bldg., Washington, D. C.

New England Coal Dealers' Association will hold its annual meeting March 23 and 24 at Boston, Mass. President, W. A. Clark, Boston, Mass.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

The annual meeting of the **Pittsburgh Vein Operators' Association**, which was scheduled to have been held in Cleveland on Feb. 14, has been postponed to March 14.

National Retail Coal Merchants Association Sixth Conference of Secretaries and Executives to be held at the Baltimore Hotel, Kansas City, Mo., May 15 and 16. For reservations address H. S. Mitchell, New York Life Bldg., Kansas City, Mo.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 19 NEW YORK, THURSDAY, MARCH 17, 1921 Number 11

Restoring the Reputation of American Coal

TWO years ago representatives of the coal trade met with officials of the Shipping Board at Washington to discuss a program that would give the new coal export business full opportunity with vessels flying the American flag. On that occasion much was said about protecting the name of American coal abroad by upholding quality. Everyone who attended that notable meeting was of one mind—that permanency of American coal in foreign markets depended on our ability to build up a name for the quality of our coals. No concerted effort followed. The Shipping Board and State Department, both interested in the development of foreign coal business, were in no wise able to insist on the shipment of clean coal, and when the demand abroad was greatest in 1920 coincident with ample shipping, anything that was black was shipped on foreign account. By no means all shipments were off grade, but sufficient pool 18 was shipped on pool 1 business, or buckwheat No. 3 for gas coal, to give our product a very bad name in Europe.

It is, therefore, with much interest and many wishes for success that we chronicle this week official announcement of the contract between the Tidewater Coal Exchange, Inc., and the Bureau of Mines. This contract, which is the second of its kind, the first having been with the Sewalls Point Exchange, has for its purpose the standardization and purification of the classified tidewater pools through disinterested and authoritative sampling and analysis of commercial shipments from the mines shipping through the tidewater pools.

It has become common practice to trade in coal by pool numbers. Although designed for Tidewater business, shippers quote pool coal to line trade, and it is understood that a number of mines are classified and given pool numbers that have never shipped coal to the piers. Operators outside of the exchange have been known to make quotations on shipments "as good as" or "equal to" certain pools. Pool 1, pool 9, pool 18, etc., have definite meanings in the trade. The use of these pool numbers is a form of standardization that if well done will react to the credit and benefit of a large number of those in the Eastern field. For instance, a buyer was considering last week the quotations of a responsible and well-known shipper of smokeless coal and of a shipper through the Sewalls Point Exchange who quoted pool coal. Had the reclassification of the mines on the Virginian based on the sampling done in co-operation with the Bureau of Mines been completed, the buyer would have placed the business with the member of the exchange because of lower price. The experience of this buyer with the present Tidewater classifications makes him wary of the coal he is likely to get.

Building up the reputation of the pools for pure coal, whatever quality they may be supposed to represent, is going to be very slow. Months will be required for sampling shipments from the various mines—there being more than eighteen hundred now listed by the Northern exchanges. A great deal of time will be required for the study of results before the exchange can benefit from the work of the Bureau of Mines. The outcome, however distant, cannot be other than beneficial to the members of the exchange and to the American coal trade generally. It is just as well to recognize that whether the fault lie with the classification or with the preparation at the mines, consignees in the last year have not been getting the quality of coal supposed to be represented in certain pools, and the pools, to some extent at least, have been living on their reputation. As an earnest of good faith the solicitation by the Tidewater Coal Exchange, Inc., of the help of the Bureau of Mines will go far toward permanently establishing the prestige of the exchange here and abroad, and the participation of the Bureau of Mines is an entirely welcome form of venture by the government in business.

Upper Silesian Coal as a Peace Bond

UPPER Silesia as a prize probably is as important in settlement of the German reparations as any other single feature. A vote is to be taken this month as to the disposition of this territory, and on the result of this plebiscite will depend the future ownership of coal reserves representing 40 per cent of those of pre-war Germany. Edwin C. Eckel, writing in the *Annalist* of March 7, 1921, thinks that the possibility of Germany being able to make large and steady payments in reparation depends to a very large extent on her retention of this important coal area. He says: "If Germany retains this area her economic position will be approximately that of June, 1914, and she can pay accordingly. But if the plebiscite in Upper Silesia ends in favor of Poland, then we may as well prepare to accept certain economic consequences, for while control of the Upper Silesian coal fields will give Poland a real chance to become a manufacturing country on a very large scale, its loss will paralyze the industry of central and eastern Germany." He characterizes the coal and iron ore reserves of Germany as assets on which an indemnity bond issue might have been based, and points out that the loss of the entire Lorraine iron ore tonnage and the Saar coal reduced by so much—at least half, in his opinion—lessens the real security behind such an issue.

In 1914 the mines of Upper Silesia produced a little more than 37,000,000 tons of coal, or about 37 per cent as much as the Ruhr. The coal here produced is used mainly for gas and byproducts and as fuel for the heavy chemical industries of Silesia. It is pointed out that the transfer of Upper Silesia to Poland will, in point of reserves, reduce Germany to a position a little bet-

ter than Great Britain and place Poland in third position in Europe.

A German indemnity bond, backed by the pledge of the Lorraine ores and Westphalian and Silesian coal fields, according to Mr. Eckel would be a good investment. As against that the bond of a Germany lacking iron ore and short of coal would be entirely worthless, in his opinion.

It is small wonder then that in the course of the negotiations on March 1 the Allies refused to discuss the German proposal that was based primarily upon the unqualified retention of Upper Silesia by Germany. According to Mr. Eckel's figures, Upper Silesia in the hands of Poland will make for the industrial and commercial power of that country but without affording France an asset on which to collect reparation payments.

Stewart on Mine-Labor Efficiency

SOMEONE has been defaming the efficiency of the pick miner both in this country and in Great Britain. At least that is the inference to be drawn from the signed editorial by Ethelbert Stewart, U. S. Commissioner of Labor Statistics, in the February number of the *Monthly Labor Review*. Mr. Stewart's statements appear as an introduction to tables of statistics of 9,817 pick miners out of some 360,000 men "who really produce the coal," showing a very specialized study of days worked and tons actually loaded by these men. He has gone far out of his way to criticise adversely the data on labor statistics in the coal industry published by the U. S. Geological Survey and, while it is patently not necessary to defend the Survey's methods or data, some may take Mr. Stewart's remarks at their face value because of his official position. Comment on some features of his contentions are not, therefore, amiss. His errors in interpreting his own as well as the labor statistics of the Survey we may lay to his enthusiasm over a subject that is strange to him.

He begins by attacking as unreasonable and unsound the customary use of the figure obtained by dividing the total tons of coal produced by the men—(tipple) days as an index of labor efficiency. He appears to be thinking of none but miners (tonnage men) while he is discussing the figures of others that are concerned with total mine employees. He will search in vain in the reports of the Geological Survey for any reference to this figure as showing the relative efficiency of the *miner*, for it is well known, and was fully demonstrated by F. C. Honnold in his testimony before the Robinson commission, that it as in the day labor that inefficiency developed during the war.

Mr. Stewart points out that because certain mines are becoming deeper and therefore require more "track laying, track repairing and doubtless much additional underground labor of other kinds," the indirect labor is increased and the average output per man per day is lowered. He overlooks the fact that even during the war period there was no diminution in the development of new mines and that there is no reason to suppose that the number of mines abandoned was any less during that period or is any less now than it has been in years past. If the increased output of 1918 or 1920 had come from the same mines that were in operation in 1916, there would be some point to his argument, but in point of fact the greater production came from several thousand new as well as the old mines, and in the new mines the actual requirement for day labor is much lower than in the old, deep workings.

He admits that "actual average daily production per miner is unknown and unknowable in the present condition of [mine] record keeping." He might have added that it will continue to be unknown as long as the miners' union is able to keep time clocks off the works. He further says that "output [per miner] may be increasing or decreasing; nobody knows. What is known is that the proportion of underground non-miners and above-ground men to actual miners is increasing——." On the contrary, there is no reason for arguing that because this proportion increased from the beginning of 1917 to the end of 1918, it has continued or will continue to increase. In fact, the causes for this increase as set forth in the Survey reports on coal ("Coal in 1917," page 931, and "Coal in 1918," page 714), as quoted by Mr. Stewart, ceased to operate for a period in 1919 and are inoperative now. An investigation of labor at work in the coal mines today would show an increase over the war period in the proportion of miners to indirect labor.

The explanation offered in the Survey reports for the relatively greater increase in non-productive labor, namely that "the demand for coal was so great and the prevailing market price of coal so good that operators exerted every effort to increase their capacity and output" and that the "most certain way to increase capacity is to put on more men," an explanation lightly put aside by Mr. Stewart with the statement that it "is one that could scarcely have emanated from a practical coal operator," nevertheless is the explanation offered by the leading bituminous coal-mining engineer in the country as well as by one of the best informed of the larger soft-coal operators, nor does the Labor Bureau statistician offer any other explanation of his own, except to say that the increase of 21 per cent in the number of men employed in the mines in 1917 was needed to get cars, not to get coal. His understanding of the subject should be broadened to include a knowledge of the fact that in 1917 and until late in 1918 cars were needed to get coal.

Mr. Stewart appears to object to the use of "tipple" time in recording mine and labor operations. No one has asserted that tipple time should be the standard; it happens that this is the only mine record of length of daily operation that can be universally obtained. However contrary to Mr. Stewart's understanding, it is more often true than not that mine-operating time is greater than tipple time. In other words, it is generally true that the coal can be dumped over the tipple at a greater rate than the miners can load it into mine cars.

It is only after one has labored through the writer's tirade on all other statistics of coal-mine labor that he finds at the end material that relates to the subject of the article, "Tonnage Output Per Pick Miner Per Day" and finds new and interesting data, lacking, however, in one very important essential, and one that could as well have been added. Figures are given showing the average days worked by the pick miners, but with no reference to the relation of this number of days to the number of days each man was given opportunity to work. Mr. Stewart has, perhaps unconsciously, been unfair to the very pick miners he so earnestly defends. As presented, the figures show that but 150 of the 9,817 pick miners worked thirteen or more days in the half month, and as a natural consequence the way is left open for the inference that the remainder of the men must have been loafers.

Coal-Pillar Drawing Methods in Europe*

Longwall Is Prevailing System of Mining Followed—Where Pillars Are Made They Are Comparatively Large and Are Extracted by Successive Splitting or Slicing—A Recovery of About 95 Per Cent Is Thus Attained

By George S. Rice†
Washington, D. C.

IN MOST of the coal mines of Continental Europe some one of the various forms of longwall mining is generally chosen as the means of extraction. Longwall methods are followed also in Great Britain wherever the coal is weak and friable, wherever the coal bed provides material for pack walls and filling, wherever the bottom is soft and heaves easily, wherever the roof is pliable, wherever the bed is thin and brushing provides building material, or wherever thick multiple seams are mined in layers, as is the case in the 24-ft. seam in Weymss, Scotland, or the Ten-Yard pitching bed near Coventry, England. Pillar methods have been retained in British fields wherever the coal beds are from 5 to 9 ft. thick and wherever (the coal being free from heavy partings and binders or draw slate) no waste rock is provided for pack walls, or where the roof is hard and must be shot to bring it down. These methods are used also where the bottom or floor is comparatively hard.

The room-and-pillar system, by which probably 95 per cent of the coal of the United States is produced, is now used in only a few Welsh mines, where it is known as the pillar-and-single-stall method. The American room-and-pillar system is not equivalent to the bord-and-pillar or stoop-and-room method. The essential difference between the bord-and-pillar and the average American room-and-pillar system probably arises from the difference in conditions here and in Europe. The coal in most of the mines in the United States is at a depth of less than 700 ft., whereas the bulk of the coal mined in Europe lies under a cover of more than 1,200 ft., and the deepest mines in Great Britain, Belgium, and France reach depths of 3,500 to 4,000 ft. In deep workings roof spans of great width cannot be safely provided even with the use of abundant timber. As the mines in the United States become deeper, conditions will become increasingly like those in Europe and the rooms will become narrower and the pillars thicker, and the bulk of the coal will be extracted on the retreat.

Lessors and Laws Demand Conservation

It is generally conceded, without reference to the cost of production, that the larger the pillars left on first mining, the more thoroughly can the coal be extracted. In Europe the operators are compelled either by the lessors or by the governments to make a complete extraction of the coal, whereas in this country the competitive cost of production or the necessity of giving support to the surface, as in the flat farming districts of the Middle West, has largely determined the character of the measures taken to provide for the complete extraction of the coal.

Generally the more complete the extraction of a coal deposit, beyond 70 to 80 per cent, the higher will be the cost of production, as to obtain such a result either more extensive timbering is necessary or packs and walls have to be constructed. The longwall system practically removes all the coal in the seam but at a cost of production greater than by the room-and-pillar system, for in the former a large amount of deadwork has to be done. On the other hand, with heavy overburden, accompanied usually by friable coal and roof, it is often the only system that can be used.

The wasteful methods of room-and-pillar mining which in earlier years were practiced in the United States have been difficult to overcome, parly because the miners' contract prices have been determined largely on the basis of wide working places, wide crosscuts between rooms and narrow pillars. These agreements and the

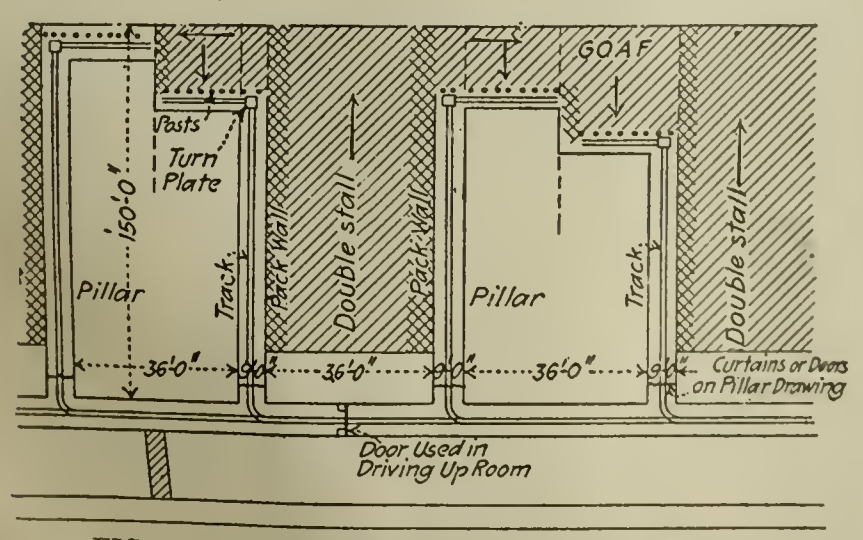


FIG. 1. PILLAR AND DOUBLE-STALL METHOD

A method not uncommon in the United States except in the use of the pack wall. Mr. Rice does not say so, but experience in central Pennsylvania is not favorable to the leaving of any pack walls or weak pillars in the goaf, as they prevent the complete collapse of the roof of the goaf which should occur as soon as the main pillars are withdrawn. Note the use of the turnplate at pillar ends.

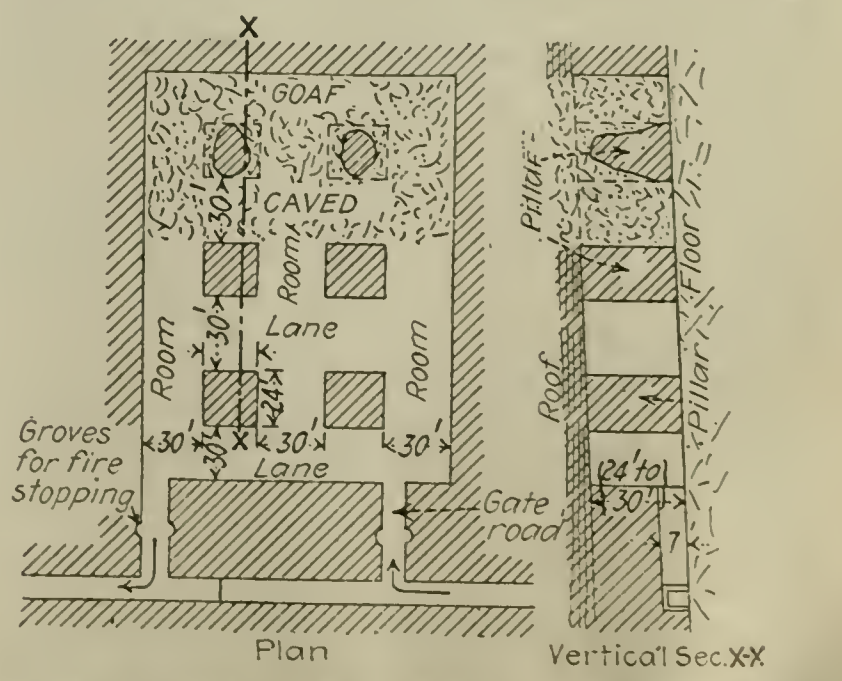


FIG. 2. SQUARE CHAMBER METHOD USED IN SOUTH STAFFORDSHIRE MINES

This method consists practically of driving a large three-road room with two necks. As the place is excessively wide, pillars are left in the heart of the room, which are saved as far as possible when the room is abandoned.

*Presented by permission of the director of the U. S. Bureau of Mines before the meeting of the American Institute of Mining and Metallurgical Engineers, New York, Feb. 15, 1921.

†Chief mining engineer, U. S. Bureau of Mines.

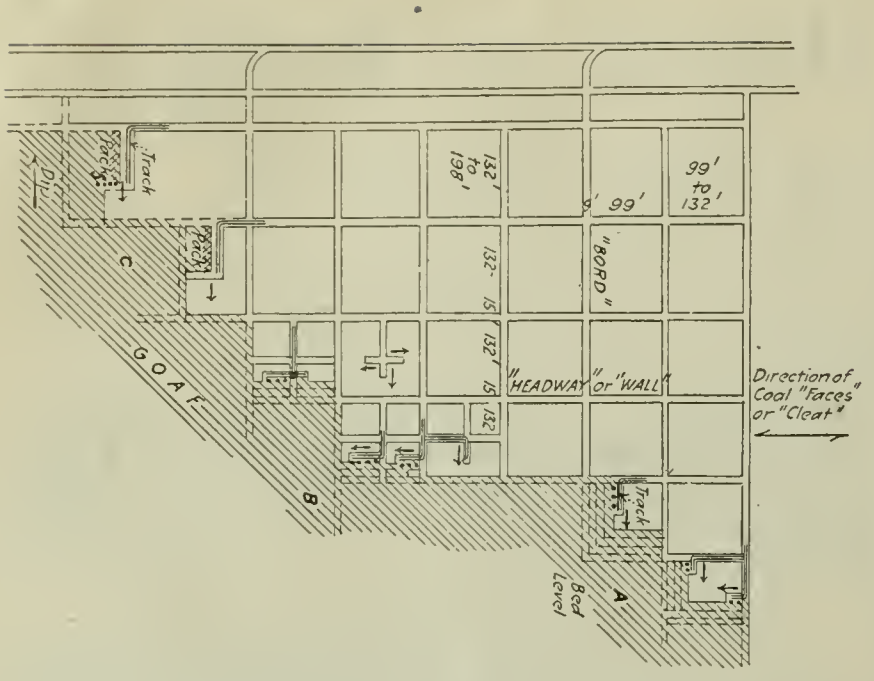


FIG. 3. BORD-AND-PILLAR METHOD

In this system first mining is reduced to its lowest proportions. Barely more than a tenth part of the coal is taken out in the advance. As shown here, the breaking line is not by any means straight and some unnecessary waste would inevitably occur, especially in section C.

customs and usages that have been established are hard to change when the mining proceeds under heavier cover or more complete recovery is demanded by the owners of the coal fee.

The pillar systems used in Europe may be classified as follows: Pillar-and-single-stall, pillar-and-double-stall, the square-chamber method of South Staffordshire, bord-and-pillar (or stoop-and-room), rooms or bords hydraulically sand-filled.

Room-and-Pillar Method Rare in Europe

Pillar-and-single-stall, the equivalent of the American room-and-pillar, is used in a few places in Wales. I observed it in the Craig Merthyr colliery, in a slightly pitching shallow anthracite bed 5½ ft. thick having a strong roof. The stalls were 27 ft. wide, and the pillars 18 ft. thick. The pillars were extracted by the methods generally used in American mines, starting at the inner end and bringing back a block of pillars simultaneously.

In Upper Silesia, room-and-pillar methods of ordinary type were used extensively in beds 10 to 60 ft. thick; but, owing to the extensive fires and to the trouble from the subsidence of the surface and to the imperfect recovery of the coal usually attained, these systems have been supplanted by longwall and hydraulic sand-filling methods.

The pillar-and-double-stall method was formerly used in Scotland, and in 1911 was adopted in Wales at the Seven Sisters colliery in an anthracite bed 7 to 8½ ft. thick. The stalls were 42 to 48 ft. wide and the pillars 36 to 48 ft. wide. In this system, as shown in Fig. 1, the stalls have two entrances, and the tracks are set at either rib, the excavation between the tracks being gobbed. When the stalls have been driven up to the next entry or level, they are widened on either side and slices about 10 to 18 ft. wide are taken back. Sometimes a thin pillar is left between stalls, but this is lost. The average recovery is said to be about 90 per cent. Gradually the system is being supplanted by longwall. This method of mining was formerly used in Appanoose County, Iowa, in a 30 to 36-in. bed of coal, but the thin pillars were not generally recovered; the system even there has been largely replaced by longwall.

The unusual square-chamber method of South Staffordshire, shown in Fig. 2, was developed to mine the so-called Ten-Yard seam, which lies approximately horizontal. The chambers, which are separated by thick pillars, are 138 ft. wide and as much as 200 ft. long, arranged with four to six internal coal pillars. They are opened with two narrow gate roads off the level. As the coal is liable to fire spontaneously, arrangements are usually made for fire dams, grooves being cut in each rib of the gateway and clay being placed conveniently at hand. These gate roads are connected by a "lane" 30 ft. wide. Stalls or rooms 30 ft. wide are driven at 24-ft. intervals extending the gates and at every 24-ft. interval there are similar cross lanes 30 ft. wide, thus leaving internal coal pillars 24 ft. square.

Top Coal Is Taken Down In Section

This mining is in the bottom coal, which is from 7 to 8 ft. thick. After the chamber is formed, the top coal is taken down in sections, slice after slice being removed vertically, by cutting vertical grooves successively every 6 ft., leaving "spurns" or narrow webs holed through, in the upper part. When the layer of coal that is being extracted is thus cut, the spurns are reduced by pick and finally knocked out with a "picker," which is an instrument similar to a boathook.

It is so managed that the mass falls as a whole and the coal is then loaded. Thus the work continues until the roof is reached. The internal pillars are then sliced away as much as possible before the roof falls. Necessarily more or less coal is buried by the falls. The thick pillars between chambers are extracted after the ground has settled.

No appreciable amount of methane has been found in these mines during the past hundred years of working, although the bed reaches a depth of from 1,200 to 1,500

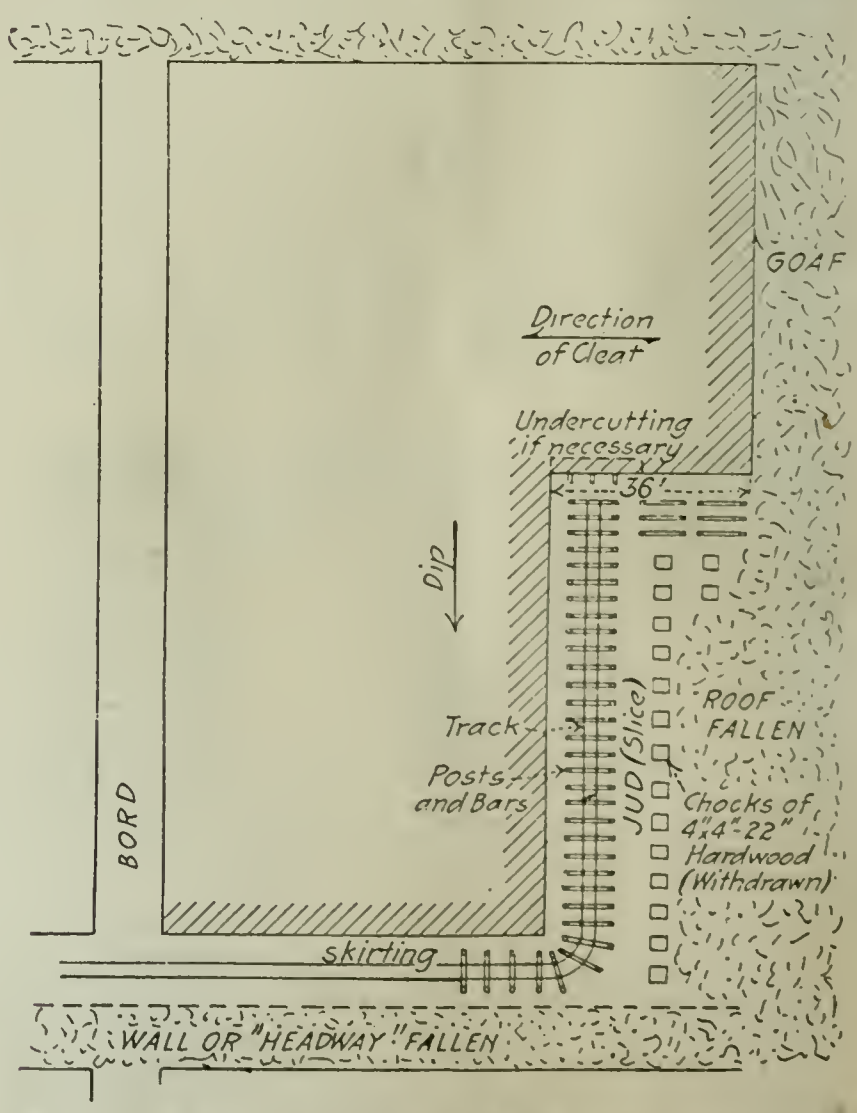


FIG. 4. DETAILS OF PILLAR EXTRACTION, BORD-AND-PILLAR SYSTEM

Exhibits how the work of drawing pillars is performed when the roadways fall and become filled with rock. Skirtings are driven along the face and juds at right angles thereto.

ft. The mine is worked with open lights and sometimes with candles. The chambers and roadways are dusty, but it is said that no explosions have occurred in this field except during the war, when one resulted from blasting. The infrequency of explosions, apart from the fact that the coal is not of a highly inflammable character, probably is due to the restricted use of explosives, the coal mainly being extracted by pick and bar.

Bumps Are Collapses of Upper Measures

An unusual feature in the operation of the coal in the south Staffordshire field is the occurrence of "bumps," which apparently arise from the breaking of the strong overlying rocks that for a time are able to span the large underground subsidences which have been caused by the mining of coal. When these rocks break they jar the roof immediately above the coal seam, which falls and smashes timbers. Generally there is some preliminary dribbling of rock from the roof, which warns the miners, so that comparatively few serious accidents have occurred from this cause. A similar condition prevailed in a mine at Fernie, in British Columbia, but there the bumps caused much loss of life. In that mine the condition has apparently been overcome by driving entries that divide the coal area into large pillars, as in the bord-and-pillar system, thus removing only a small percentage of the coal in first mining. The rest of the coal will be recovered later by what is equivalent to a longwall retreat.

In the south Staffordshire field the yield of coal by first mining is quite low yet in spite of the large number of remaining pillars much coal is lost by the caving of the roof. It requires skilled workmen and does not appear to have advantages that would commend it for use elsewhere.

In Europe the bord-and-pillar (or stoop-and-room) is the most important system in which pillars are used. It is common in the north of England, in Scotland, and to a lesser extent in Wales; in a modified form it is used in the Upper Silesian field in connection with hydraulic stowage. (See Figs. 3, 4, and 5.)

In the typical bord-and-pillar systems narrow places are driven at right angles to one another, forming large square or rectangular pillars that are extracted when the workings reach the boundary. With the best of conditions this is essentially longwall retreating and is then an admirable system. Little or no explosive is required, as the coal "facings" are usually close together in European coal beds, and pick work takes the place of powder.

Bord-and-Pillar for Thick, Level, Clean Coal

Formerly this system was used almost universally in the flatter beds of Great Britain, but gradually longwall advancing supplanted it until now probably over three-fourths of the coal produced is mined by this latter system. The bord-and-pillar method is used in the same districts as is the advancing longwall and sometimes in different beds of the same mine. It is considered especially applicable, in fact necessary, where the coal bed is approximately horizontal or not dipping over 1 in 3, has a medium thickness (4 to 10 ft.), is free from thick partings, and the roof is strong and not flexible or bending in character. Conversely, longwall is used where the room is weak or flexible or where the coal bed is comparatively thin (under 4 ft. thick) or where it is thick and there is a soft underlying clay, or where

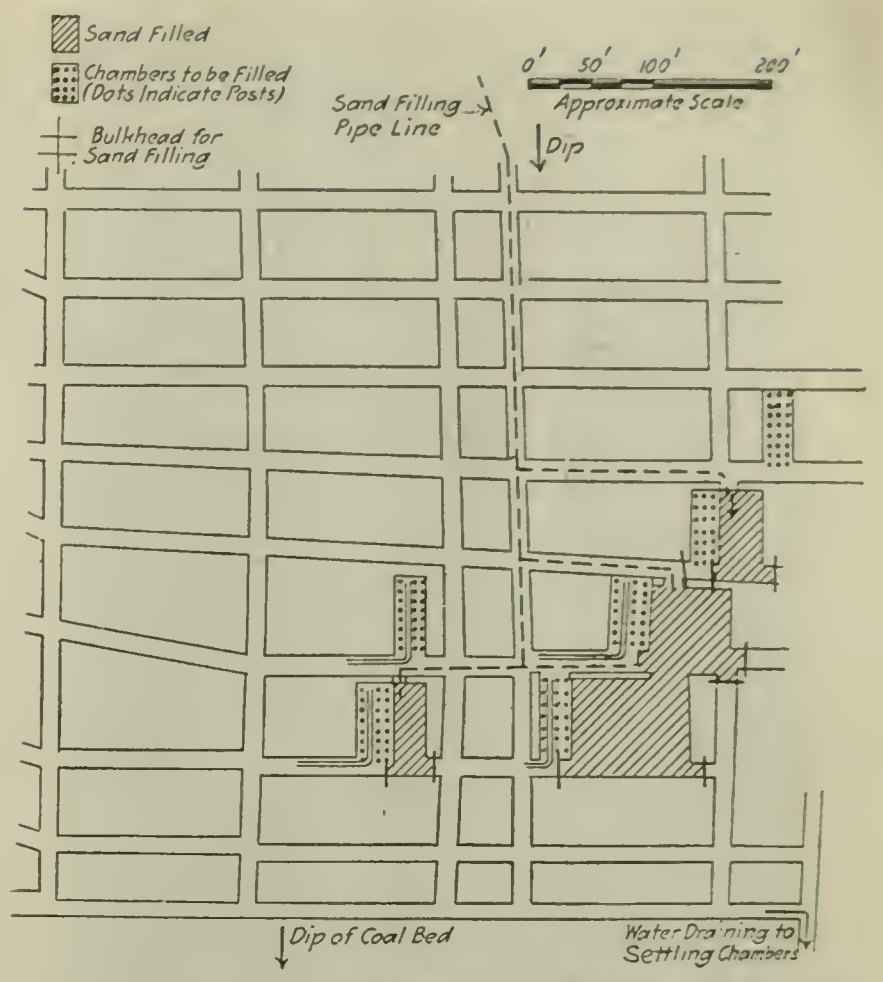


FIG. 5. BORD-AND-PILLAR METHOD WITH SAND FILLING
Coal is taken out in horizontal slices, and as it is removed sand is flushed in to take its place. This method prevents spontaneous combustion and permits of complete extraction.

the bed has thick partings that can be used for pack walls.

While the bord-and-pillar practice has not been standardized, it is probable that the deeper the workings, the more necessary it is to have pillars the dimensions of which are large when compared with the width of the surrounding working places. The essential feature of the system is to drive "headways," or what in the United States would be termed butt entries, about 9 ft. wide advancing on the ends or butts of the coal, and from these are turned off boards, or rooms, 9 to 15 ft. wide advancing on or at right angles to the facings of the coal.

First Mining May Take Only Tithe of Coal

A typical case is at the Eppleton colliery near Durham, England, where the mines operate three coal beds which lie practically horizontal at depths of 1,008, 1,050 and 1,170 ft. and have thicknesses of 7 ft. 4 in., 6 ft. 10 in., and 3 ft. 8 in. respectively. The pillars vary from 99 x 132 ft. to 198 ft. square. The headways or walls which are driven on the butts are 9 ft. wide, and the bords, which work at right angles to the coal facings, are 15 ft. wide. In forming the pillars, therefore, only 10 to 17 per cent of the coal is extracted. The final recovery on the retreat is large, the claim being made that 95 per cent of the coal ultimately is recovered.

The pillars are extracted in various ways, but in general when the boundaries are reached, the pillars are brought back on a stepped diagonal line. The pillars to be drawn are split by a headway and a narrow bord, making four smaller pillars, then these are split or successively sliced off on the goaf side. Where, however, the roof is of a character that breaks short, slices are taken off the sides of the headings working toward the goaf. Where the roof is poor, it is sometimes difficult to make complete recovery, and the small corner stumps left for protection are lost.

The system in general is admirable, the recovery of

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ALMOST A HALF MILE BELOW GROUND

In the Ludwigschaft mine 2,275 ft. underground. Apparently no slicing method is in use at this mine. Perhaps the exigencies of war are to blame for the change. High cars and narrow are used, which may be suited to metal mines, but are ill suited to coal mines, where an important desideratum is coal not broken in loading.

the coal being only slightly inferior to that which longwall advancing affords. It is not, however, well adapted to the use of mining machines and no instances have been brought to my attention where coal mined by this method is cut by machinery. In the withdrawal of individual pillars slices are taken off the goaf side, lines of breaker props are sometimes used and withdrawn, in other places cogs are employed. In general it is expected that the timber will be almost completely recovered. In some instances when the pillars and the workings are old or the room or floor is not strong, the headways and bords become filled, in which case it is generally cheaper to drive new places alongside them. These are called "skirtings" and "jenkins," respectively, in the Durham district.

Objections to the bord-and-pillar system are the large amount of narrow work driven at the start of operations, resulting in the payment of much yardage to the miners and in the production of the large proportion of small coal or screenings which narrow places always provide. These conditions are sometimes obviated by making both the headways and the bords 15 ft. wide and allowing the roof to cave except in such passages as are needed for haulage or airways.

The system employing rooms or bords hydraulically sand filled is to be found only in Upper Silesia, where it is used in the flatter coal beds, up to thicknesses of 10 or 12 ft. In the thicker multiple beds (up to 60 ft. in thickness in the Myslowitz colliery) the longwall slicing system is employed, in some instances layer by layer. In steeply pitching beds (as in the Delbrück colliery) successive horizontal slicing followed by sand filling is used. The bord workings are driven like narrow rooms from the level or gangway, forming large rectangular pillars, which are extracted by successive slices from gangway to gangway. As fast as the slices are extracted the spaces are filled hydraulically with sand and gravel by the method introduced from the anthracite district of Pennsylvania in 1897, and developed to meet the particular conditions here encountered. The recovery apparently is quite complete.

This method has succeeded in preventing the spontaneous fires which were a serious menace in mining these thick coal beds by the room or chamber method. The only serious objection is the loss of timber, for few of the props and lagging necessary to support the roof while the coal is being mined are ever recovered. In Upper Silesia extensive sand and gravel beds are found adjacent to or near the mines. Under pre-war conditions the sand filling added only about 25c. per ton to the cost of the coal, which was more than repaid by the freedom from fires and from explosions of coal dust, and by the nearly complete extraction.

To summarize then: (1) Only a small proportion of the coal production in Europe is obtained by mining systems employing pillars (of course, pillars are left around shafts and under buildings, or are maintained as barriers).

(2) Pillar systems are employed to a limited extent in Great Britain and in connection with sand filling in Upper Silesia.

(3) The typical American room-and-pillar system is not employed in Europe except in a few places in Wales.

(4) The pillar system, most generally adopted where

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IN THE NORMASTACHT MINE, SILESIA

Here again are long pole props in large open workings. Note the compressed air drills and the rungs of the ladder with treads of thicker cross-section in the center.

such a method is used at all, is the bord-and-pillar, in which the pillars are extensive, compared with the area taken out by the preliminary bords and headways; in general not over 10 or 15 per cent of the coal is taken out in advance.

(5) In its best form the bord-and-pillar system permits a recovery of 95 per cent of the coal, by what is practically a retreating longwall method.

(6) Pillars are extracted by successive splitting or slicing.

(7) The bord-and-pillar system is applicable only where the coal and roof are relatively strong, the coal free from large partings, and where there is no draw slate that requires gobbing.

(8) The American room-and-pillar system approaches the bord-and-pillar where the rooms are narrow and the pillars wide and the retreat is carried on a diagonal line, as in mines of the Connellsville district of Pennsylvania and in some of the deep mines in the Rocky Mountain region.

Why Some Operators Are Substituting Skips for Cages in the Hoisting of Coal*

Almost Universal Adoption of Skip Hoisting in the Metal-Mining Industry Attests Its Usefulness—For Mines Where Large Coal Must Be Produced, However, Certain Modifications in Design Are Necessary

By Andrews Allen and John A. Garcia
Chicago, Ill.

LARGE increases in the wages of mine workers make it imperative that all factors tending to limit production per miner be eliminated as far as possible. The trolley and storage-battery locomotive, mining machine, hoisting engine, the system of mining followed, etc., all have increased the possible output per man, but this output is still limited by the capacity of the hoisting engine and cable and by the size of the mine car.

The superiority of skip hoisting in metal-mining operations is shown by its almost universal adoption. By varying the size of the skip and the rope speed, any desired hoisting tonnage can be obtained, and as in metal mines only one kind of material usually is handled and the breakage of ore is unimportant, skips can be easily and cheaply loaded from bins into which the material from the mine cars has been dumped. Accordingly the cars may be designed to fit the conditions existing in the mine rather than as a compromise between what is necessary to satisfy hoisting and mining requirements. Such a compromise is quite likely to suit neither shaft nor mine conditions.

In coal mines the usual practice has been to hoist the car to the surface, either on platform or self-dumping cages. Of late years the number of skip-hoisting plants in coal mines has been rapidly increasing, but more or less inertia must be overcome in establishing so radical a change in practice; furthermore, the earlier skip operations were not uniformly successful. As a result, it became evident that metal-mining practice would require radical modification before skip hoisting could be successfully used in coal mining.

Early Skip Hoisting Increased Degradation

Except where coal is used for coking or other purposes where breakage is unimportant, its degradation at all points between the face and the railroad car is of vital consequence. The average selling price is seriously reduced when the percentage of screenings is increased. Where metal-mining practice is followed, the coal is dumped into a deep pit, cut off into a skip load by a measuring hopper or other means, dumped into a deep, narrow rectangular skip, and poured out into a bin at the top. This causes excessive breakage.

It is difficult to make a direct comparison between the breakage of coal in mines operated with self-dumping cages and with skips. The amount of fines is influenced by other considerations than handling, such, for instance, as the character of the coal and the percentage of narrow work being driven at the time the test is made.

The complete records of the percentages of two Illinois mines that were started at about the same time and are producing nearly the same tonnage are available. In one, the Kathleen mine of the Union Colliery Co., the coal is hoisted in 10-ton skips; in the other, the No. 2 mine of the J. K. Dering Coal Co., at Eldorado, it is being hoisted in 3½-ton cars. The record for 1920 up to Oct. 1 for these two mines is given in Tables I and II.

TABLE I. PRODUCT AT J. K. DERING COAL CO'S CAGE-HOISTING MINE, ELDORADO, ILL.

Sizes	Percentages
6-in. lump	9.3
6- x 3-in. egg	20.4
1¼- x 3-in. nut	21.6
1¼-in. screenings	48.7
Total	100.0

When 2-in. screenings are considered, the proper proportion of nut added to the 1¼-in. screenings gives 54 per cent for the same period.

TABLE II. PRODUCT AT UNION COLLIERY CO'S KATHLEEN MINE USING 10-TON SKIPS

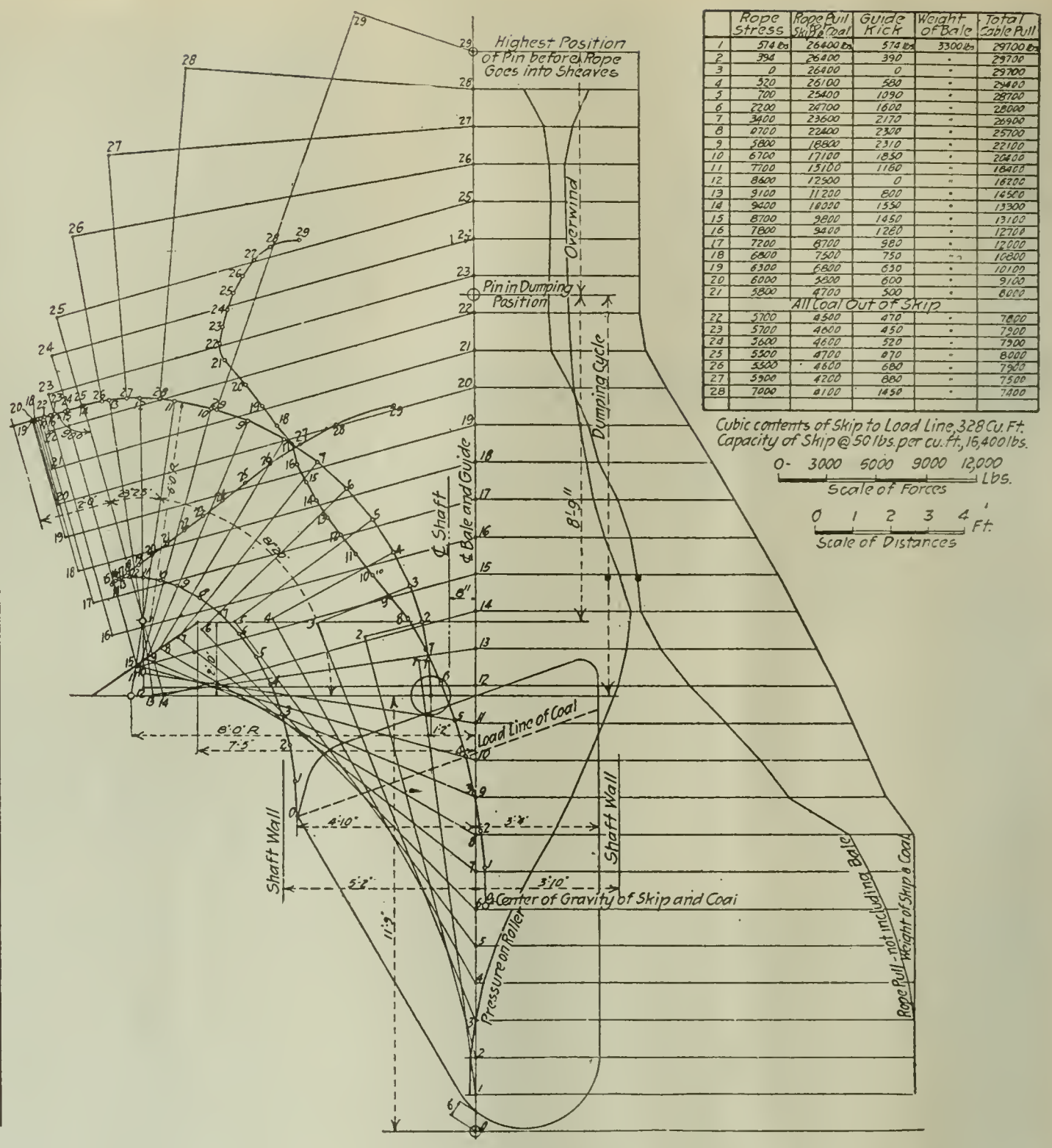
Sizes	Percentages in October	Percentages Jan. 1 to Oct. 31
2-in. lump	2.4	10.4
3-in. lump	0.1	...
6-in. lump	12.7	10.5
3 x 6-in. egg	16.2	14.4
2 x 3-in nut	18.0	13.9
2-in. screenings	50.6	50.8
Total	100.0	100.0

*First part of a paper entitled "Skip Hoisting for Coal Mines" presented before the American Institute of Mining and Metallurgical Engineers, New York, Feb. 16, 1921. The second portion of this paper will appear in a succeeding issue.

FIG. 1

Skip Diagram

The curves on the diagram illustrate for the various increments in the passage of the bale the successive movements of the points on the skip (shown at the bottom of the illustration). Thus the movement of the lip of the bucket and the gravimetric center of the skip and coal are traced in detail as are also the course of the dumping roller. In the upper right-hand corner the calculations of rope stress, rope pull, guide kick, weight of bale and cable pull are recorded. Some of the stresses are plotted graphically to the right of the diagram.



	Rope Stress	Rope Pull Skip & Coal	Guide Kick	Weight of Bale	Total Cable Pull
1	574 lbs	26400 lbs	574 lbs	3300 lbs	29700 lbs
2	394	26400	390	"	29700
3	0	26400	0	"	29700
4	320	26100	580	"	29400
5	700	25400	1090	"	28700
6	2200	24700	1600	"	28000
7	3400	23600	2170	"	26900
8	0700	22400	2300	"	25700
9	5800	18800	2310	"	22100
10	6700	17100	1850	"	20400
11	7100	13100	1160	"	18400
12	8600	12500	0	"	16200
13	9100	11200	800	"	14500
14	9400	10000	1550	"	13300
15	8700	9800	1450	"	13100
16	7800	9400	1260	"	12700
17	7200	8700	980	"	12000
18	6800	7500	750	"	10800
19	6300	6800	630	"	10100
20	6000	5600	600	"	9100
21	5800	4700	500	"	8000
		All Coal Out of Skip			
22	5700	4500	470	"	7800
23	5700	4600	450	"	7900
24	5600	4600	520	"	7900
25	5500	4700	870	"	8000
26	5500	4600	680	"	7900
27	5900	4200	880	"	7500
28	7000	3100	1450	"	7400

It will be noted that a lower percentage of 2-in. screenings was made in the skip-hoisting mine than in the mine having cages, which bears out the theory that handling coal in large masses, as in skip hoisting, does not cause any more breakage then does its handling on self-dumping cages.

Skip Plant Costs More But Pays in the End

An installation for dumping cars and loading skips underground costs more than does an ordinary coal-mine bottom, where cars are run directly onto a platform or self-dumping cage. However, keeping the entire cost of the plant in view, it will be found that many important savings may be effected, and the expenditure may be justified by the greatly increased hoisting tonnage and the decreased cost of labor.

As coal dust is inflammable, the dumping of coal at the bottom of a downcast hoisting shaft might be considered a source of danger. This objection, in our opinion, has been greatly overestimated. From a close observation, we think that only an extremely small amount of dust thus produced finds its way into the entries. Effective means are available for allaying such dust, should it become a serious menace. Where the hoisting shaft is an upcast, no trouble from this source can be experienced.

The difficulties arising in inspection and docking perhaps constitute the most serious objection to skip hoisting. Yet these may be easily overcome. In a large mine it is impossible to examine and dock each car separately. The effort of the mine management should be directed to obtaining clean coal at the face, and the only practicable method of checking the work of the loaders is to employ a "spotting system," by means of which a certain number of cars, taken at random or from sections of the mine where careless loading is suspected, are shifted to one side and carefully and thoroughly inspected, the docked cars being identified and the losses charged against the guilty loader.

Three Ways of Handling Rock at Skip Mine

Where the coal is dumped indiscriminately into a deep pit, no docking or spotting system is possible, except through the use of an auxiliary shaft; but where a skip installation is properly designed, it is as easy to dock where a skip is used as it is where the coal is hoisted in a cage. This can be done without any greater inconvenience or sacrifice of output.

Many coal mines are compelled to hoist large quantities of rock. Where cages are employed, the rock can be taken as it comes in the trip and disposed of at

the top by means of a fly gate or some similar contrivance. Where skips are loaded from a pit, rock can be handled only at an auxiliary shaft or at the main shaft during a second shift. In both methods the rock cars have to be cut out of the trips in which they appear. This is readily done if at the partings care has been exercised in assembling the cars.

In a skip mine an excessive hoisting capacity can be provided such as will be sufficient to handle both rock and coal. Where a deep pit is not used, the design can be easily arranged so that a moderate quantity of rock can be hoisted at the main shaft without the slightest difficulty.

A skip will not handle men or material unless equipped with an auxiliary deck, in which case it becomes cumbersome and inconvenient. While this can be done successfully, the interruptions to hoisting arising from the handling of men and material during the day shift are serious in any large mine and practically all modern large-tonnage mines have found it necessary to install an auxiliary hoisting plant in a separate compartment, usually in connection with the airshaft. Such an auxiliary hoist meets this objection completely.

Why Skip Hoisting Is To Be Preferred

The advantages of skip hoisting are as follows: (1) A hoisting capacity capable of handling all the coal and rock that can be mined. (2) A smaller shaft. (3) A large ratio of lading to gross weight. For example, for an 8-ton skip and a 4-ton self-dumping cage this ratio is as in Table III.

TABLE III. WEIGHTS IN POUNDS THAT MUST BE HOISTED WITH SKIP AND CAGE

	Skip Installation	Cage Installation
Weight of cage or skip	13,000	14,000
Weight of car	.....	4,000
Weight of coal	16,000	8,000
Totals	29,000	26,000

With the cage the coal constitutes about 30 per cent of the total weight hoisted, while in the case of the skip the coal represents 55 per cent of that weight.

Other advantages are: (4) A low rope speed, resulting in lower power consumption and a less expensive hoisting plant; greater regularity and safety in hoisting, including freedom from the casualties which hoisting usually entails. These accidents are the result of speed and violence in cage operation. (5) Entire absence of hoists that "miss the hook," or cars that go into the basket. Such mishaps are encountered in self-dumping cage operations, and result in wrecks and delays. (6) Skip hoisting requires not more than one-half the men ordinarily employed in the operation of a smaller self-dumping cage installation. (7) Solid-end cars can be used with a skip hoist, thus making it unnecessary to operate wagons having lifting or hinged end gates. This lowers the first cost of the cars, cuts the maintenance cost in half, and prevents dust and spillage of coal on the roadway.

Type of Skip That Should Be Preferred

Two types of skips are now in use. The first of these is rectangular, of uniform cross-section, and of any required depth. The bottom of the skip slants at a steep angle to the gate, which is placed in one side. This gate is operated by engagements in the tipple and

	Self Dumping Cage	Overturning Skip	Bottom Dumping Skip
Depth of Shaft	400	400	400
	Triple 60	Triple 46	Triple 46
Total Hoist	Diameter 6 - 0 1/2"	Diameter 18" - 42"	Diameter 5 - 0 1/2"
Capacity	600 Tons per hour	600 Tons per hour	600 Tons per hour
Cycle: Loading Shaft	45 sec	60 sec	60 sec
Hoisting & Operating	90 sec	120 sec	120 sec
Cycle: Running	90 sec	150 sec	150 sec
Retardation	15 sec 45 sec	30 sec 60 sec	30 sec 45 sec
Weight of Cage or Skip	14,000 #	13,000 #	7,000 #
Car	4,000 #	———	———
Coal	8,000 # - 24,000 #	16,000 # - 32,000 #	8,000 # - 24,000 #
Size of Hoisting Rope	1 1/4"	1 1/4"	1"
Hoist during pump	6.0"	4.3"	5.6"
Net Static Load for Cage	12000 #	8300 #	7000 #
Average Rope Speed	2000 ft per min	930 per minute	1040 per minute
Main Rope Speed	3610 "	1480 "	475 "
Size of Cylinder Compound	Twin Drum	Twin Drum	Twin Drum
	Direct Connected	Geared	Geared
DC Hoist Motor	2000 HP	650 HP	643 HP
(60 Foot Mean Squares)			
Size of DC Generator on			
Ilgner Set	1400 KW	600 KW	600 KW
AC Motor on			
Ilgner Set	800 HP	600 HP	600 HP
AC Input per hour	656 KWH	525 KWH	525 KWH
" per ton of Coal	082 KWH	0875 KWH	0875 KWH
Hoist Overall Efficiency			
Based on 966' Hoist	930%	930%	930%
Approx Cost for Factory			
1920 Basis) Equip't	$ 75000	$ 30000	$ 30000
Electrical Equip't	$ 90000 - $ 130000	$ 28500 - $ 70000	$ 28500 - $ 70000

FIG. 2. COMPARATIVE DATA FOR CAGE SKIP HOISTS

Though the drum for the self-dumping cage is less expensive, the cost of the electrical equipment for the overturning or bottom-dumping skip is in the case selected about half as much as for the self-dumping cage. Note that the size of the direct-current generator on an Ilgner set is more than twice as great with a self-dumping cage as with an overturning or bottom-dumping skip.

is held tight when running in the shaft, by means of a latch or toggle levers. The best example of this type is known as the Lepley skip. The gate is held in place by toggle levers and, when opened, by engagement with the tipple acts as a chute extending over the dump plate.

In the case of an 8-ton skip the discharge lip must be hoisted about 2 ft. 6 in. above the point at which discharge of coal is commenced before the final position of the skip is reached. At this point the skip may stand stationary while the coal flows out. This should not take more than four or five seconds, during which time the other skip is being filled.

The objections to a skip of this character are: (1) The discharge mechanism must be attached to the skip; this not only increases the weight and cost, but puts the working parts in a position where they are easily damaged but are difficult to repair or lubricate. (2) The hinged gate is a weak point. The coal dumps directly upon it, and, like the operating mechanism, it is subject to serious wear, which in time will cause leakage. (3) The form of the skip makes it necessary to dump the coal from the bin directly into a V-shaped bottom. This produces more breakage than is incurred when using a skip of any other form.

The advantages of this skip are: (1) A slightly shorter movement during the dumping operation. In the Lepley 8-ton skip the loading lip will be about 14 ft. 6 in. above the dump chute when the final discharge position is reached, whereas with the overturning skip of same capacity this distance is about 4 ft. 6 in. greater. (2) Greater capacity in a given size of shaft, compared with the round-bottom type, as the skip may be made as deep as desired. (3) Adaptability to installation of a platform for men or materials. (4) A larger dead weight available for counterweighting the loaded skip when it is lifted from the bottom. The entire weight, 17,000 lb., is available for counterweighting, whereas a round-bottom overturning skip weighing 13,000 lb. will lose about 5,000 lb., leaving only 8,000 lb. available for counterweighting the loaded skip.

The type of overturning skip that has been successfully adapted to coal mining is, in shape, much like an old-fashioned coal scuttle, having a rounded bottom and a discharge side about 30 deg. off the vertical.

This form saves breakage because the coal does not strike a square blow on the steel side or bottom. As the skip is not excessively deep, the slanting discharge side makes it possible to empty the coal completely with a dumping angle of 105 deg. in place of the 135 deg. required by a rectangular skip.

The cycle of dumping operation is shown in Fig. 1. It will be noticed that the discharge of coal commences at point 8 and is completed at point 21, covering a vertical hoisting distance of 13 ft., commencing well below the dumping point and finishing at a position where the loading lip of the skip, if hoisted vertically, would be 19 ft. above the dumping point. While traversing this distance the coal is discharged uniformly and sustains little drop when flowing into the chute.

The skip shown is loaded from the side opposite its discharge; in this way the greatest capacity is obtained. The depth of the skip from loading lip to bottom is fixed by the width of the shaft and the angle of the discharge side. The coal in loading naturally assumes a position approximately as shown by the dotted line on the diagram. The skip is held vertical in the shaft by gravity, being pivoted slightly in front of the center of gravity; also by a spring latch on each side. These are opened by engagements on the tipple and automatically snap into position again when the skip descends.

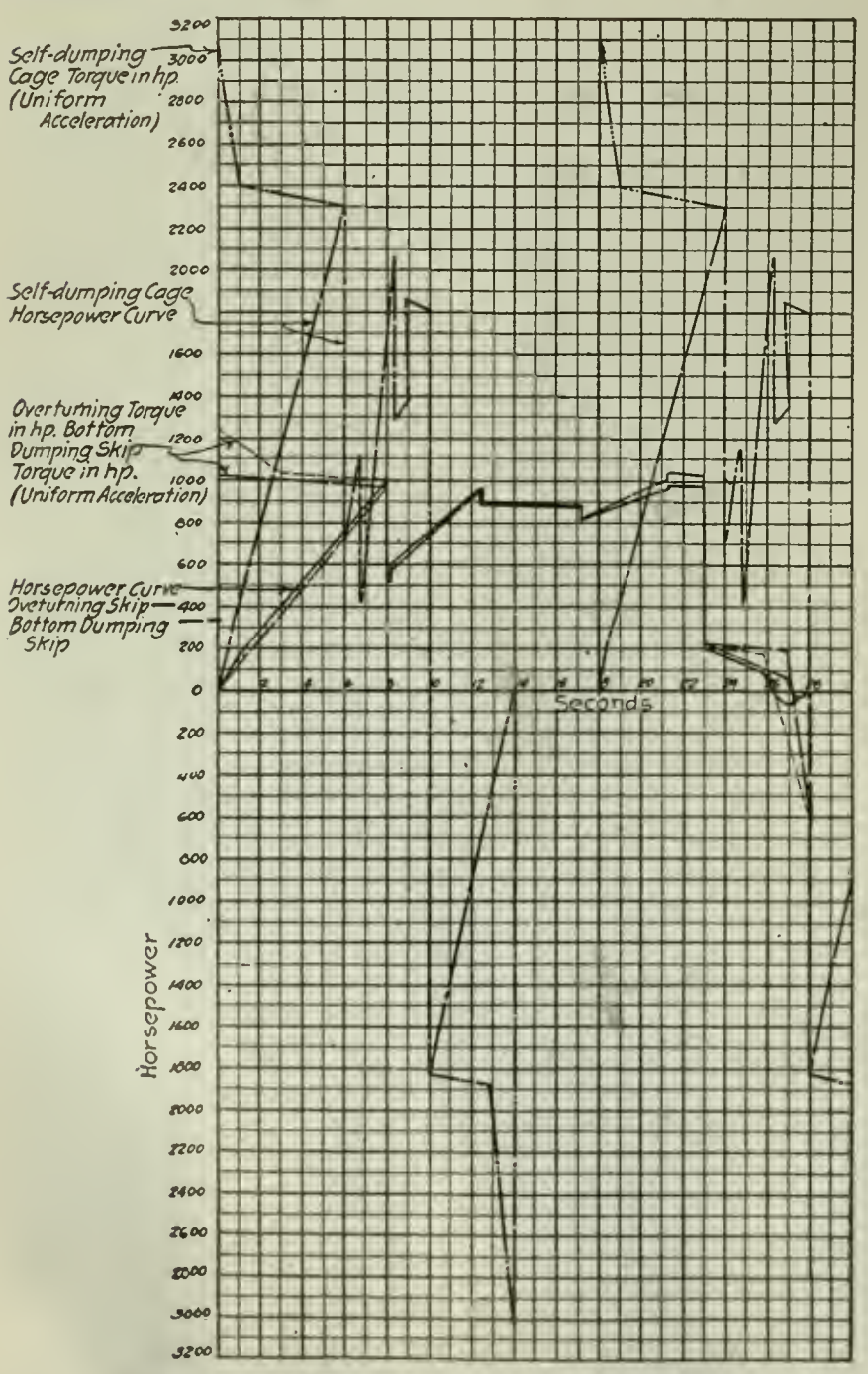


FIG. 3. CURVES OF POWER CONSUMPTION

The peak of the cage-hoisting cycle is about 3,100 hp. whereas the peak of the skip-hoisting cycle is a little more than 1,000 hp. for the bottom-dumping skip and more than over 1,200 hp. for the overturning skip.

The dumping is effected by two well-lubricated wheels of comparatively large diameter at the top of the skip engaging long angle-iron guides carefully formed to the exact dumping curve. The skip is held rigidly between the bales by tapered plates, which bring it into a true vertical position as it returns into the shaft. It is possible to omit the latches and to place a second set of guides in the shaft, so that the dumping wheels will come in contact with them if the skip should become unbalanced. Both of these types are in successful operation.

The objections to this skip, compared with the bottom-dumping type, are: (1) A slight sacrifice of capacity, meaning a slightly larger shaft for the same output. (2) A slightly greater hoist to accommodate the dumping cycle at the top. This amounts to about 4 ft. 6 in. for an 8-ton skip. (3) Less load on the hoisting rope available for counterweighting the loaded skip when the cycle has been completed.

Advantages inherent in this type of skip are: (1) Simplicity and ruggedness; (2) lightness in proportion to the load; (3) less breakage; (4) an easy and uniform discharge without the possibility of large pieces of rock or coal lodging in the gate and with no more drop than is experienced with the bottom-dumping skip.

Skips Hold from Five to Fifty Tons

A skip can be made to handle almost any desired capacity; those now in use ordinarily hold a maximum of from five to thirteen tons for balanced hoisting. A 50-ton skip is being designed for counterweighted operation. Any skip should be so planned as to hold some multiple of the mine-car capacity. This provision being made, the cars can be dumped directly into the skip, eliminating the deep pit and the measuring hopper. The time required to load one of these skips will average from five to eight seconds measured from the moment when the skip lands on the timbers to the time when it is belled away. With balanced hoisting, an average load of nine tons, a total hoist of 400 ft. and an average rope speed of 1,000 ft. per min., it is possible to hoist and dump slightly over 1,000 tons per hour.

Figs. 2 and 3 furnish a comparison between the power consumption, motor sizes and cost of hoist for three assumed installations designed for the same capacity. The first is a self-dumping cage installation; the second uses overturning skips, and the third is an installation of the Lepley type. The comparisons are made on the basis of a 400-ft. shaft and a hoisting capacity of 800 tons per hour.

Skips Show Advantage in Deep Shafts

This, of course, is somewhat high for cage hoisting, although it is within the limits of actual practice. If the comparison had been made on the basis of 1,000 tons per hour or for a deeper shaft, the skip installation would show only a moderate increase in power consumption, whereas the power used by the cage installation would increase at such a rapid ratio that it would soon exceed the practicable limits of construction and operation.

Comparisons could not be made for three existing mines of these types, as it would be impossible to get exactly parallel conditions. The figures used, however, are based on actual results and are worked out on exactly the same basis.

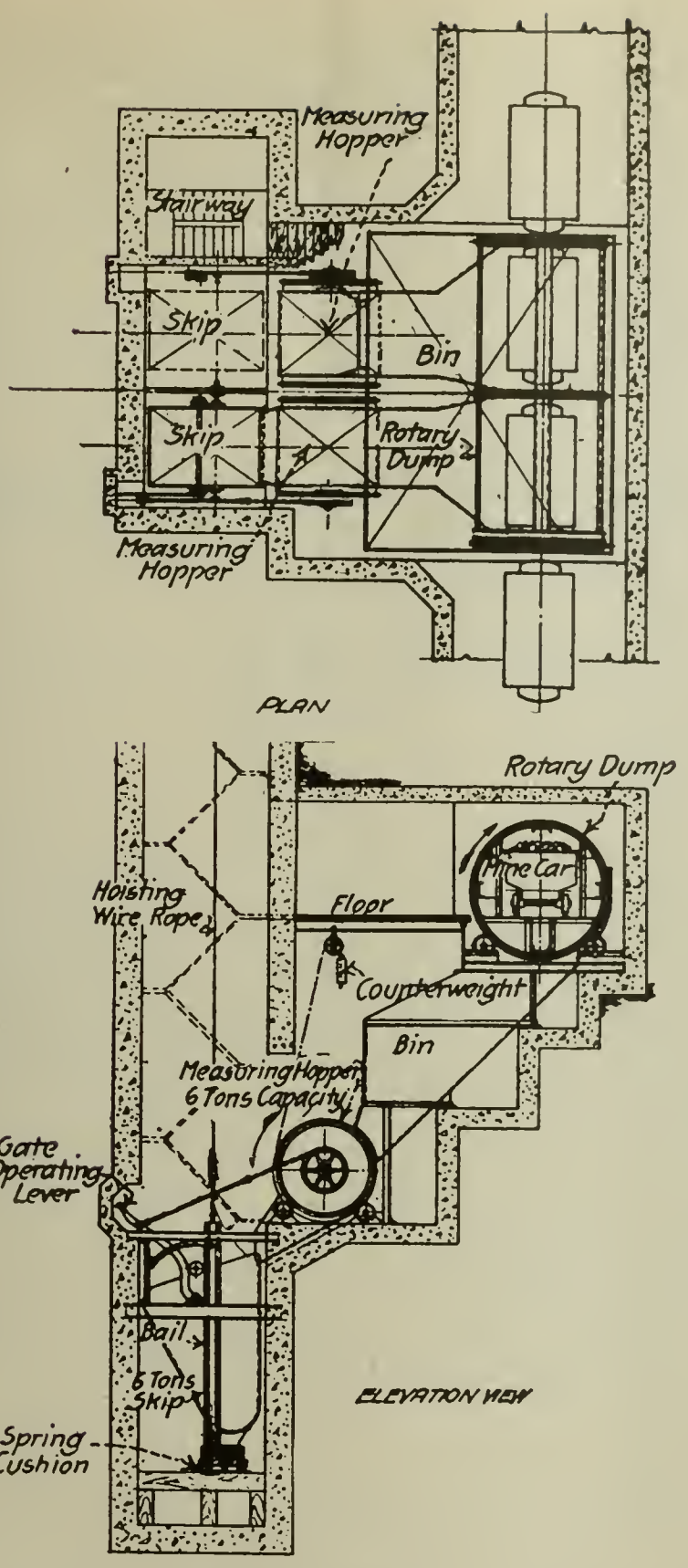


FIG. 4. PIT AND MEASURING HOPPER
This arrangement is admirably suited for such mines as are indifferent as to size of product. Where the coal is to be used for coking such an arrangement will work well.

Furthermore, the comparison is made on the basis of direct-current hoisting with an Ilgner flywheel set, so proportioned as to take the peak load off the line, thus giving a uniform power consumption for the cycle assumed. If the peak load is not too great for the transmission line, an alternating-current hoist may be used, which will show a large economy in first cost. It will be noted that the peak of the cage-hoisting cycle is about 3,100 hp. (2,311.7 kw.), while the peak of the skip-hoisting cycle is a little over 1,000 hp. (745.7 kw.) for the bottom-dumping skip and a little over 1,200 hp. (894.8 kw.) for the overturning skip. The motor sizes are approximately 2,000 hp. (1,491.4 kw.) in the case of the cage and 850 hp. (633.8 kw.) in both skip installations. Neither of these, under ordinary circumstances, would permit the use of an alternating-current hoist, but such a hoist can be used to a much larger capacity with a skip than with a cage.

Where steam hoists are used there is no such difference in favor of the skip, as the size of the hoisting engine is determined by the total load rather than by the acceleration peak. The steam consumption will, however, follow approximately the power curves shown. The diagrams and tables show that either skip installation possesses a power economy of nearly 25 per cent compared with the cage; also there is a difference in cost of approximately $37,000 in the examples cited.

Where no attention is paid to breakage and where inspection of coal and rock are provided for elsewhere, there are some advantages in the bottom layout in which the cars are dumped directly into a deep pit, which can be used to store a large amount of coal. From the pit the coal flows into an automatic measuring hopper, and then to the skip by means of a gate operated by the skip itself. This arrangement is shown in Fig. 4.

This method has two advantages: The skips can be loaded to full capacity, irrespective of the size and loading of the cars, and dumping operations can be carried on without reference to the hoisting cycle, thus reducing the number of cars used in the mine. A few more pit cars, however, will provide greater storage at less cost. In an outfit of this kind it may be possible to obtain the desired dumping capacity with a single-car instead of a two-car rotary dump, the latter being necessary where the dumping is regulated by the skip, though at the cost of breakage, and inability to dock and to handle rock.

Two Hundred Hoists Per Hour at Gillespie

MINE No. 3 of the Superior Coal Co., at Gillespie, Ill., on Dec. 4 last broke all previous records for Macoupin County and established a new high score for cars hoisted in eight hours. The total output for the day was 5,730 tons, the hourly hoist tally being as follows: First hour, 199; second hour, 184; third hour, 202; fourth hour, 203; fifth hour, 204; sixth hour, 204; seventh hour, 206, and eighth hour, 201; total, 1,603 hoists. The coal raised filled 135 railroad cars.

During the entire day no time was lost on top. One car was derailed on the bottom, causing a delay of two minutes. The hoist engine at this plant is a 24 x 36 in. Litchfield machine equipped with conical drums increasing from 6 ft. to 8 ft. in diameter. This hoist is in charge of George Klein and Fred Hoppe, who change off every hour.

This mine, which is equipped with electric cutting machines, hauling being done by nineteen locomotives and five mules, is in charge of Alex. Young, mine manager. The output of Dec. 4 was loaded by 375 miners handling an average of 15 tons per man.

(*Coal Age* wishes to congratulate the men and officials of Superior No. 3 mine on their accomplishment. Who can beat it?—EDITOR.)

Graduate Assistantships Offer Opportunity For Research and Study With Pay

TO ASSIST in the conduct of engineering research and to extend its graduate work in engineering, the University of Illinois maintains fourteen research graduate assistantships in the Engineering Experiment Station. Two other such assistantships have been established under the patronage of the Illinois Gas Association. These assistantships, for each of which there is an annual stipend of $600 and freedom from all fees except the matriculation and

diploma fees, are open to graduates of approved American and foreign universities and technical schools.

An appointment to the position of research graduate assistant is made and must be accepted for two consecutive collegiate years, at the expiration of which period, if all requirements have been met, the degree of Master of Science will be conferred.

There are now twelve vacancies in these fellowships, and the mining department expects that at least one and possibly two will be allotted to it, if suitable candidates make application. The mining department has a thoroughly equipped laboratory for coal washing, ore dressing, hydro metallurgy, the study of mine gases and coal dust, rock drilling and coal cutting, explosives, and, of course, has access to the other laboratories of the university and particularly to those of the Engineering Experiment Station.

Special attention is directed to the advantages offered in industrial chemistry in connection with coal and coke work under Prof. S. W. Parr. Special graduate courses in the Economics of Mining also are available. The resident engineers and chemists of the U. S. Bureau of Mines are carrying on at this station researches of great interest to graduate students in mining.

Additional information may be obtained by addressing the director of the Engineering Experiment Station, University of Illinois, Urbana, Ill.

Kinds of Coal That Go Into Tidewater Pools

Striking Contrast in Fixed Carbon and Volatile Matter Shown Between Coals of Pools 1, 2, 42 and 4 and Those of Pool 21 and Higher Numbers — Careful Preparation and Systematic Inspection Exert Important Influence on Classification

By Dr. Henry M. Payne

NO ATTEMPT has ever been made officially to specify by analysis the quality of the coal included in the various classified pools. Pool 1, American Standard Navy Coal, is limited to those mines on what is known as the navy acceptable list and pool 71 includes only those mines in the Northern fields on the navy supplemental list. These pools, therefore, have an official recognition not accorded to any other, but this guarantee of quality comes from the navy and not the Tidewater Exchange. The first classification was made in the summer of 1917 by a group of men thoroughly familiar with the coals shipped to the Atlantic ports and the mines producing these coals. Although the work was done under pressure and it was not possible to take time for collection of extensive data or for examination of samples where knowledge was lacking, the original grouping of the mines was exceedingly well done and subsequent refinements have not added greatly to the perfection of the pools. Those who have made the classifications from time to time doubtless have had in mind the limits as of ash, sulphur, and volatile content as well as heating value that are to be included in each classified pool, but these limits have never been made a matter of official record or published.

The analyses and fusing points of ash published in this paper are averages of a large number of shipments I have collected over a period of years. They are believed to be representative of the coals shipped through these pools, but they are not and cannot be guaranteed, nor are these analyses officially authorized by the Tidewater Coal Exchange, Inc. Being averages they do not show the upper and lower limits of quality in each pool. It should be understood that no single shipment of coal in any pool will show an analysis exactly comparable to the average given.

To assist in visualizing the range in quality and in certain chemical properties of the coals comprising the several "mine-run" pools the average analyses in the accompanying table are shown graphically in the accompanying diagrams. In these diagrams the coals in the Northern fields are separated from those in the Southern fields and the four elements in the proximate analysis—fixed carbon, volatile matter, ash and moisture—are plotted as segments of vertical columns, arranged from left to right in descending order of percentage of fixed carbon. Above this part of the diagram is plotted the heat value in British thermal units, and on a separate diagram are shown the sulphur content and the fusing point of the ash in degrees centigrade. This arrangement, of course, puts the low-volatile pools on the left of each diagram and the high-volatile pools on the right. A striking feature brought out in this manner is the sudden change in fixed carbon and volatile matter content from the low-volatile coals (pools 1, 2, 42 and 4) in the Southern fields to the high-volatile coals, as contrasted with the uniform graduation from the low-volatile coals (pools 1, 71, 8, 9, 10 and 11) in the Northern fields, through the medium-volatiles (pools 12, 14 and 15) to the high-volatiles (pools 21 and those with higher numbers).

Distribution of Low- and High-Volatile Coals

Comparing these average analyses of the coals entering into each major pool with the geographic distribution of the mines producing the various coals, as shown in the maps in the preceding issue of *Coal Age* (March 10, 1921, pp. 442-445), it will be noted that the southern areas of low- and high-volatile coal are well defined. In Pennsylvania, Maryland and northern West Virginia it may be said in general that the low-volatile coals lie on the eastern side of the measures, and the high-volatile coals to the west, while the medium-volatile mines are found to overlap portions of both. In a few instances both low- and high-volatile seams are found adjacent.

Certain localities by virtue of concentrated development, exceptional railroad facilities, or recognized geological features, have acquired sufficient distinction to warrant individual pools, as the Greensburg Basin (pool 40), Marion County gas (pool 38), etc.

The principal seam mined for gas coal is the world-famous Pittsburgh, which blankets southwestern Pennsylvania and northern West Virginia. This seam is sold under various trade names, the principal of which are Pittsburgh, Westmoreland, Youghiogheny, Pittsburgh-Fairmont, and Marion County gas coal.

It has been my observation that from north to south,

the fusing point of ash decreases from about 2,600 deg. F. to 2,100 deg. F. in this seam, while the sulphur and ash contents show a slight increase. The friability of the seam varies greatly, in certain localities the output being extremely hard and blocky, standing transshipment well, while in others it is sufficiently soft to market principally as a mine-run.

Of particular significance are data on production of coal in each pool classification. It must be evident that the capacity of mines producing coals of the higher grades is limited, otherwise there would be no production of the lower-grade coals. Statistics giving complete details of this character are not available, but the following table, prepared by the Central Pennsylvania Coal Producers' Association, gives a good idea of the relative output of the mines comprising the several classified groups in this important field:

PRODUCTION OF COMMERCIAL COAL BY CLASSIFIED POOLS IN CENTRAL PENNSYLVANIA IN 1918

Pool	Net Tons	Pool	Net Tons
1, 9, 71	9,446,790	15	1,955,432
4	2,137,160	18	4,240,877
10	12,312,834	21	502,964
11	5,794,397	Unclassified	4,204,888
12 to 14	7,668,801		
14	6,810,896	Total	55,075,039

In determining the classification of mine marked attention also is paid to facilities for preparation of coal and the degree to which they are utilized, because as between two coals of similar grade in a competitive market the one may be rendered worthy of a somewhat higher classification by virtue of regular and thorough picking or screening and by more systematic inspection or, as is not infrequently the case, by attention to roof rock or top coal or partings in mining. The coal from mines on the same bed in the same field, therefore, may not all be classified in the same pool, but because of the more or less uniform character of each well-recognized coal bed it follows that, at least locally, the output of coal from a given bed is of particular significance. There are given herewith certain statistics of production of coal by coal beds in 1918 as published recently by the U. S. Geological Survey. These figures represent the nearest approach at present possible to a record of the production of coal according to quality—that is, according to the pools.

An idea of the relative productive capacity of the several pools shown graphically on the maps in the preceding issue of *Coal Age* is obtained from the following table showing the number of mines included in

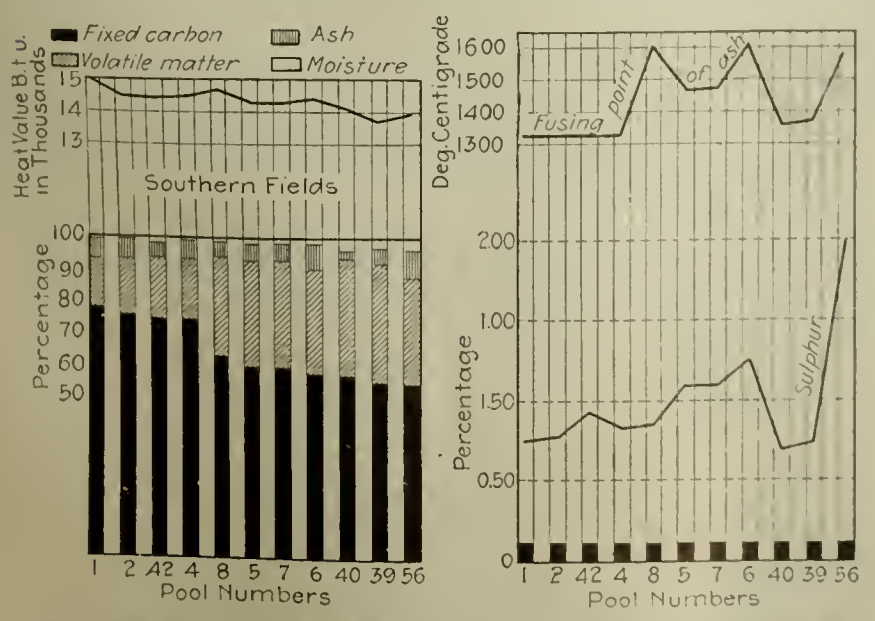


DIAGRAM SHOWING ANALYSES OF COALS IN CLASSIFIED POOLS AT SOUTHERN PORTS

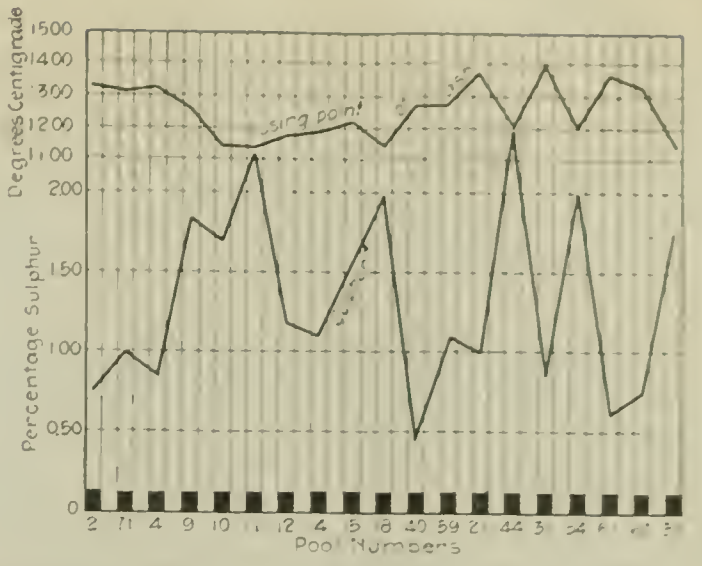


DIAGRAM SHOWING PERCENTAGES OF SULPHUR AND FUSING POINTS OF ASH IN COALS IN CLASSIFIED POOLS IN THE NORTHERN FIELDS

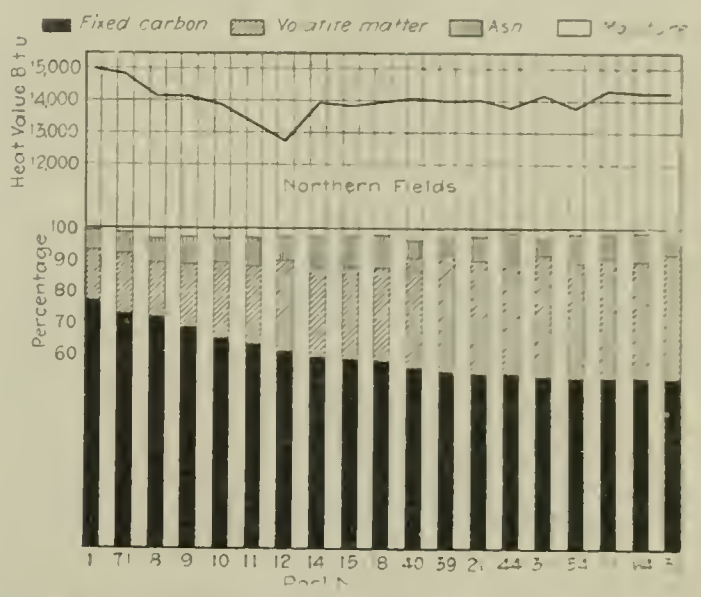


DIAGRAM SHOWING PROXIMATE ANALYSES AND HEAT VALUE OF COALS IN CLASSIFIED POOLS IN THE NORTHERN FIELDS

the original and amended classification. Each of these 3,680 mines was located on the maps from which were drawn those published.

NUMBER OF MINES, CLASSIFIED BY POOLS AND REGIONS

I. Southern Fields

	Pools 1 and 2	Pools 5, 6, and 7	All Other Pools
Virginian	166	32	37
Chesapeake & Ohio	111	426	40
Nashville & Western	154	202	20
	431	660	97

II. Baltimore & Ohio and Tributary Roads

Pools	1–71	9–10–11	34	38	30–60	All other
No. of mines	5	238	279	41	128	377

III. Pennsylvania Railroad and Tributary Roads

Pools	1–71	9–10–11	12–14–15	34	40	30–60	All other
No. of mines	32	423	90	145	30	110	239

IV. New York Central and Tributary Roads

Pools	1–71	9–10–11	12–14–15	All other
No. of mines	2	186	89	68

Total group I	1,198
Total group II	1,068
Total group III	1,069
Total group IV	345
	3,680

The third and last installment of this discussion of the Tidewater pools will describe the mechanics of the exchanges and will be accompanied by a map showing the freight rates from each rate group to Tidewater.

In response to a number of requests COAL AGE will publish the three articles by H. M. Payne on the tidewater coal pools as a reprint after the third and last number has appeared in the issue of March 24. Maps appearing in COAL AGE of March 10 will be republished on the same scale in order that they may be fitted together. Several corrections of minor importance with respect to locations of towns and railroads will be made on the republished maps.

Tidewater Exchanges	Pool	Designation of Classification	Size	Seams from Which Mined	Railroads	Approximate Average Analyses: Moisture	Volatile	Fix. Car.	Ash	Sulphur	Fusing Point of Ash: Deg. Fahr.	Deg. Cent.	B.T.U.	Calories
NPB HR	1	*AMER. STANDARD LOW VOLATILE* (Mines on Navy Acceptable List)	R. M.	Pocahontas No. 3 Pocahontas No. 4 Sewell Beckley Fire Creek "B" or Miller Fulton	C. & O. K. & M. N. & W. Vir. C. C. & O. L. & N. C. & P. P. R.R.	0.62	16.28	77.40	5.70	0.75	2,425	1,328	15,000	8,333
HR	2	OTHER HIGH GRADE LOW VOLATILE (Pocahontas, Flat Top, New River, Tug River and Virginian Ry. Points)	R. M.	Pocahontas No. 3 Pocahontas No. 4 Sewell Fire Creek	C. & O. N. & W. VIR.	0.39	17.60	75.79	5.72	0.78	2,425	1,328	14,500	8,055
HR	3	LOW VOLATILE		Pocahontas No. 3 Pocahontas No. 4 Slack Sewell Beckley Fire Creek	C. & O. K. & M. N. & W. C. C.& O. L. & N. VIR.	1.00	16.50	76.50	6.00	0.75	2,425	1,328	14,500	8,055
NPB	4	*GOOD "B" and "D" SEAM*	R. M.	Lower Kittanning "B" or Miller.	N. Y. C C. & I.	3.00	16.50	72.50	8.00	1.75	2,490	1,364	14,100	7,833
HR	4	MEDIUM GRADE LOW VOLATILE	R. M.	Pocahontas No. 3	VIR.	0.66	18.81	74.78	5.75	0.84	2,425	1,328	14,500	8,055
HR	5	HIGH VOLATILE GAS	R. M.	No. 2 Gas Freeburn Upper War Eagle,etc.	N. & W. C. & O.	1.50	33.30	60.00	5.20	1.10	2,680	1,470	14,280	7,933
HR		HIGH VOLATILE STEAM	R. M.	Upper Banner Lower Banner Kennedy Imboden No. 5 Block Thacker Winifrede Coalburg Elkhorn	N. & W. C. & O. C.C.& O.	1.50	33.00	58.00	7.50	1.25	2,950	1,619	14,400	8,000
HR	7	HIGH VOLATILE BY-PRODUCT	R. M.	No. 2 Gas Freeburn Upper War Eagle, etc.	N. & W. C. & O.	1.50	33.30	60.00	5.20	1.10	2,680	1,470	14,280	7,933
HR	8	HIGH VOLATILE BY-PRODUCT (Virginian Ry. Points)	R. M.	Eagle No. 1 Gas Middle War Eagle	VIR.	0.81	31.01	63.09	5.09	0.86	2,940	1,614	14,710	8,133
NPB	9	*UNDER 24 PER CENT VOLATILE* (Classification "C": Somerset C Prime "D": High Grade South Fork, Miller Vein, E.B.T.R.R.& C.Co.)	R. M.	Upper Kittanning "C" Prime Lower Kittanning "B"or Miller	W. M. B. & O. C. & P. P. R.R. E.B.T.	2.88	20.03	69.12	7.97	1.85	2,300	1,259	14,100	7,833
NPB	10	*UNDER 24 PER CENT VOLATILE* (Classification "C": Superior Low Volatile "D": Superior Steam Low Volatile "E": "C" and "D" Seams)	R. M.	Upper Freeport "E" Upper Freeport "D" Middle Kittanning "C" Kittanning "B" Clarion	P. R.R. B. & O. N. Y. C. P. & S. W. M.	3.10	23.48	65.84	7.58	1.69	2,100	1,148	13,850	7,693
NPB	11	*UNDER 24 PER CENT VOLATILE* (Fair Low Volatile)	R. M.	Upper Freeport "E" Upper Freeport "D" Middle Kittanning "C" Kittanning "B" Clarion	P. R.R. B. & O. N. Y. C. P. & S. W. M.	3.10	24.00	63.90	9.00	2.25	2,090	1,142	13,350	7,416
NPB	12	*BETWEEN 24 PER CENT and 31 PER CENT VOLATILE* (High Grade Medium Volatile)	R.M.	Upper Freeport "E" Lower Freeport"D" Pittsburgh	P.R.R. B. & O. N. Y. C. C.& I. B. R. & P.	2.53	28.07	62.10	7.30	1.18	2,150	1,175	12,710	7,061
NPB	14	*BETWEEN 24 PER CENT and 31 PER CENT VOLATILE* (Medium Grade Medium Volatile)	R. M.	"B" or Miller Middle Kittanning "C" Lower Freeport "D" Upper Freeport "E" Pittsburgh	P. R.R. B. & O. B. R. & P. P. & S. P. S. & N.	2.47	28.00	60.03	9.50	1.00	2,170	1,187	13,930	7,739
NPB	15	*BETWEEN 24 PER CENT and 31 PER CENT VOLATILE* (And Railroad Fuel Coal)	R. M.	Upper Freeport "E" Lower Freeport"D" Kittanning "B" Pittsburgh	P. R.R. B. & O. N. Y. C.	2.63	28.00	59.37	10.00	1.44	2,235	1,223	13,875	7,708
NPB	18	FAIR LOW VOLATILE STEAM (Classification "C": Ordinary Low Volatile "D" & "E": Ordinary Low Volatile "D" & "E": Steam and R.R.Fuel)	R. M.	Miscellaneous	P. R.R. B. & O. W. M. N.Y.C. C. & P. P. & S.	2.00	29.00	59.00	10.00	2.00	2,100	1,148	14,000	7,777
NPB	20	*LOW VOLATILE* (Classification "C": From Pools 1-9-10-11 "E": Slack)	Slack	Pools 9-10-11 on P.R.R. Pools 1-4-10-71 on N.Y.C. and Connections	P. R.R. N. Y. C.	2.75	22.25	67.50	7.50	1.25	2,390	1,309	14,000	7,777
NPB	21	*HIGH VOLATILE BY-PRODUCT*	R. M.	Pittsburgh	P. R.R.	2.50	35.00	55.00	7.50	1.00	2,515	1,378	14,000	7,777
NPB	30	*GAS COAL.* (Maximum Sulphur 1¼%)	¼ in.	Pittsburgh	P. R.R. B. & O.	1.56	35.51	57.27	5.66	0.90	2,500	1,370	14,355	7,971
NPB	31	*GAS COAL* (Classification "C": Youghiogheny Gas, Low Sul. "D": Gas Coal, Max. Sul. 1¼%)	R. M.	Pittsburgh	P. R.R. B. & O.	2.30	37.00	54.90	5.80	0.85	2,585	1,417	14,180	7,877
NPB HR	32	*GAS COAL* (Classification "B": High Volatile Gas "C": Youghiogheny Gas, Low Sul. "D": Gas Coal, Max. Sul. 1¼%)	Slack	Pittsburgh No. 2 Gas	P. R.R. B. & O. N. & W. C. & O.	2.15	37.40	54.95	5.40	1.05	2,425	1,328	13,925	7,736
NPB	33	*GAS COAL* (Classification "C": Pittsburgh-Fairmont High Volatile Steam "D": High Volatile Steam)	¼ in	Pittsburgh	P. R.R. B. & O.	1.47	36.77	54.64	7.12	2.00	2,324	1,272	14,250	7,917
NPB	34a	*GAS and STEAM COAL* (Classification "C": Pittsburgh-Fairmont High Volatile Steam "D": High Volatile Steam)	R. M.	Pittsburgh Redstone Sewickley	P. R.R. B. & O.	1.50	36.10	54.00	8.40	2.25	2,200	1,203	14,000	7,777
NPB HR	35	*STEAM COAL* (Classification "B": High Volatile Steam "C": Pittsburgh-Fairmont High Volatile Steam "D" High Volatile Steam)	Slack	Pools 6-34-54-64	N. & W. C. & O. C. C. & O. B. & O. P. R.R.	1.50	34.55	56.00	7.95	1.75	2,575	1,411	14,000	7,777

Tidewater Exchanges	Pool	Designation of Classification	Size	Seams from Which Mined	Railroads	Approximate Average Analyses: Moisture	Volatile	Fix. Car.	Ash	Sulphur	Fusing Point of Ash: Deg. Fahr.	Deg. Cent.	B. T. U.	Calories
NPB	37	*MARION COUNTY GAS*	¾-in.	Pittsburgh	B. & O.	1.12	40.00	53.26	5.56	1 70	2,100	1,145	14,300	7,944
NPB	38	*MARION COUNTY GAS*	R. M.	Pittsburgh	B. & O.	1 12	39.00	53.40	6.48	1.75	2,100	1,145	14,300	7,944
HR	39	HIGH VOLATILE BY-PRODUCT (Classification "B": Big Sandy Div. C. & O.)	R. M.	Elkhorn	C. & O.	3.40	36.75	55.85	4 00	0 75	2,505	1,373	14,000	7,777
NPB	39	*HIGH VOLATILE BY-PRODUCT* (Classification "D": Greensburg Basin)	¾-in.	Pittsburgh	P. R.R.	2.80	31.00	58 00	8 00	1.10	2,324	1,272	13,700	7,611
HR	40	HIGH VOLATILE STEAM (Classification "B": Local Mines)	R. M.	Darby Taggart	N. & W. C. C. & O.	3.60	36.50	57.50	2.40	0.70	2,450	1,359	14,600	8,011
NPB	40	*HIGH VOLATILE STEAM* (Classification "D": Greensburg Basin)	R. M.	Pittsburgh	P. R.R.	3.65	34.63	56.50	5.22	0.46	2,324	1,272	14,140	7,855
HR	41	HIGH VOLATILE STEAM OR SPLINT	Lump	Same as Pool 6	N. & W. C. & O.	3.25	34.00	56.25	6.50	0 92	2,950	1,619	14,400	8,000
HR	42	LOW VOLATILE GAS	R. M.	Same as Pool 2	N. & W. C. & O.	2.64	19.02	74.89	4.92	0 93	2,425	1,328	14,450	8,044
HR	43	HIGH VOLATILE GAS	Lump	No. 2 Gas	N. & W. C. & O.	1 95	33 00	59 85	5.20	1.30	2,680	1,470	14,280	7,933
NPB	43	*HIGH VOLATILE GAS*	¾-in.	Kittanning Freeport Sewickley Waynesburg Pittsburgh	B. & O. P. R.R.	1.50	34.50	55.00	9.00	2.40	2,220	1,214	13,800	7,666
HR	44	LOW VOLATILE STEAM	Lump	Same as Pool 2	N. & W. C. & O. VIR.	1.37	17.00	77.00	4.63	0.75	2,425	1,328	14,400	8,000
NPB	44	*HIGH VOLATILE GAS*	R. M.	Kittanning Freeport Sewickley Waynesburg Pittsburgh	B. & O P. R.R.	1.50	34.25	55.00	9.25	2.40	2,220	1,214	13,800	7,666
NPB	45	*HIGH VOLATILE GAS*	Slack	Pittsburgh-Fairmont Kittanning Sewickley Waynesburg Pittsburgh	B. & O.	1.50	34.25	55.00	9.25	2.40	2,190	1,198	13,800	7,666
HR	51	HIGH VOLATILE STEAM	1½- 3-in.	Same as Pool 6	N. & W. C. & O. C. C. & O.	2.64	35.42	56.34	5.60	1.00	2,950	1,619	14,550	8,083
NPB	53	*HIGH VOLATILE GAS and STEAM*	¾-in.	Best prepared Kittanning, Freeport, Sewickley, Connellsville Coking.	P. R.R. B. & O.	1.50	35.25	54.25	9.00	2.00	2,200	1,203	13,800	7,666
HR	53	HIGH VOLATILE GAS	1½- 3-in.	Same as Pool 5	N. & W. C. & O.	1.50	33.30	60.00	5.20	1.10	2,680	1,470	14,280	7,933
NPB	54	*HIGH VOLATILE GAS and STEAM*	R. M.	Best Prepared Kittanning, Freeport, Sewickley, Connellsville Coking..	P.R.R. B. & O.	1.50	35.00	54.25	9.25	2.00	2,200	1,203	13,800	7,666
HR	54	SUPERIOR LOW VOLATILE	1½- 3-in.	Same as Pools 1-2	C. & O. N. & W. VIR.	0.81	16.64	76.85	5.70	0.75	2,425	1,328	14,750	8,194
HR	56	HIGH VOLATILE STEAM	R. M.	No. 5 Block Winifrede Coalburg Elkhorn	C. & O.	3.09	33.20	55.11	8.60	2.00	2,880	1,581	13,980	7,767
NPB	60	*LOW SULPHUR GAS* (Westmoreland-Youghiogheny Dist.)	¾-in.	Pittsburgh	B. & O. P. R.R. W. M. C. & P.	1.60	36.80	54.25	7.35	0.87	2,500	1,370	14,350	7,972
NPB	61	*LOW SULPHUR GAS* (Westmoreland-Youghiogheny Dist.)	R. M.	Pittsburgh	B. & O. P. R.R. W. M. C. & P.	1.60	36.80	54.25	7.35	0.87	2,500	1,370	14,350	7,972
HR	61	HIGH VOLATILE STEAM	¾- 1 -in.	Same as Pool 6	N. & W. C. & O.	2.60	36.00	54.90	6.50	1 00	2,950	1,619	14,550	8,083
NPB	62	*LOW SULPHUR GAS* (Westmoreland-Youghiogheny Dist.)	Slack	Pittsburgh	B. & O. P. R.R. W. M. C. & P.	1.60	35.80	54.25	8.35	0.90	2,500	1,370	14,350	7,972
HR	63	HIGH VOLATILE GAS	¾- 1 -in.	Same as Pool 5	N. & W. C. & O.	1.50	33.30	60.00	5.20	1.10	2,680	1,470	14,280	7,933
NPB	63	*HIGH GRADE LOW VOLATILE*	¾-in.	Same as Pools 1-2	C. & O. N. & W. VIR.	0.81	16.64	54.00	7.25	1.50	2,425	1,328	14,750	7,933
HR	64	HIGH GRADE LOW VOLATILE	¾-1¼-in.	Same as Pools 1-2	C. & O. N. & W. VIR.	0.81	16.64	76.85	5.70	0.75	2,425	1,328	14,750	8,194
NPB	64	*HIGH GRADE HIGH VOLATILE GAS and STEAM* (Maximum Sulphur 2%)	R. M.	Pittsburgh Redstone (Hard structure, gas producing)	P. R.R. B. & O	1.50	37.00	54 00	7 50	1.62	2,500	1,370	14,280	7,933
NPB	71	*SUPERIOR LOW VOLATILE* (Mines on Navy Supplementary List)	R. M.	"B" or Miller "C" Prime Lower Kittanning	B. & O. C. & I. P. R.R.	1.55	18.54	73.62	6.19	1.00	2,400	1,314	14,800	8,222
HR	84	LOW VOLATILE STEAM	Pea ¾- 1¼-in. Nut & Slack	Pocahontas No. 3 Pocahontas No. 4 Sewell Beckley Fire Creek "B" or Miller Fulton	C. & O. K. & M. N. & W. VIR. C. C. & O. L. & N.	0.90	16.00	75.10	8.00	1.00	2,400	1,314	14,950	8,300

NPB = New York, Philadelphia & Baltimore Exchanges.
HR = Newport News, Sewall's Point and Lambert's Point Exchanges at Hampton Roads.
NN = Newport News.
SP = Sewall's Point.
LP = Lambert's Point.
CB = Curtis Bay.
LO = Locust Point.

GP = Greenwich Piers.
PR = Port Richmond.
CN = Canton Piers.
NY = New York Harbor Piers.
BRP = Buffalo, Rochester & Pittsburgh R.R.
P.S.N. = Pittsburgh, Shawmut & Northern R.R.
C. & I. = Cambria & Indiana R.R.
C. & P. = Cumberland & Pennsylvania R.R.
P. & S. = Pittsburgh & Susquehanna R.R.
K. & M. = Kanawha & Michigan R.R.

W. M. = Western Maryland R.R.
E. B. T. = East Broad Top R.R.
C. & O. = Chesapeake & Ohio R.R.
N. & W. = Norfolk & Western R.R.
C. C. & O = Carolina, Clinchfield & Ohio R R.
L. & N. = Louisville & Nashville R.R.
P. R R. = Pennsylvania R.R.
Vir. = Virginian Ry.
N. Y. C. = New York Central R.R.
B. & O. = Baltimore & Ohio R.R.

PRODUCTION OF COAL IN 1918 BY BEDS, AS REPORTED BY THE U. S. GEOLOGICAL SURVEY

MARYLAND

Name or Number of Bed or Seam	No. of Mines	Production — Net Tons	Production — Percentage of State Total
Bakerstown	5	192,947	4.29
Bakerstown and Freeport	1	59,666	1.33
Bakerstown and Pittsburgh	2	46,251	1.03
Big Vein	5	36,375	0.81
Big Vein and Bakerstown	2	203,294	4.52
Big Vein and Tyson	3	214,699	4.77
Bluebaugh	1	49,679	1.10
Clarion	1	15,159	0.34
Freeport	1	11,965	0.27
Georges Creek Big Vein	1	34,464	0.77
Kittanning	6	265,360	5.90
Kittanning and Freeport	2	129,099	2.87
Lower Kittanning	7	485,952	10.81
Parker	1	39,838	0.89
Pittsburgh	17	1,144,528	25.45
Pittsburgh, Big Vein	3	295,351	6.57
Pittsburgh, Tyson	2	99,043	2.20
Pittsburgh, Tyson, and Bakerstown	1	101,529	2.26
Red Stone	1	5,550	0.12
Split Six	1	12,560	0.28
Tyson	3	94,280	2.08
Tyson, Waynesburg	1	163,940	3.65
Upper Freeport	4	92,329	2.05
Upper and Lower Kittanning	3	132,703	2.95
Upper Kittanning and Bakerstown	1	26,835	0.60
Upper Sewickley	4	231,327	5.14
Not specified	52	312,574	6.95
	131	4,497,297	.....

PENNSYLVANIA

Name or Number of Bed or Seam	No. of Mines	Production — Net Tons	Production — Percentage of State Total
Barnett	14	253,294	0.14
Barnett and Kelly	2	99,537	0.06
Bear Creek	3	14,632	0.01
Berlin	3	135,819	0.08
Bloss	10	463,071	0.26
Brookville	61	2,729,350	1.53
Brookville or Clarion	3	33,889	0.02
Clarion	11	157,679	0.09
Freeport	30	2,571,049	1.44
Fulton	13	799,246	0.45
Fulton and Barnett	6	154,932	0.09
Freeport and Kittanning	2	35,356	0.02
Kelly	17	621,079	0.35
Kittanning	9	226,946	0.13
Lower Freeport	225	12,813,625	7.18
Lower Kittanning B	384	25,114,437	14.06
Lower Kittanning and Upper Freeport	1	282,633	0.16
Lower Freeport and Lower Kittanning	6	194,035	0.11
Lower Freeport, Lower Kittanning, and Brookville	2	100,434	0.06
Lower Freeport and Middle Kittanning	5	114,244	0.06
Lower Freeport, Middle Kittanning, and Lower Kittanning	1	30,045	0.02
Lower Kittanning and Brookville	6	156,785	0.09
Middle and Lower Kittanning	1	35,972	0.02
Middle Kittanning	56	1,920,720	1.08
Middle Kittanning and Upper Freeport	5	167,079	0.09
Mercer	2	1,245	(a)
Pittsburgh	606	94,656,136	53.01
Pittsburgh and Upper Freeport	1	51,427	0.03
Pittsburgh and Redstone	7	366,115	0.21
Platt	1	42,892	0.02
Price	2	15,931	0.01
Price or Berlin	2	26,752	0.01
Redstone	11	353,828	0.20
Sewickley	29	1,154,016	.65
Seymour	4	341,682	0.19
Upper Freeport	240	15,438,723	8.65
Upper and Lower Freeport	40	4,886,500	2.74
Upper Kittanning	114	6,394,307	3.58
Upper Freeport and Lower Kittanning	2	275,572	0.15
Upper Kittanning and Lower Kittanning	6	156,035	0.07
Upper Clarion	2	20,656	0.01
Upper and Lower Freeport and Middle Kittanning	2	28,489	0.02

PENNSYLVANIA (continued)

Name or Number of Bed or Seam	No. of Mines	Production — Net Tons	Production — Percentage of State Total
Upper Freeport, Lower Kittanning, and Brookville	1	26,004	0.01
Waynesburg	12	148,368	0.08
Not specified	922	4,940,175	2.76
	2,882	178,550,741	.....

VIRGINIA

Name or Number of Bed or Seam	No. of Mines	Production — Net Tons	Production — Percentage of State Total
Ailey	1	20,366	0.20
Banner	2	55,483	0.54
Big Seam	1	2,142	0.02
Brush Mountain, Big Vein	1	3,250	0.03
Dorchester	3	372,000	3.62
Edwards	3	126,748	1.23
Haskell	1	12,000	0.12
Hog Wallow	1	79,487	0.77
Imboden	13	2,349,760	22.84
Jaw Bone	4	24,670	0.24
Jewell Pocahontas	1	73,911	0.70
Kelley	1	6,275	0.06
Kelley and Imboden	1	97,068	0.94
Lower Banner	5	128,441	1.25
Mohawk	1	60,400	0.59
Middle Norion	1	15,000	0.15
Nos. 1 and 2	2	159,414	1.55
Nos. 2 and 4	1	36,050	0.35
No. 3	4	1,121,568	10.90
No. 5	9	352,434	3.43
Nos. 5 and 7	1	66,903	0.65
No. 6	1	132,797	1.29
No. 1 Black Mountain	1	30,379	0.30
No. 3 Black Mountain	1	7,577	0.07
No. 6 and Jawbone	1	77,121	0.75
North Fork	1	8,000	0.08
Parsons	1	218,701	2.13
Price Mountain	2	39,440	0.38
Red Ash	4	130,496	1.27
Splash Dam	2	16,444	0.16
Taggart	1	674,941	6.56
Town Hill	1	60,173	0.59
Upper Banner	18	1,137,327	11.05
Upper and Lower Banner	2	1,658,762	16.12
Upper Banner, Lower Banner, and Widow Kennedy	1	22,600	0.22
Virginia Anthracite	2	79,554	0.77
Widow Kennedy	4	34,835	0.34
Wise No. 1	1	72,384	0.70
Not specified	88	724,907	7.04
	189	10,289,808	.....

WEST VIRGINIA

Name or Number of Bed or Seam	No. of Mines	Production — Net Tons	Production — Percentage of State Total
Alma	10	417,073	0.43
Bakerstown	24	312,512	0.35
Bradshaw	2	39,341	0.04
Belmont	1	21,427	0.02
Beckley	42	4,159,491	4.63
Beckley No. 2	2	10,972	0.01
Beckley Fire Creek	1	61,700	0.07
Beckley, Pocahontas No. 3	1	116,878	0.13
Beckley & Sewell	3	304,047	0.34
Black Band	4	142,484	0.16
Campbell Creek No. 2	1	48,276	0.05
Cedar Grove	8	891,981	0.99
Chilton	22	1,577,647	1.75
Coalburg	34	2,466,532	2.74
Coalburg and Belmont	4	188,608	0.21
Coalburg and Cedar Grove	1	29,056	0.03
Coalburg and Lewiston	2	6,095	0.01
Coalburg Peerless	1	76,028	.08
Coalburg, Winifred, Thacker	1	152,951	0.17
Connellsville	1	47,254	0.05
Dorothy	1	97,319	0.11
Draper	1	46,834	.05
Draper and Dingess	1	50,869	0.06
Draper and Eagle	1	63,313	0.07
Eagle	28	1,713,178	1.90
Eagle No. 1	5	427,596	0.48
Eagle, No. 5, Splint	2	83,500	0.09
Eagle, No. 2, Gas	1	33,343	0.04
Eagle No. 2	3	231,676	0.26
Eagle Island Creek	2	216,132	0.24
Eagle Powellton	1	470,122	0.52
Eagle, Thacker, Island Crk	3	236,082	0.26
East Lynn	1	36,860	0.04
Elk Garden-Big Vein	1	29,480	0.03
Elk Lick	1	1,800	(a)
Fire Creek	23	914,272	1.02
Freeburn	3	218,274	0.24
Freeport	29	957,381	1.06
Freeport-Kittanning	1	28,427	0.03
Georges Creek Big Vein	2	91,937	0.10
Georges Creek Small Vein	1	11,901	0.01
Glen Alum	1	180,522	0.20
Iaeger	1	7,959	0.01
Island Creek	44	5,198,358	5.78
Island Creek Thacker	2	146,070	0.16
Kanawha	3	55,523	0.06
Kanawha, No. 1 Gas, No. 2 Gas, Amsted, and Eagle	2	259,973	0.29
Kanawha No. 5	4	164,429	0.18
Kittanning	27	1,350,168	1.50
Lewiston	6	225,596	0.25
Lewiston No. 2 Gas	1	15,150	0.02
Little Eagle	1	7,200	0.01
Little Pittsburgh	1	3,604	(a)
Lower Freeport	2	33,980	0.04
Lower Kittanning	24	1,410,533	1.58
Mahoning	1	1,248	(a)
Mason	1	6,270	0.01
Middle Kittanning	3	91,138	0.10
Mohawk	1	86,684	0.10
Masontown	1	16,690	0.02
No. 1	2	4,699	0.01
No. 1 Gas	3	197,517	0.22
No. 2	15	1,402,538	1.56
No. 2 Gas	53	2,387,471	2.65
No. 2 Gas and Coalburg	1	1,050	(a)
No. 3	3	186,123	0.21
Nos. 3 and 4	1	47,719	0.06
No. 5	4	384,946	0.43
No. 5 Block	23	846,927	0.94
No. 5 and Lewiston	4	110,138	0.12
No. 5 Splint	4	150,951	0.17
No. 7	2	142,554	0.16
No. 8	1	13,888	0.02
No. 8a	1	30,561	0.03
Peerless	4	61,291	0.07
Pittsburgh	197	13,509,518	15.02
Pittsburgh No. 8	33	2,607,012	2.90
Pittsburgh and Sewickley	1	44,296	0.05
Pittsburgh and Red Stone	1	51,359	0.06
Pittsburgh, Red Stone and Sewickley	1	172,532	0.19
Pocahontas	28	1,785,510	1.99
Pocahontas No. 3	62	10,810,422	12.02
Pocahontas Nos. 3 and 4	14	4,945,352	5.51
Pocahontas Nos. 3 and 6	1	35,880	0.40
Pocahontas No. 4	4	281,760	0.31
Pocahontas No. 7	1	96,422	0.11
Pocahontas No. 12	1	119,157	0.13
Pocahontas Sewell	1	30,550	0.03
Pomeroy	1	48,962	0.05
Pond Creek	2	56,781	0.06
Powellton	4	178,244	0.21
Queen	1	2,000	(a)
Quinnimont	2	53,037	0.06
Raymond	4	129,119	0.14
Red Jacket	4	255,492	0.29
Red Jacket Thacker	1	138,926	0.15
Red Stone	16	616,168	0.69
Sewell	92	6,647,680	7.39
Sewell No. 5	1	32,972	0.04
Sewickley	22	842,025	0.94
Thacker	15	542,716	0.60
Upper Freeport	25	1,056,194	1.17
Upper Freeport and Lower Kittanning	3	68,676	0.08
Upper Kittanning	2	9,779	0.01
Upper and Lower Kittanning	1	21,164	0.02
Upper Potomac	8	659,906	0.73
Upper Sewickley	1	3,640	(a)
War Creek	12	680,501	0.76
War Eagle No. 1	2	75,465	0.08
Waynesburg	3	18,398	0.02
Welch	5	246,574	0.27
Welch and Pocahontas	1	233,233	0.26
Westerley No. 1	1	155,715	0.17
Winifrede	18	1,212,056	1.35
Winifrede Coalburg	3	303,473	0.34
Winifrede, Coalburg, Freeport	1	83,858	0.09
Winifrede Pond Creek	2	172,230	0.19
Winifrede Thacker	3	149,488	0.17
Not specified	621	8,491,480	9.45
	1,745	89,935,839	.....

(a) Less than 0.01 per cent.

SWITZERLAND IMPORTED 233,804 metric tons of coal in September, 1920, as compared with 153,000 tons during the same month of 1919. This tonnage was obtained from the sources shown below:

	Metric Tons
Saare	26,105
Ruhr	17,754
Rhenish brown coal	13,810
Belgium	2,676
France	2,413
England	68,254
U. S. A.	100,592
Total	233,804

COAL PRODUCTION in the Ostrau-Karwin (Czechoslovakia) district in October, 1920, decreased by 26,320 tons or 3.91 per cent as against September, 1920, and amounted to 646,592 tons, compared with 672,912 tons in September, and 700,736 tons in August.

BRAZIL'S COAL MARKET is easing up, and the quality of both British and American coal now coming shows a marked improvement over past shipments. American coal is reported to be less in price than British, despite the low British rate of exchange.

To Control Combustion on Basis of Carbon Dioxide Alone Is Unsatisfactory

Loss Incurred Through Combustible Gases Passing Unburned Into the Chimney Is Far Greater Than the Saving Effected by an Equal Increase in Percentage of Carbon Dioxide—Instrument Has Been Devised that Continuously Analyzes the Flue Gas and Records the Component of Both Carbon Monoxide and Dioxide

By F. D. Harger*
New York City

IN THE OPERATION of boilers the efficiency of the furnace should be considered apart entirely from the boiler efficiency. The master key to the proper testing of furnace efficiency is a continuous gas analysis, such as not only measures the excess air present at all times but also promptly detects and measures the presence of combustible gases in the flue whenever they appear.

By a comparison of the curves in Figs. 1 and 2 an idea may be gained of the relative importance of two forms of fuel loss, arising: (1) From the escape of combustible gases into the stack whenever the air supply is insufficient and (2) from the introduction of excess air into the furnace. Fig. 1 shows the fuel losses which take place with varying percentages of carbon dioxide in the flue gases providing no combustible gases are present.

These vary inversely with the excess air supply. However, as the percentage of carbon dioxide is increased, or, in other words, as the air supply is decreased, there comes a time when combustible gases —carbon monoxide, methane and hydrogen—begin to form. The formation of these combustible gases causes a far greater loss than can be compensated by the saving which will be afforded by a decrease in the amount of admitted air or, what is the same thing, an increase in the percentage of carbon dioxide.

This is graphically illustrated in Fig. 2, wherein the portion of the curve indicated by *C B* represents fuel losses that develop beyond the point *C*. Here combustible gases begin to form as the air supply is decreased and as the carbon-dioxide percentage is accordingly increased.

The point *C* is the critical point. It is the region where combustion takes place with the greatest economy in fuel. The position of this point varies not only in different furnaces but changes constantly within the same furnace.

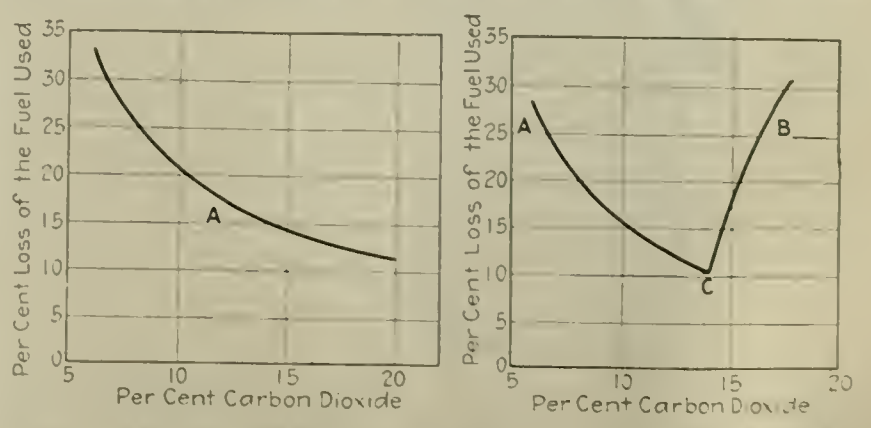
Recently an instrument has been perfected and placed on the market which not only accurately analyzes and records the percentages of carbon dioxide present in flue gases but also detects and clearly records on the same chart the presence and the approximate proportion of combustible gases as soon as they appear.

This instrument, manufactured by the Mono Corporation and the invention of Olof Rodhe, is so sensitive and accurate in the performance of this function that it will unfailingly detect and record the presence of even such minute fractions as $\frac{1}{10}$ of 1 per cent of combustible in the flue gases. Even this slight proportion is shown on the chart, so that the operator at a glance can clearly discern its presence. The existence of combustible gases being once established, the accurate determination of their actual percentages is of no great importance. The instrument indicates approximately the degree in which they appear, and this is sufficient for the guidance of the fireman. The actual percentage of combustible gas present is rarely less than two-thirds of the amount recorded on the chart and is seldom more than equal to the recorded amount.

Fig. 3 represents a diagram made by one of these instruments. The darker contour accurately shows the percentages of carbon dioxide present at all times. The lighter areas in the diagram indicate the presence of combustible gases, the proportion of which is roughly indicated by the height of the lighter areas at any particular time.

This diagram shows the condition found in a boiler plant at the time the instrument was first connected. Certain changes were made in the furnace, the nature of the fuel and the method of firing, with the result that conditions as illustrated in Fig. 4 were obtained. In this diagram it is seen that the carbon-dioxide content could be carried to a point as high as 13 per cent without the formation of combustible gases. In other words, the critical point, or that at which carbon monoxide began to reach the flue, was raised several per cent, resulting in a saving of 20 per cent of the fuel. Where the dark contour goes below the critical point, too much air is supplied or the air is improperly distributed. Where, on the other hand, it rises above the critical point, that is, the point where light areas begin to show, the supply of air is insufficient.

The apparatus itself (see Fig. 5) is driven by water under a pressure of about 10 lb. per square inch. Before entering the instrument the gas samples from the flue are drawn through a filtering system, that removes



FIGS. 1 AND 2. CHARTS OF THEORETICAL AND ACTUAL FURNACE OPERATION

These show respectively the loss of fuel with given percentages of carbon dioxide when all the combustible gases are consumed and the loss of fuel with given percentages of carbon dioxide under actual conditions of operation. Enough air must be admitted to burn all the combustible gases or more heat is lost than economy in the use of air will save.

*Vice-president and general manager, Mono Corporation of America.

FIGS. 3 AND 4

Charts for Ill- and Well-Adjusted Furnace

The dark area represents carbon dioxide percentage and the lighter area indicates roughly the amount of escaping unburned combustible gas. In Fig. 3 wherever the carbon dioxide content exceeds 10 per cent the line adjacent by its superior length evidences the presence of unburned combustible gas. In Fig. 4 the furnace has been adjusted and the amount of unburned gas is small.

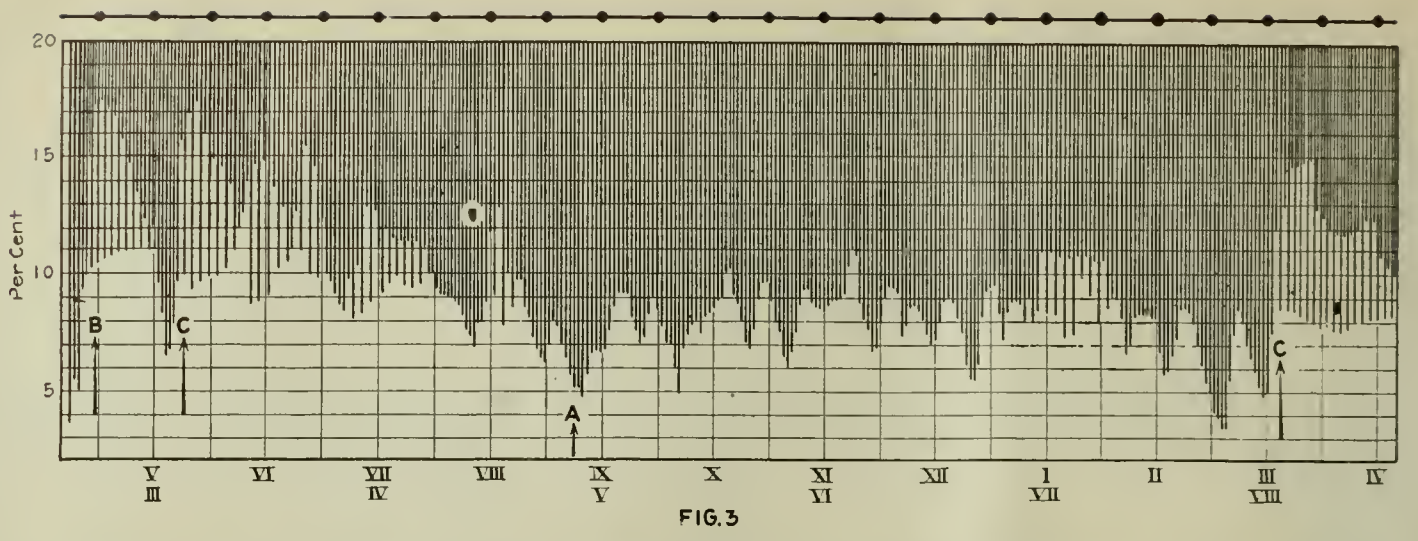


FIG. 3

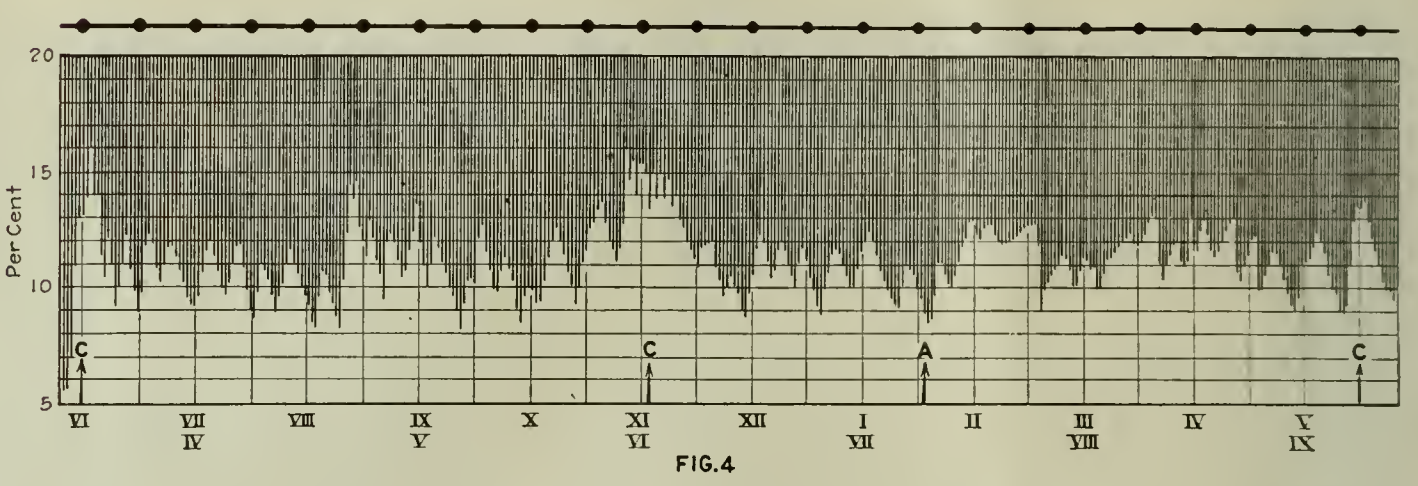


FIG. 4

all soot and dirt. They are then drawn into and forced through the apparatus by a mercury piston. There are no mechanical valves, the functions of such parts being performed by various mercury seals, traps, etc.

Samples of gas are forced alternately through two routes, one leading directly through a caustic-potash tank, where carbon dioxide is absorbed, and the other first through an electrically-heated furnace, wherein the combustible gases are first oxidized to carbon dioxide and water, and then passed through the caustic-potash tank. Samples that are forced through the caustic-potash tank give the readings only for carbon dioxide.

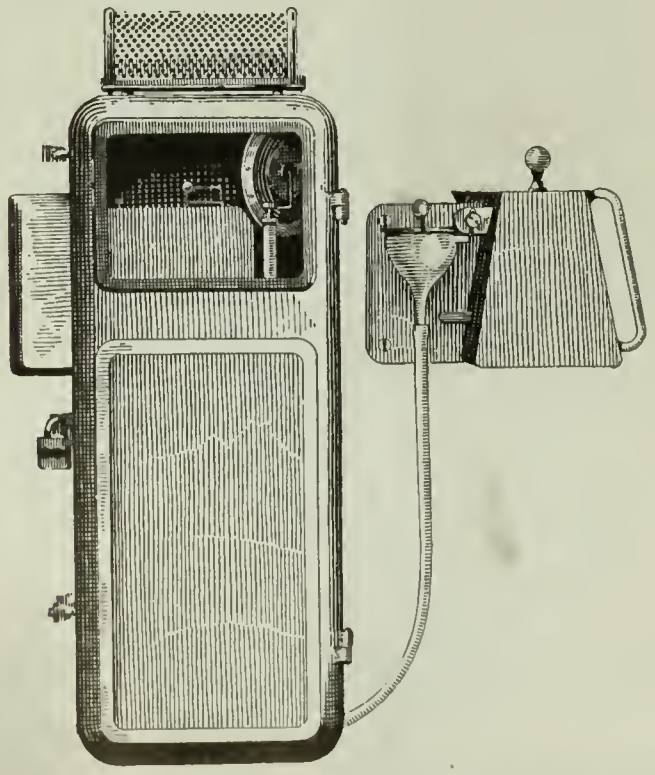


FIG. 5. RECORDER SHOWS CARBON DIOXIDE PERCENTAGES AND INDICATES PRESENCE OF COMBUSTIBLE GAS

This recorder takes samples of flue gas, finds how much carbon dioxide is in them and rules a line to accord therewith. It also burns the combustible gas in them, measures the carbon dioxide and the water vapor in the sample after burning and records the combined volume. As a result a line is ruled which shows by difference the carbon dioxide and water resulting from the completed combustion and exhibits roughly how much combustible gas is going up the stack unburned.

Those that are first forced through the electrically-heated furnace and then through the caustic-potash tank, give readings of the carbon dioxide in the natural stack gases plus the carbon dioxide and water derived from the combustion of the combustible gas in the stack. The difference between any two successive readings is proportional to the amount of the combustible gases present at the time the analyses are made.

In the electrically-heated furnace the oxygen necessary to oxidize the combustible gases and form carbon dioxide (which is later absorbed in the caustic-potash tank) and water (which is condensed) usually is derived from the air which is almost invariably present in flue gases even when they contain combustible. When such free oxygen is not available this gas is taken from copper oxide placed in the furnace for the purpose. The material, however, probably seldom acts as anything but a catalytic agent and need never be renewed.

The apparatus is practically dustproof and requires only a slight amount of attention, which consists in winding the clock once a week, renewing the caustic-potash solution two or three times a month, replenishing the ink supply twice a month and putting in new rolls of paper once every two months.

The carbon-dioxide records of the machine are extremely accurate. This makes possible the close determination of the critical point at any time under any conditions. This critical point, as mentioned before, is the highest percentage of carbon dioxide that can be reached in a given furnace without the formation of combustible gases. The higher it can be raised, the more economical is the process of combustion. Knowing its maximum from the clear and accurate records of the instrument, the fireman has available a constant indication of how near he is approaching ideal conditions. Should combustible gases appear at a percentage below the critical point, he knows that his dampers, fire doors, or the fire itself needs immediate attention. This his experience soon teaches him to give to the best advantage.

Froth Flotation for Cleaning Coal Being Tried Out in England

SMALL-SCALE experiments have been made by the Skinningrove Iron Co., of Saltburn-by-Sea, England, into the cleaning of coal by flotation. These were briefly described in a paper by Arnold F. Bury and Arthur B. Bicknell at a meeting of the Newcastle section of the Society of Chemical Industry held on Jan. 26 of this year.

A special laboratory was fitted up and machinery installed capable of dealing with samples up to 112 lb. The coal tested may briefly be said to consist of a mixture of (1) pure coal having a low ash of from 2.5 to 5 per cent, (2) bone coal having an ash of from 10 to 16 per cent, (3) shale containing a varying amount of bituminous matter and an ash of 60 to 85 per cent, (4) small quantities of other impurities such as gypsum and pyrites.

The shale, gypsum and pyrites could be removed by mechanical means if the coal were crushed sufficiently fine to free it from the impurities, but the bone coal presents a more difficult problem, for it cannot be removed even when the coal is ground to pass a 200-mesh screen, but the flotation process seems to meet this difficulty with satisfaction. The table shows the results obtained.

		1st Concentration		2d Concentration		1st and 2d Concentration		Residues	
	Ash	Weight	Ash	Weight	Ash	Weight	Ash	Weight	Ash
Freshly Mined									
No.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
1	12.4	78.6	3.1	9.2	10.1	87.8	3.8	12.2	72.4
2	24.2	62.7	3.4	13.2	14.5	75.9	5.2	24.8	78.5
3	15.8	81.1	3.0	2.1	19.3	83.2	5.4	16.8	75.0
Washery Refuse									
4	49.0	19.6	7.0	11.5	13.3	31.1	8.7	68.0	65.5
5	65.7	13.2	14.2	12.2	35.5	....	....	74.6	79.3
Pit Refuse									
6	53.3	30.4	5.1	4.6	15.1	....	....	65.0	77.5
7	28.2	38.4	7.0	13.9	13.5	52.3	8.2	44.3	63.5
Dumps									
8	47.4	33.3	8.7	4.4	36.9	....	....	62.3	73.6

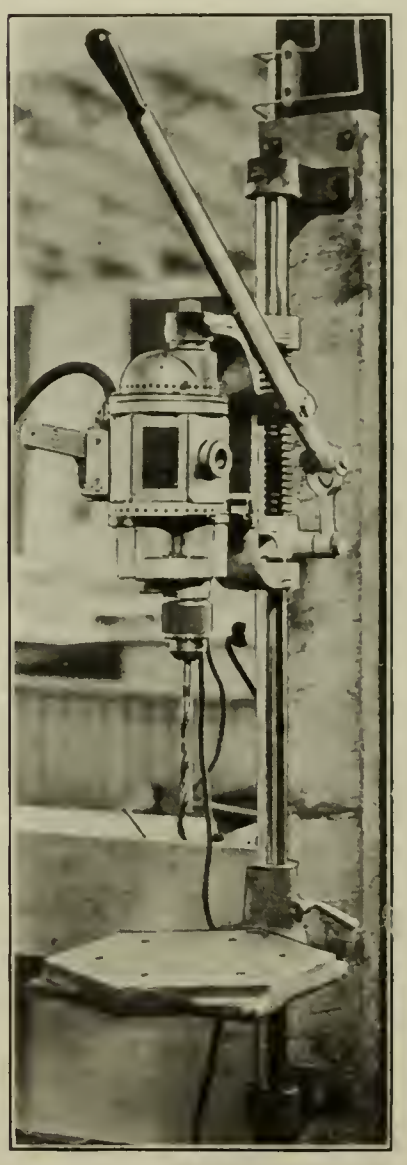
When certain reagents are added to small quantities of water and the whole is agitated violently, a multitude of minute air bubbles are formed. On allowing the liquid to come to rest the bubbles do not coalesce but remain distinct from each other and rise slowly to the surface, where a more or less permanent froth is formed. The reagents that can be used for the purpose are many, including certain oils, such as turps; soluble organic substances, such as cresol; certain alcohols, such as amyl alcohol, and soaps. The proportion of reagent required is small, amounting to a fraction of a pound of reagent to a ton of water. Particles of metallic sulphide, coal and graphite readily float on the froth, but sand, clay and similar earthy materials sink to the bottom.

If the mine product comprises pure coal, carboniferous shale and clay, the pure coal can be recovered, after which, by adding a small quantity of the oily reagent, the carboniferous shale can be separated, the clay being finally left behind. Flotation by this process does not depend on the specific gravity of the particles, for some substances, such as galena, which are most readily floated, have a high specific gravity.

A plant capable of dealing with 600 tons a day is being built at Skinningrove and it is conservatively estimated that by the use of the process 10 per cent increase in carbon in the coke will be obtained, with increases in gas and byproducts. The saving in the production of pig iron that will be effected is estimated at 75c. per ton. It is also said that waste liquor from naphthalene is an efficient agent for floating coal.

Post Designed to Permit Portable Electric Drill To Be Used as a Drill Press

MEANS by which a portable electric drill may be adapted for use as a post machine, making it practically a drill press, are shown in the accompanying illustration. This device enables the portable machine to do, with at least reasonable precision, either the heavy work of a drill press or ordinary drilling work. The machine may be attached to, or detached from, the post in a few seconds. All parts of this device are of rugged construction and generous proportions. The column is a solid steel shaft 1 7/8-in. in diameter attached to wall or post by means of heavy brackets. This post attachment is designed to take drills of 3/8 in. to 7/8 in. capacity, any of which can be attached or detached quickly. The bracket carrying the drill can be raised, lowered or rotated sidewise and is secured in any desired position by means of a split collar and clamping screw. A spiral spring returns the drill to its upper position when the feed lever is released. Provision also is made for raising, lowering or swinging the table. Both vertical and horizontal adjustments are made secure by means of a clamp screw. The chief dimensions of this device are as follows: Length of vertical column, 46 in.; vertical adjustment of drill, 25¼ in.; drilling radius or distance from center of drill to surface of drill column, 7 in.; horizontal adjustment of drill, 180 deg.; feed, vertical travel of drill under action of feed lever, 4½ in.; net weight, 80 lb. The feed lever is long and affords a ratio of 6: 1, so that, say, 100 lb. pressure applied to the lever gives 600 lb. on the drill bit. This, of course, means rapid work accomplished with small effort on the part of the operator. Six half-inch holes are tapped in the table to receive studs carrying clamps that hold the work in place. One stud with clamp and nut is supplied with the stand.



PORTABLE DRILL ON WALL POST

By providing a wall post with suitable bracket an electric drill can be adapted to ordinary blacksmithing work.

This unit, as may readily be understood, is unusually flexible. For this reason it makes an especially efficient device for use in such places as mine-car shops, where the majority of the work handled comes well within its range. It is built by the Black & Decker Co. for use in conjunction with the portable electric drills which that firm manufactures.

Problems of Operating Men

Edited by James T. Beard

Difficulties Met in Working the Redstone Coal

Experience Gained as a Miner, in the Working of the Redstone Seam, Serves to Solve Some of the Difficulties of the Problem, When Later Taking Charge as Foreman of Another Mine Operating in the Same Seam and Subject to the Same Conditions

READING the inquiry of an operator in the Pittsburgh district, who states that he has in contemplation the development of a tract of 200 acres of the Redstone coal, recalls my own experience, first as a miner and then as a foreman of a mine working that seam, in the Meyersdale region.

The inquirer asks for information regarding the quality of the coal and the difficulties that are likely to be met in the undertaking he has in prospect. He states that all the coal in the underlying Pittsburgh seam has been worked out in that tract. Regarding the quality of the Redstone coal I can say little that would be of help, but will enumerate some of the difficulties encountered in the working of the seam, hoping that my narration will be of some assistance.

Observations in the Meyersdale District, Redstone Seam

More than one-half the coal of the Meyersdale district was being mined from the Redstone seam, at the time to which I refer. For a considerable period, I was engaged digging coal as a miner. In every mine where I worked, my observation showed that the rooms were driven on 36 ft. centers and had a width of 5 yd., which made the width of the room pillars 21 ft.

Many a bad break have I seen in the rooms; at times, these would cut out the coal entirely. When that happened it was seldom that we were able to drive ahead. It was generally necessary to let the place stand and come back later on the coal from an adjoining room.

Often, I have seen the floor drop away from the coal several inches, and this condition would be extended through a number of rooms on the entry. Great care was then necessary to sprag the coal ahead and avoid taking down too much of the face at a time. Of course, this trouble resulted from the broken condition of the floor and roof caused by the extraction of the coal in the underlying seam.

On several occasions large breaks would be followed by heavy roof falls. Timbering seemed to have little effect to prevent this, as the broken roof would fall in spite of the timbers, and it required the miner to watch carefully in order to avoid being caught. To say the least, the condition was discouraging and called for the utmost forethought and skill on the part of both the foreman and the miner.

Working Out a Plan Based on Observation and Experience

Later, when called to take charge of a mine as foreman, in that district, I started to work out a system suggested by my observations and experience at the time of mining this coal. The plan, which I adopted after considerable study, was one that I thought would eliminate at least some of the troubles. But, while the methods employed were successful in part, we were still hindered by breaks and falls that would frequently cut us off and make it necessary to work around and come back on the coal, as before.

Working around in this manner would often cause poor ventilation at the coal face; but this was improved by stretching a line of canvas or brattice to carry the air forward, which we had to do to keep the face clear so that the men could work.

Reducing the Number of Breaks

As foreman, one scheme that I followed was to secure a map of the lower workings whenever this was possible. Then, by planning the work in the Redstone seam so that the openings would cross those in the seam below, we were able to reduce the number of breaks, which has been the source of most of the trouble previously.

Another plan that proved very helpful was the system we adopted of driving the headings narrow, not to exceed 10 ft. in width, and turning the rooms on 40-ft. centers, or larger when this seemed advisable. The seam was subject to creeps or squeezes, and the larger pillars left in the first working proved a great help in overcoming this difficulty.

One thing that seems surprising is the few accidents that have occurred in mining under these conditions. This can be attributed chiefly to the fact that the miner knows that he must watch and keep his timbers close to the face of the coal. Often have I found it necessary to change the system according to the changes observed in the direction of the breaks in the roof. Occasionally, it would be necessary to drive ahead to ascertain this fact.

In closing, let me say I frequently feared the coming of the mine inspector, for the reason that the conditions under which we were compelled to work rendered it almost impossible at times to make the necessary clearance required by law. This necessity was frequently admitted by the inspector himself. I hope sincerely that these brief comments may be of some value in reference to working the Redstone coal.

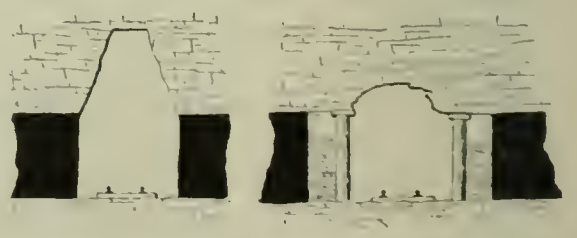
Pittsburgh, Pa. OPERATOR.

Avoiding Roof Troubles in Mining

Emphasizing the suggestions made in regard to overcoming the tendency of a jointed mine roof to develop heavy sudden falls that give no warning. Analagous conditions observed in the No. 4 seam, in Indiana, to those said to exist in the Miller, or B seam, of the Central Pennsylvania bituminous field.

READING the interesting article of Alfred E. Roberts, *Coal Age*, Jan. 13, p. 57, I am reminded that the troubles he describes as experienced in the mining of the Central Pennsylvania "B seam," in many respects resemble the conditions that exist in portions of the Indiana coal beds.

Roof troubles experienced in mining the coal from No. 4 seam, in Indiana, have caused me to devote many hours of deep study in striving to overcome



OVERCOMING CUTTING ACTION OF AIR ON ROOF IN NARROW-WORK

them. A most troublesome feature in this seam is the cutting action of the roof when driving narrow-work.

Owing to some cause, which many mine officials describe as phenomenal, but that seems to me is the result of violating a principle of mining, the roof of a narrow entry will fall, cutting upward almost vertically on each side, as indicated on the left, in the accompanying figure.

An entry eight or nine feet in width will often develop a fall several yards in length and from six to eight feet in

height above the rail. At the top of the fall the opening will be only three or four feet wide. This condition can be seen in the No. 27 mine of the Vandalia Coal Co., in this district. The cutting action is more prominent in those entries running north and south, but develops to a less degree in entries running east and west.

The closest observation failed to reveal any slips that would have started the fall. The mine boss (foreman) believed that the trouble was chiefly due to the entries having too small an area, which gave rise to a greater velocity of the air current than was found in the rooms, where the trouble was not as manifest as on the entries.

It was also thought it might be due to moisture, as an air current is more apt to deposit moisture on entering the mine and passing through the airways than when traveling in the rooms, as the variation in temperature is greater on the airways.

Blasting Weakens the Mine Roof

At another time, I was employed in No. 16 mine of the same company, where there was much narrow-work and the same trouble was manifest. It was a condition that resisted all efforts to timber or prevent the fall, until the roof had broken to a height that was self-supporting.

One thing that seems to me may have an important bearing on the question and explain why this trouble is more manifest on the entries than in the rooms has reference to blasting. In entrywork, the shots are generally put closer to the roof and there is less freedom for the charge to perform its work. The result is that the roof of the entry is submitted to a greater shock, which would naturally weaken its structure and give it a greater tendency to disintegrate and fall.

Wide Openings Make Roof Elastic

Arguing from this standpoint, I strongly advise driving the entries, say 12 ft. wide, which will give an opportunity for standing posts on each side of the track, as shown on the right of the figure. In most cases, this will not only have the advantage of avoiding the payment of yardage, but there will be provided ample space for storing the fallen refuse at the side of the track.

In the article to which I have referred, reference has been made to the greater elasticity given to the roof material through the opening up of a larger area. This is an element that I have thought operated to give less trouble in the rooms, which were often driven a width of 30 ft.

There is no question but that a greater width of the opening would give an increased freedom in the room and reduce, to that extent, the severe strain arising from the taking out of the coal. I would advise setting good timbers in the wide entries mentioned. The posts should have a diameter not less than one-eighth of their length.

Let me say that opening a mine, under these conditions, on the triple-entry system and driving a caving room as close as possible to each back entry and parallel to it, after the plan suggested in the article previously mentioned, appeals strongly to me. Other caving rooms can also be driven in suitable and convenient positions for the purpose of relieving the roof pressure on adjoining openings.

The suggestion of driving openings, as far as practicable, at an angle with the joint-planes in the roof of a coal seam, is a good one. Most of the systems of mining being in rectangular form, will require driving all openings at an angle of about 45 deg. with the joint-planes in the roof.

Better Roof Support Afforded When Openings Cross Joint Planes

The suggestion of the simultaneous development of all the workings in a given area, with a view to reducing the roof troubles mentioned, would seem to ponit to the adoption of the panel system of mining, which to my mind is a wasteful method and gives a low percentage of extraction.

It seems to me that a much higher percentage is often claimed for panel work than is actually experienced in that system. The form of the panel system in vogue, in this district, affords little or no opportunity for driving caving headings, which I consider an important feature.

By way of summation, let me say I favor a less production of coal in the first working and leaving large pillars to be taken out by machine on the retreating system. This in brief, is the plan that appeals to me as promising the greatest success.

Linton, Ind. W. H. Luxton.

Practice in South Wales Mines

Observation and experience show that the methods employed in the mining of coal in South Wales are the chief factors in limiting the output, per man per day, in those mines.

FOR a period of nearly twelve years I was employed in practically every class of work performed in the mines in South Wales, from trapperboy to fireman (fireboss). That experience, together with my later observation and experiences in the mines of this country, convinces me that the man who has not had similar opportunities to compare the results of miners in both countries is not competent to judge as to why the American miner puts out more coal, per day, than a miner in the old country.

While a man may visit one or more mines, in Great Britain and elsewhere, and observe the different methods of mining and transporting the coal, he is in no position to judge of the comparative merits of these different ways of working, like the man who has had the actual experience and performed work under the different conditions that exist in those countries.

Even in this country, conditions that influence the output, per man per day, are different in different mines. For example, a man may prove to be a champion coal digger in a mine where he has worked previously; but, on going to another mine, he finds his capacity for producing coal is handicapped by conditions that he cannot control, although the second mine may be working the same seam as the first.

There are many reasons why the average output, per man per day, is greater in the mines of this country than in Great Britain. Attention has been drawn, in previous letters on this subject, to the fact that the greater depth of shafts, the comparative thinness of the coal seams, and the more extensive development of the mines, necessitating a greater length of haul underground, all operate to reduce the daily output of a miner.

Creep or Squeeze Cause Trouble

In addition to these causes, the mines in South Wales are practically all worked on the longwall system, and are subject to squeeze and creep, which proves a great hindrance to the mining of the coal. Some of the mines are more affected in this manner than others. Where the creep is continuous, as sometimes happens, it requires a large force of daymen to keep the roads open.

At the Cambrian Collieries, Clydach Vale, in the Rhondda Valley, there were at one time a thousand men employed on the nightshift for brushing the roads, repairing track where the bottom had heaved, and timbering. The force included overmen, rippers, timbermen, drivers, rope riders, cagers, besides daymen and topmen.

Again, the miner in South Wales is not paid for fine coal and slack, which are thrown back into the gob. For this he receives no credit. He is not allowed to load his coal with a shovel but must use a "curling box," which he must fill by hand with clean coal, making the process of loading a car slow work.

No Machines a Handicap

In South Wales, there are no mining machines, all the coal being mined by hand. Much of the coal is tough and, after being undermined and sheared, must be broken down by sledge and wedge. Under these conditions, the output of a good miner will not exceed two tons a day. This estimate, moreover, is based on the miner alone and does not include drivers, timbermen, trackmen and others working in the mine.

Conditions in most of the mines in South Wales are such as to make the use of locomotives for hauling the coal impracticable. As a result all of the haulage is performed by endless or tailrope haulage.

These conditions should make it clear to anyone that no true comparison can be made between the output, per man per day, of miners in the two countries. Such a comparison would do an injustice to the ability of coal miners in Great Britain and should not be attempted.

Stoyestown, Pa. Griff Griffith.

Standardizing Rules in Mine Timbering

Discussing the need and practicability of formulating a set of standard rules regarding the setting of post timber at the working faces in mines.

REFERRING to the attempt of the Pennsylvania Compensation Rating and Inspection Bureau to ascertain if a standard set of rules could not be drafted that would provide for the setting of posts at a uniform distance from the face of the coal, this may naturally meet with some opposition in different quarters, but it will be generally agreed is a step in the right direction.

From the account given in *Coal Age*, Jan. 6, p. 15, it appears that the committee appointed to look into the matter made numerous practical tests, which showed that posts set three feet from the coal were not shot down, except where black powder was used.

It was also shown that the distance of three feet gavé ample space for sumping a shortwall machine, though it did not afford sufficient room to operate a breast machine, without removing the props.

While it appears that no conclusion was reached at this hearing, it is stated that the matter was held over for another year, in order to give time for collecting further data and making other tests.

It is to be hoped that these efforts will be continuous, until some standard rule relating to the timbering of the coal face in a mine is reported and adopted. Only by this means can it be expected to reduce the number of accidents from falls of roof and coal at the working face.

Accident Statistics Show the Need of Standardization

Of the 879 fatal accidents that occurred in the four-year period, 1816-1819, inclusive, 490 of these accidents occurred when the men were working at the face, either mining or loading coal. This high percentage should strongly urge the need of some practicable means or plan for adoption.

When a practice involving certain principles of safety is left to men's judgment, there easily results a wide margin of practice. In the majority of instances, the question of safety is made subordinate to getting results in the mining of the coal.

There are rules and regulations regarding the use of explosives and methods of blasting the coal. The practice of blasting has been standardized, in many mines, with the result that shooting off the solid is no longer permitted and permissible powders that are adapted to the hardness of the coal, thickness of the seam and other conditions, have replaced the black powder formerly used.

Again, the matter of lighting and the use of open lights and safety lamps, have come to be regulated by rules adapted to the conditions in particular mines. Different types of lamps have been tested and approved by the Government Bureau of Mines. All of these steps have served to reduce the mine-accident list.

It goes without saying that a standard rule of practice is the backbone of discipline. Why should we not standardize as far as practicable the methods of post timbering at the working face in mines. I understand the mine foremen in parts of Europe carry with them a stick or cane of a specified length and where props are found set farther apart than a specified distance, the miner is compelled to reset them.

While it is true there are many miners who need no watching, but set their timbers in a way to insure the maximum of safety for themselves, there are many others who will not do this except as they are compelled to it, by the strict enforcement of a rule or law that specifies how the timbers must be placed. For this reason, the adoption of a recognized standard is most to be desired. Such a standard, once adopted, will be a large factor in reducing the accident list of today.

Thomas, W. Va. "Safety First."

Inquiries Of General Interest

Composition of Natural Gas

The Claim of Miners That Firedamp in Mines Is Detected by Its Smell Leads to the Inquiry of What Other Gases Are Associated with Methane That Would Create the Odor So Often Ascribed to That Gas

KINDLY give the general composition of natural gas. I ask this information, because a large number of miners claim that they can detect the presence of firedamp by its smell.

Since all mining textbooks and chemistries state that methane or marsh gas, which is the chief constituent of firedamp, is odorless, it seems to me that the smell attributed by miners to firedamp must be caused by the presence of other gases.

If these other gases, occuring with methane as feeder gas, are also odorless, it may be that the odor detected by miners is due to the gas having percolated through some oily deposits.

The claim of odor in firedamp is so general among old miners that it cannot be set aside as being without foundation. Any experienced fireboss will freely admit that he has often perceived this odor, and has come to take it as an indication of the presence of gas.

Many firebosses do not hesitate to state that they are positive firedamp has an odor that is characteristic and gives warning of its presence before any test is made for the gas. What light can *Coal Age* throw on this matter?

Bicknell, Ind. N. E. Mosbey.

It is true that pure methane is described in all textbooks as being odorless. That fact has been determined by the manufacture of the gas in a pure condition, in the chemical laboratory, and is not to be disputed. On the other hand, the firedamp found in mines is never pure methane, but contains other gases besides.

This is not the first time that the attention of *Coal Age* has been drawn to the claim of miners that firedamp, in mines, is easily detected by its smell, provided one has had the experience that would enable him to recognize the particular odor, which is described as being peculiar to firedamp.

There are associated with methane, occurring as feeder gas, a few other hydrocarbons, the principal one being ethane (C_2H_6). The olefine gases, of which the most common representative is olefiant gas (C_2H_4), are rarely found in appreciable quantity associated with methane.

Traces of olefiant gas have been reported, in several instances, but generally less than 1 per cent of the mixture. Also, small percentages of carbon monoxide (CO) and somewhat larger percentages of carbon dioxide (CO_2) are found in gas coming from natural feeders.

Practically all of these associated gases, just mentioned, like methane, have no odor, with the exception of a slight pleasant odor attributed to olefiant gas. The presence of this gas in appreciable quantity, however, is so rare in the mines that it will not explain the odor ascribed to firedamp.

In this connection, it is interesting to note a statement made in Bulletin 148, published by the U. S. Bureau of Mines, entitled "Some Physical Properties of Petroleum and Gases," by J. O. Lewis. Mr. Lewis draws attention to the fact that certain oils absorb gas, which is held in solution as a liquid in the oil.

These gases belong to the olefine group. They have been styled "wet gases," in distinction from other so-called "dry gases," that are not condensible to the liquid form. Methane and ethane belong to the paraffin group and are dry gases.

In discussing the dry and wet hydrocarbon gases a short time ago, James Ashworth, mining engineer, drew attention to the vaporization of the oil contained in the Mahoning sandstone, in Ohio, as being a possible source of natural gas of a dangerous character, generated in large quantities by the vaporization of the oil.

The inquirer, here, has suggested that the odor associated with firedamp may arise from the filtering of the gases through a deposit impregnated with oil. It would seem more likely, however, that the alleged odor of firedamp arises from the presence of one or more of the so-called wet hydrocarbon gases, set free by the vaporization of the oil.

The bulletin to which we have referred is authority for the statement that enormous quantities of gas are held in solution by the oil, under the high initial pressure to which the oil is subjected in the measures. The release of this pressure, by the extraction of the coal in the seam and the subsidence of the overlying strata, is accompanied with the rapid vaporization of the oil and generation of gas.

In conclusion, it may be stated that Mr. Ashworth, who has devoted much time to the study of the generation of gas in mines, believes that some of the enormous outbursts of gas, notably those that occurred in the Morrisey Colliery of the Crows Nest Pass Coal Co., Alberta, Canada, in 1903 and 1904, and which finally lead to the abandonment of that mine in 1909, resulted from the vaporization of these liquid hydrocarbons that have since been styled as "wet gases." *Coal Age* will be glad to hear from others.

Examination Questions Answered

Examination for Mine Foremen, Seventeenth Anthracite District

(Selected Questions)

QUESTION — *If the return air-course becomes contracted in area what effect has this upon the water gage and the quantity of air, the ventilating power remaining the same?*

ANSWER — In fan ventilation, if the fan is properly designed to suit the conditions in the mine regarding its ventilation, any obstruction of the airways whereby the sectional area is reduced, will have the effect to increase the reading of the water gage, while the quantity of air in circulation will be decreased in the same proportion, if the ventilating power remains unchanged.

QUESTION — *How many cubic feet of air will pass per minute through an air-course 5 x 7 ft. when the current is traveling at the rate of 20 yd. in 15 seconds?*

ANSWER—A current traveling at the rate of 20 yd. in 15 seconds represents a velocity of $(3 \times 20) \div 15 = 4$ ft. per sec., or $4 \times 60 = 240$ ft. per min. The sectional area of this airway is $5 \times 7 = 35$ sq.ft., and assuming the velocity given is an average for the entire area of the airway, the quantity of air in circulation is $35 \times 240 = 8{,}400$ cu.ft. per min.

QUESTION—*If the roadway where the air travels be doubled in length, how much will the resistance be increased?*

ANSWER—Assuming the power on the air is constant, if the length of an airway is doubled, the velocity of the current will vary inversely as the cube root of 2, or $1/\sqrt[3]{2} = 1/1.26 = 0.793$. But, the resistance of an airway varies directly as its length and as the square of the velocity of the current; or as $2 \times 0.793^2 = 2 \times 0.628 =$ say 1.25. Therefore, to double the length of an airway, when the power on the air remains constant, will increase the resistance one-fourth of what it was previously.

QUESTION—*What instruments are required by a mine foreman, in order to efficiently fulfill his duties? Explain the use of each?*

ANSWER—The mine foreman requires an anemometer, for measuring the velocity of the air current by observing the reading of the dial after the instrument has been exposed for one minute in the airway. He requires a water gage for measuring the ventilating pressure. Multiplying the reading of the water gage, in inches, by 5.2 gives the difference of pressure, in pounds per square foot, between the intake and return airways.

The foreman should have a hygrometer, for measuring the humidity of the mine air, which is calculated from the difference in the readings of the wet- and dry-bulb thermometers. The dry-bulb thermometer of this instrument gives the temperature of the air.

The foreman should observe, regularly, on entering and leaving the mine, the reading of the mercurial barometer, which should be located at or near the mine entrance, on the surface. The rise or fall of the mercury column shows a corresponding increase or decrease of atmospheric pressure.

The mine foreman needs a magnetic compass, for giving sights and determining bearings in the mine. In steeply pitching seams, the foreman should have a clinometer, for measuring the angle of pitch. He must also carry with him a measuring tape for measuring distances and checking the widths of rooms and pillars. In a gassy mine, the foreman must carry his safety lamp with him; and he should have, besides, some form of gas indicator, either the Beard-Mackie sight indicator, or the Burrell gas detector, for determining the percentage of gas present.

QUESTION — *What is the difference between natural and artificial ventilation?*

ANSWER—Natural ventilation differs from that which is artificial in that the former is dependent wholly on atmospheric agencies, such as the difference in temperature of the mine air and the outside atmosphere; the force of wind exerted at the mine opening or diverted into the mine by some mechanical contrivance such as a wind cowl. Natural ventilation is also, at times, effected by means of a waterfall in the shaft.

On the other hand, artificial ventilation is produced by some mechanical means such as a ventilating fan; or is induced by the heat of a furnace located in the mine at or near the foot of the upcast shaft; or by the force of a steam jet or blower in the shaft.

QUESTION — *Given an arched airway 10 ft. in diameter, with a semicircular arch springing 5 ft. above the floor, and the velocity of the air 500 ft. per min., what would be the quantity of air passing, in cubic feet per minute?*

ANSWER — The arch being a semicircle, its diameter is the width of the airway. The area of the rectangular portion of the airway is, then, $5 \times 10 = 50$ sq.ft. and that of the semicircle $\frac{1}{2}(0.7854 \times 10^2) = 39.27$ sq.ft., which makes the total sectional area of the airway 89.27 sq.ft. Taking the average velocity of the air as 500 ft. per min., the quantity of air passing, in this airway, is $500 \times 89.27 = 44{,}635$ cu.ft. per min.

QUESTION—*If the velocity of the air, in an upcast shaft 14 ft. in diameter, is 1,100 ft. per min., how much air is there returning from the mine?*

ANSWER—The sectional area of this shaft is $0.7854 \times 14^2 = 153.9$ sq.ft. Then assuming the average velocity of the air current passing up the shaft is, as given, 1,100 ft. per min., the quantity of air returning from the mine is $1{,}100 \times 153.9 = 169{,}290$ cu.ft. per min.

QUESTION — *If the water gage reads 3½ in. what is the pressure per square foot producing the circulation?*

ANSWER—The unit ventilating pressure corresponding to a 3½-in. water gage is $3\frac{1}{2} \times 5.2 = 18.2$ lb. per sq.ft.

QUESTION — *If the quantity of air passing is 60,000 cu.ft. per min. and the water gage 2 in., what is the horsepower producing the circulation?*

ANSWER—First, the pressure producing circulation is $2 \times 5.2 = 10.4$ lb. per sq.ft. The horsepower of the air is found by multiplying the quantity of air in circulation, by this unit pressure and dividing the result by 33,000; thus $H = (60{,}000 \times 10.4)/33{,}000 = 18.9$ hp.

QUESTION—*How much will the power have to be increased to increase the quantity of air in circulation from 10,000 to 15,000 cu.ft. per min.?*

ANSWER — The power on the air varies as the cube of the quantity of air in circulation, other things remaining unchanged. In other words, the power ratio is equal to the cube of the quantity ratio. Therefore, in this case, since the quantity ratio is 15:10 = 1.5, the power ratio is $1.5^3 = 3\frac{3}{8}$. Hence, it will require $3\frac{3}{8}$ times the original power to accomplish the desired result, in this case by increasing the power.

Washington Coal Dealers Indicted on Charge of Conspiracy in Restraint of Trade

TWELVE coal dealers of the District of Columbia were indicted by the District of Columbia Grand Jury on March 3 for violation of the Sherman Anti-Trust Act on the ground of conspiracy in restraint of trade in coal in Washington. The indictments follow the charges made before the Senate Manufactures Committee on the coal bill that a local coal association had driven other coal men out of business for cutting prices.

The indictment charges that about March, 1918, the defendants adopted a method for preventing the small dealer from encroaching on their business; that they obtained control of supplies from the mines and of the single wholesale concern—the Standard Co.—from which the local small dealers obtain their supplies when they could not get them from large dealers; with persuading small dealers to join the Coal Merchants Board of Trade, of which, it is alleged, the accused dominated the directorship for the purpose of impressing upon small dealers the necessity of friendly, fraternal and ethical intercourse; that the small dealers were persuaded not to cut prevailing prices or to take customers from each other; that the big dealers sought to drive out small dealers who had the temerity to resist said coercion and compulsion or refused to be bound by the rules prescribed by the accused by preventing them from procuring supplies of coal; and that these acts resulted in inconvenience and delay to consumers in procuring coal and necessitated the payment of a vast sum in excess of what coal would have cost if business had been run in normal channels.

The alleged conspiracy under the act is a misdemeanor, the punishment being imprisonment for not more than one year and a fine not exceeding $5,000.

Mine Foremen Must Not Displace Workers

IDLENESS in northern West Virginia has afforded operators and miners an opportunity to get together and discuss certain disputed matters in regard to working conditions, such discussions having resulted in an agreement being signed about the middle of February denying the right to assign mine foremen to certain duties covered by the scale contract. The agreement was signed on behalf of the Northern West Virginia Coal Operators Association by E. S. McCullough, commissioner of the association, and by Nick Aiello, president of sub-district 4, on behalf of the miners. The agreement in substance is as follows:

Several complaints have been made before the operators' commissioner and the United Mine Workers' officials relative to mine foremen doing work covered by the scale contract. We make the following decision relative to the mine foreman:

"It is in violation of contract for any boss or foreman who is exempted by scale contract from the payment of union dues to work on any job covered by scale contract. This does not prohibit a boss or foreman from assisting any workman in performing emergency work whenever no workman is thereby displaced.

"When a mine is closed down pending a revival of the coal market, the regular workmen must be employed whenever men are needed to keep the mine in repair; this does not, however, prevent companies from combining two or more jobs when the work can be performed without doing an injustice."

Terrorized Willis Branch Men Quit Work

THE trouble at Willis Branch, in the New River field, where the Willis Branch Coal Co. has been endeavoring to run an open-shop mine since September, 1919, despite frequent attacks from union miners and their sympathizers, has become so serious that on Friday, Feb. 25, Governor John J. Cornwell of West Virginia and Governor-elect Morgan made a personal visit to Willis Branch for the purpose of investigating conditions and deciding on the best course to pursue in preventing further trouble.

After the attack on the Willis Branch plant made on Feb. 18 no one was left at the plant, and in order to protect it from utter destruction a squad of state police was assigned to guard it from further attacks. No attempt is being made to operate the mines, as the miners who stuck to their jobs over a period of more than a year have all been driven away by the fury of recent attacks, which reached their climax during the third week of February.

Want Right to Organize Established by Law

MORE than one hundred national and international labor union representatives conferred with American Federation of Labor officials in Washington recently to prepare a program, to combat the open-shop movement and to prevent legislation and other restrictions on labor's right to strike. President Lewis of the United Mine Workers of America said that 100,000 miners had been without work since Jan. 1 of this year and that those working were on a two- or three-day week basis. It is understood that the executive council of the federation has drafted a bill to legalize the right of labor unions to organize all fields of industry despite individual contracts between employers and employees. This bill is framed to meet the decision in the Hitchman Coal & Coke Co. case which held such contracts to be legal.

Come Here to Work and Not to Strike

ALBERT MANKA, formerly an organizer for the United Mine Workers of America, has embarked upon an insurgent movement against the United Mine Workers, his plan being to have the miners of northern West Virginia break away from the United Mine Workers and form a separate organization in West Virginia. He bases his campaign on the fact that the Polish miners did not come to the United States to strike but to work.

Manka is of Polish birth, and as there are a good many miners of that nationality in West Virginia his influence may carry considerable weight. Manka really launched his campaign during the third week of February at Sabraton, in Monongalia County, where he is said to have addressed a large and enthusiastic meeting of miners.

Manka's argument is that inasmuch as the union miners are now allied with the miners of Illinois, Indiana and Ohio in the Central Competitive field, every time there is serious trouble in the Central Competitive field, miners of West Virginia also are called out, although the controversy may be one in which they have no interest. Hence when West Virginia miners are called out they lose time and money.

As an alternative to the international organization Manka favors a state organization and is making his campaign with that end in view. Manka asserts that there is a large sentiment favorable to secession from the parent body.

Plan Strike as School and Borough Taxes Are Deducted from Wages

SINGLE men having pay coming at the Jermyn Coal Co.'s colliery, Old Forge, Pa., had their school and borough taxes deducted on Feb. 28, at the instance of John W. Holland, borough tax collector. Some refused to accept the pay offered, but, on receiving advice, accepted what was tendered. The mine workers knew that it would be the last pay to be received for some time, as the mine was to be closed down indefinitely for lack of orders. The Pennsylvania Coal Co.'s mine in the same borough suspended operations on the same day, Feb. 28. In fact the Jermyn Coal Co.'s plant had been idle for two weeks prior to that date. Many men have been temporarily dismissed from service at the Rushbrook colliery, of the Suffolk Coal Co., in Avoca. Other independent anthracite companies are planning a suspension of operations.

INDIANA COVE COLLIERY, NEAR GLACE BAY, N. S., RESUMES.—Union officials are jubilant over a settlement, said to be much better than the Montreal award, that has been granted to the men of the Indian Cove Colliery, near Glace Bay, N. S. The new wage scale is retroactive to Nov. 1, 1920.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THE general business situation has changed but little during the past month, according to the March bulletin of the National City Bank of New York.

"The industrial situation is mixed," the bulletin continues, "the news from day to day telling of works that are closing and works that are starting up, the one class of reports apparently about balancing the other. The amount of unemployment unquestionably is very large, but the amount of distress reported is comparatively small, indicating that the wage-earners had laid by something in the day of good earnings. The volume of retail trade in the industrial cities supports this view, but trade in the rural districts is light, bank clearings are down 25 to 30 per cent from a year ago, which, however, is not very bad considering the lower prices.

"Railroad tonnage is off about 20 per cent from the high point in October. The number of idle cars approaches 400,000. The movement of coal, grain, oil, lumber and all the chief commodities is light. The export business in coal to Europe is dead for the time being at least, and the domestic coal trade is flat, with a good many mines on part time and keen competition among sellers.

"The general trend of commodity prices has been downward and trade has continued on a hand-to-mouth basis.

"The automobile industry is showing some revival. Wage reductions are numerous and generally accepted as necessary.

"The cotton goods trades have had a fair amount of small business, but have not sustained the expectations that were raised soon after the first of the year, when they started off with a rush.

"The railroad situation is involved in a maze of complications almost as desperate as the state of international relations. There are so many powers to be consulted, so much speechmaking to be done, so much antagonism to be overcome, and such a division of authority that the proceedings are interminable. The railroad companies are trying to get into position where they will be able to exercise some effective authority in the operation of their lines."

Lincoln Motor Co. on Full Time

The Lincoln Motor Co. plant at Detroit was to resume full time operations with an enlarged force Monday, March 7, according to an announcement made March 5 by W. C. Leland, vice-president. The plant had been operating part time.

5,000 Garment Workers Strike

The International Ladies' Garment Workers' Union on March 9 put into effect a general strike in the misses and children's dress industry of New York City. About 5,000 operatives, mostly girls and women, quit 400 shops. The strike was called to unionize the entire industry and establish a minimum wage of $25 a week. The Children's Dress Manufacturers' Association, which had an agreement with the union, recently disbanded, and on the termination of the contract the union charges hours were lengthened and wages cut from $3 to $10 a week.

Form New Automobile Company

Frank L. Klingensmith, recently resigned from the Ford Motor Co.; Frank F. Beall, former vice-president of the Packard Motor Co., and William A. Blackburn, former factory manager of the Cadillac Motor Car Co., announced March 9 that they had organized a new company for the manufacture of automobiles in Detroit. The new concern is to be known as the Gray Motor Corporation, and the manufacture of cars to be sold at about $1,500 will start at once. It is the expectation of the officers that cars will be placed on the market this summer.

18,000 Re-Employed in Detroit

Nearly 18,000 more men were employed in factories in the Detroit area on March 1 than at the beginning of February, according to a survey of the labor situation made public March 4 by the Employers' Association of that city. The number of men now employed by the seventy-nine member corporations was placed at 62,878, a gain of 17,905 during February. This leaves approximately 140,000 idle, the association estimated.

Paper Mill Cuts Force Again

Sixty men in the sulphite department of the Great Northern Paper Co. at Madison, Me., were laid off indefinitely March 7. Others had been laid off the previous week, but part of them are employed in other departments.

P.R.R. Has Dropped 61,000 Men

It has been learned at the Pennsylvania Railroad offices in Philadelphia that since the company began its retrenchment policy last December 61,000 men throughout the system had been laid off up to March 1, reducing the total number of employees from 279,000 to 218,000.

Woolen Mills Resume Operations

The Indian Spring Mill of the American Woolen Company at Madison, Me., which has been idle since May, received orders March 8 to resume operations. It is expected that it will be running at full capacity within three weeks, employing about 300 persons. Starting Monday, Feb. 28, the Thomas Oakes Woolen Mills at Bloomfield, N. J., resumed operations on a forty-eight hours a week basis with a 20 per cent reduction in wages. Since last December the plant had been closed on Saturdays. The decrease in pay was announced early in February, and 300 workers went on strike.

Little Promise in Steel Outlook

Summarizing conditions in the iron and steel industry as of March 10 the *Iron Age* said: "March promises as yet no more business than February, which was a record for dullness with many of the steel companies. Failing to see signs of active buying interest, mills have entered the small amounts of current business at above the minimum levels of late extreme quotations. All the immediate improvement expected will probably be due to increased purchases for urgent consumption seeing that present output, totaling hardly 40 per cent for the industry as a whole, is only two-thirds of what is considered necessary to meet the ordinary wear and tear."

British Decontrol Unsettles Prices

DOMESTIC coal prices are increasing with the termination of government control of the British coal industry. South Wales collieries are advancing house coal 5s. to 1s. 6d. a ton, and it is understood that industrial coal will be similarly raised, excepting smalls, for which a free market has tended to weaken prices in view of large stocks. South Derbyshire collieries also have advanced house coal 5s., reducing smalls 5s. a ton. Miners' advances in wages under the strike agreement of November have practically disappeared owing to the reduced output.

The Coal Merchants' Federation, however, has decided that there shall be no immediate advance in coal anywhere. Twelve thousand tons of seconds Durham gas coke have been sold in New Castle for early shipment to Genoa at £2 5s. c.i.f. This is much below the current f.o.b. equivalent.

Output for the week ended Feb. 12 was placed at 4,345,000 tons, comparing with 4,418,000 tons the week previous and 4,607,000 tons in the week of Jan. 29. Production shows a steady decline since the turn of the year, resulting from the slow demand and poor market.

German Coal Production in 1920

By H. O. Herzog

GERMANY'S coal production figures for December being now available, allow a clear survey of the year's total production. The following table gives the figures of the various coal-producing sections in thousands of metric tons:

	Bituminous Coal	Brown Coal	Coke	Coal Bricks	Brown Coal Bricks
Prussia exclusive of the Saar and Palatinite districts	127,036	91,761	24,865	4,177	19,837
Bavaria	87	2,421	.....	.....	121
Saxony	4,056	7,656	145	.....	1,808
Badenia	.....	.....	.....	669	.....
Hessen	.....	522	.....	82	18
Brunswick	.....	2,756	.....	.....	624
Saxony-Altenburg	.....	5,364	.....	.....	1,715
Anhalt	.....	1,154	.....	.....	158
Other provinces	168	.....	168	11	.....
Total Germany without Saar and Palatinate districts	131,347	111,634	25,177	4,938	24,287

These figures denote considerable progress compared with 1919, and make even quite a good showing in comparison with the production of bituminous coal during war time, as is shown in the following tables:

	Total Germany	Total excluding Alsace-Lorraine, (Saar and Bavarian Palatinate)
	In Thousands of Metric Tons	
1914	161,535	148,523
1915	146,712	134,352
1916	158,847	145,111
1917	167,311	154,409
1918	160,526	148,187
1919	116,681	107,711
1920	131,347	131,347

For comparison the first row of figures of the above table gives the output of the German state including the territories disannexed by the peace treaty, while in the second row the output of the latter has been deducted. These figures demonstrate the progress in 1920 and the approach to normal conditions.

When making comparison with the production of pre-war years German publications invariably put forward the output of the year 1913. The output of 1920 remains far behind that of 1913, but the latter year represents the highest German coal production on record, and gives by no means a fair standard. In fact production in 1920 does not fall so very short of pre-war production, when looking back beyond 1913. Production in the years from 1908 to 1913, inclusive of the contribution of the now disannexed districts, was as follows in metric tons: 1908, 146,093,000; 1909, 146,964,000; 1910, 151,073,000; 1911, 158,581,000; 1912, 174,875,000; 1913, 191,511,000. The contribution of the disannexed districts averaged 8 per cent of the total output, which should be deducted when considering the past output, of the mines of present Germany only.

From these figures it appears that production now stands approximately where it was in 1909 and even 1910.

The increase in production is due to improvement of mine equipment, which, although carried out on a small scale, has made itself felt in such a way that in some mines the best record figures have already been reached; also to an increase in the number of miners, and mainly to the so-called overtime shifts or extension of regular working time from seven to eight or eight and one-half hours, which has come into force since March, 1919, although results were delayed by the political riots of that month. How far the larger number of miners is responsible for increased production becomes apparent in the following figures relating to the Rhenish-Westphalian district:

1920 Month	Output per Day, Metric Tons	Number of Work Days	Number of Miners Employed	Production per Man and Shift
January	264,875	25¼	475,747	0.591
February	286,511	24	479,252	0.613
March	236,951	27	481,274	0.581
April	271,314	24	474,202	0.580
May	305,053	23¼	479,080	0.593
June	304,272	24½	484,410	0.591
July	280,154	27	491,106	0.577
August	287,879	26	502,526	0.574
September	300,042	26	511,274	0.578
October	312,199	26	519,685	0.607
November	331,205	24¼	527,348	0.628
December	377,279	24⅛	532,798	0.720

A report which just comes from Upper Silesia clearly shows the importance of these overtime shifts. In one-half month after coming into operation in Upper Silesia the daily output has been raised considerably. It was 120,887 tons on Jan. 15, while the daily average previous to Jan. 1 was only 112,000 tons.

The most adverse condition is the general deficiency of transportation. The Ruhr district alone reports for December a shortage of 122,000 trucks. The stores of coal at pit mouths in the district increased from 490,000 tons to 882,000 tons in December, compelling several mines to reduce shifts.

While coal production has improved, it is still below the average of previous years; but brown coal production has reached unparalleled figures. Last year's production of brown coal by far exceeds the output of any preceding year. In view of the preparations which have been made throughout the country for more intensive production of brown coal, a considerable advance may be expected during the coming year.

Shanghai and Japanese Markets Are Dull

OWING to the approach of the China New Year—Feb. 8—trading in Japanese coal at Shanghai was very quiet during the fortnight covered by Wheelock & Co.'s coal market report, dated Jan. 27. Native dealers were not inclined to enter into any new business, but an early revival was predicted after the holidays. In Japan the market was dull and prices easier. Fushun and Kaiping coals are unchanged.

Fu Chung coal mines, located in the Province of Honan, produce anthracite which has been very well-known for a number of years, particularly at Hankow, where the Fu Chung Corp. has extensive facilities for handling coal for export.

Coal prices are quoted as follows:

	Taels per Ton ex Wharf
JAPAN COAL	
Miike lump, Miike small, Miike dust	Contracted for
Kishima lump	16.00
Shakano lump	15.00
Arate lump	14.00
Shimoyamada Kirigomi	13.00
Shin Shakano Kirigomi	13.00
Yoshinotani No. 1 lump	14.00
Yoshinotani No. 2 lump	12.00
Ochi lump	14.50
KAIPING COAL	
No. 1 lump	Contracted for
No. 2 lump	13.50
Washed nuts	13.50
Washed slack	10.50
No. 1 slack	9.00
No. 2 slack	8.50
FUSHUN COAL	
Dust	11.00
Kirigomi	No stock
Lump	No stock
FU CHUNG (ANTHRACITE) COAL	
Nos. 1, 2 and 3 Cobbles	14.00
Boiler coal	13.50
Dust coal	9.50

National Construction Conference Advises Drastic Deflation of Prices and Wages

FRANKLY stating that public distrust of the construction industries is the cause of the present stagnation in building, the National Construction Conference at Chicago, on March 2 and 3, advised "drastic deflation of prices and wages to an irreducible minimum." While each charged responsibility for inaction to the others, labor, management, capital and transportation all agreed on this main fact. Organized labor, it is to be particularly noted, was as prompt in accepting its duty in readjustment as were capital and management. With the decision that deflation is necessary, the conference recommended that local conferences be held to state the problem and arrive at means for concerted action and that individual industries review and revise their prices to effect complete deflation at the earliest possible moment.

Striking the keynote of the conference with the statement that no remedy was possible unless all interests approached the situation with a determination to sacrifice something, Harry A. Wheeler, vice-president of the Union Trust Co., Chicago, announced that "It is obvious that cheaper money is essential to the start of building operations." If it may be expected that labor, materials, transportation and money will recede no further, then this is the time to begin to build, and to convince the public that such is the case. If, on the other hand, we may expect that these commodities will be cheaper, every effort must now be made to arrive at that stage of an "irreducible price level" when reconstruction may start.

Rediscount rates, expressing the financial remedy to the building trade, Mr. Wheeler said, are the main obstacles facing the construction business. "If rediscount rates were lowered today, current money rates would fall within forty-eight hours. From our viewpoint, that is the biggest item now obstructing the financing of building projects. If the Federal Reserve system will lower its rediscount rate, in conformity with the rate now prevalent in a number of commodities, the banks will immediately lower their interest rates on money."

Railways Unable to Reduce Rates

C. H. Markham, president of the Illinois Central R.R., spoke on the transportation problem as it affects the construction industry, urging builders to co-operate with the railroads in furthering liquidation. He was supported by A. J. County, vice-president of the Pennsylvania R.R., who stated that there will be no increases in rates despite the frequent deficits, but on the other hand there can be no decrease for some time to come. Mr. County stated that the "railroads have made a serious deflation in their outlays and costs, and are looking to the other trades and industries to help in making a basis on which business can resume." High costs and profits must be deflated to meet present conditions. Industries can get close to their customers with prices for raw materials and finished work that will influence them to enter the market. "We must also look for the government to assist this deflation program by definite steps: (1) The fixing of war indemnities and the funding of the war debts and costs of the various nations, as well as our own, so that the same may be spread over a fifty-year period. (2) Reduction to a peace basis of governmental staffs and bureaus—federal, state and municipal—to bring about a reduction in heavy taxes."

The government, he asserted, must join in a program of cutting off large expenditures for non-productive work, and those that will not reduce expenses and finish only those projects so far advanced that it will mean a waste of capital to stop the work.

High Prices Control—Not High Wages

Speaking for organized labor, James Bulger, president of the Denver Trades Division of the national federation, said: "Everyone who has taken part in this conference has taken a keen pleasure in 'passing the buck.' The railways have laid the trouble to labor and rates. The banks, as represented here, mention rediscount rates as the trouble and labor. Coal representatives who have spoken at this conference have stated that 80 per cent of the cost of coal is due to labor. Construction men have plainly intimated that housing operations would start just as soon as labor reduced its wages. Labor may be somewhat at fault—that may be said of a number of things pertinent to the construction industry—but, deeper than that, it is indisputable that the real obstacle in the way of commencing building operations, and one of the principal causes of unemployment—is the high price of building materials."

Summarized briefly the conference disclosed that current costs of construction materials still remain much and erratically higher as compared with pre-war costs and compared with the average of all other commodities. Current construction labor costs have not had proper adjustment to accord with present conditions. Practices and conditions surrounding the financing of building construction require modification. Relations between employers and employees call for improvement and stabilization to effect continuity of operations in all building construction, and employers and contractors have not progressed to the needed extent in effecting reasonably prompt deflation of values throughout the construction industry (and all stages thereof from raw materials to finished products), including their own overhead and profit.

The conference was held under the direction of the National Federation of Construction Industries, Ernest T. Trigg, Philadelphia, Pa., president.

Seven Lives Believed Lost in Worst Mine Fire in History of Illinois

THE Kathleen mine at Dowell, Ill., operated by the Union Colliery Co., of St. Louis and Chicago, has been closed down and both of the large shafts of the mine have been sealed up. Wednesday morning, Feb. 23, at about 10:30, a small fire was discovered in one of the main entries of the mine about 3,000 feet from the shaft bottom. The fire while small when discovered, was evidently burning very rapidly and all of the men working in the mine were immediately notified to leave for the surface. In some manner, seven men, most of them tracklayers, who were working behind where the fire was, became trapped in such a way that it was impossible for them to escape through any of the back entries or crosscuts.

All efforts were then turned toward rescuing the men. Mine-rescue teams from Du Quoin, Benton, Elkville, Hallidayboro and other neighboring towns were called on, and after thirteen hours of desperate fighting it was pronounced by company and state mine officials impossible to put out the fire with any known fire apparatus. As it also was impossible to rescue the men while the fire was raging, the order was given and sanctioned by state mining officials to seal both shafts of the mine. The work of sealing the two holes started at 2 o'clock the morning after the fire, the fan having been stopped, and the job was completed about one hour after daylight.

This is said to be the worst mine fire in the history of Illinois and it also happens to be in one of the newest, largest and most up-to-date mines in the state.

The day following the fire, many state mining experts from Springfield, including Robert M. Medill, State Director of Mines and Minerals of Illinois, and also a body of mining engineers and students from the University of Illinois, arrived at the scene. At their suggestion, a churn drill was moved over the entry where the men were entrapped and the work of drilling into the entry was commenced, in the hope that the men might have possibly sealed themselves from the fire with material which was known to have been in the entry. After drilling for four and one-half days, however, the hole punctured the entry, but instead of any signs or taps being heard on the casing of the hole only

hot and death dealing fumes came from the hole, verifying the general opinion that the men had died a few hours after the fire had started.

The mine will be closed from thirty to ninety days, depending largely upon the success of smothering the flames. In the meanwhile the mining and University of Illinois engineers will make experiments as to the conditions of the fire and the various gases emitted. The mine was equipped with mining machinery and safety devices costing nearly $1,000,000.

To Hold Hearing March 24 on Proposed Changes in Anthracite Rates

IN compliance with requests from carriers the Coal and Coke Committee of Trunk Line Territory announces a hearing March 24, 1921, at 10:15 a.m., room 401, 143 Liberty Street, New York City, on a proposal to restore substantial parity of rates on anthracite coal as between shippers, consignees, destinations and routes from anthracite fields in Pennsylvania to points on the New York Central R.R., West Shore R.R., New York, Ontario and Western Ry., Erie R.R., Lehigh Valley R.R., Delaware, Lackawanna & Western R.R., Delaware & Hudson Co., Cooperstown & Charlotte Valley R.R., Boston & Maine R.R. (Saratoga Springs, N. Y.), Buffalo, Rochester & Pittsburgh Ry., Central New York Southern R.R., Pittsburgh, Shawmut & Northern R.R., Unadilla Valley R.R., Cortland County Traction Co. and Pennsylvania R.R.

Washington Reverts to Wage of 1919

DATING from yesterday, March 16, the coal industry in the State of Washington has reverted to the scale existing Oct. 31, 1919. This, according to the formal statement issued March 1 by an operators' committee representing 90 per cent of the state's commercial coal production, means that an average reduction of 23 per cent will be made both to mine workers and consumers. To compensate the various classes of labor employed, the statement says, living costs to labor at the mines will be correspondingly reduced.

The operators before making the reductions sent a personal statement to each employee explaining what had made the move necessary. They added that these changes would doubtless be opposed by officials of the United Mine Workers of America, District No. 10, but they believe the employees would see the justice of the employers' position and demand such action by the union as would permit the mines to operate. Should the operators' action be rejected by the mine workers, it was announced, the mines would close March 16, to remain shut until action by the men permitted their reopening.

It is asserted that the operators' announcement means a cut in the price of coal to the consumer of from $1 to $2.50 per ton.

Employees will be affected as follows: Miners actually digging the coal, who have averaged $10 a day, will not average more than $8.50; timbermen, track layers and other semi-skilled men working under ground, who now make $8.25 a day, will be paid $5.89 a day; common laborers employed under ground, who now make $7.55 a day, will receive $5.20; semi-skilled men employed above ground, who now make $8 a day, will be paid $5.75 a day; common laborers working above ground, who now receive $7 a day, will get $4.65 a day.

Even with these reductions, the operators pointed out, the common laborers working under ground and above ground at the coal mines will receive a much higher wage than now is being paid the same class of labor by lumber camps. The latter wage, according to the coal operators, averages from $3.20 to $3.60 a day. As compensation to the labor classes, so that they may maintain the same relation between the new wage scale and the cost of living as it existed on Oct. 31, 1919, the mines will reduce the cost of room and board from the present figures, which range between $40 and $47 a month, to between $30 and $37.

Some of the coal-price reductions to consumers will not run more than 50c. a ton, but domestic coals will decrease in price as much as $2.50 a ton. Normally 5,000 workers are employed by the coal industry of the state. Of these it is estimated 3,500 are now working. Twenty per cent of the mines, however, are now shut down and the balance operate only two to three days a week.

The notice mailed to all coal-mine employees by the operators is signed by the Wilkeson Coal & Coke Co., Roslyn Cascade Coal Co., Carbon Hill Coal Co., Fairfax Mine, Inc., Denny-Renton Clay & Coal Co., Carbon Coal & Clay Co., Cumberland Coal Mining Co., Ozark Coal Mining Co., Central Coal Co., Columbia Collieries, Durham Colliery Co., Roslyn Fuel Co., Independent Coal & Coke Co., Pacific Coast Coal Co., Mendotta Coal & Coke Co. and the Fords Prairie Coal Co.

Bureau of Mines Will Sample and Test Coals Shipped Through Tidewater Exchange

A CO-OPERATIVE agreement has been entered into by the U. S. Bureau of Mines and the Tidewater Coal Exchange, Inc., for the purpose of sampling and testing coals shipped through the exchange and assisting in classification of the mines. The contract follows:

"Whereas the Tidewater Coal Exchange, Inc., desires to classify coal on a basis of accurate sampling and analyses and to establish limits and tolerance of quality for certain pools and to maintain the quality of the pools within the limits specified, and

"Whereas the Bureau of Mines desires to obtain and disseminate accurate information concerning the preparation of coal with a view to increasing efficiency and conserving resources:

"Therefore, the Bureau of Mines and the Tidewater Coal Exchange, Inc., agree to co-operate to realize the mutually desired ends, as follows:

"The Bureau of Mines agrees to direct the work of obtaining the necessary technical information required, using its standard methods and equipment and furnishing certified reports of each finding. The work contemplates the collection and analysis of representative samples of coal as shipped and of mine samples when necessary. All analyses will be made at the bureau's Pittsburgh station.

"The bureau will give such aid as it can in helping the Tidewater Coal Exchange, Inc., to establish limits and tolerances based on analysis for each pool and in disseminating information as to such standards when finally determined. The bureau will aid in developing the necessary equipment and facilities for taking samples, and it is mutually agreed that in the process of taking samples, either at the mines, the piers or elsewhere, such sampling will be done in a manner that will not interfere with the railroad operation. The bureau will hire all the men mutually agreed upon as necessary to do the work, and certify all vouchers to the Tidewater Coal Exchange, Inc. The bureau's responsibility shall not extend beyond the facilities provided by the Tidewater Coal Exchange, Inc., to meet these responsibilities.

"The Tidewater Coal Exchange, Inc., agrees to make classifications on the basis of the analysis furnished by the bureau and publish the same, and to assign coal to pools within the limits and tolerances as finally published.

"The Tidewater Coal Exchange, Inc., agrees to pay all expenses incurred in work mutually agreed to in writing and by vouchers certified by the Bureau of Mines.

"The Tidewater Coal Exchange, Inc., agrees to obtain permission from mine operators shipping coal to ports for Bureau of Mines engineers to have free access to mines when necessary for the purpose of taking mine samples and to furnish labor as may be needed and reasonable facilities for reducing gross samples.

"The Tidewater Coal Exchange, Inc., agrees to furnish facilities and equipment where needed to carry out the expressed intent of this agreement and to use the name and connection of the Bureau of Mines in no way other than as agreed to in writing by the Director of the Bureau.

"This agreement is to terminate June 30, 1921, unless renewed, or the agreement may be terminated on sixty days' notice by either party.

Navy Opens Bids for Coal Requirements for Next Year; Repeal of Lever Act Ends Commandeering

ON March 8 the Navy Department opened bids for its coal supply for the next year, receiving a large number of proposals for both anthracite and bituminous coal for shore and ships' use. The bids in most instances were in great detail, covering various quantities, deliveries at various places and for various periods. It is reported that the bids were regarded as reasonable both as regards the mine and point of delivery quotations. As Congress has repealed the Lever Food and Fuel Law, under which the navy has commandeered coal since 1917, the department will be required to accept all or part of the bids, or readvertise.

The bids on some of the larger items at tidewater are as follows, those for the period April 1 to June 30, 1921, being indicated by the prefix (1), those for period April 1 to Sept. 30, 1921, by the prefix (2), and those for the coal year April 1, 1921, to March 31, 1922, by the prefix (3):

Whitely & Foedisch, Phila., bid $7.24 on 1 and 2 and $7.29 on 3, for 76,500 gross tons of steaming coal for the Brooklyn Navy Yard (class 1031).

On class 1033, which is for 25,000 gross tons of steaming coal for the Philadelphia Navy yard, the Emmons Coal Mining Co., Philadelphia, bid $7.18; Quemahoning Coal Co., Somerset, Pa., bid $6.68, and Thorne, Neale & Co., Philadelphia, bid $6.87 for delivery f.o.b. vessels under chutes at piers. All three bids are for the entire coal year. On the same requirements, but for delivery f.o.b. hopper-bottom cars at mines, the Davis Coal & Coke Co., Baltimore, bid (2) $3.83, (3) $3.98; Emmons Coal Mining Co., Philadelphia, (3) $4.20; Imperial Coal Corporation, New York City, (2) $3.92, (3) $4.20; Quemahoning Coal Co., Somerset, Pa., (3) $4.05; The J. Tatnall Lea & Co., Philadelphia, (3) $3.90; Thorne, Neale & Co., (3) $4.18; Weston-Dodson Co., Inc., Bethlehem, Pa., (3) $4.46.

On bid on class 1035, which is for 100,000 gross tons steaming coal for delivery f.o.b. vessels, under chutes at piers at Baltimore, was received from the White Oak Coal Co., Macdonald, Fayette County, W. Va., (3) $4.48. On the same item, but for delivery f.o.b. hopper-bottom cars at mines the Davis Coal and Coke Co., Baltimore, bid (2) $3.83; and H. P. Brydon & Bros., Inc., Piedmont, W. Va., bid (1), (2) and (3) $4.48.

For 50,000 gross tons of coal for use at the naval base at Hampton Roads (class 1041) bids for delivery f.o.b. hopper bottom cars at mines, were received from the S. J. Patterson Co., Dayton, Ohio, (1), (2) and (3) $4.50, 25,000 tons; Reid Coal Mining Co., New York City, (3) $1.74; Flat-Top Fuel Co., Inc., Bluefield, W. Va., (1) $3.70, (2) $3.80, (3) $3.90; L. A. Snead Co., Washington, D. C., (3) $3.92.

The largest requirement in the proposal is for 915,000 gross tons of steaming (bunker) coal, Hampton Roads, class 1042. Bids on this item for delivery f.o.b. vessels at piers were received from William C. Atwater & Co., Inc., New York, (3) $6.70, 240,000 tons; Crozer-Pocohantas Co., Philadelphia, (3) $6.75 for 200,000 tons, alternate $6.50; Reid Coal Mining Co., New York, (3) $6.49; Dexter & Carpenter, Inc., New York, (1) $6.50, (2) $6.75, (3) $7.10, 15,000 tons monthly; The C. G. Blake Co., Cincinnati, Ohio, (3) $4.48; Pocohantas Fuel Co., New York, (3) $6.75 for 450,000 tons; White Oak Coal Co., Macdonald, Fayette Co., W. Va., (3) $7.28 for 90,000 tons; Weston-Dodson Co., Bethlehem, Pa., (3) 100,000 tons $7.35, 100,000 tons $7.58, and 100,000 tons $7.83.

For storage, for which about 300,000 tons are expected to be required, delivery to be either into storage or at mines, as indicated, the following bids were received: Reid Coal Mining Co., New York, (3) $6.49 (storage); Fayette Smokeless Fuel Co., Mount Hope, W. Va., $4 (mines), (3) $4.35 (mines), and $7.15 (storage); C. G. Blake Co., Cincinnati, (1) $3.36, 240,000 tons (mines); Leckie Coal Co., Inc., Columbus, Ohio, (3) $4.50, 50,000 tons (mines).

Another Coal Crisis on the Way*

By Samuel Dunn
Editor, *Railway Age*

IF PRESENT TENDENCIES in the production and transportation of coal are not speedily changed the American people within a few months will be confronted with the most serious danger of a coal famine ever known. The production and transportation of bituminous coal have been rapidly declining, and within recent weeks have reached the lowest levels for years, except during the coal strike in November and December, 1919.

It is but two months since the week ended Dec. 11, when the mines produced and the railroads transported 12,865,000 tons of bituminous coal. They are now producing and transporting only 7,300,000 tons weekly, a decline of 43 per cent. It is but a few months since the railways were being generally denounced because they could not haul all the coal the country needed. Today 175,000 coal cars are standing idle because consumers and dealers are not buying and the mines are not producing coal with which to load them.

The situation demands the immediate attention of coal consumers, dealers and operators, railway officers and the Interstate Commerce Commission. There has been a plethora of propaganda in the past because the railroads could not handle enough coal when people wanted it. There is need to make all concerned understand now that if the railways are not soon given opportunity to haul more coal, the coal situation developing will be far more acute than any previously experienced.

The only time within recent years, except during the miners' strike, when the production and transportation of coal were anywhere near so small as they are now was early in 1919. The situation now, however, is much more threatening than then. Not only is less coal being produced than then, but the country entered the year 1919 with a storage supply of about 58,000,000 tons, the largest amount ever on hand at the beginning of a year, while it entered the year 1921 with comparatively small storage supplies.

The production of coal continued to be small throughout the first half of 1919. Everybody knows the sequel. The storage supplies were almost exhausted. Business suddenly revived, and with it the demand for coal. The railways were unable to transport it as fast as it was wanted and could be produced, and a howl went up all over the country that there was danger of a coal famine and that the railroads were to blame. In November, 1919, came the strike in the coal mines, which was followed by a coal shortage of several months' duration, due not only to the strike but to the small production in the early part of 1919. The railways throughout 1920 had to make herculean exertions to get enough coal to the Northwest to keep it from freezing and enough to New England and other parts of the country to keep their industries going. Priority had to be given to the use of open-top cars for the transportation of coal, with the result that many business activities, especially building and highway construction, had to be practically stopped.

We are moving toward a repetition of this experience, but in a more serious form and with more serious consequences. The annual average consumption of coal in this

*Editorial in *Railway Age*, March 11, 1921.

country for four years has been 535,000,000 tons, or more than 10,000,000 tons a week. The reduction of consumption owing to mild weather and industrial depression has been large, but far from sufficient to justify a reduction of production to 7,300,000 tons a week.

The main reason for this reduction, as shown by the reports of the U. S. Geological Survey, is "no market." Consumers and dealers won't buy. Probably the main reason they won't buy is the present prices. They are lower than those of a few months ago, but still high. The main reason they stay so high is the excessive wages being paid to the miners. In the two years March 31, 1918, to March 31, 1920, the mine workers in the Central Competitive Field were given five advances. This field embraces Pennsylvania, Ohio, Illinois, Indiana and the Southwest, and has set the pace for the country. Repeatedly wage scales were made to remain in effect for specified periods and advances granted before these periods had expired because the mine workers refused to abide by their contracts.

The advance in the daily wage rate between 1918 and 1920 was from $3.00 to $7.50, or 150 per cent. Many consumers and dealers are not buying because they expect coal prices to be further reduced and believe they should be. Because of this buyers' strike, hundreds of thousands of miners are unemployed, a large part of all the coal cars are idle, and the country is drifting toward a serious crisis.

The present wage scale was adopted to stay in effect until April 1, 1922. Since the miners in the past have repeatedly demanded and secured advances in wages before contract periods have expired, there is no reason why the mine operators should not demand and secure a reduction of wages before the present contract period expires. The entire industry of the country is suffering from the present prices of coal. This is especially true of the railroads. They consume one-third of all the coal produced. Their fuel bills now amount to about $750,000,000 a year. One of the principal reasons for their present high operating expenses is the excessive cost of coal. The question whether there is to be any reduction of miners' wages and consequent further reduction of the price of coal this year should be settled as soon as possible so as to reduce the length of the buyers' strike.

In every year for four years the transportation and business of the country have been demoralized by demands that the railroads should in certain periods to prevent a coal shortage handle more coal than they are physically capable of handling. The railroads and the Interstate Commerce Commission should definitely announce at an early date in terms leaving no possibility of misunderstanding, that no priority will be given to coal this year, no matter what may become the alleged necessities of coal producers and consumers, or of those of any section. The railroads can transport all the coal the country needs if given opportunity to handle it in reasonably uniform volume, and if the stupidity and selfishness of the coal producers, dealers and consumers which have caused one coal crisis after another cause another this year, their stupidity and selfishness should be allowed to produce their natural results. The railroads should cease to be made the "goat" for these coal crises.

Meantime, where are the construction concerns who made such a howl last summer when, owing to priority being given to coal, they could not get enough cars to ship materials? Why are not they "shipping early" in some of the 175,000 open-top cars now standing idle? A few months ago when the railways were moving the largest volume of freight ever handled, many people were charging they had "broken down" because they did not move more. Now, when over one-third of the railroad capacity of the country is idle, many people are saying private operation has "broken down" because with this enormously reduced traffic the railways are facing a financial crisis. The most varied and bitter experience does not seem to teach the American people anything regarding transportation matters.

PRICES OF COAL supplied to steamships at the Panama Canal were reduced $3 per ton on March 1, according to an announcement made by the Governor of the Panama Canal. The reduction will make the price of bunker coal $15 per ton at Cristobal and $17 at Balboa.

Connellsville Coke Concern Cuts Wages

W. J. RAINEY Co., Inc., has reduced wages 18 per cent, the reduction becoming effective March 8 and applying to all classes of mine and coke-yard labor. This company, like all the Connellsville concerns, has no contract with the union. It is considered the largest independent coke-producing company in the region.

The action of the Rainey interests is considered of more than usual importance because it marks one of the rare occasions in the history of the region when an independent operator has taken the initative in revising the wage scale. The H. C. Frick Coke Co., fuel subsidiary of the United States Steel corporation, has in the past set the pace for wages paid, but that company still has in effect the wage scale of September, 1920.

Twenty-five hundred men are affected by the Rainey reduction. The company operates ten plants in the Connellsville region, all of which have been working at approximately 95 per cent of their capacity. Other independent operators have virtually suspended operations and the Frick company is operating upon a 60 per cent basis.

The general opinion prevalent is that the remaining independent operators will wait for action by the Frick company before putting a new wage scale into effect. A comparison of the principal items of the new Rainey scale with the Frick scale now generally in force follows:

	Rainey	Frick
Mining and loading room and rib coal, 100 bu	$2.66	$3.24
Mining and loading heading coal, 100 bu	2.91	3.56
Mining and loading wet coal, 100 bu. (miners to drill holes and furnish own powder)	3.15	3.85
Loading machine coal, per 100 bu	1.80	3.85
Drawing coke per oven charged 72 hr	2.19	....
Drawing coke per oven charged 48 hr	2.08	....
Drivers, rope riders, etc., shafts	6.25	7.55
Drivers, rope riders, etc., drift	6.20	7.50
Mine labor, 8 hours	5.25	6.55
Outside labor, 9 hours	4.40	5.40
Leveling ovens, hand	.25	.31

Coal Industry in Peril as Winslow Bill Hung Fire; Seeks Safeguard for Future

NOW that the danger is past, coal operators admit that the solvency of practically the entire industry was threatened at the time the Winslow bill became a law. At that time, it is estimated, the coal producers of the country were carrying on their books more than $125,000,000 worth of railroad accounts. Had the railroads not been permitted to receive partial payments of the government's indebtedness, the coal industry would have been overtaken by the most serious financial difficulty of its history.

As it is, the accounts are being liquidated slowly. The fact, however, that the Winslow bill is on the statute books and the certainty that these overdue accounts will be met as soon as the rather cumbersome procedure is gone through with has reassured the banks, and the situation is comparatively easy. Some individual companies have lost their profit as a result of delays in payment for railroad fuel.

There is much concern in the industry as to the possibility of a similar situation arising in the future. The railroads apparently are having the greatest difficult in meeting their expenses. The partial payments from the government may afford only temporary relief. There is a general demand that some safeguard be provided which will relieve the coal industry of the necessity of financing in part the railroads of the country.

Shipping Board Rejects Latest Bids

WHILE regarding some of the coal bids received Feb. 28 as satisfactory, Chairman Benson of the Shipping Board decided March 14 to reject all the bids in order that the new Shipping Board to be appointed by President Harding might pass on the bids. New bids probably will not be called for until the new board takes office. The decision to reject the bids was reached in order that bidders might be relieved of uncertainty and given opportunity to make other disposition of coal being held for the board. This is the third series of bids to be received and rejected by the board. the first having been received in December, the second in January and the third in February.

Standardizing the Pools of the Sewalls Point Exchange

By J. S. Burrows*

EVER since the beginning of the tidewater coal pools as a war measure there has been much dissatisfaction with the classification of mines and the grading of shipments to these pools. This has been due entirely to the lack of a fixed standard classification and grading system which left out the personal element and which would be as comprehensible to the producer and consumer of coal as to the officials of the exchanges who classified the mines and graded the shipments.

That the personal element entered largely into the matter may be seen from the fact that mines were classified and shipments graded in accordance with the judgment of a few men whose personal experience and knowledge of coal was their only criterion. Such a basis of classification is only one man's opinion against another's, and in cases where the exchanges and their shippers disagreed on the grading of coal there has been no basis for settling the dispute because there have been no definite standards for the various pools and no basis of comparing one shipment with another except by visual inspection.

Shippers of coal over the Virginian Ry., which serves the New River smokeless coal field and has its loading piers at Sewalls Point, Va., on Hampton Roads, determined to correct this situation with respect to their own coal in organizing the Sewalls Point Coal Exchange.

The question of classification and grading of shipments was given first consideration in the organization meeting of the shippers, and it was decided to attempt, under my direction, a scientific basis of classification, in which a known standard would be established for each pool. The basis of classification was to be adopted only after an examination had been made of every mine shipping to the exchange and of a representative sample of a full day's loading taken at each tipple for analysis and test. The co-operation of the U. S. Bureau of Mines was obtained in this work in order that the results would be authoritative. All samples were obtained and analyses made by the trained samplers and chemists of this government bureau.

Operators Insist on Classification by Merit

It is of interest at this time, when quality is re-asserting itself in all industry, to remark the foresight of the group of coal operators who, nine months ago, in the face of an unprecedented demand and high prices, required that regardless of individual consequences, their coal be classified on its merits as determined by test. It has taken all of eight months to complete the preliminary investigation in the field and set up a system of classification and grading based on actual tests.

The new system became effective beginning with shipments to Sewalls Point on March 15, and embraces a definite specification of quality for each pool. Each pool has a standard analysis, a limit of variation, and the buyer is assured coal of this standard quality by certificate of the exchange.

The following new rules of the exchange explain the procedure of classifying the mines:

Only mines which have a car allotment from the Virginian Ry. and which have loading tipples located on their private sidings shall be classified. Wagon mines or other coal mining operations of a temporary character shall not be classified.

New mining operations of a permanent character which are on a development basis will be considered for classification only after a loading tipple has been provided and coal is being loaded direct from mine to railroad car in usual manner.

All mines entitled to classification in the exchange shall be subjected to a standardization test before being classified, and the results of such test shall determine to which pool shipments shall be made.

A standardization test shall consist of a proximate chemical analysis, calorimeter determination and fusing temperature of the ash as made by the U. S. Bureau of Mines or in conformity with the latest methods and apparatus employed in its coal laboratory. Such an analysis and tests to be made of a representative sample of a day's loading at the tipple collected from the run of mine by a coal sampler employed by the exchange, who shall follow the exchange's coal sampling routine, which is made a part of these rules, and who shall submit a report embracing a record of the sample together with his observations as to the grade or size, character or appearance, nature of impurities and preparation of the product. An equal and representative half of the sample shall be furnished to the mine management if desired and the sampler shall ask its representative whether the management is satisfied that the sample taken is representative of the day's loading.

As a result of the standardization test, a copy of which shall be furnished to the mine, the exchange and the mine management shall agree on a standard of preparation in terms of ash in dry coal within the pool limit indicated by the test and the management shall agree to use its best efforts to maintain the standard of preparation decided upon.

Additional standardization tests may be made by the exchange as often as in its opinion changed conditions at the mines require, and any dissatisfaction with the classification may be appealed to the Board of Directors.

Having determined the status of each mine by the standardization test, which gives the mine the opportunity to demonstrate under known conditions the quality of its product (and really classify itself), the next step in the Sewalls Point system is the check on the day-to-day shipments to the pools. This is the most important part of the whole scheme, on which the exchange is depending for the maintainence of its standards. Heretofore it has been considered impracticable to establish analysis standards on account of the difficulty of getting representative samples of coal from railroad cars by the usual methods where the coal is rapidly discharged, as when being dumped into vessels. Samples of coal to be thoroughly representative must weigh a thousand pounds or more—the more the better—and should come from every part of the car.

Installs Country's Only Coal Sampling Plant

Realizing the importance of getting absolutely accurate samples of shipments to the pools, the exchange installed at Sewalls Point coal pier the first and only coal sampling plant for handling large commercial shipments in the United States. The plant was built after my designs and consists of three units, as follows: The dumper, which is separate from the main dumper of the pier, with its own tracks and connections to the pier; the riffle car of sixty tons capacity, which is self propelled; and the sampling and crusher station.

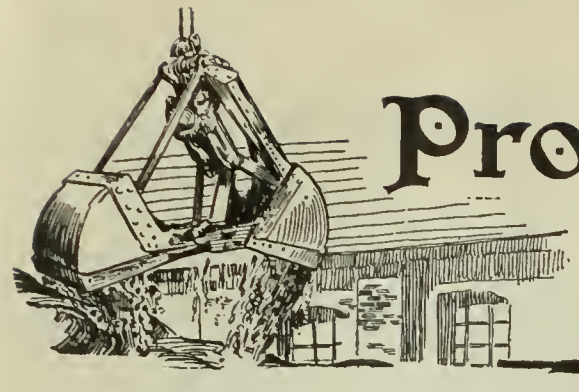
The operation of the plant is as follows: A car of coal to be sampled is run up into the dumper under which the riffle car is standing. The coal from the railroad car is rolled and mixed in passing through the dumper and falls in a wide stream into the riffle car. The body of the riffle car is arranged like a laboratory riffle and the separate compartments cut out a portion of the stream of fifty to sixty tons of the coal flowing in from the dumper.

When loaded the riffle car is run down to the sampling station and ten thousand pounds of coal is discharged from the compartments through a feeder, crusher and bucket elevator, in which it is finally carried to the top of the station, where an automatic device cuts out a portion of the gross sample, which is further reduced to laboratory size as it passes through the plant. The balance of the sample is all returned to the riffle car, which when the sampling is completed proceeds to the top of the pier, discharges and returns to the dumper for the next sample. Daily samples of shipments from the mines form an indisputable record of the quality of the coal being shipped by each mine, and preparation can be controlled and mines reclassified immediately on that record.

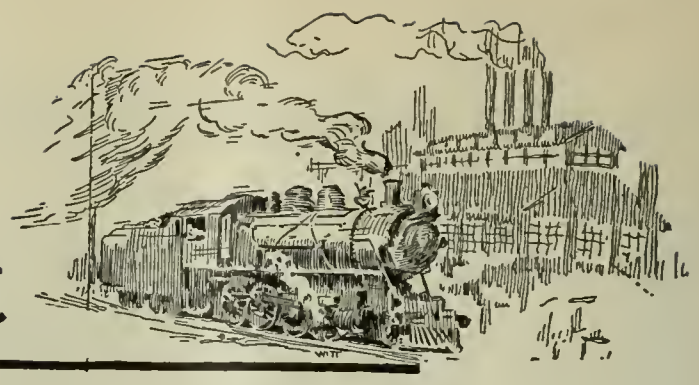
Exchange Conducted for Mutual Protection

In the operation of an exchange the interests of a buyer of coal and of a member of the exchange are identical in so far as quality is concerned. The member who ships a high-grade coal to a pool, for instance, is entitled to and expects to receive from the exchange coal of a grade equal to his own. It is for the mutual protection of both buyers and sellers of coal dealing through the Sewalls Point Coal Exchange, therefore this exchange has established the precedent of making available coal of uniform standardized quality. There is now in preparation a book of specifications and descriptions of the pools, which will be issued by the exchange shortly.

*Consulting engineer, Coal Classification, Sewalls Point Coal Exchange.



Production and the Market



Weekly Review

SO CERTAIN are many producers and shippers of bituminous coal that the industrial consumer, the railroads and the public utilities are inviting trouble for themselves by their continued policy of staying out of the market that these producers and shippers are either indifferent to contract offers or are openly refusing to consider commitments for next year. There is a considerable element in the trade in entire harmony with the editorial of *Railway Age* of March 11 (published elsewhere in this issue of *Coal Age*) entitled "Another Coal Crisis on the Way," who believe that we are due for another period of car shortage and high prices, the beginning of which some predict will be as early as July 1.

A Warning to Industrial Consumers

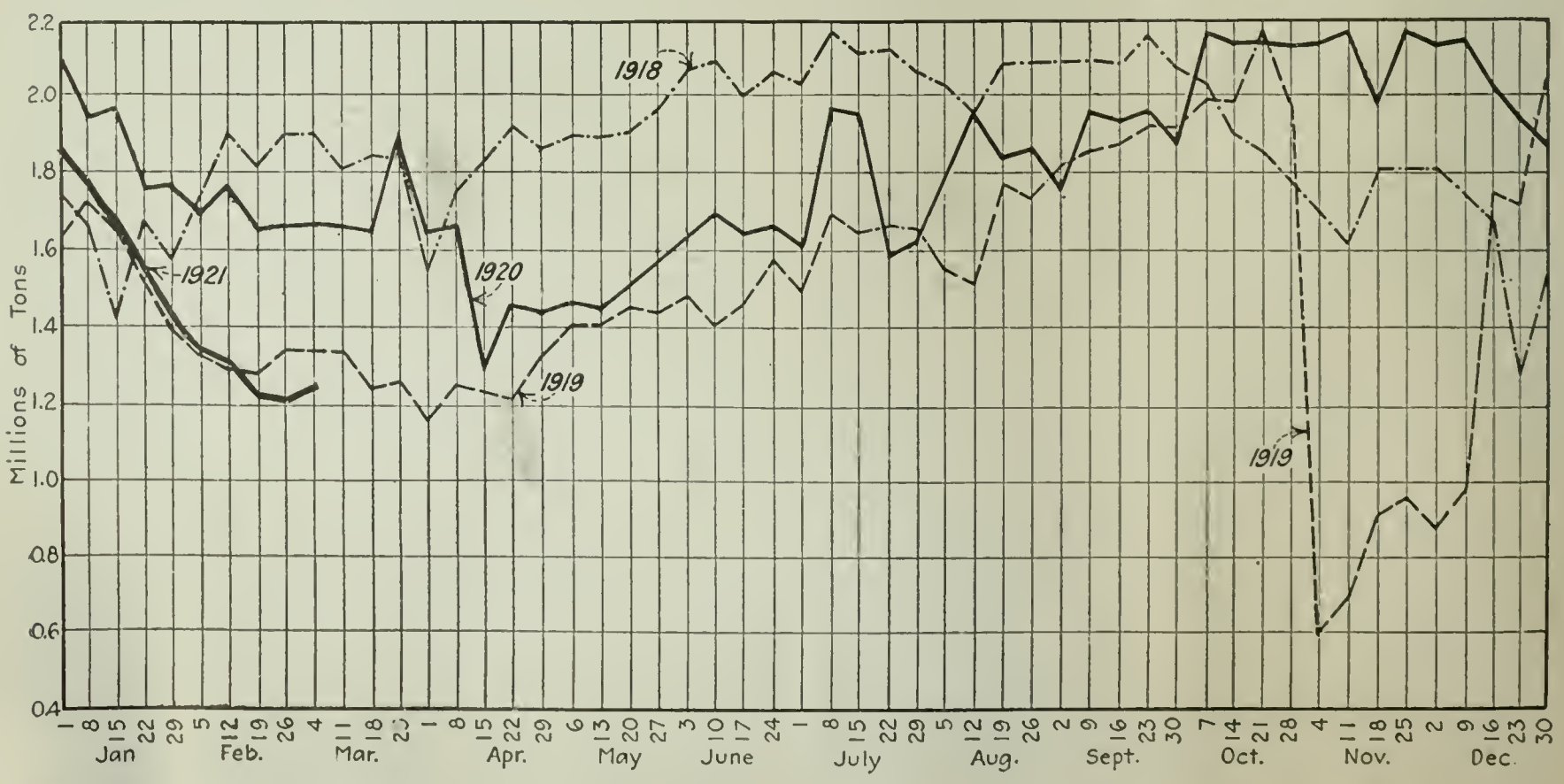
It is up to each individual buyer of industrial coal to appraise his own situation. If he has in prospect the need for a certain amount of coal for the next twelve months he will do well to heed these preliminary warnings and not only protect himself with a contract for a good grade of coal, and at a very reasonable price, but he will make provision for putting the majority of that coal in his stock-pile in the next four or five months. Contracts can be made today with a labor clause covering decrease in wages, and prices for bituminous coal, both for spot and contract, are about as low as can be expected.

The low rate of production and the absence of any spot demand attests the inactivity of all branches of the coal market. Reserves of large consumers are for the most part adequate for present needs, retail trade is quiet because of a continuance of mild temperatures, and overseas demand has temporarily ceased.

Inquiries Made for Contract Quotations

The only bright spots at present are the increasing inquiries for contract quotations and a new condition in the steam market where a slight shortage of screened steam sizes exists. Although but few contracts have actually been closed for the new coal year it is apparent that buyers are measuring their requirements for the next twelve months and are all "getting the range." Buyers' offers for railroad fuel still find few if any takers, but the tonnage involved shows little diminution from amounts covered in normal years. Large users are relying on the spot market currently, but have one eye on the industrial situation, while the other gauges the market. An indication of improvement would doubtless enable them to figure what their requirements may be.

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

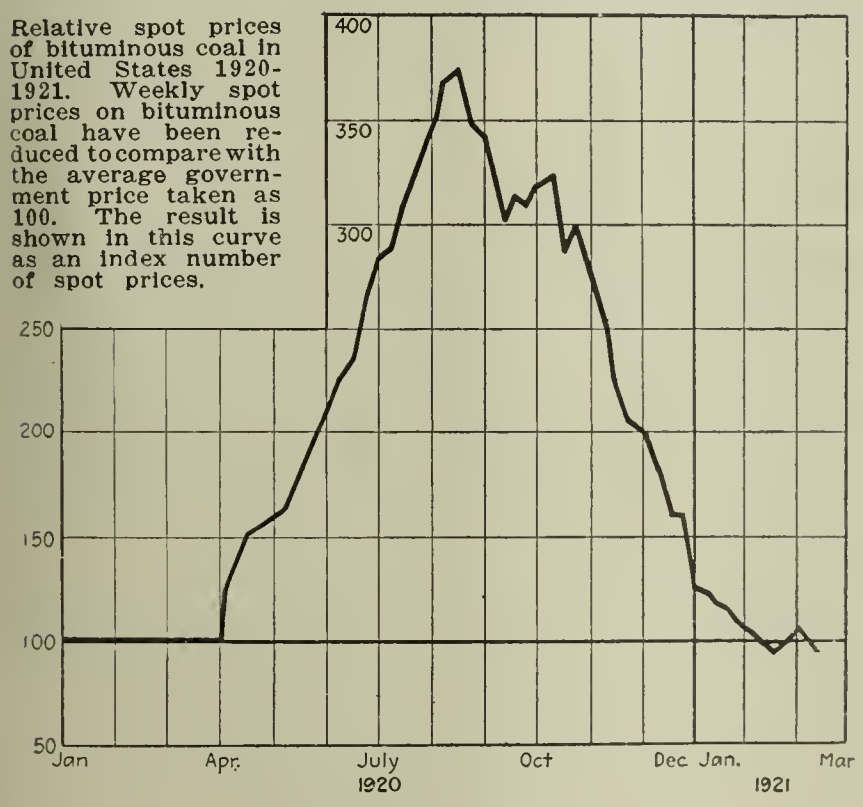
Until that time not many contracts will be closed except where bargains are obtainable.

BITUMINOUS

For the first time since last December the rate of production recovered slightly in the week ended March 5. That this was largely caused by a carryover of business from the short preceding week of Washington's Birthday may be seen from the fact that loadings for the first two days of the next week (March 6-12) declined 1,047 cars. The total output is estimated by the Geological Survey at 7,406,000 net tons, an increase of 160,000 tons compared with the preceding holiday week, but 83,000 tons less than the week ended Feb. 19, the latest full time week.

The heaviest "no-market" losses continue to be found in the Middle Appalachian region. Pocahontas, New River and Winding Gulf fields registered over 60 per cent lost time from this source and the Logan field also was hard hit, 70 per cent operating time being lost. Production in the Northern and Middle Appalachians for the last week in February was 4,162,000 net tons, more than 100,000 tons under the figure for the preceding week.

Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.



Rumbles of impending wage readjustments are heard from the coal fields. Reduction of wages in many other lines and the decline in living costs have opened the question of lower mine wages. Interest has been focused on this by the railroads' attempts to lower wages. Trouble has already been experienced in the State of Washington, where 2,000 men are on strike as a protest against a reduction of mine wages.

Spot prices were depressed in the week ended March 15, as shown by the *Coal Age* index, which dropped to 98, a decline of two points from the preceding week. Increasing anxiety of Eastern producers to move coal in the face of an inactive market caused this decline. In the Middle West, spring prices have been announced and the schedule is being well maintained.

Slow opening of the Lakes trade is anticipated, as no ore-carrying charters have yet been made, nor has there been sufficient contracting for Lake coal to guide vessel men in setting rates and completing seasonal arrangements. The question of carrying charges has not yet been taken up.

Tidewater dumping at Hampton Roads piers for the first ten days of March was but 234,000 gross tons; Baltimore some 30,000 tons. The February movement to Tide declined sharply, 2,702,000 net tons being reported by the

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date (a)
Feb. 19 (b)	7,489,000	483,173,000	9,513,000	427,477,000
Daily average	1,248,000	1,768,000	1,585,000	1,558,000
Feb. 26 (b)	7,240,000	490,413,000	10,120,000	437,597,000
Daily average	1,207,000	1,756,000	1,687,000	1,560,000
Mar. 5 (c)	7,406,000	497,818,000	10,304,000	447,900,000
Daily average	1,234,000	1,745,000	1,717,000	1,564,000

(a) Less 2 days' production during first week in April to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date (a)
Feb. 19	2,010,000	8,,675,000	1,504,000	82,286,000
Feb. 26 (b)	1,816,000	83,491,000	1,767,000	84,053,000
Mar. 5 (c)	1,917,000	85,408,000	1,604,000	85,657,000

(a) Less 2 days' production during first week in April to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

BEEHIVE COKE

Week Ended Mar. 5 (a) 1921	Week Ended Feb. 26 (b) 1921	Week Ended Mar. 6 1920	1921 to Date	1920 (c) to Date
181,000	193,000	412,000	2,098,000	4,120,000

(a) Subject to revision. (b) Revised from last report. (c) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Coal	Market Quoted	Gov't Price	Feb. 15 1921	Mar. 8 1921	Mar. 15 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$3.85	$3.50	$3 50
Pocahontas lump	Columbus	2.60	6 00	5.50	5.50
Pocahontas mine run	Chicago	2.35	2.75	3.75	*$3.50@$3.75*
Pocahontas lump	Chicago	2.60	3.90	5.25	*4.50@ 5.50*
Pocahontas mine run	Boston*	....	6.15	5.75	*5.50@ 5.85*
Pool 1	New York	2.35	3.50	3.25	3.00@ 3.50
Pool 1	Philadelphia	2.35	3.50	....	....
Pool 1	Baltimore	2.35	3.00	3.00	3 00
Clearfields mine run	Boston	2.95	2.60	2.55	*2.00@ 3.00*
Somersets mine run	Boston	2.95	3.15	3.15	*2.40@ 3.60*
Pools 10, 11	New York	2.95	2.50	2.40	**2 15@ 2 75**
Pools 10, 11	Baltimore	2.95	2.50	2.60	*2.25@ 2.75*
Pools 10, 11	Philadelphia	2.95	2.50	2.50	2.25@ 2.75
Pool 9	New York	2.95	2.85	2.80	**2.85@ 3.25**
Pool 9	Philadelphia	2.95	3 00	3.00	**3 25**
Pool 9	Baltimore	2.95	2.80	2.80	**2.75@ 3.00**
High-Volatile, Eastern					
Pittsburgh mine run	Pittsburgh	2.35	2.40	2.35	*2.00@ 2.50*
Pittsburgh sc'd. gas	Pittsburgh	2.35	2.90	2.85	2.75@ 3.00
Kanawha mine run	Columbus	2.70	2.50	2.25	2.25
Kanawha lump	Columbus	2.95	3 90	3.75	*3.50*
Hocking mine run	Columbus	2.50	2.40	2.15	**2.25**
Hocking lump	Columbus	2.75	3.85	3.65	*3.50*
Pitts. No. 8 mine run	Cleveland	2.35	2.50	2.35	*2.00@ 2.25*
Pitts. No. 8 lump	Cleveland	2.60	3.75	3.65	*3.25@ 3.75*

Coal	Market Quoted	Gov't Price	Feb. 15 1921	Mar. 8 1921	Mar. 15 1921†
Pool 32 (54, 64)	Philadelphia	$2.50	$2.10	$2.35	*$2.00@$2 25*
Pool 34 (54, 64)	New York	2.50	2.15	2.10	2.00@ 2.25
Pool 34 (54, 64)	Baltimore	2.50	2.15	2.15	*2.00*
Midwest					
Franklin, Ill., mine run	Chicago	2.35	2.75	2 65	**2.25@ 3 50**
Franklin, Ill, lump	Chicago	2.55	3.80	3.75	*3.80@ 3.50*
Central Ill., mine run	Chicago	2.35	1.85	1.85	**1.50@ 2.50**
Central Ill., lump	Chicago	2 55	2.60	2.60	*2.00@ 3.00*
Ind. 4th Vein, mine run	Chicago	2.35	2.20	2.60	**2 25@ 3.00**
Ind. 4th Vein, lump	Chicago	2.55	3.30	3.30	**2.75@ 3 50**
Ind. 5th Vein, mine run	Chicago	2.35	2.15	2.40	**2.25@ 2.75**
Ind. 5th Vein, lump	Chicago	2.55	3.10	3.05	*2.25@ 3.25*
Standard mine run	St. Louis	2.35	1.95	1.95	*1.90*
Standard lump	St. Louis	2.55	2.50	2.60	2.50@ 2 75
West Ky., mine run	Louisville	2.35	2.30	2.40	**2.35@ 2.50**
West Ky., lump	Louisville	2.60	3.40	3.15	3.00@ 3.25
South and Southwest					
Big Seam mine run	Birmingham	2.45	3.10	2.95	2.70@ 3.25
Big Seam lump	Birmingham	2.75	3.75	3.75	3.25@ 4.25
S. E. Ky. mine run	Louisville	3.00	2.65	2.75	2.75
S. E. Ky. lump	Louisville	3.25	4.40	3.85	*3.50@ 4.00*
Kansas mine run	Kansas City	3.50	4.50	4.50	4.50
Kansas lump	Kansas City	4.00	5.50	5.50	5.50

*Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

Geological Survey. As compared with January figures exports fell off 37 per cent, New England coastwise, 19 per cent, and bunkering 25 per cent. Tonnage destined to Tide in February was distributed as follows:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England..	130,000	28,000	50,000	310,000	.....	518,000
Exports....	.....	60,000	92,000	527,000	33,000	712,000
Bunker.....	318,000	29,000	42,000	234,000	3,000	626,000
Inside capes	.....	136,000	67,000	31,000	1,000	235,000
Other tonnage.....	561,000	1,000	1,000	44,000	4,000	611,000
Total....	1,009,000	254,000	252,000	1,146,000	41,000	2,702,000
Total Jan.	1,328,000	371,000	383,000	1,625,000	38,000	3,745,000

The Government Fuel Yard at Washington has advertised for 143,000 tons of bituminous from Maryland, Pennsylvania or northern West Virginia; 76,000 tons from New River and 1,600 tons of gas coal for use in government departments in Washington, bids to be opened March 18.

ANTHRACITE

Production for the first week of March, although larger than in the week of Washington's Birthday, amounted to 1,917,000 net tons, or 4.6 per cent short of the week ended Feb. 19, the last full-time period.

Some uncertainty yet persists in the matter of company schedules of domestic coal for April. As yet but one large shipper has announced a spring reduction of 50c. on family sizes, the others standing firm on winter prices. However, it is intimated that several of the large companies may this week follow suit, but it is clear that there will be no unanimous action this month on summer discounts.

COKE

Production of beehive coke during the week ended March 5 touched a new low level of 181,000 net tons. Virtually no market exists. The blast furnaces are running so light that sales of Connellsville coke hardly can be forced. No interest is shown in the offers of coke producers to cut their contract prices to enable furnaces to get into operation again. The action of the largest independent of making an 18 per cent wage reduction is not expected to be followed by other independents, as these are standing firm awaiting action of the Frick Co., which usually sets the pace in wage adjustments.

Reports From the Market Centers

New England

BOSTON

Inquiry Light—Trade Watchful of Developments—"Distress" Coal Absorbed with Difficulty—Anthracite Price Situation Very Much Mixed.

Bituminous—Buyers show little interest in the current market. One large utility for which bids were solicited in February for any part of 300,000 tons has not yet made any purchase for any but temporary needs. The steady scaling down of prices on Government business leads consumers here to believe there is every inducement for waiting. It is hard to see how there can be anything more than scattering demand between now and June 1, although much depends on the general industrial situation. Reserves are fully as large as in the spring of 1919 and it remains an open question whether the bulk of steam coal for New England will come all-rail as last year or whether Pocahontas and New River agencies will be able to regain something of their tonnage in years previous.

A lot of 1920 business is expiring this month but so far the trade has done nothing but try to keep informed. Conferences this week are likely to make somewhat clearer the attitude of West Virginia operators who ship via Hampton Roads. Recent bids as low as $3 per net ton at the mines for No. 1 Pocahontas show the drift of the contract market and since such prices have been named for 12 months there is small chance of carrying through any base price of $4 and over.

A very few shippers have sent coal forward on consignment with the usual disastrous outcome. There are cargoes here of Pocahontas and New River on which bids of less than $7 alongside have been urged. It is also reported there are 2,600 cars on the B. & O. alone without destination. These are not factors that inspire confidence.

Loadings at all piers are extremely light. While there are still heavy accumulations at Norfolk and Newport News, the aggregate dumpings are smaller than ever. Both offshore and coastwise there is such a dearth of orders that average output is on less than a 40 per cent basis.

Current prices are shown in the Weekly Review.

Anthracite—Except for scattering inquiry on egg and stove there is almost nothing doing at wholesale. Retail stocks are small, but deliveries are at a low ebb, and there is no uneasiness anywhere except over the dull outlook. Buyers are settling back with the comfortable feeling that all the domestic sizes are going to be in ample supply and that 1921 will see a buyers' market throughout the season. Nowadays there is more anthracite required, however, and mining days that are lost because of no market will not be easily made up.

Dealers here would take on coal now if they had more assurance there would not be a material reduction in prices later on. One of the large producing interests has announced a price 50c. less on broken to pea effective March 15 but certain other producers have strongly intimated they could not this year see their way clear to modify the present circular. The public expects a marked reduction but the public does not understand that the complete fading away of any demand for steam sizes has a most important bearing on prepared coal.

Tidewater—East

NEW YORK

One Company Announces Anthracite Reduction — Domestic Coals Move Slowly—No Demand for Bituminous—Few Inquiries Regarding Contracts.

Anthracite—An announcement of a 50c. reduction in the prices of domestic coals, effective March 15, was made last week by one of the largest producers. It was also accompanied by a cut in the prices of steam coals. The reduction in the price of buckwheat was 60c.; rice, 50c. and barley, 75c.

There is little demand. Premiums for independent coals have disappeared. Dealers from New England last week told local wholesalers that unless producers reduced prices on April 1 they would not be able to do their usual summer business and that consumers would not see the necessity of putting their winter coal in before fall.

Retail yards here are well stocked but salesmen say the line trade could take considerable more coal. Pea coal is being moved with difficulty and some shippers are looking for offers. Steam coals are a drug and prices will have to be reduced to meet bituminous competition. The independent coals are hard to move. Buckwheat of good quality was quoted $2.50@$3.25; rice, $1.75 @$2.50 and barley from 75c. up.

Current quotations for company coal per gross ton are as follows:

	Mine	Tide
Broken	$7 10@$7 75	$9 71@$10.36
Egg	7 10@ 7 75	9 71@ 10.36
Stove	7 35@ 8 10	9 96@ 10.71
Chestnut	7 45@ 8 10	10 06@ 10 71
Pea	5 65@ 6 40	8 12@ 8 87
Buckwheat	3 50@ 4 25	5 97@ 6 72
Rice	2 50@ 3 50	4 97@ 5 97
Barley	1 50@ 2 25	3 97@ 4 72

Quotations for domestic coals at the upper ports are generally 5c. higher.

Bituminous—With demand slow and buyers refusing to do any contracting there was little doing. The efforts of producers to keep the market from being overstocked has prevented a further lowering of prices. While there is con-

siderable coal at the docks it is not hard to handle and shippers are not bringing new tonnage to Tidewater unless there is a market for it.

Salesmen say that large consumers have sufficient coal on hand to last them for at least another month or six weeks and are not likely to come into the market before that time. Operators are not inclined to lower their contract quotations, which range around $3.75 for Pool 10; $4 for Pool 9 and $4.25 for Pool 1. Lower grade coals are being offered 25c. to 50c. less.

In the local harbor there is very little inquiry for bunkering. Because of the slack demand the strike of the boatmen inaugurated March 10 because of a wage cut had little effect on the situation.

There have been but slight changes in mine quotations which are shown in the Weekly Review. Quotations f.o.b. this Tidewater follow: Pool 1, $6.25@$6.50; Pool 9, $5.90@$6.15; Pool 10, $5.75@$6; Pool 71, $6@$6.10; Pool 11, $5@$5.25.

BALTIMORE

Optimistic Attitude Despite Market Stagnation—Contract Prices Strong—Spot Demand Flat at Low Prices.

Bituminous—While the "atmosphere" in nearly every line of business here, and this includes the coal trade, is optimistic for a change for the better in the near future, and a line of inquiry for products is gradually opening, it can not be denied that at present the fuel industry is wretchedly flat.

Whether it be for steam, gas or anthracite coals, the story is the same, as there is not even a fair demand. At the pool here is standing a daily average of around 2,000 cars, but this is of little interest as dumpings have dropped to around 300 to 400 cars a day. One day the past week, for the first time since before the war, not a single ship was reported either at the Curtis Bay pier or waiting astream for coal.

The most encouraging feature of the situation has to do with contract prices, the best steam coals being held here at $4 and better for any considerable delivery over an extended period, some closings being up to $4.50 for specialized coals. The spot market is exceptionally weak, and while best steam coals are selling $2.75@$3 in many cases, there has been an increase in sales of first class coals as low as $2.50. Medium grades are offering $2.25@$2.35, and poorer fuels at $2, with but few takers. Gas coals remain pretty well out of the trading. The export movement from Baltimore for the first seven days of March was 28,199 tons cargo and 1,911 tons on bunker account.

Anthracite—Hard coal men have not much of a story to tell other than that they are ordering little because they have sufficient supplies to carry them through March. The public is not buying in any quantity.

For the future the trade is still figuring on present retail prices being the spring schedule. Dealers are convinced also that the public, hit by the business depression, and with probably no inducement of a price cut in April, will be slow in putting their orders on the books.

PHILADELPHIA

Anthracite Unsettled by Uncertain Prices — Independent Prices Shade Down—Retail Figures Tend to Break—Bituminous Is Unimproved — Prices Firm—Coke Quiet.

Anthracite—Trade is now very much unsettled. Due to unusually mild weather buying has almost ceased and retail yards are becoming quite filled up. The retail business is also greatly hindered by the uncertainty as to prices on April 1. At least two of the large companies are on record as saying that no reduction can be expected, and it is intimated that one of them might even try to increase the price, as it will be necessary to cut heavily on steam sizes to compete with bituminous.

Independent shippers have considerably reduced their prices. Pea coal is selling at company price of $6.40, and some shippers in particularly urgent need of a market are selling at $6.25. There is even some egg, stove and nut being sold at less than company prices. Average independent prices are as follows: egg $8.10, stove and nut $8.35.

Retail buying was considerably curtailed last week when a newspaper made an announcement that retail prices would drop 50c on April 1. While no reliable basis can be found for this statement, it has for the time effectually stopped most orders for storing for next season. Another feature is that some dealers anxious for business show a tendency to shade prices. For several months $14.25 has been an average figure for family coal delivered in cellars, and $12.25 for pea. These prices are now being cut from 25 to 50c., and just recently it was rumored that one big retailer contemplated a cut of $1.

Steam sizes remain weak and Independent producers are especially hard hit trying to move their output. Company mine prices per gross ton for line shipment and f.o.b. Port Richmond for Tide are as follows:

	Line	Tide
Broken	$7.75	$10.45
Egg	7.75	10.45
Stove	8.05	10.70
Nut	8.05	10.70
Pea	6.40	8.80
Buckwheat	3.50	6.00
Rice	2.50	5.00
Boiler	2.00	4.40
Barley	1.50	4.00
Culm	1.50	3.90

Bituminous—Production is steadily growing less, and the demand shows no tendency to increase. Even though big consumers are cutting fairly well into their stocks, they make but little effort to replace the coal that is used. Some inquiries are heard for contract prices, but producers show little inclination to recede from their stand for $4.50 for the very best coals in big tonnages. Spot prices remain unchanged and are shown in the Weekly Review.

Coke—With production light, buying continues unchanged. Some big users have made inquiry for fuel recently, attracted by the price, but very little business has been done. As to prices, 75-hr. is held $5.75 and 48-hr. $5.50.

HAMPTON ROADS

Inactivity Continues — Prices Soft — Dumpings at Low Figure.

Inactivity in all lines marked the coal trade, only 234,793 tons being dumped at all three terminals during the first ten days in March. Under normal conditions this figure would have been approximately double.

Prices of Pools 1 and 2 ranged $5.75@$6, with some orders being filled at even lower figures. Other pools have showed practically no activity, their prices ranging $5.25@$5.50 per ton.

The following ships cleared from this port with coal cargoes during the week ended March 11:

Jap. SS Kaikyu Maru, for Amsterdam, 11,123 tons; Am. SS Eastern Importer, for San Diego, 7,837 tons; Br. SS Fanteem, for Cape Town, 1,597 tons; Am. SS Robin Adair, for Rio de Janeiro, 8,948 tons; Am. Schr. Tifton, for St. Georges, 909 tons; Br. SS Bisley, for Buenos Aires, 5,919 tons; Braz. SS Lages, for Coquimbo, 6,715 tons; Br. SS Berwindvale, for Havana, 7,817 tons; Br. SS Taransey, for Alexadria, 6,115 tons; Br. SS Butetown, for Amsterdam, 3,467 tons; Am. SS Bar Harbor, for Ensenada-de-Moro, 1,078 tons; Br. SS Sidlaw Range, for Dunkirk, 5,735 tons; Nor. SS Smaragd, for Kingston, 1,084 tons; Ital. SS Olona, for Buenos Aires, 2,350 tons; Br. SS Avonmede, for Argentina, 5,435 tons; Br. SS Kelsomead, 4,381 tons.

BUFFALO

Bituminous Slow as Ever—Prices Very Weak—No Prospect of Early Improvement—Plenty of Anthracite — Lake Loading Begins.

Bituminous—One of the unfavorable features of the trade is that railroads are not in position to buy much of anything. Shippers do not feel as though they can sell to them safely at present. They have always been slow pay, but now there is not much promise that they will or can pay at all as they are not earning a profit.

Private consumers will not buy more than they need at any price. The big piles of coal, whether in rail yards or elsewhere, are running down, so that buying will need to increase before long, even if business does not revive. There are plenty of people who hold that the present stagnation will continue till wages come down.

The bituminous market is very unsteady. Late quotations are $3.50 for Youghiogheny gas, $3 for Pittsburgh and No. 8 lump; $2.60 for mine run and $2 for slack, to which add $2.36 for Allegheny Valley coal and $2.51 for all other for freight. Considerable coal is selling even lower than these figures.

Anthracite—The supply has now run up and the Lake-shipping companies are beginning to take tonnage. It will be a month or more before sailing is resumed. Business is so slack in all industries that an effort will be made to delay the opening till well toward May. At the same time a slow opening is no indication of a poor season. The need of coal at Upper Lake ports

is just as great as ever and if business is poor generally it ought to make a low-freight route all the more popular.

Only a few cents premium is now paid for independent coal and this will disappear soon. The report that standard prices would come down next month has kept people from buying, but shippers give out no information. An unauthorized report, said to come from a leading company, has been made lately to the effect that no reduction would be made.

Some little local competition is showing among the larger companies, which may or may not mean something. Not only is there a difference of half a dollar or so, but the appeal of consumers for protection against the big putting-in charge (75c.@$1 per ton) is now heeded in a way that reduces this expense one-half.

Coke—The market continues dull. Local byproduct plants are running on very short time. Jobbers do not get many orders, either for beehive or byproduct. Furnaces are running on short time and are not ready to anticipate a market that is not yet in sight. The only favorable condition is that the good stock of iron ore laid in last season has been used up so that there is a smaller supply at Lake Erie ports than there was a year ago. Coke prices are $5.75 for 72-hour foundry, $5 for 48-hour furnace, $4 for stock and $6 for domestic sizes.

Northwest

MINNEAPOLIS

Colder Weather Aids the Market—Less Distress Coal — Strenuous Efforts to Reduce Carry-Over.

There has been an occasional touch of cold weather for some days past, resulting in a little increase of consumption, but no material help to the wholesale trade, so far as current business is concerned. Of course there will be ultimate benefit, for all consumption reduces stores which would otherwise continue to stand against further business, and it is true that there has been a distinct improvement in the cleaning up of coal in transit and in local yards. But what has been lacking was any snap to the market, any eagerness to buy.

Prospects for the opening market are regarded variously. Some jobbers confidently believe that they have seen the worst prices on coal—the lowest—that they will see. They look to see the new season open a little higher than some current prices, and to have a steady advance during the summer. There are those who prophesy another car shortage with all the attendant ills that go with it, including a coal scarcity. But there is also the argument that the trend is generally downward and there must be a mighty force to go against this.

There is considerable discussion as to the amount of coal which will be remaining on the docks April 1. Present indications are that there will be less hard coal than a year ago, when the total was very small. And there will doubtless be much less bituminous. This minimizes the amount of loss taken on dock coals, though some of the loss has been taken already, since the slump in prices which has prevailed during the last few weeks.

It has been expected that there would be a steady improvement in the industrial demand. There was a turn for the better a short time ago, but it does not seem to be gaining any impetus. Buying in many directions has been narrowly confined, and has hardly begun to show much improvement.

MILWAUKEE

Mild Weather Market—Little Hope of Betterment—Further Price Cuts Seen.

The fuel business is in a state of chronic dullness with little hope of betterment during the remainder of the usually inclement season. Warm weather has been the order thus far in March. Coal is moving out in very small quantities only.

Soft coal and coke will undoubtedly be shaded in price again before the opening of Lake navigation. Anthracite remains high and will continue to be regarded as high if the usual spring reduction is confined to 50c. per ton. Following are the current prices:

Pitts. Hock. and Yough. screened	$8.25
Pitts. Hock. and Yough. pile run	7.75
Pitts. Hock. and Yough. screenings	7.25
West Virginia screened	8.25
West Virginia pile run	7.75
West Virginia screenings	7.25
Pocahontas screened	13.50
Pocahontas mine run	11.25
Pocahontas screenings	9.00
Smithing	12.50
Kanawha gas, mine run	7.75
Ill. and Ind. screened	7.00
Ill. and Ind. pile run	6.50
Ill. and Ind. screenings	6.00
Anthracite egg	15.95
Anthracite stove	16.20
Anthracite nut	16.20
Anthracite pea	14.35
Anthracite buckwheat	12.65
Coke, solvay egg, range and chestnut	14.50
Coke, gas, nut	13.50
Coke, gas, small nut	12.00

Coal carried in, $1 per ton extra.

Inland West

COLUMBUS

Slightly Better Outlook Has Developed —Immediate Business Still at Low Ebb —Contract Inquiries Increasing.

Coal men report an improved tone to the trade. Although orders have not increased materially, prospects for future business are getting better from day to day and it is believed that the worst of the slump is over. The trade is looking forward to the opening of the Lake season as well as to the time for renewal of contracts.

Inquiries for steam tonnage are coming in in large numbers. It is really surprising how many users want to get quotations, although but few of the inquiries have developed into orders or contracts. It is reported that a year's contract for 100,000 tons was made in Ohio territory for mine run at $3. Prices quoted on large tonnages range $3@$3.35 and in some instances higher. Prices for screenings are not as well defined, although tentative figures are $2.50@$2.75 on long-time contracts.

Domestic business shows no strength in any section. Retail stocks are fairly large and in most cases sufficient for the season. Consumers are laying low and only buying from hand to mouth. Retail prices are unchanged from the previous week.

Steam business is also at a standstill. Reports of resumption have been found to be exaggerated. Automobile concerns are increasing their output to a certain extent. Many large users still have adequate reserves and are not inclined to buy under present conditions. Production is small in all Ohio fields. Spot prices are shown in the Weekly Review.

DETROIT

Trading Is Dull Although Inquiries Increase—Contract Market Is Inactive—Prices Are Firm.

With sales of both steam and domestic sizes of bituminous reduced to a very small amount, the trade appears to have settled down to a policy of waiting for materialization of the long awaited business improvement. The situation is not devoid of encouraging features, as there are daily reports of increasing activity in manufacturing and industrial plants.

With coal consumption greatly reduced there is little demand for steam coal. Some of the jobbers observe a slight increase in the number of inquiries but no corresponding improvement in volume of orders. The sale of domestic is checked by the continuance of moderate temperatures, as well as by the considerable amount of unemployment.

While dealers are not heavily stocked, they are confronting an unsatisfactory condition from the fact that the coal is not leaving their yards with the rapidity customary in previous years.

Little interest is manifested in contracts by either buyers or producers. Users of steam coal have apparently accepted the theory that they will be able to supply their requirements by purchases in the spot market at prices lower than they would obtain in contract negotiations.

Prices show little variation. Lump from West Virginia or Kentucky is quoted $3.75@$4, egg $3.50, mine run $2.75 and slack $2.25. Ohio lump is $3 @$3.60, mine run $2.60 and slack $2.25. Smokeless lump and egg is $6, mine run $3.75 and slack $2.25. With light demand, supplies of anthracite seem ample. Prices are generally steady.

CHICAGO

Retail Price Cut Expected, as New Mine Figures Decline — Spot Market Inactive, but Steam Price Holding.

It is expected that within a short time Chicago retailers will reduce their prices on Illinois and Indiana coal. This reduction has been brought about on account of the new quotations issued by the southern Illinois operators, which

showed a reduction of 65c. per ton on domestic sizes.

A great many retailers have just about cleaned out their yards. These fortunate individuals have gotten rid of their high priced coal, although some of them had to take a very substantial loss in order to accomplish this. It is thought that the retailers will carry only small reserves during the summer months.

The steam situation is very unsatisfactory, although prices are being maintained at fairly reasonable levels. This is only because so little domestic is being sold that the mines have but few cars of the steam grades to offer. Buyers are doing their best to get what they consider advantageous contract quotations. They believe that these figures ought to be based on today's current prices, whereas, the average operator refuses to tie up his tonnage at prevailing prices, preferring to take his chances on the open market in the hope that there will be a better market in the fall, which will enable him to get a higher average during the year.

Eastern operators are making a very strong drive to regain their position in the Chicago market. A number of the large West Virginia companies, producing Pocahontas and New River coals, who have not heretofore been represented in this market, are endeavoring to make connections with Chicago wholesalers. It is the concensus of opinion, however, that eastern operators will not regain much of their old business here.

The main reason why the ordinary retailer is not very friendly toward making a contract or placing an order with eastern operators is the fact that he is running a chance of disappointing his customers after he has worked up his trade, and disappointing customers in times like these, is something that the retail dealer wants to avoid. The uncertainty of this source of supply, as demonstrated last summer, is working against West Virginia producers.

ST. LOUIS

Domestic Business Stagnant — Steam Coal in Better Demand — Spot Buying to Detriment of Contracts.

Domestic business is practically dead due to early spring weather. Retailers are largely out of the market until the present high-priced storage supplies are cleaned up. These are moving very slowly. The industrial situation shows but little improvement although the steam market is somewhat stronger because of the curtailment of domestic production.

There is a shortage of Mt. Olive screenings at present and Standard screenings are not equal to the demand. As the steam sizes went up domestic coals came down. Very little Carterville coal is moving in, tonnage from Mt. Olive is somewhat light, and Standard seems to be the principal coal to be received at the present time. Retail prices are firm. There is no demand for anthracite, smokeless or coke.

Consumers are taking advantage of the low spot prices prevailing and many contracts, which have several months yet to run, are being disregarded.

New quotations are as follows: Carterville domestic, March and April, $3.65, May, $3.85. Mt. Olive prices have been reduced 25c.; contract price for domestic is $3.65, mine run, $3.50.

CINCINNATI

Sluggish Demand Continues—Contracts for New Year Lag.

The market still remains virtually unchanged from the inactive condition which has prevailed for several months. Those plants that have in a measure resumed operations are running but one or two days a week and are buying coal only as the necessity demands. Aside from limited contract shipments there is very little coal being received.

Very few new contracts have been closed. Under ordinary circumstances by the first of March much of this coal has been contracted for. In view of the present low prices and the dull demand, buyers in making inquiries have dwelt on the theory that the current spot prices should be considered a basis for new contracts.

Mine prices range as follows: Bituminous lump, $3.25@$3.50; mine run, $2.50; smokeless lump, $5@$5.50; mine run, $4.

Dealers quote the following: Bituminous lump, $9.25@$10; mine run, $8.50@$9; smokeless lump, $10.50@$11; mine run, $9.50; anthracite egg, $15@$16.25; domestic egg coke, $14.50@$16.

CLEVELAND

Contract Inquiry Brisker — Spot Market Continues Dead—Production Shows Some Improvement—Heavy R.R. Fuel Bills.

Bituminous—An unexpected show of activity in contract inquiries has created considerable interest in the local trade. Both the railroads and some manufacturing plants are showing interest. The latest development in the trade is believed to reflect the prospect of higher spot prices due to the Lake movement, reduced production, and whatever degree of spring industrial activity develops.

Negotiations are now being based upon contract prices which call for $3.25 for mine run and $3.50 for ¾-in. steam. In the meantime the spot market continues lifeless. Dealers with stocks on hand are endeavoring to move them and concessions are reported in many instances. Spot prices are shown in the Weekly Review.

The coal trade is looking for improvement to come from the new Winslow Act, which releases to the railroads more than $350,000,000 due them under the provisions of the Transportation Act. It is estimated that the roads owe coal producers about $100,000,000.

Production in the Ohio fields has shown some improvement over recent weeks, although operations are still far under normal. More mines have been closed in the Hocking Valley fields. On the whole, output is now about 45 per cent of capacity.

Anthracite and Pocahontas — No changes in prices of anthracite and pocahontas have occurred in the last week, following reductions of the preceding week. The demand continues extremely sluggish, owing to mild weather.

Receipts of bituminous coal at Cleveland during the week ended March 5 were the largest in some weeks. Industrial, 882 cars, retail 556 cars, total 1,439 cars, as compared with a total of 891 cars the previous week.

Retail prices of coal delivered follow:

Anthracite—All grades, $14.50.
Pocahontas—Shoveled lump, $11.40; mine run, $10.30.
Domestic Bituminous — West Virginia splint, $10; No. 8 Pittsburgh, $8.45; Cannel lump, $12.15.
Steam Coal — No. 6 and No. 8 slack, $6.60; No. 6 and No. 8 mine run, $7.50; No. 8 ¾-in. lump, $7.75.

South

LOUISVILLE

Demand for Steam Coal Improving—Mines on Better Operating Time—Some Discussions of Mine Wage Reductions.

Demand for lump has been very slow for the past few days, resulting in screenings being much steadier, and mine run is also moving more freely and at better prices. Mines are now operating about two days a week as a result of better industrial demand, due to old stocks being reduced, and better time in many industries.

It is hoped that the Lake movement will start early this season in spite of the fact that stocks are fairly heavy in the Northwest. Many of the big Lakes buyers are planning to ship early, while prices are low.

Operators are expecting prices to be somewhat better in April and May, and are refusing to accept long contracts except where the price is about 30 per cent higher than spot figures.

Some premature reports have been heard concerning efforts that may be made by the Operators' Association, in western Kentucky, to reduce wages when present contracts expire April 1, 1921. However, the Western Kentucky Coal Operators' Association, which controls about two-thirds of the production of the organized western Kentucky field, has a contract which will run until April 1, 1922.

Prices in eastern Kentucky show an average of around $2 for screenings, $2.65 for mine run; $3.25 for lump and $3.65 for block. Operators are reported to be refusing orders for May deliveries except at about 25c. over present spot quotations.

BIRMINGHAM

Steam and Domestic Markets Inactive — Idleness at Mines More General — Quotations Without Material Change.

The coal market is experiencing the most prolonged and acute dullness known in many years, there being an

almost complete absence of inquiry for steam, and the demand for lump is little if any better. Producers and jobbers profess to see no signs of better conditions in the trade for some time to come. The revival of industry, which does not appear to be imminent, offers the only material relief, the lack of such activity being practically the sole cause of the listless market which now prevails, as interests making favorable price concessions have not been able to book any business of importance. Consumers do not need the coal and will not buy.

The trade is dull with domestic producers at this time also, as winter weather is over and there will be little need for lump for the next several months, retailers having sufficient stocks on hand and contracted for to amply supply their needs. The usual domestic schedules effective April 1 have not as yet been formulated and announced.

Steam and domestic prices are practically without change and are shown in the Weekly Review.

The past week has witnessed the closing down of a number of large mines of furnace interests following the blowing out of several more iron makers in the district. Commercial mines now in operation are working perhaps not over two days per week on the average, and consequently the output as a whole is at a low ebb.

Southwest

KANSAS CITY

Quiet Domestic Market Creates Steam Shortage—Prices Unchanged—Oil Due to Advance.

There is little or no demand for domestic grades and this has resulted in a steam shortage. Production is being curtailed to such an extent that there is hardly enough steam coal mined to care for current requirements.

Notwithstanding the steam shortage, there has been no change in prices. Arkansas lump continues at $6, slack $3.50@$4; Kansas lump, $5.50, mine run $4.50, nut $5, slack $3.75@$4; North Missouri lump $4.50, mine run $4, washed slack $4.05, raw slack $1@$3.15 depending on quality.

No new oil contracts have been made recently. It looks like fuel oil is going off the market and this has a direct bearing on the coal industry. Production has been reduced and it is predicted that oil will take a sharp advance very soon.

West

DENVER

Steam Coal Steady—Lump Drops with Low Demand—Seasonal Prices Announced.

Colorado's storage season opens April 1 with a drop of 85c. on present mine prices in bituminous lump. There is a tendency to undercut this figure already, and some of the mines probably will sell for $5.50, making the cut $1. The general mine price April 1, 1920, was $4.50.

On the basis of $5.65 announced by one of the largest companies, the price will advance 10c. a ton successively in May and June and 15c. in July. This indicates that in August the price may stiffen to the present mine price of $6.50, or at least by September, neither of which are listed.

Retailers have not definitely announced their storage prices, but bituminous lump and nut will be about $1 cheaper than at present, Routt County dropping to $11.50 and southern Colorado to $11. This leaves a gross margin of about $2.50, a cut of 10c.

Bituminous steam is steady at $3@$3.50 f.o.b. mines; in fact, it is getting scarce because of the diminishing sales of lump. Lignite steam is unsteady, Louisville being $2.15 and Weld $1.80, while Monarch is also $1.80 but bringing $4.70 retail against $4.50 for Weld and $4.90 for Louisville.

While Louisville lignite lump at present is steady at $5.25, the mine price of $3.50 for Weld can hardly be maintained, despite the fact that a 50c. cut was accepted Feb. 1. Louisville lump is bringing $9.25 on the retail market, while Weld lump is unsteady at $7.25, some retailers selling for $6.75@$6.95.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Some Low-Priced Sales Seem to Be Regular Production — No Interest in Contracts — Production Continues to Decline.

The spot coal market remains so narrow that prices are by no means clearly defined. Low-price sales do not stop, and the opinion grows that in many cases the coal thus sold is not really "distress" coal but was produced by the operator with his eyes open. It is the common belief, nevertheless, that the prices done are below the bare cost of production and represent a definite loss. Sales of ordinary steam mine run are not infrequently made at $2, but at the same time good grades of steam mine run occasionally bring up to $2.50. In some instances $2 has been shaded.

Gas coal remains at a good margin over steam, simply because operators prefer to leave the coal in the ground if they cannot secure a margin above cost, since it is an accepted fact that the supplies of good grades of gas coal in the Pittsburgh district are relatively limited.

There are scarcely even tentative negotiations on contracts for the coal year, and April 1 is likely to arrive with many consumers committed to a policy of buying from hand to mouth until prospects become more clearly defined.

Production continues to decline and is perhaps not over 40 per cent of rated capacity. Industrial demand is extremely light, contract shipments being largely to railroads and utilities. The spot market is quotable at $2@$2.50 for steam mine run, $2.50@$2.75 for fair grades of gas mine run and $2.75@$3 for best grades, with 25c. additional for screened gas. There is nothing doing in steam slack or steam screened.

UNIONTOWN

Production at Low Ebb—Lakes Trade Outlook Disappointing—Wage Reduction by Independent Operator.

The industrial situation in the coke region has reached the lowest point in its history. Production is at a low ebb and there is virtually no market for coal tonnage. There is some demand for foundry coke but sales of that grade are usually limited to a carload or two at a time. There is virtually no demand for furnace coke. Quotations for the week are; steam coal, $1.75@$1.85; by-product, $2.50@$2.75 with possibly some sales recorded at $2.25; furnace coke $4.75@$5 and foundry $6@$6.75, with most tonnage moving at the minimum figure.

Both the possibility of any railroad or Lakes business has been dismissed by operators here. Reports received by jobbers who have looked into the possibility of the Lakes trade are to the effect that approximately 4,000,000 tons of coal are yet stored in that territory.

One of the largest independent operators announced a cut, effective March 8, of 18 per cent in the wages of all classes of mine and coke yard labor. The impression prevails that few if any other independents will follow suit. The general opinion is that the remaining independent operators will wait for action by the H. C. Frick Co., who in the past set the pace for wages paid.

CONNELLSVILLE

Stagnation Continues — Furnaces Do Not Even Seek Lower Rates—Foundry Coke Business Very Moderate.

Blast furnace operations are so light, with much fewer than half the furnaces in blast, that sales of furnace coke cannot be forced by price reductions,

yet quotations are lower this week, some standard furnace coke having been available at $4, though $4.50 seemed the minimum a week ago and is still the more common asking price. Spot foundry coke is a shade easier. Last week it was quotable at $5.50@ $6.50 but now the $6.50 quotation has disappeared, practically the best grades being obtainable at not over $6. There appears to be a moderate movement of foundry coke in the spot market, chiefly in single carloads, but actual consumption is less than would be indicated by this circumstance, since so few consumers are receiving coke on contract.

The pig iron market is so lifeless that no issue is raised between furnaces and coke operators as to prices for coke that would be needed to enable furnaces to operate. One large merchant interest has some sliding scale contracts which the coke operators are willing to revise to a more attractive basis, but the furnace interest does not suggest that anything be done on the contracts to furnish a basis for getting any of the furnaces into operation again.

The *Courier* reports production in the week ended March 5 at 90,790 tons by the furnace ovens and 25,540 tons by the merchant ovens, making a total of 116,330 tons, a decrease of 4,490 tons.

EASTERN OHIO

Heavier Production—Lake Trade Slow —R.R. Fuel Inquiries Increase—Prices Firm.

Production for the week ended March 5 is estimated at 280,000 tons or about 45 per cent of potential capacity. These figures embrace practically all tipple operations in the field or approximately 170 mines, and indicate an increase in production of 56,000 tons over the preceding five-day week.

With the exception of a slight stimulus felt for shipment to Lake, the mines generally are marking time. Fuel for railroads constitutes around 50 per cent of present output, many of the contracts for which expire with the close of the month. Some negotiations have already been conducted by carriers looking to next year's fuel supply but figures are so low as to be out of the realm of serious consideration.

Estimates are made that 100,000 tons will be moved to lower docks during the month, about 30 per cent of which will be shipped from eastern Ohio. A slow opening in the Lake trade is anticipated as no chartering for ore-carrying has yet been done nor has there been sufficient contracting to date for coal upon which vessel men can get together and complete arrangements for the season. The question of carrying charges will not be taken up for some time. The present early loading of Lake coal is due to light demand in local trades and shippers are paying the expense of shifting vessels as rates have not yet been fixed.

There is nothing to indicate a general resumption of demand for industrial coal and operators are slow to predict the time when a real improvement in the situation may be expected. Spot prices remain about the same.

CENTRAL PENNSYLVANIA

Production Declines—Contract Market Listless—Collections Are Poor.

Production shows a further decline. The weather has been exceedingly mild; a very pronounced reduction has been noted in the tonnage used by the railroads, and the uncertainty overhanging future business conditions has made the demand practically nil. Many operators are producing coal only to keep their working organizations together until the demand will equal or surpass the supply.

The transition from an acute car shortage to an enormous surplus is now complete. The railroads are very remiss in meeting their fuel bills. Collections in general are slow. Pools 10 and 11 are being offered $2.40@$3 and other grades at a much lower figure.

An average production of 2,235 cars a day is shown by reports for the past week, which represents a reduction of 35 per cent as compared with the December output. Railroads and other large users are conferring with operators relative to contract renewals but few agreements have been closed.

FAIRMONT AND PANHANDLE

Production Declines Further—Low Contract Offers Find No Takers—No Lakes Business in Sight.

Fairmont

Producers had even less business during the first week of March. However, the decrease was confined to the Monongahela Ry. section. Contract movement, which was good at the outset, declined rapidly throughout the week. Spot prices were off, but there were few takers among producers. Very little contracting was done, the price of $2.40 @$2.75 offered by railroads being considered by operators as too low. There were no signs of Lakes business.

Northern Panhandle

Dearth of orders limited production to 25 per cent of normal. What little spot coal was sold moved off storage piles. Contract negotiations had not reached a point where agreements were being closed; producers and buyers were jockeying for position, but were far apart as to prices.

Middle West

MIDWEST REVIEW

Spring Prices Announced—Contract Market Shows Activity—Reserves Are Dwindling — Spot Market in Better Shape.

Operators supplying coal to the Middle West are now concentrating all their energies and facilities on their contract prospects. Practically 80 per cent of the tonnage moving today is going to industries which are testing out new coals with the idea of placing contracts.

The volume of business is unusually small, in fact, much smaller than the tonnage which ordinarily moves at this period of the year. Franklin County operators published their spring prices a few days ago. We were advised that the opening prices on lump, furnace, and small egg, will be $3.50 per ton. The price on cookstove nut and chestnut, will be $3.40; 2-in screenings will be $3 and 1¼-in. screenings, $2.85. We understand that the contract price for the Franklin County field on mine run will be $3.50 although this quotation has not been verified.

It is expected that operators from other competing districts will have to shade their prices and adjust their contract figures in order to be in line with the pace set by the Franklin County operators.

The industrial situation continues stagnant, but nevertheless, the reserves held in many of the industrial centers are constantly dwindling. This is also proving true in the case of the retailer. Purchases in both the retail and domestic trade have been curtailed so stringently during the past two months that stocks on hand are far below normal. This is about the only encouraging feature of the market anad just came to light the other day after a very careful investigation.

Weather conditions continue very strongly against the coal man, as it was only a few days ago that portions of Illinois, Indiana, and Wisconsin were treated to an old fashioned hail storm of the kind that usually arrives in June or July.

Practically all spot coal has been absorbed by the market and it is now almost impossible to pick up demurrage coal in any of the big railway centers. Operators in Illinois and Indiana much prefer, in the light of recent experience, to keep their coal in the ground until they have an order for it rather than produce it and send it on to some railway terminal, trusting in the meanwhile to the ability of their sales agents to dispose of it.

SOUTHERN ILLINOIS

Screenings in Some Demand—R.R. Tonnage Declining—Domestic Hard to Move — Standard Field Conditions Serious.

Conditions in the Standard field during the first week of March were unusually bad. Railroad fuel tonnage was on the decline and many small mines are arranging to close down for an indefinite period. Screenings are moving fairly well but domestic sizes are almost impossible to sell. Prices are quoted in the Weekly Review. The bulk of the tonnage is moving to St. Louis, but little going to the North and Northwest.

Mt. Olive mines worked about two days a week for commercial operations and little better than three days on railroad fuel. Screenings are moving well. A fairly good tonnage of coal was shipped to Omaha territory. The volume of railroad fuel is easing up.

Domestic coal ranged $3.25@$3.50, screenings $1.75@$2.

The only bright spot in conditions in the Carterville field of Williamson and Franklin Counties is the fact that screenings are moving fairly well, indicating that steam sizes are going to be in stronger demand. The amount of steam coal on track is lighter than for some weeks past. It is almost impossible, however, to move the larger sizes. The tonnage of railroad coal is steadily declining.

Prices are quoted in the Weekly Review. Commercial mines worked about two days a week and the best working time reported was four days.

Duquoin field conditions are extremely bad, mines for the most part working about two days a week. Domestic sizes are selling as low as $3 with mine run below $2.50 and screenings down to $1.75. Railroad tonnage is exceedingly light.

WESTERN KENTUCKY

Steam Demand Showing Improvement —Lump Market Quiet—Contracting Is Slow.

Demand for steam grades is showing improvement, screenings being a little stronger in price, and mine run has moved more freely. Lump coal is in light demand, which is making for smaller production of screenings and is aiding prices of all steam grades.

Operators are not anxious to book much contract business in view of uncertain railroad and price conditions later on, there being an optimistic feeling regarding better prices later in the year. At present it is reported that contract figures are about 30 per cent higher than spot quotations.

The market last week and this week shows no price change. Prepared average is $3.26 on a range of $2.75@$3.50; mine run, $2.50, range, $2@$3; screenings, $1.75, range, $1.40@$2.25.

A fair amount of coal is moving South, with a very fair river movement. Export business, which was showing improvement a few weeks ago, is very quiet just now.

Middle Appalachian

LOW-VOLATILE FIELDS

Prices Weaken with Acceptance of Low Spot Orders—No Contracts Closed—All Markets Inactive.

New River and the Gulf

New River prices softened somewhat in the face of better production in the week ended March 5, as a result of heavier selling at prices that were offering. However, the majority of producers still decline to market their coal at the prevailing low figures. There is still a large accumulation at Tidewater. With the nearness of the new coal year there was no more contract activity than during the previous weeks.

Production in the Winding Gulf region continued at about 25 per cent of normal. There was little or no demand either at Tide or for Inland. Contract orders were all that kept the few mines in operation. About the only production on the Virginian Ry. was for railroad use. The new contract market has been unusually quiet so far.

Pocahontas and Tug River

"No market" losses were running exceedingly high in the Pocahontas region, production not reaching more than 175,000 tons. Not more than a dozen mines were running on a full-time basis. There was a little better call for domestic but demand for all other sizes simply did not exist. Tide accumulations restricted the movement in that direction. Buyers were active in securing contract prices, but no business was reported closed.

Tug River mines worked mainly on contract orders, and even these were diminishing in volume. All operations were limited to two or three days. No spot demand existed in any market—foreign call was quiet and Tidewater terminals had a heavy tonnage on track. Collections were slow, and this added to the general dullness made for generally discouraging conditions in the region.

HIGH-VOLATILE FIELDS

Spot Offers Too Low for Operators—Distress Tonnage Lighter — General Conditions Unimproved—Some Interest in Contract Prices.

Kanawha

Mines with contract orders worked not more than two days in the first week of March, complete idleness existing in the case of such operations without contracts. Production was about on a level with the preceding week.

Contracting was slow, prices offered being no inducement to producers. No signs of activity in Lakes coal have appeared, despite the nearness of the opening of the season. Absence of demand and low prices were responble for an inactive spot market. But little distress coal was offering.

Logan and Thacker

Production in the Logan region was a little heavier, due to better movement on contracts to automobile industries. Some coal was also being mined for storage, but the spot demand was unimproved. Steam price offers of $2 were too low for producers to accept.

Thacker mines did not work more than two days because of a pulseless market. However, but few operations have closed entirely. Contract conditions resembled those prevailing in other fields. Steam prices ranged $2@$2.50.

Northeastern Kentucky

The ouput continued at a low ebb—20 to 25 per cent of potential capacity. Few mines were able to run because of the lack of either spot or contract orders. Screenings were a little firmer, following an even weaker demand for domestic sizes.

Virginia

Lack of even contract orders caused the output to slump to about 40 per cent of capacity. There was nothing tangible about the new contract situation, with producers and buyers still far apart on the price question. The spot market took a bare minimum because of weak demand and price offerings too low for the operator to consider.

Southern Appalachian

SOUTHEASTERN KENTUCKY

More Mines Close—Contract Market Inactive—New Railroad Project.

Arrival of warm weather has forced more mines to close down, due to inability to move block. Stagnation in domestic sizes has forced the price on nut and slack upward. Quotations are running around $4 for block, $3.50 for egg, $3 for mine run, and $2 for nut and slack.

While there is not much demand at these figures, yet they represent about the maximum of decline possible under present operation costs. Many mines have not operated since the first of the year, and the men are getting very anxious to work, although firm in their stand against a reduction in wages. There will probably be much talk, and little action in this matter, until the expiration of the present wage contract next spring.

Many inquiries are coming in as to probable contract prices, but buyers and sellers are at a wide variance and as yet no contracts of any magnitude have been reported closed.

There is considerable talk going round about a new railroad to extend from Middlesboro, Ky., to Williamson, W. Va., but as yet nothing tangible has been done. Such a road would open up a vast expanse of Kentucky's richest coal deposits, and the road will undoubtedly be put through in the next few years. Developments along this line are being closely watched by those who are alive to the possibilities of such a project.

West

UTAH

No Domestic Trade—Coast Market Dull —Production Declining.

Mines are working 35 per cent of capacity. Two weeks ago official figures were a little better. The ideal spring weather prevailing of late has paralyzed domestic demand. People are buying only in very small quantities.

Steam coal finds a poor market. Business on the coast is not good. From inquiries made among some of the leading companies it would seem that there will be no change in miners' wages for a long time.

MINE And COMPANY NEWS

ALABAMA

E. J. Longyear Co. is sinking a circular shaft 16 ft. in diameter and 487 ft. deep for the **Pratt Consolidated Coal Co.** at their mine near Banner.

William T. Sheehan, editor of the Montgomery *Advertiser*, and John W. Durr and Richard M. Hobby, wholesale merchants of Montgomery, have been named by Governor Thomas E. Kilby to gather data in regard to the matters at issue between the coal operators and striking miners. The commission is in session in Birmingham and has received briefs from both the operators and union men, and is also hearing oral testimony from prominent business men disassociated with the coal industry in order to become acquainted with the views and opinions of the general public touching the controversy. After all data has been collected and compiled the commission will submit same to the Governor, who will be the sole arbiter, and whose decision both factions have agreed to abide by, the strike having been called off on Feb. 22 by virtue of this understanding.

COLORADO

The rescue team of Mount Harris assisted in the recovery of two of the five bodies of miners who were killed in the explosion in the **Moffat Coal Co.'s** mine 2 near Oak Creek. The explosion is believed to have been caused by mine dust which was ignited by a windy shot. The bodies were found 500 ft. from the entrance of the mine. S. M. Perry of Denver is president, and R. M. Perry is manager.

ILLINOIS

While many miners are idle, it is planned to build hard roads near West Frankfort to furnish work for the unemployed and all possible street paving will be begun as soon as spring conditions permit. **The West Frankfort Chamber of Commerce** is backing the movement.

The Minonk mine is installing an electric motor. While the work is in progress the mine will be closed.

Directors of the **By-Products Coke Co.**, have declared a special dividend of 10 per cent on the capital stock payable March 25 to stockholders of record March 15.

INDIANA

The Gilmour coal mine, one of the oldest around Jasonville, has closed and the mine will not be worked any more. It has been in operation twenty years, the **Vandalia Coal Co.** having operated it for the last several years. About 200 men were made idle by the closing.

A cave-in of fifty-eight feet of sand and gravel in the shaft of the **Deep Vein Coal Co.**, at Princeton, March 1, will cause the shutting down of the mine for at least thirty days. A company of men had just left the mine when the accident occurred.

William H. Tobin, of Indianapolis, vice-president of the **Sterling-Midland Coal Co.**, and actively engaged in the control and management of the **Consumers Coal Co.**, one of the bituminous coal operators indicted by the federal grand jury on the charge of conspiracy to violate the Sherman anti-trust law, reported to Mark Storen, United States marshal, March 1, and executed a bond for $10,000. His bond was signed by Samuel E. Rauh and Jesse T. Moorman. Mr. Tobin also is one of the 125 operators and miners indicted on the charge of conspiracy to violate the Lever act. He was the first to be arrested in the Lever act case and was the first of the operators to give bond in the new case. Judge Anderson released him under the old bond and permitted him to go on his recognizance. That procedure is contemplated for every man under bond in the first case.

KENTUCKY

Gross earnings of the **West Kentucky Coal Co.**, for 1920 amounted to $1,735,415.77, an increase of 50.84 per cent. Production amounted to 907,376 tons, an increase of 11.84 per cent. The substantial increase in production was made possible largely because of the availability of the company's facilities for transportation by water.

The Banford Coal Co., capital $20,000, has been incorporated by E. G. Biddison, Frank J. Dougherty, Louisville; and E. M. Cox, of Charleston, W. Va. The debt limit is given at $40,000.

The Coal Division of the Louisville Board of Trade gave the first of a series of monthly dinners at the Louisville Old Inn Hotel, on Feb. 26, there being about fifty coal men present, including jobbers, brokers and retailers. A cabaret performance and a "jazz" band, added to the attraction. C. L. Crush, of the Atlas Coal Co., made the arrangements. It is planned to have another dinner on April 2.

It is reported that the **Old Colony Coal Co.**, a Virginia corporation, has closed a deal in Perry County for purchase of 700 acres of coal land on the L. & N., main line, with plans for development work this spring.

NEW YORK

Waterfront property on the East River, New York City, has been leased for a term of years by **Sinram Brothers**, coal dealers. They will erect a concrete coal pocket and a garage and office building.

Cross libel for $100,000 has been filed in the United States District Court by **Coale & Co.**, against the London and Piraeus Steamship Co. for alleged "abuse of judicial process." The libel was occasioned by a libel filed against Coale & Co., by the steamship company for alleged failure to carry out charter contracts, the steamship company claiming it lost thereby $134,248.70.

OHIO

The Belmont & Fairmont Coal Co., recently organized, has acquired about 500 acres of coal lands near Flushing, and plans for the immediate development of the property. Jonathan Radcliff and James T. Vandegrift head the company.

The Cleveland & Western Coal Co. have recently completed dock facilities at their Johnson mine on the Ohio River at Pipe Creek near Shadyside. Under full operation 2,000 tons per day can be loaded into barges at this new dock which has been constructed primarily to take care of output during times of severe car shortage.

The first loading this season at B. & O. docks, Lorain, began with the steamers "Sonoma" and "W. F. Hart." It is reported that 16 boats have already been loaded at the various lower Lake ports, 9 at Cleveland, 3 at Erie, 3 at Ashtabula and one at Huron, with approximately 140,000 tons. Nineteen additional boats have been named to date to receive cargoes and when loaded it is estimated that an aggregate of 300,000 tons will have been dumped into boats ready to sail when navigation opens.

The Big Vein Coal Co., general offices of which are in Cleveland, which has been operating near Salineville for many years will abandon its mines in April. Approximately 120 miners will be forced to secure employment elsewhere. Lack of coal basins and other faults within the mine have been given as reasons for suspending operations. The company has made an offer to the county to sell its railroad right of way for county road purposes, which will be available within three months after operations have ceased and mine equipment removed.

The suit of the **C. G. Blake Co.**, coal dealers, Cincinnati, against the United States Navy Department to recover approximately $22,000 alleged to be due to them on coal requisitions by the Navy Department during the first half of the year 1920, has been taken under advisement by Judge John Weld Peck in United States District Court, following the hearing of testimony on both sides, lasting more than two days.

PENNSYLVANIA

A deal has been closed by the coal firm of **Dunn, Brant & Ziegler**, with headquarters at Shanksville, Somerset County, for a tract of coal land near Clarksburg, W. Va., the consideration being in the neighborhood of $250,000. A number of wealthy men of the state are said to be backing the company. It was also announced that the same company is about to take over a number of valuable tracts in the neighborhood of Shanksville and Lambertsville, for which they will pay another quarter million dollars. These tracts are said to include all the available coal land in that section.

The Lehigh & Wilkes-Barre Coal Co. has declared a 150 per cent cash dividend to stockholders of record Feb. 28. The distribution is being made on $9,210,000 stock outstanding and amounts to $13,815,000, as the stock is of $50 par value. The share of the Central Railroad of New Jersey, which owns 169,788 shares of the coal company stock, is $12,734,100.

A contract has just been closed between the Victor Talking Machine Co., of Camden, N. J., and **Cosgrove & Co.**, Cambria County, for the entire tonnage for the big machine plant. The Victor plant is one of the largest users of bituminous coal in the Philadelphia manufacturing district. In the past about half the coal consumed was supplied by the Cosgrove company which operates twelve mines in the central Pennsylvania field. The company closing the contract let it be known that the entire tonnage was being bought from the Cosgrove company because of that company's adherence to its contracts during the period of terrific demand at high prices during the last year.

The Clinton Block Coal Co., Pittsburgh, has plans under way for a housing development for miners at its properties. About twenty-five one and two-story dwellings will be erected as an initial allotment. D. H. Cannon is general manager.

TEXAS

The American Fuel & Development Co., organized with a capital of $5,000,000, is planning for extensive development and operations on the former properties of the Garrison Oil & Coal Co., recently acquired. It is proposed to increase the output by a large tonnage.

WEST VIRVINIA

W. H. Warner & Co., of Cleveland have secured a lease on 88 acres of Pittsburgh, Redstone and Sewickley coal, the deal involving $80,000. A cash payment of $15,000 was a part of the deal. The deal also provides for a minimum royalty of $12,000 for 5 years. The rate of royalty per ton has been fixed at 15c. for Pittsburg coal and 10c. for Redstone and Sewickley coal. Upon the payment of $60,000 in royalty, the title to the acreage now under lease passes to the leasing company.

No time has been lost by the **Freer Coal Co.** in installing a plant near Birch Run in the Elk River field, Clay County. Much work has been done on driving the entry and arrangements are being made to start work on the tipple and put in siding. Officers of the company are: George G.

Bower, Buchtel, Ohio, president; F. A. Freer of Nelsonville, Ohio and J. M. Shepherd of Los Angeles, California, in charge of development work.

S. E. Ward and associates will engage in the production of coal in Sandy River district. Mr. Ward and his associates will operate under the title of the **Ward Pocahontas Coal Co.**, the new concern being capitalized at $100,000. Others interested are: J. W. Johnson, Iaeger, W. Va.; J. Logan Hill, T. A. Lambert, J. A. Peterfish, Jr., of Welch, W. Va.

Ohio mine operators will develop 750 acres of coal land, and their engineers are now making surveys near Barracksville preparatory to the opening of the mines and the installation of machinery. The **Chesapeake & Ohio Co.** is undertaking this enterprise, and its management is represented by T. H. Johnson, president, Bellaire, Ohio.

Preparations are under way for the beginning of operations in Ohio County by the **Penn-American Coal Co.**, of Pittsburgh, whose certificate of incorporation has been filed in Ohio County. The new concern is capitalized at $100,000. Offices of the company, however, are to be in Pittsburgh, Pa. This company has as its principal stockholders, Lawrence A. Crosby, Orville W. Wood, Walter G. Weighman, Paul W. McQuillen, Horace R. Lamb and Charles McGregor. The same people are also largely interested in the **Windsor Power House Coal Co.**, the principal offices of which will be in Pittsburgh, although the company will operate in Brooke County.

Organization of the **Big Seam Coal Co.** of Williamson with a capitalization of $25,000 presages the development of coal territory in Upshur County. Interested in this company are: J. S. Leedy, G. J. Adkins, H. W. Price, E. W. Price and William York.

The Fairmont & Kittanning Coal Co. has begun operating at its newly opened Bryrer mine near Philippi in the Barbour County field, the first shipment of any coal from the new mine being on Friday, Feb. 18.

A deal has been consummated by the **Home Coal Co.** of Pittsburgh disposing of 167 acres of coal land in the Pittsburgh seam to another Pittsburgh firm. The price for the property sold was $100,000. This property is located on the Charleston Division of the B. & O.

Coal land developments to cost $3,000,000 have been planned by engineers of **Quin Morton** and **W. S. Wood** of Charleston, who are interested in mining 200,000 acres of New River coal in the Meadow Creek district. Nine corporations have leases and their plans contemplate production and shipments upon the completion of the Greenbrier & Eastern Ry., now in course of construction. Electric power will furnish the mining energy. Another development is planned by the **Leckie Coal Co.**, which has purchased 2,800 acres of coal land on Big Clear Creek.

The Robinson & Phillips Coal Co., has acquired the holdings of the **Pittsvein Coal Co.** near Grafton, comprising about 1,500 acres of land, and plans for the development and operation of the property.

Capitalized at $100,000 the **Union Gas Coal Co.** has been organized as a West Virginia coal corporation but with headquarters at Uniontown. Uniontown people as follows are the principal stockholders: James H. Dunn, M. H. Bowman, Benjamin B. Howell, Edward F. Shelby and Robert W. Playford of Uniontown, Pa.

The purchase of 230 acres of Mapletown or Sewickley coal in Cass district of Monongalia County has been consummated by the **Purseglove Coal Mining Co.**, the price paid being $18,180, making a rate of about $80 an acre.

The Maryland New River Co. has sold its leasehold covering 3,500 acres on the north side of New River between Fayette and Hawk's Nest to the **Atlantic Coal & Iron Co.** in which a Mr. Emney of Philadelphia and associates are interested. Title to the land is held by the Boone and Prichard estates. The general understanding is that the purchasing company paid $300,000 for the leasehold. Under the terms of the lease the royalty basis is 10c. a ton. As a result of the change in ownership of the lease ten new openings are to be driven on a four-mile front and many new miners' houses are to be built.

Alex Ronay of Fayette City, Pa., who recently organized the **Savaria Coal Co.** with a capital stock of $300,000, has matured plans for the development of about 80 acres of coal land in Harrison County, the new mine to be near Mt. Clare. It is the expectation of the Fayette City capitalist to begin mining operations just as soon as possible and that will not be difficult because there is a tipple already on the property and a siding ready for use.

WYOMING

The Native Coal Co., has been incorporated. according to articles filed with the secretary of state, calling for the privilege of selling and dealing in coal and coal mines and transporting the products to market. Capital stock, $50,000; principal office. Cody. Directors for the first year are Otto I. Nelson, Emil Boander and J. M. Schwoob.

Personals

The National Coal Association has designated delegates and alternates to attend the Ninth Annual Convention of the Chamber of Commerce of the United States which will open April 27 at Atlantic City. The list of those selected is as follows:

DELEGATES

D. B. Wentz, Pres.,
Stonega Coke & Coal Co.,
Land Title Bldg., Phila., Pa.

Geo. H. Francis, Sec.,
Keystone Coal & Coke Co.,
Greensburg, Pa.

Geo. W. Reed, Vice-Pres.,
Peabody Coal Co.,
Chicago, Ill.

Thos. K. Maher, Pres..
The Maher Collieries Co.
Cleveland, Ohio.

E. L. Douglas,
1018 Union Central Bldg.,
Cincinnati, Ohio.

P. M. Snyder, Pres.,
East Gulf Coal Co.,
Mount Hope, West Va.

Thos. T. Brewster, Vice-Pres.,
Mt. Olive & Staunton Coal Co.,
St. Louis, Mo.

Allan C. Dodson,
Weston Dodson Co.,
Bethlehem, Pa.

Walter Barnum, Treas.,
Pacific Coast Co.,
10 Wall St., New York, N. Y.

A. M. Ogle, Pres.,
Ogle Coal Co.,
Indianapolis, Ind.

ALTERNATES

J. G. Bradley, Pres.,
Elk River Coal & Lumber Co.,
Dundon, West Va.

Geo. S. Baton,
Greensburg-Connellsville Coal & Coke Corporation,
Pittsburgh, Pa.

J. C. Brydon, Pres.,
Quemahoning Creek Coal Co.,
Somerset, Pa.

Geo. H. Barker, Vice-Pres.,
Maynard Coal Co.,
Columbus, Ohio.

Calvin Holmes, Vice-Pres.,
Blue Diamond Coal Sales Co.
Cincinnati, Ohio.

C. H. Jenkins, Vice-Pres.,
Hutchinson Coal Co.,
Fairmont, West Va.

D. F. Cushing, Pres.,
Iowa Coal Opers. Assn.,
Des Moines, Iowa.

Geo. H. Bartlet,
Victor American Fuel Co.,
Denver, Colo.

R. T. Price, Pres.,
Interstate Coal Co.,
Muskogee, Okla.

W. J. Snyder, Treas.,
American Coal Mining Co.,
Indianapolis, Ind.

F. R. Wadleigh has been appointed assistant to the president of the Tuttle Corporation, New York City, effective March 1, 1921.

R. N. Hosler, superintendent of coal mining section of the Pennsylvania State Compensation and Inspection Bureau, made an address at the weekly session of the safety instruction course of the Pittsburgh Chamber of Commerce. His subject was "The Effect of Schedule Ratings on Reduction of Mine Accidents in Pennsylvania."

By direction of the President, **Dr. Harry A. Garfield**, former Fuel Administrator, has been awarded a Distinguished Service Medal by the War Department. In making the award Secretary Baker said that the medal was conferred for "exceptionally valuable services to the Government as Federal Fuel Administrator during the war."

S. D. Brady, head of the Brady interests, operating on an extensive scale in northern West Virginia, was a business visitor in the Cleveland market recently.

Hugh Gilmore, of Bethlehem, Pa., formerly connected with the Amherst Fuel Co. at Amherstdale in the Logan field and now connected with Weston Dodson & Co., was a visitor in Huntington, W. Va., about the middle of February.

B. R. Guy, district representative of the American Export & Inland Coal Corporation with headquarters at Williamson, has returned from a trip to Eastern markets.

A recent visitor in the Huntington, W. Va., market was **George Thompson**, of Cleveland, representing Pickands, Mather & Co.

Charles E. Sandberg, one of the well known operators of the Kanawha field, with headquarters at Charleston, was a visitor in the Huntington market recently.

C. A. Cabell, general manager of the Carbon Fuel Co. of Charleston, W. Va., has recovered from a very serious illness.

J. H. Huffman, identified with the J. E. Long coal interests of Clarksburg, was a visitor in Cleveland during the latter part of February.

R. P. Bopes, of Coale & Co., New York, has returned to that city after a visit covering several weeks at Charleston, W. Va.

J. J. Forbes, formerly mining engineer in charge of mine rescue car No. 2 of the United States Bureau of Mines, stationed at Ratoon, New Mexico, has been transferred to car No. 5 as coal mining engineer. Mr. Forbes will take charge of the Bureau of Mines work in the Birmingham district.

Traffic News

In hearings on the army appropriation bill before the Senate Military Committee, of which he is a member, Senator Frelinghuysen, N. J., said he would propose a **seasonal freight rate coal bill**, providing for a reduction of 75 per cent of the rate on coal during the summer to induce early purchase and storage of coal.

The President on Feb. 26 signed the Act of Congress permitting partial payments to railroads of funds under the guarantee provision of the Transportation Act. It was urged in the interest of coal companies, among others, whose coal bills are unpaid by the railroads.

The case of the Missouri Pacific R.R. vs. the **McGrew Coal Co.**, involving freight rates, was argued before the U. S. Supreme Court on Feb. 28.

The Michigan Manufacturers' Association has filed a complaint with the Interstate Commerce Commission attacking the coal rate schedule on movements into Michigan and naming 63 railroad as defendants. It accuses the roads of sharp practices in increasing freight rates and charges that if the scale on bituminous coal is permitted to stand, Michigan consumers will pay $1.120,000 more in freight assessments this year than the roads are legally entitled to charge.

The Corona Coal Co., of Birmingham, in a complaint attacks as prejudicial the rates on soft coal from the Warrior coal field in Alabama to destinations in Louisiana in comparison with rates from Brilliant, Ala and West Kentucky coal fields to the same destinations.

The C. N. Dietz Lumber Co., of Omaha, attacks as unreasonable the rates on soft coal from points in Colorado, Illinois, Pennsylvania, West Virginia and Wyoming to destinations in Iowa, Wyoming and Nebraska.

The Sharon Coal Co., Peoria, Ill., attacks as unreasonable the rates on soft coal from mines in Illinois to Peoria from June 25 to Oct. 5, 1918.

In the case of the **Southern Fuel Co.**, vs. **The Bauxite & Northern Ry. Co.**, et al., the I. C. C. decides that the rate applicable on chestnut coal in carloads from Brewer, Okla, to Bauxite, Ark., was not unreasonable or otherwise unlawful. Complaint dismissed.

In the complaint of the **P. Koenig Coal Co.**, a tentative report of an I. C. C. examiner recommends that the rates on coal from Ohio, Kentucky, West Virginia and Pennsylvania to complainants Seven Mile Road Yard, Detroit, are illegal, and that reparation be awarded.

The I. C. C. has suspended until July 1 proposed increase of 20c. a ton on coal from points on the Cumberland R.R. to Florida points.

In a complaint to the I. C. C. the **Endicott-Johnson Corporation** of New York attacks as unreasonable the rates on bituminous coal from Morris Run, Pa., to Endicott and Johnson City, N. Y.

The Sergeant Coal Co. of Evansville, Ind., attacks as unreasonable the rates on bituminous coal from mines in the Boonville district of Indiana to points in Illinois, Wisconsin, Iowa and Minnesota.

The National Supply Co. of Lincoln, Neb., attacks as unreasonable rates on coke from Terre Haute, Ind., to Coburg and Fontanelle, La., and Adams, Neb.

The commission has authorized the Coal Trade Bureau of Illinois to intervene in the complaint of the **West Kentucky Coal Bureau**, which seeks establishment of joint through-rates from mines of complainant members on lines of the Illinois Central to the Southern Peninsula of Michigan.

In a complaint to the I. C. C., **Swift & Co.**, attacks, as unreasonable rates on coal screenings from points in Illinois to Sioux City, Iowa.

The Lackawanna Steel Co., of N. Y., attacks as unreasonable intra-terminal switching charges at the Ellsworth (Pa.) Collieries Co., on bituminous coal.

The Wasatch Coal Co., Salt Lake, attacks as unreasonable rates on run of mine and nut bituminous coal from mines in Utah to Salt Lake.

The West Virginia Northern R.R. Co., has applied for authority to acquire and operate an extension of its railroad extending to the coal mine of the **Atlantic Coal and Coke Co.**, in Preston Co., W. Va., which will open up new coal fields.

The Wichita Falls & Southern R.R. has been authorized to construct a line from Newcastle, Young County, by way of Graham, South Bend and Eliasville, to Breckenridge, Stephens County, Texas, 44 miles, which will open up extensive deposits of coal in the vicinity of Newcastle.

The Omaha Lumber and Coal Co., has complained against unreasonable rates on anthracite coal from points in Colorado to Omaha, South Omaha and Fremont, Neb., and Kiron and Council Bluffs, Iowa.

Wm. L. Carney, Chicago, complains against unreasonable rates on soft coal from Illinois and Indiana to Chicago from June 25 to Oct. 4, 1918. He also complains against overcharges on anthracite coal from points in Pennsylvania on the Erie to Chicago.

The Central Illinois Light Co., of Peoria, Ill., attacks as unreasonable rates on soft coal from Virden, Girard, Springfield and Bissell, Ill., to Peoria, during Federal control.

Association Activities

Morgantown Coal Club

Finishing touches were put on the organization of the coal club at a meeting held on Feb. 21. As soon as the constitution and by-laws of the new organization, as reported by a special committeee appointed to draft them, were adopted after being slightly amended, the following board of directors was elected: G. L. Rodgers, of the Mon-Scott Fuel Co.; R. R. McFall, of the Southern Fuel Co.; C. E. Gadd, of the Gadd-Shaw Fuel Co.; C. F. Sutherland, of the C. F. Sutherland Co.; J. R. Blackburn, of W. H. Bradford & Co.; M. L. Taylor, of the Morgantown Coal Co.; C. W. Lyons, of the Fuel Corporation of America. On the same day the directors assembled and elected the following officers to serve until the annual meeting in 1922: G. L. Rodgers, president; M. L. Taylor, vice president; R. R. McFall, secretary-treasurer.

Kanawha Coal Operators' Association

Instead of three separate and distinct coal associations in the Kanawha region, there is now only one as the result of action taken at a meeting of representatives of the Kanawha Operators' Association, the Cabin Creek Coal Operators' Association and the Big Coal River Operators' Association, held at Charleston on March 2, all three associations being consolidated and forming the Kanawha Coal Operators' Association, with a membership of 111 companies. The total output of the companies now forming the enlarged association amounts to more than 12,000,000 tons a year. There has been a movement on foot for several months having for its object greater cohesion among the operators of the Kanawha region through the organization of one association but finishing touches were not put on the consolidation until the date above mentioned.

As separate entities the Kanawha Coal Operators' Association, of which Quin Morton of Charleston was president had a membership of 90 companies operating 125 different plants; the Cabin Creek Coal Operators' Association had a membership of nine companies operating 10 different mines and the Big Coal River Operators' Association, of which Lute Hornickel was president, had a membership of 12 different companies with 15 different plants.

Just as soon as reorganization was definitely determined upon, members of the enlarged association proceeded to choose the following board of directors: E. O. Dana, Lute Hornickel, Carl Scholz, C. A. Cabell, W. C. Mitchell, F. O. Harris, W. M. Wiley, Garner Fletcher and Jno. J. Snure.

The directors in turn elected the following new officers at a meeting held on March 3: C. A. Cabell, president; W. M. Wiley, vice president; D. C. Kennedy, secretary-commissioner and John L. Dickenson, treasurer. M. Cabell is the general manager of the Carbon Fuel Co., operating on Cabell Creek and Mr. Wiley, the new vice president, a man active in association affairs is the general manager of the Boone County Coal Corporation. D. C. Kennedy has been the secretary of all three associations.

Action of the board in electing officers was followed by the appointment of new committees, the personnel of such being:

Railroad (Chesapeake & Ohio) T. J. Robson, Herschell Morton and Carl Scholz.

Railroad (Kanawha & Michigan) — Charles Paisley, Frank Harris and John L. Dickenson.

On Grievances—D. H. Morton, Josiah Keeley, John Snure, John McKeever, Mr. Fleugel, Alex Hereford, W. C. Mitchell and Carl Scholz

While awaiting for a revival of business, the members of the Kanawha Operators' Association are devoting much time and thought to the matter of securing a readjustment of freight rates to the Lakes which it claimed are discriminatory.

Trade Catalogs

Standardized Scraper Conveyors. The Jeffrey Manufacturing Co., Columbus, Ohio. Pp. 83; 8½ x 11 in.; illustrated.—Advertiser.

O-B Catalog No. 18 — The Ohio Brass Co., Mansfield, Ohio. Pp. 638; 6 x 9 in.; illustrated. Contains cuts and data on high tension insulators, trolley line materials, rail bonds and tools, third rail insulators, car equipment specialties, etc.—Advertiser.

Garton-Davids and Keystone Lightning Protective Apparatus — Electric Service Supplies Co., Philadelphia, Pa. Booklet No. 175; pp. 62; 6 x 9 in.; illustrated.—Advertiser.

Static Condensers—General Electric Co., Schenectady, N. Y. Bulletin 49711C. Pp. 19; illustrated; 8 x 10½ in.—Advertiser.

The Cooling of Quenching Oil in the Heat Treatment of Steel. The Griscom-Russell Co., New York City. Pp. 29; illustrated. Describes the various quenching mediums and systems used, showing typical installations.

Wires and Cables., General Electric Co., Schenectady, N. Y. Bulletins 49305-6-7-8-9; 8 x 11 in.; illustrated.—Advertiser.

Acme Angles. Acme Motor Truck Co., Cadillac, Mich. Booklet, 7 x 10 in., illustrated. Pp. 15.

D-C Steel Frame Motors. Triumph Electric Co., Cincinnati, Ohio. Bulletin 2006. Pp. 15; 6 x 9 in.; illustrated.

Recent Patents

Coal Handling Apparatus. James E. Jones, Switchback, W. Va., 1,357,456. Nov. 2, 1920. Filed Nov. 22, 1918. Serial No. 263,672.

Artificial Fuel. Alexander H. Ege, Mechanicsburg, Pa., 1,357,627. Nov. 2, 1920. Filed May 12, 1919. Special No. 296,523.

Mine Locomotive. Wm. W. Sloane, Chicago, Ill., assignor to Goodman Manufacturing Co., Chicago, Ill., 1,358,028. Nov. 9, 1920. Filed May 1, 1920. Serial No. 378,874.

Safety Horn Block and Tripping Mechanism. G. M. Johnson, McDonald, Pa. 1,361,627. Jan. 4, 1921. Filed March 27, 1919. Serial No. 285,158.

Coal-Cutting Machine. Wm. M. Thomas, New York, N. Y., 1,361,903. Jan. 11, 1921. Original application filed July 11, 1915. Serial No. 39,760. Divided and this application filed May 11, 1917. Serial No. 167,857.

Mining Machine. C. S. Oldroyd, Knoxville, Tenn., 1,365,598. Jan. 11, 1921. Filed May 5, 1916. Serial No. 95,690.

Apparatus for Feeding Pulverized Fuel. E. C. Covert, Avalon, Pa., 1,365,663. Jan. 18, 1921. Filed May 31, 1919. Serial No. 300,881.

Mining Machine. Albert Ball, Claremont, N. H., 1,365,881. Jan. 18, 1921. Filed June 20, 1911. Serial No. 631,293. Renewed April 17, 1920. Serial No. 374,752.

Fuel Briquet Manufacture. John F. Lovejoy, New Rochelle, N. Y. 1,366,091. Jan. 18, 1921. Filed Oct. 15, 1919. Serial No. 330,822.

Mining Machine. Clarence C. Perry, Ill. 1,366,096. Jan. 18, 1921. Filed April 21, 1920. Serial No. 375,469.

Obituary

J. F. McKeenan, general manager of the Colorado Fuel & Iron Co., died March 8. Mr. McKeenan was unable to survive an operation performed the day before.

Harvey Furry Grazier of Johnstown, Pa., president of the Grazier Coal Co., the Grazier Coke Co. and the Grazier Supply Co., died recently at Albuquerque, N. M.

Joseph L. Robbins, 65 years old, an active figure in the development of the coke industry in the Connellsville region, who helped to burn the first coke produced, died recently of paralysis at his home at Keister.

Henry Lloyd Herbert, who until 1916 was president of H. L. Herbert & Co. at one time one of the largest retail coal firms in New York City, died in Bridgeton, Barbados, on March 5. Mr. Herbert, who was chairman of the American Polo Association since its formation in 1890, went to Bridgeton on Dec. 10.

Daniel Nichols Davis, 70 years old, formerly a coal operator of Terre Haute, died recently at Martinsville, Ind. Mr. Davis was one of the best known business men in Terre Haute and some years ago went to Muncie, where he was engaged in the iron and steel business.

Coming Meetings

The American Wholesale Coal Association will hold its annual convention in Washington, D. C. June 7. Secretary, G. H. Merryweather, Woodward Bldg., Washington, D. C.

Canadian Retail Coal Association will hold its annual convention April 6 and 7 at the King Edward Hotel, Toronto, Ont., Canada. Secretary, B. A. Caspell, Brantford, Ont., Canada.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill., May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The National Coal Association will hold its next annual convention at the Waldorf Astoria Hotel, New York City, May 19 and 20. White Sulphur Springs hotel reservations have been cancelled. W. B. Reed, secretary, Commercial National Bank Bldg., Washington, D. C.

New England Coal Dealers' Association will hold its annual meeting March 23 and 24 at Boston, Mass. President, W. A. Clark Boston, Mass

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary Calvin W. Rice, 29 West 39th St., New York City.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

National Retail Coal Merchants Association Sixth Conference of Secretaries and Executives to be held at the Baltimore Hotel, Kansas City, Mo., May 15 and 16. For reservations address H. S. Mitchell, New York Life Bldg., Kansas City, Mo.

Congressional Echoes on Coal Affairs

THE NAVY HAS REDUCED its estimate for coal for next year from 891,500 tons to 406,575 tons.

REPRESENTATIVE KELLEY COMPLAINED that the navy had sent coal burners to the Pacific and foreign ports, requiring the transportation of coal, and argued that the coal-burning ships should be in the Atlantic fleet nearer the sources of supply. Admiral People says the coal burners were so stationed because they had lost their military value, and that only about 26,000 tons of coal had been shipped to the coal depot at Cavité. Pocahontas coal has been laid down at Manila at $5.15 per ton, including transportation.

"THE FUEL QUESTION has made almost all of us turn gray," Secretary of the Navy Daniels told the committee. "We have been in a constant fight with the oil and coal people." He said the navy had taken advantage of the commandeering act when the navy could not obtain satisfactory prices, and that it had prevented profiteering. He recommended continuance of authority all the time to the navy to commandeer fuel in order that it could obtain supplies at reasonable prices. He said most of the suppliers had been satisfied with navy prices, only three having appealed to the courts. He said that from 1917 to 1921 the navy paid an average of $2.61 a ton for coal, the prices ranging as follows: Pennsylvania, $2 to $4.24; New River and Pocahontas, $2.09 to $3.93. The purchases during this period covered about 9,500,000 tons of coal.

NEW ENGLAND FUEL & TRANSPORTATION Co. and the Pocahontas Fuel Co. advocated before the House Judiciary Committee a bill, which was reported, to permit private owners of vessels and merchandise to sue the government when their vessels or goods were damaged through collision with government-owned vessels.

THE PRESIDENT HAS SIGNED, thereby making it a law, the act passed by Congress providing for the sale of the remainder of the coal deposits on the segregated lands in the Choctaw and Chickasaw nations of Oklahoma.

REPRESENTATIVE LONGWORTH, OF OHIO, a member of the Ways and Means Committee which will consider the subject in the new Congress, has introduced a tax revision bill, providing for repeal of the excess and war profits taxes and also repealing the war taxes on freight shipments.

THE SENATE MILITARY COMMITTEE in reporting the army appropriation bill to the House retains the House provision authorizing the War Department to contract for coal in advance of appropriations therefor. It changes the authorization to provide for the payment of such coal under contract from funds appropriated for the fiscal year in which deliveries are made, instead of in which contract was made, as provided by the House.

THE NAVAL APPROPRIATION BILL reported to the Senate increased the appropriation for navy fuel from $17,500,000 to $25,000,000; fuel under the Bureau of Supplies and Accounts from $9,000,000 to $9,500,000; fuel for Marine Corps from $590,000 to $1,000,000.

COLONEL HANNAY OF THE QUARTERMASTER GENERAL'S office of the army told the Senate Committee on Military Affairs, considering the army appropriation bill, that it was estimated bituminous coal next year would cost $7.70 and anthracite $8.22 a ton. Members of the committee suggested that the Quartermaster General purchase coal for all branches of the army when it developed that several branches were purchasing independently, and the quartermaster general officers agreed to this. The army estimated that it would need $13,000,000 for fuel next year.

THE SENATE HAS PASSED a bill for the allotment of lands in the Fort Belknap, Mont., Indian reservation, provision being made for lease of coal and other deposits for ten years.

THE SENATE HAS PASSED a bill providing for prospecting permits for four years for not exceeding 2,560 acres on coal lands in Alaska, and giving the permitted the right to a lease for all or any part of the lease if coal is discovered in commercial quantities. The committee eliminated the House provision authorizing an investigation as to connecting the Nome-Shelton system of communications in Alaska with the coal deposits of the Kugruk River, Chicago Creek and the Keewalik Mining district.

SECRETARY OF THE NAVY DANIELS in a letter to the House objects to the Rhode bill authorizing the purchase of all government coal through the Bureau of Mines, on the ground that the navy should continue to be allowed to purchase its coal.

THE SENATE MILITARY COMMITTEE in reporting the army appropriation bill struck out the House provision limiting army purchase of fuel next year to $6,500,000, which will permit the department to buy coal to meet its needs from a lump appropriation of $28,000,000 made for quartermaster supplies.

COAL PURCHASED AT THE Aberdeen, Md., Proving Ground last year by the army cost $10.10 a ton, but army officers in charge of the station hope to get coal for half that amount this year.

MINE UNION REPRESENTATIVES conferred with President Gompers of the American Federation of Labor on Feb. 21 on the Hinchman coal case, involving an injunction against strikes, and discussed plans for remedial legislative action.

ON ACCOUNT OF THE lateness of the session and the fact that there will be several new members on the committee in the next Congress after March 1, the House Committee on Mines and Mining decided not to take up before that date the Rhodes bill to authorize the Bureau of Mines to purchase coal and other fuel for the government service throughout the country.

THE KIWANIS CLUB, of Altoona, Pa., and the Belden Manufacturing Co., of Chicago, have petitioned Congress against the Calder coal-regulation bill.

BEFORE THE HOUSE COMMITTEE ON WAYS AND MEANS in the tariff revision hearings N. D. Moore, of Seattle, representing eighteen coal-mining companies of Washington, favored a duty of 75c. a ton on imported coal, to meet the competition of Canadian coal, imports of which into Washington form 90 per cent of total imports of coal into the United States.

EARLY IN MARCH the Government Fuel Yard at Washington will invite bids for coal. The yard has been oversupplied with bituminous, having 18,000 tons on hand. It recently bought coal as low as $3.25 a ton and had had coal offered at a less price. A high-grade coal, such as that from Somerset and Central Pennsylvania districts, is required. New River coal is used; the price now is $4.50 as against $5.50 formerly.

SENATOR KENYON, OF IOWA, has introduced a bill conferring power upon the states to control intrastate railway rates, and to take away the present power thereover exercised by the Interstate Commerce Commission.

SENATOR HITCHCOCK HAS PRESENTED to the Senate a memorial of the Nebraska Legislature favoring nationalization of the coal industry.

THE CHICAGO RAILWAY EQUIPMENT Co., the Freeport (Ill.) Chamber of Commerce and W. H. La Boyteau, of New York, have petitioned Congress against the Calder coal bill.

SENATOR FRELINGHUYSEN, OF NEW JERSEY, who as chairman of a subcommittee of the Senate Interstate Commerce Committee last session considered coal legislation, is understood to be preparing a speech on coal to be delivered in the Senate in the extra session, and to press his Coal Commissioner and seasonal freight rate bills.

THE FEDERAL TRADE COMMISSION has instituted an investigation of alleged price fixing by the District of Columbia retail coal dealers association, growing out of charges of a dealer during hearings on the Calder bill that he had been driven out of business for selling below the prices fixed by the association.

THE PANAMA CANAL OFFICE reports that in 1920 a total of 651,844 tons of coal were shipped through the Panama Canal from the Atlantic to the Pacific coast.

THE HOUSE HAS PASSED a bill for four-year prospecting permits for coal in Alaska, permits limited to 2,560 acres each, with a right to lease by the permittee if coal is developed. Representative Blanton, of Texas, sought to prevent the passage of the bill on the ground that large interests might control Alaskan coal lands. Representative Mondell, of Wyoming, said the same legislation should apply to coal lands in the United States. Representative Madden, of Illinois, urged the bill on the ground that coal development in Alaska was much to be desired. Representative Ferris, Okla., in urging the bill, said that under present laws Alaska coal lands could not be developed.

IN AN OPINION DELIVERED by Chief Justice White, March 7, the U. S. Supreme Court set aside the verdict of the lower court against the Diamond Coal & Coke Co., charging fraud in obtaining coal lands. The court said the inferences of the lower court as to fraud by the coal company were conjecture and not legitimate.

AMONG THE FINAL BILLS to be approved by President Wilson was one authorizing four-year leases for coal lands in Alaska.

UNDER THE $60,000 APPROPRIATED by Congress for enforcement of the leasing law, the Bureau of Mines will supervise coal lease operations, George S. Rice, chief mining engineer of the Bureau being in charge. A chief mining supervisor will have headquarters at Denver, assisted by a district mining supervisor. The Secretary of Interior has approved operating and safety rules and regulations for coal mining operations under the leasing law, which will be issued shortly.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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New Relations and Permanent Peace

PUBLIC opinion is a powerful agent in shaping our conduct and our business. Public opinion has judged coal and found it wanting. The "man on the street," so often quoted, thinks there is something to the story that coal is controlled by a combine that boosts price, mistreats labor and rigs the supply to suit its fancy. Coal to the everyday consumer, to the householder or large industrial user is simply a matter of necessary expense, borne grudgingly. The press agents of coal have been men like Senator Calder, whose words of condemnation have carried the breadth of the land.

Mr. McAdoo has told the country that the coal operators make a thousand per cent profit in their business: Senator Calder has said that the coal men pass the cars around and add dollars and dollars to the price in the process; Herbert Hoover announces that the bituminous coal industry is the "worst functioning" of all large business; Dr. Garfield has recommended that there be some form of supervision of the industry; the public utilities tell the people that they must double their charges for light and trolley-car tickets because the coal man is getting all their money, and the railroads blame the increased cost of coal for a substantial part of their deficit. And there is a grain of truth in what every one of these has told the public.

Throughout the years the men of the industry have been either complaining or explaining. Before the war they were complaining that they could not make a living wage for themselves and for their men and since the war they have been answering their critics with explanations—explanations that explain to those who want to listen to all the intricate details of labor costs, car shortages, marketing methods, investments and average returns, but explanations that interest not the layman because he is not educated up to balance sheets, subtle distinctions between contracts that are not contracts and reasons why he gets dirty coal and is told the cost cannot go down.

Why is a man proud of his gasoline bill and ashamed of his coal bill? Why is it a mark of distinction to have a shiny six purring at the curb on a nice spring day and but a sign of common thrift to have a pile of next winter's coal on the sidewalk? What is it that has brought the average man to a state of mind where he willingly shivers and lets his guests shiver, as long as he has Persian rugs on the floor? Is there not something wrong when coal is looked upon as a necessary expense and these other things as necessary luxuries? The manufacturers of asbestos are capitalizing the idea that coal is just an expense that should be eliminated as far as possible. Coal is something bought by the ton and dumped in the back yard.

Coal is heat and heat is comfort; but who but the makers of radiators and furnaces for the parlor has ever attempted to popularize the comfort of heat? Why should those who produce and distribute anthracite be so indifferent to what people think of them and their product, unless they are content in their knowledge that there is no substitute for hard coal? And if they are not indifferent, what evidence is there of their concern? In the Middle West the best selling argument for the product of the largest distributor of bituminous coal for house use is that its product looks like anthracite. Two scuttles full of coal—"who can pick the anthracite from our chestnut?"

Coal is power. The mighty engine thundering over the rails, the giant liner plowing through the ocean waves, the shifting spindles of industry are propelled by the letting loose of the pent-up energy of coal. But who has ever made us visualize coal as the Atlas holding up the world, or the Hercules performing the arduous tasks for man, or the fleet-winged Mercury carrying our messages across the continents and around the world? Coal is so necessary that it is commonplace; so essential that through its lack we stopped the United States for five "heatless days."

The coal industry has been complaining and explaining because it is on the defensive. Public opinion is centered on just one thing about coal and that is the profit taken by the men who engage in its traffic. All the controversies in the halls of the Congress have waged around that theme and all the efforts of the coal industry have been to explain and justify their action in taking a profit. For every outrageous story about coal we have at hand a perfectly lucid explanation, supported by uncontrovertible facts. We can disprove Mr. McAdoo's fairy tale, we can find more honest men in the industry than Mr. Calder can scamps, we can show Mr. Hoover other industries as poorly managed as coal, we can tell Dr. Garfield that it is not fair to pick on coal alone of all the essential industries and we can show the public utilities and the railroads why coal must cost money, but we have not changed anyone's ideas about what is the trouble with coal.

The only time the coal industry ever went before the people of the nation with a story, it was to throw a scare into them. The "Buy Now" campaign of the National Coal Association in June, 1919, was fully warranted in the circumstances, was well conceived and has been amply justified by subsequent history. Notwithstanding, the association has been publicly accused and has had to defend itself against the charge of having undertaken that campaign from motives of profit. The success of that single attempt to influence public action was sufficiently clear to show what can be done in other directions.

Irregularity of operation and inflated mine capacity are the chief causes of trouble to the bituminous coal

industry. Traced to its cause we find that irregular operation, high and low spots in production and prices, are responsible for the existence of too many mines. Irregular operation in turn is the result of irregular demand. In 1914 and in earlier years the coal operators were the ones to suffer from this condition and they turned to Washington and sought from the Federal Government some form of relief. In the past few years it has been the consumer who has suffered, and he in turn has appealed to Washington. The weight of public opinion was against any form of combination in business or even co-operation under the protecting wing of the Federal Trade Commission in 1914, but the weight of public opinion is not so clearly set against some form of regulation of the coal man in the supposed interest of the consumer. And yet the remedy, if remedy there be, lies with the consumer of the coal, not with the coal man or with the government. No law that could be put on the statute books will make one buy coal, and some of the laws that have been proposed would have the opposite effect in such a time as this by lulling the consumer into a sense of false security.

If furs can be sold to the people in the summer time and ice in the winter is there not something that can be done to move coal with less regard to season? We have heard much about developing a merchandising program for coal but Mr. Cushing in his Atlantic City address in December, 1920, told us that in two years he had only got so far as to consider whether or not there should be a simple, standard figure representing the jobber's commission and whether or not that should by fifty cents! No suggestion of whether the compensation should not vary with the service; just a question of the profit—a standard wage for every man with a union card.

The winter campaign is closed; General Frelinghuysen and General Calder on the one side and General Coalman on the other, are digging in and gathering their respective forces for the spring drive. The campaign of last winter found the forces of coal on the defensive, without unified command and sadly in need of ammunition. Back of the other side is a strong public opinion that will produce a new leader, or better said, a follower, for every one that is lost or driven out. The better strategy would then appear to be to consider the public behind Congress. A change in the attitude of coal toward the public and in the relation of the public to coal is the surest way to permanent peace.

Merchandising Replaces Transportation Saving

PUTTING a certification of quality on their coal equivalent to the guaranty of a steel producer on his product, shippers of coal produced in the New River Field of Virginia on the Virginian Ry. have subordinated individuality to the cause of uniform and perfect product. Few realize on the first reading of the statement by J. S. Burrows, consulting engineer on coal classification for the Sewalls Point Coal Exchange, *Coal Age*, March 17, page 509, that something altogether new in the classification of coal as a guaranty of product has been put over by this exchange.

The original method of classifying and pooling coal at Tidewater had for its purpose the reduction of car detention—that is, the saving of transportation. Grouping the mines was simply a means of reducing the number of "classifications" and was but an incidental though necessary step in the program. The new system of tidewater classification developed by the Sewalls Point Coal Exchange has for its purpose standardization of product and the absolute guaranty of quality. Under the original system, and it is a system yet in use by all exchanges save that at Sewalls Point, the only guaranty offered the shipper is that the coal he gets in his boat comes from a certain list of mines. The exchanges have never told anyone what kind of coal is included in any given classification. During the war and last year it was not necessary in order to sell the coal to go into much detail with respect to whether or not it would burn. Conditions have changed. Consumers now are picking and choosing their coal, and there are now thase to whom it is not sufficient to quote pool 1, pool 9 or pool 37, but who in addition require to know something about the quality of the coal.

The new system of pooling is, rather than specify what mines will furnish the coal in a given pool, to say what the coal in that pool is. In other words, the new idea in pooling is based upon the merchandising of coal and not on the saving in transportation. Mr. Burrows comments on the "foresight of the group of coal operators who, nine months ago, in the face of an unprecedented demand and high prices, required that, regardless of individual consequences, their coal be classified on its merits as determined by test." The machinery developed for protecting the integrity of the new Sewalls Point pools is such that the shipper from every mine on this railroad has not only been willing but anxious to avail himself of the exchange. The membership is 100 per cent; none can afford to stay out.

The Tidewater Coal Exchange, Inc., operating at the ports of Baltimore, Philadelphia and New York, and the new South Carolina exchange have called in the Bureau of Mines, as did the Sewalls Point Exchange, for assistance in sampling and testing the coal from the classified mines shipping into the different exchanges. The problem of the Northern exchange, however similar in principle to that of the Virginia shippers, is infinitely more complicated in detail. There are about 1,800 mines classified for shipment into the pools at the three Northern ports; the coals range from low through medium to high volatile, compared with one low-volatile coal at Sewalls point. Compared with one pier at which the Sewalls Point exchange has erected a large scale sampler the Northern shippers have five piers at Baltimore and Philadelphia, in addition to half a dozen in New York Harbor.

The praise that goes to the Virginia shippers is for pioneering, that to the Northern shippers for undertaking the bigger job. We trust that they will see it through.

When Abraham Lincoln was a young man he ran for the Legislature in Illinois, and was defeated. He next entered business, failed, and was seventeen years paying his debts.

He was engaged to a beautiful woman—she died.

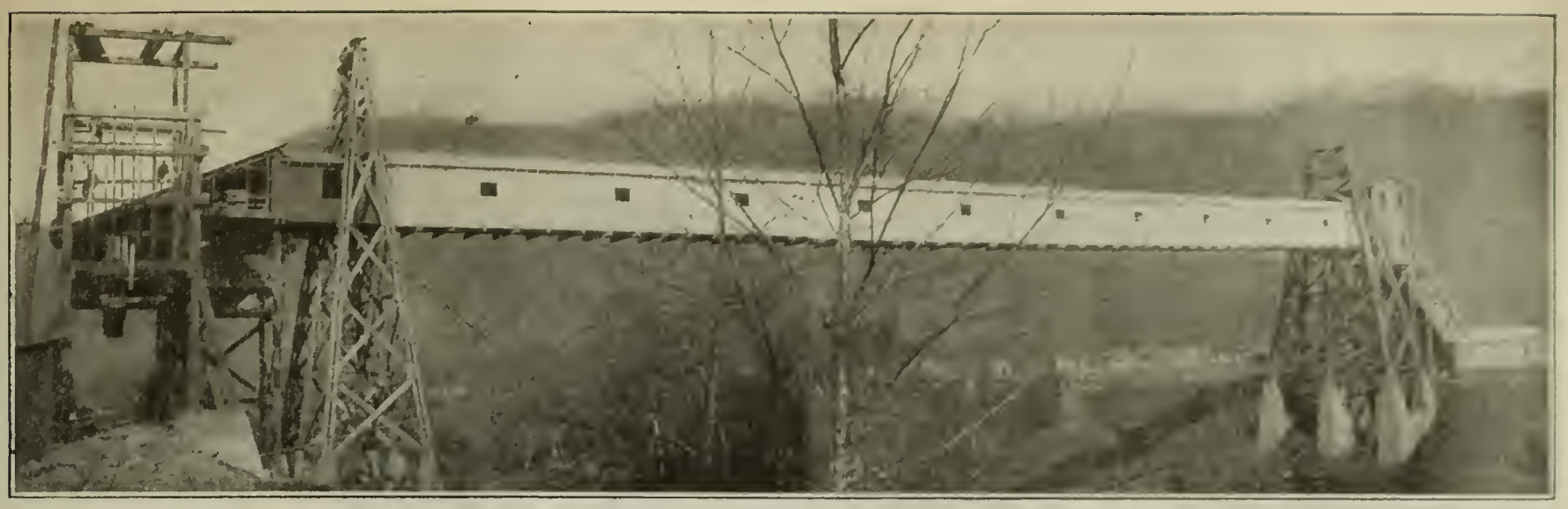
Entering politics again, he ran for Congress, and was again defeated.

He then tried to get an appointment in the U. S. Land Office, but failed.

He became a candidate for the United States Senate, and was badly beaten.

He ran for Vice-President and was once more defeated.

When the coal market is dull, think of Lincoln.



SUSPENSION BRIDGE 65 FT. CLEAR OF THE RIVER CARRIES BELT CONVEYOR BY WHICH COAL IS TRANSFERRED

Belt Conveyor Transfers Coal Across River With Suspension Bridge as Support

With the Mine on One Side of the River and the Railroad on the Other It Was Necessary to Move the Coal Across the Stream Without Interfering with Navigation—This Was Accomplished by Means of a Suspension Bridge Carrying a Belt Conveyor

By R. W. Shumway*
Huntington, W. Va.

F THE many installations completed in the eastern Kentucky coal field during the last year, the plant of the Eureka Coal & Mining Co. located at Prestonsburg, on the Big Sandy Division of the Chesapeake & Ohio R.R. and completed Feb. 1 of this year, is one of the most interesting. This firm has successfully developed a large tract of coal land lying on the opposite side of the river from the railroad, and has built a suspension bridge crossing the stream to support a belt conveyor, which carries coal from the tipple house to the screens and bin on the railroad siding.

The plant was designed and built to handle without expansion of the bridge structure the whole tonnage that will be produced by the operating company from its present acreage and from any coal holdings that it may later acquire. Its capacity is 250 tons of mine run per hour, and this output the management expects to produce within two years. This will make this plant one of the larger producers in the field.

A multiple-bucket aërial tramway was first considered for this property, on account of its lower installation cost, but this idea was abandoned in favor of a suspension bridge carrying a belt conveyor, for such a combination would afford a larger capacity and lower operating expense.

Big Sandy at Prestonsburg 200 Ft. Wide

With the exception of the suspension bridge itself, which was designed by the Leschen Rope Co., the entire plant was planned and equipped with machinery by the Link Belt Co. of Chicago. The conditions which determined the selection of the system of conveyance are, briefly, as follows: A coal bed lying on a level with the railroad but across the river from it, with 600 ft. between the outcrop and the river bank. The river, the Big Sandy, is 200 ft. wide at this point, with steep banks about 40 ft. high. The railroad, at the center line of the bridge, is cut through a rock cliff, practically at the river's edge, so that, between the railroad and the stream, but little room was available for trackage or tipple.

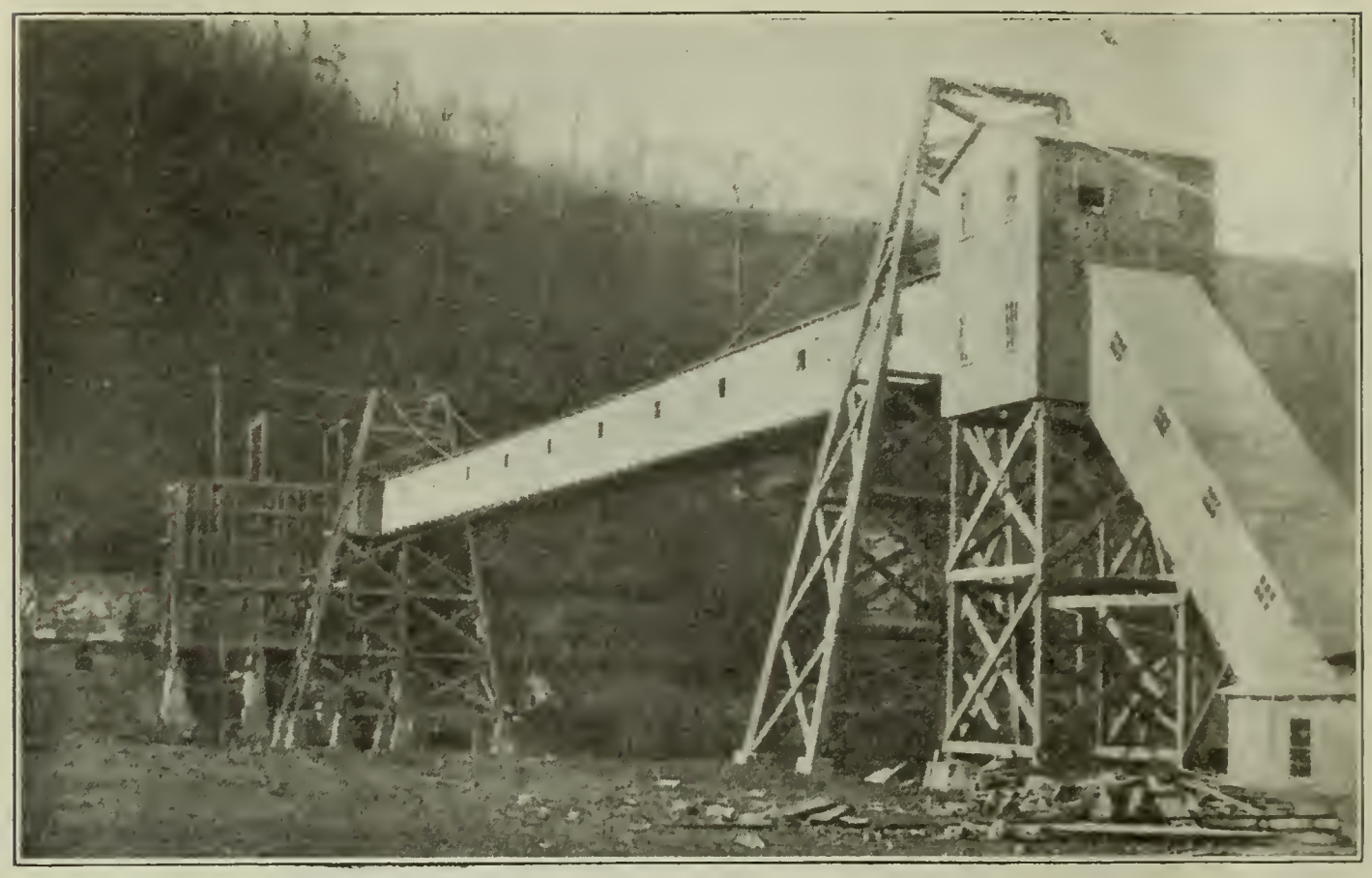
As the road is now built, the coal from three mine openings in the Miller's Creek bed is hauled by combination trolley locomotives to a central tipple located near the river bank, where it is weighed and discharged by a Phillips cross-over dump, which delivers to a small bin. Thence it is fed over a reciprocating-plate feeder to a flight conveyor built at an inclination of 45 deg., which in turn discharges it over a lip screen to the belt conveyor. The flight conveyor is 101 ft. 6-in. from center to center with 23-in. pitch chains carrying 15 x ⅜ x 36 in. steel flights and having a capacity of 250 tons per hour at a speed of 90 ft. per min.

Screened Slack Used as Bed for Lump Coal

The lip screen is introduced between the flight conveyor and the belt, to screen out part of the slack coal. This falls directly onto the belt and forms a cushion for the lump coal, thus protecting the belt from undue abrasion. The belt is a 36-in. 6-ply rubber band, running at a speed of 250 ft. per min., over flat Uniroll idlers, having a slight flare at the ends. The belt lies practically level across the idler, yet does not show the usual tendency to spill coal over the sides. The tendency to spill which most belts show is as a rule prevented by the use of three- to five-roll troughing idlers.

Mine-run coal is discharged at the railroad end of the belt and screened over a stationary lip screen, which

*Constructing engineer.



View from Mine Side

Coal is dumped on mine side of river into a bin, fed to a reciprocating-plate feeder which discharges on a 45 deg. flight conveyor. A 36-in. belt carries the coal across the river where it is loaded into railroad cars.

separates the coal into slack and 4-in. lump. The lump goes directly to the railroad car, and the undersize is raised in a bucket elevator to a storage bin of 150-ton capacity, placed over the single loading track and about 25 ft. to one side of the tipple. Should additional sizes be required, an additional track may later be built for loading lump coal.

The belt conveyor is 80 ft. above low water level in the river, that clearance being demanded by the U. S. War War Department, which classes the Big Sandy at this point as a navigable steam. This height is demanded for the unobstructed passage of boats.

Belt Conveyor Carried by Suspension Bridge

The span of the bridge is 250-ft. This length is carried by two latticed wood towers, one on each river bank, each tower being 65 ft. high from foundation to the center line of ropes. The entire bridge is suspended from two 2-in. galvanized-steel carrying cables, the rope stress in each cable being 110,000 lb. The cable anchorages are concrete blocks having a dead weight of over 100 tons.

The west anchorage is in the cliff back of the railroad and was especially difficult to install, as the sandrock was disturbed by fissure or "hill" seams at fairly frequent intervals. These extended to a thin coal bed some 15 ft. below the top of the anchorage. On this account it was thought advisable to extend the anchorage excavation beyond these seams until solid rock was reached, and bed the anchors at that point. To accomplish this, a 5 x 14-ft. tunnel was driven 20 ft. into the hill, then the anchors were placed and practically the entire tunnel then filled with concrete.

As this tunnel was 25 ft. above the railroad and the concrete mixer, it was expected that the placing of 50 cu.yd. of concrete, without special facilities for doing the work, would prove to be a slow and expensive process. However, a small single-drum contractor's hoist was available and accordingly a small rope was anchored above the opening and the concrete poured into a half barrel, which was then hoisted and tipped by hand into the tunnel, which fortunately was driven steeply downhill, to roughly correspond to the pitch of the bridge-supporting cables. In this way 50 cu.yd. of concrete was placed at the rate of 10 cu.yd. per day, using a total labor force of ten men, which fed the mixer, wheeled and placed the material with one man at the hoist.

Reinforced Concrete Footings Under Towers

The foundations of the bridge tower also were difficult to construct, as they were both placed directly at the river bank. This made it necessary to dig deep excavations on both sides of the river. On the mine side a sandy clay was found as a subsoil, which made an excellent foundation. Three concrete footings were used as tower bases. These were reinforced with 30-lb. rail placed at 2-ft. intervals, horizontally. Upon these footings stone piers were constructed for the tower supports.

On the railroad side of the river the site for the piers was found to be a loose, rock fill, being the waste from the original railroad-cut excavation. This was shot and quarried out until an area of sufficient size was made for a footing course 24 x 56 ft. over all. This area was then covered with a slab of concrete reinforced at 2-ft. intervals with 30-lb. steel rail.

The tower piers were then built of concrete upon this base. This was all later covered with débris from the tipple-pier excavations. As completed the tower piers are quite substantial, containing nearly 400 cu.yd. of concrete for each tower. They can carry with safety several times the load that will be placed upon them.

Construction Details of Suspension Bridge

The bridge itself is a light frame structure suspended from the two carrying cables by ⅞ in. Earnst hanger rods placed on 5 ft. 6 in. centers. Oak stringers 6 x 10 in. in dimensions are attached to the hanger rods and form the main bridge stringers. These support the girders of 6 x 10-in. oak, on which are placed 3 x 8-in. oak deck sills on 4-ft. centers. The lateral X-bracing is of 2 x 8-in. oak, bolted to the main stringers, while 3 x 10-in. stringers are used for the belt idlers, which are placed in the center of the platform with a decking laid on either side.

The entire structure is covered with corrugated iron attached to ordinary balloon framing. Three ⅞-in. steel-cable guy ropes are attached to each side of the bridge at the center and quarter points. These are provided with turnbuckles at the shore end. Sufficient tension is taken to maintain the bridge in a true position under all weather conditions.

The bridge was designed for the following loads: Moving load on conveyor, 100 lb. per sq.ft.; wind on bridge for lateral system, 30 lb. per sq.ft.; wind on bridge for tower uplift, 60 lb. per sq.ft.; snow load, 25 lb. per sq.ft.; dead load, 360 lb. per sq.ft. The structure when completed was found to be quite stable and rigid, with practically no deflection under load and but little lateral motion under the action of heavy winds.

Hard to Determine Construction Camber

After the carrying cables were erected some difficulty was encountered in determining the amount of camber to leave in the unstretched ropes, so that when the weight of the bridge and loaded belt was applied the stretch should be sufficient to allow the belt to assume a true horizontal position without sag. No data seemed to be available that would cover the conditions of an unloaded rope in this position, making allowance for sag in the rope between tower and terminals, slight kinks or waves in the cable due to its unstretched condition, the flatness of the curve in the rope over the tower saddles arising from the same cause and finally the gradual stretch in the cable itself as the load was applied. The last item appeared to be the only one that could be calculated with any degree of certainty. As the bridge was erected in cold weather, the temperature in summer would also affect the sag of the bridge.

It was found impossible to determine these various factors and a camber of 12 in. was allowed in the unstretched ropes, on the assumption that this would be taken up under loading. Threaded U-bolts were used on both ends of the cables to take up any sag that might develop later. This allowance has proven to be fairly satisfactory, as the bridge now is almost level, with but 4 in. of sag, in an unloaded condition. When the belt is full of coal the sag apparently is not increased, as no additional deflection can be detected with an engineer's level. This 4 in. deflection will be taken up later by screwing up the U-bolts at the end of the ropes and by threading up the hanger rods.

The entire tipple structure is of oak and of standard construction. It is supported on concrete piers. The driving machinery for the feeder and flight conveyor is placed below ground in a 25 ft. excavation inclosed by 36 in. stone walls. In this pit a small quantity of water gathers daily and a small pump connected to the feeder drive is provided for its removal.

A New Non-Freezing Military Explosive and Its Application to Mining

Extensive Government Tests Establish the Stability of the New Powder as Well as Its Great Rending Power—Shells Torn to Pieces and Warped by the Firing of One of Them Did Not Themselves Explode—Powder Can Be Set Off Only by Detonation

By Dever C. Ashmead
Wilkes-Barre, Pa.

IN ONE of the reports of the U. S. Army Ordnance Department occurs the statement: "Thus was born the only distinctively new military explosive developed in America or Europe during the world struggle." This sentence refers to an explosive developed by the Pennsylvania Trojan Powder Co., of Allentown, Pa., and San Francisco, Cal., this explosive being known as Trojan powder.

Although this powder is new from the military standpoint, it was discovered previous to the war and has been used commercially for the past eight years. Before we take up its value from the commercial standpoint, however, it might be well to see what it accomplished during the war and how the advantages that it then showed are applicable to commercial pursuits. The information here set forth has been obtained not from the manufacturer but from reports of the government.

This new explosive, which is highly economical in use, dispenses with glycerine, and the base of its manufacture is not a fat from which glycerine may be derived but a product obtained from two of America's greatest cereal crops, viz., corn and potatoes. The process of manufacture is, of course, secret. During the war 7,244,569 defense hand grenades, 1,526,000 offense hand grenades, 9,921,533 rifle grenades and 813,073 3-in. trench mortar shells were loaded with this powder.

Fragmentation and penetration tests, as conducted by the government, proved conclusively that better results were obtained from this than from any of the other explosives used. This shows that a greater explosive force is inherent in this powder than in other high explosives.

Shells Torn to Pieces But Did Not Explode

As the next statement is little short of astonishing, it is quoted verbatim from page 34 of bulletin 2,030 of the Army Ordnance Department: "It was required that the powder should be immune against an enemy shell that might be dropped upon an American ammunition dump. In the test fifteen bombs in five boxes were buried 6 ft. under earth and one of the number was exploded by a fuse. The force of the explosion tore five of the remaining fourteen to pieces and warped three more, but none exploded. The result was so remarkable that the experts insisted that these other bombs be fired in turn to see if they really contained powder. They were, and they did."

This powder has been used by the Locust Mountain Coal Co. for about four years, and the following information concerning it has been procured from this company. The powder cannot be fired by dropping the stick nor by shooting rifle bullets through the cases. It may, however, be fired when a detonator is placed in the stick and exploded. It is thus quite safe when properly handled and manipulated.

No matter how cold the explosive may become there is no danger in warming it, for the simple reason that it does not freeze. Consequently this danger, always present with some of the older type of explosives, is entirely eliminated. The coal company above mentioned has had excellent opportunity to test this quality of the Trojan powder, as it has one of the largest open-pit strippings in the anthracite region and has used many carloads of the explosive in winter and summer.

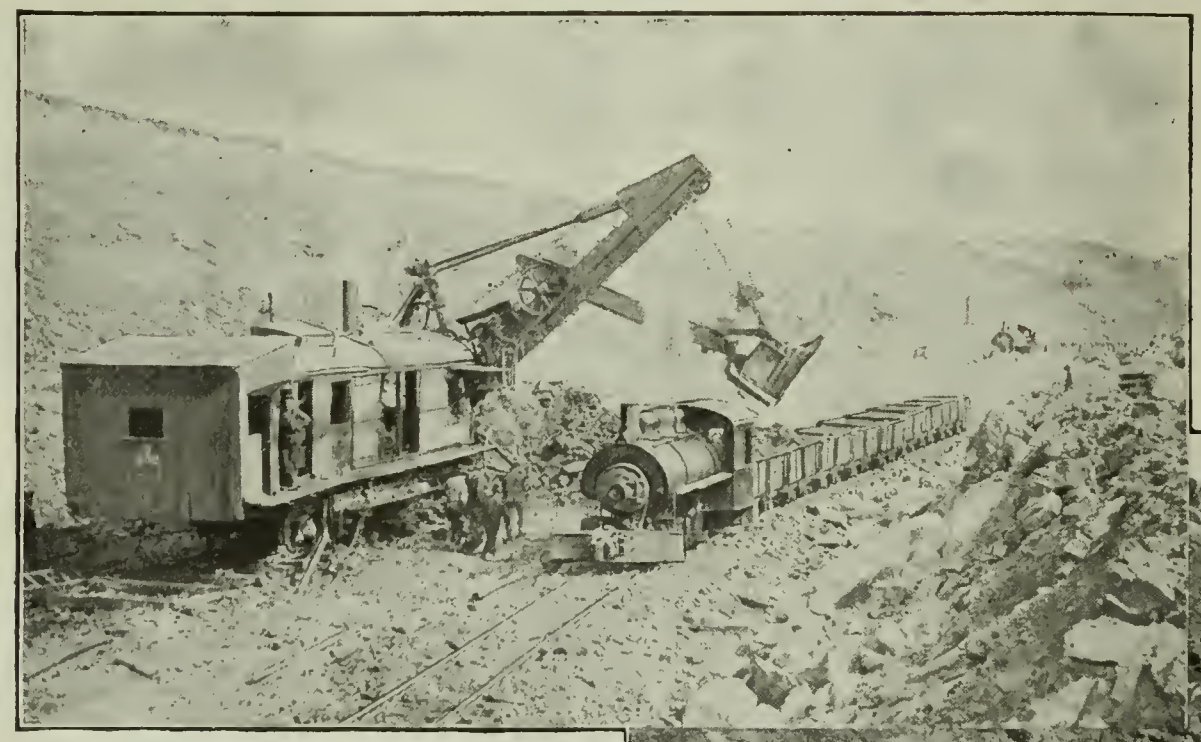
In the quotation above, taken from the government report, it was shown that one bomb could be exploded beside another without detonating it. In other words, each stick has to be in almost actual contact with its neighbor in order to fire it, the jump gap being extremely small. This fact greatly increases the safety with which it can be used in mining operations.

Gases Given Off Do Not Cause Headache

The bad odors and fumes that follow the detonation of certain explosives keep men out of the working places for appreciable lengths of time, for if they returned to work they would soon become nauseated or acquire an intense headache. This causes a great loss of time and consequently a reduction in the output per man. The explosion of Trojan powder does not cause such fumes and consequent headaches.

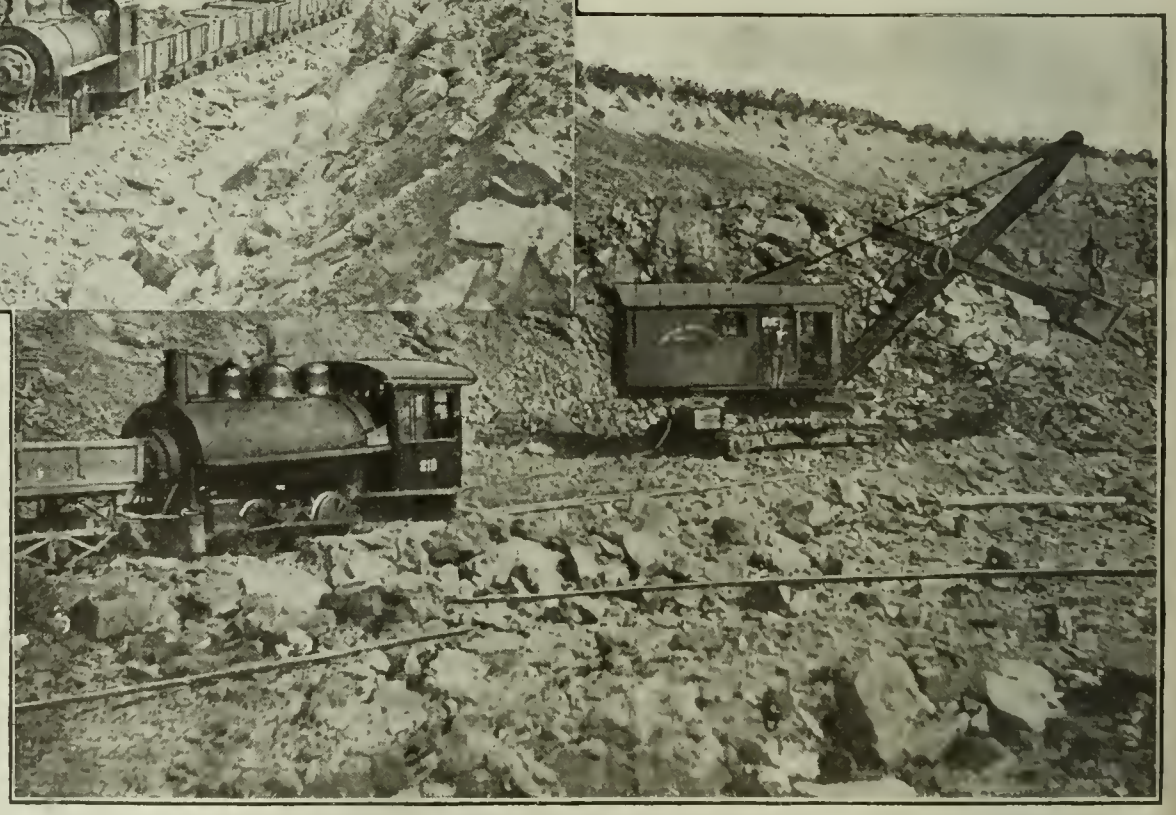
While discussing this powder it might be well to mention some matters of interest connected with its use in quarries. This explosive is being employed with great success in limestone and cement-rock quarries, where it is commonly fired in holes from 60 to 120 ft. in depth. Detonation is here accomplished by means of a kind of fuse known as "cordeau." This detonating fuse consists of a lead tube filled with an explosive substance. Tests have shown that if a length of 17,500 ft. of it should be laid and one end fired by means of a detonator, the explosion would reach the opposite end in one second. This represents a rate of explosive propagation of more than three miles per second, and this quality has been taken advantage of in firing these holes.

When it is desired to fire a deep hole in quarry or surface blasting work, the first stick of Trojan powder lowered into the hole is attached to the extremity of a length of cordeau. The fuse thus reaches the bottom of the hole. The other sticks of explosive composing the charge are then placed in the hole, and a detonator is attached to the upper end of the cordeau fuse. This is fired by means of an electric battery. The explosion of the fuse, extending down the hole, detonates the sticks of explosive that it passes as well as the one into which it is inserted. This causes an almost instantaneous explosion, or one much more rapid than would occur if the bottom stick were fired first and the remainder of the charge detonated from its explosion. This system of loading and firing by means of the cordeau is said to give much better results than can be obtained from the same amount of explosive fired in the ordinary manner. It is meeting with considerable use in many large quarries.



Loading in Open Cut

This view was taken in a large anthracite strip pit, where many tons of the new non-freezing explosive are used annually.



Another View in the Same Pit

This little electric shovel is digging blasted rock. The rending effect obtained may be judged by the condition of the material in which the machine is working.

Provisions That Enable the Skip Hoist at Coal Mines to Give Maximum Service

Where Skip Hoisting Is Employed the Bottom Layout Differs Radically from That Used with Cage Hoisting—Although Four Kinds of Dumps Are Available the Rotary Is the Variety Most Generally Installed

By Andrews Allen and John A. Garcia
Chicago, Ill.

At COAL mines where sized coal is to be loaded the mine product should be dumped so as to pass in as direct a manner as possible from the cars into the skip, which accordingly must have a capacity that is some multiple of the capacity of the car used. Where cars are of moderate size and the shaft is not too deep, it is usually convenient and economical to use a skip that will hold two carloads of coal. With a two-car rotary dump, either one of two arrangements may be employed. In one the contents of both cars are thrown to each skip alternately; in the other each car dumps into a separate weigh pan or chute, the second dumping going on top of the first. This provides two carloads of coal for each skip, the operations being started with only a single dump in one of the two skips. The first arrangement is shown in Fig. 1 and the second in Fig. 2. Either of these plans eliminates the deep pit, reduces breakage, provides facilities for docking and for handling rock, and seems to meet admirably the conditions and requirements for coal mining.

For dumping cars at shaft bottoms where skips are employed for hoisting four devices are used: the cross-over dump, the kick-back dump, the bottom-dumping car and the rotary dump. The first two types require cars with end gates, which are, of course, objectionable. Such dumps are inexpensive, require no power and are easily installed. The cross-over dump is rapid. Neither of thse dumps, however, can operate in multiple or handle coupled trips.

The kick-back dump can be easily adapted to skip hoisting, one device of this kind being located in front of each shaft compartment. In this way skip hoisting may be installed in an existing mine without any radical reconstruction of the bottom.

It should be noted that the mine bottom for skip hoisting runs at right angles to the bottom designed for cages. It seems that driving new entries is the only convenient and economical way of adapting an existing mine bottom to hoisting by skip.

Place for Reliable Bottom-Dumping Car

A thoroughly satisfactory bottom-dumping car has, as yet, not been designed, although many types of such cars are in operation. All require on the car itself mechanism the cost of which is great if not actually prohibitive. In addition, bottom-dumping cars lack solidity and strength. They sometimes dump unexpectedly in the mine, causing wrecks; they spill more coal dust than cars with end gates; they are expensive to maintain, and frequently do not clean themselves readily, large lumps having a tendency to stick in them unless an extra-wide track gage is employed. If a satisfactory and economical bottom-dumping car should be developed, trips could be emptied without uncoupling or even without stopping. As a consequence the bottom layout could be correspondingly simplified.

Neither the cross-over dump nor the bottom-dumping car is adapted to installations where the coal is discharged directly from the car into the skip, and the kick-back dump is too slow or a mine having a large capacity.

The rotary dump combines every advantage of the types mentioned, except the ability to discharge a moving trip, which can be done only with the bottom-dumping car. It is capable of dumping with a minimum of breakage and is extremely rapid. It will handle solid-end cars in multiple or without uncoupling. It is rugged, simple, and free from operating troubles. Rotary dumps are used almost universally in England, where they are operated either by gravity or power or a combination of both.

Gravity Versus Power Rotary Dumps

The best gravity dumper is of the multiple compartment type. This is an excellent arrangement for small cars but it is not well adapted to an installation at a mine bottom on account of its large diameter and because it will not handle cars without uncoupling. The Hansen & Hayes gravity dump is rapid but difficult to handle and hard on the coal. The new gravity dumper, controlled by gears and a powerful hand wheel, seems to afford perfect control and for light cars of small capacity should give excellent service.

For cars of large capacity power dumpers are almost universally employed. Motor-operated dumps make a complete revolution; the reversing type, actuated by air or steam, revolves through 135 deg. to rest and then returns to its original position. The motor-operated design requires a large motor to take care of the peak load encountered in rapid operation. The stop at the end of a revolution is not absolutely positive, as it depends on a latch. These dumps are capable of handling eight to ten cars per minute and may be operated by either spur or friction gears from the motor.

The reversing type of dump is actuated by cable and air cylinder. Speed of operation is obtained with a comparatively low power consumption, as the air cylinder takes the peak of the load. A single dump of this type will handle up to seven cars per minute singly, or five cars per minute in trips. A two-car dump will handle from six to eight cars in trips and from eight to ten in pairs.

The Wood dump is operated by two single-acting air cylinders with tail-rope connection. These cylinders usually are set horizontally and fitted with equalized

*Second and concluding portion of a paper entitled "Skip Hoist for Coal Mining," presented before the American Institute of Mining and Metallurgical Engineers, New York, Feb. 16, 1921.

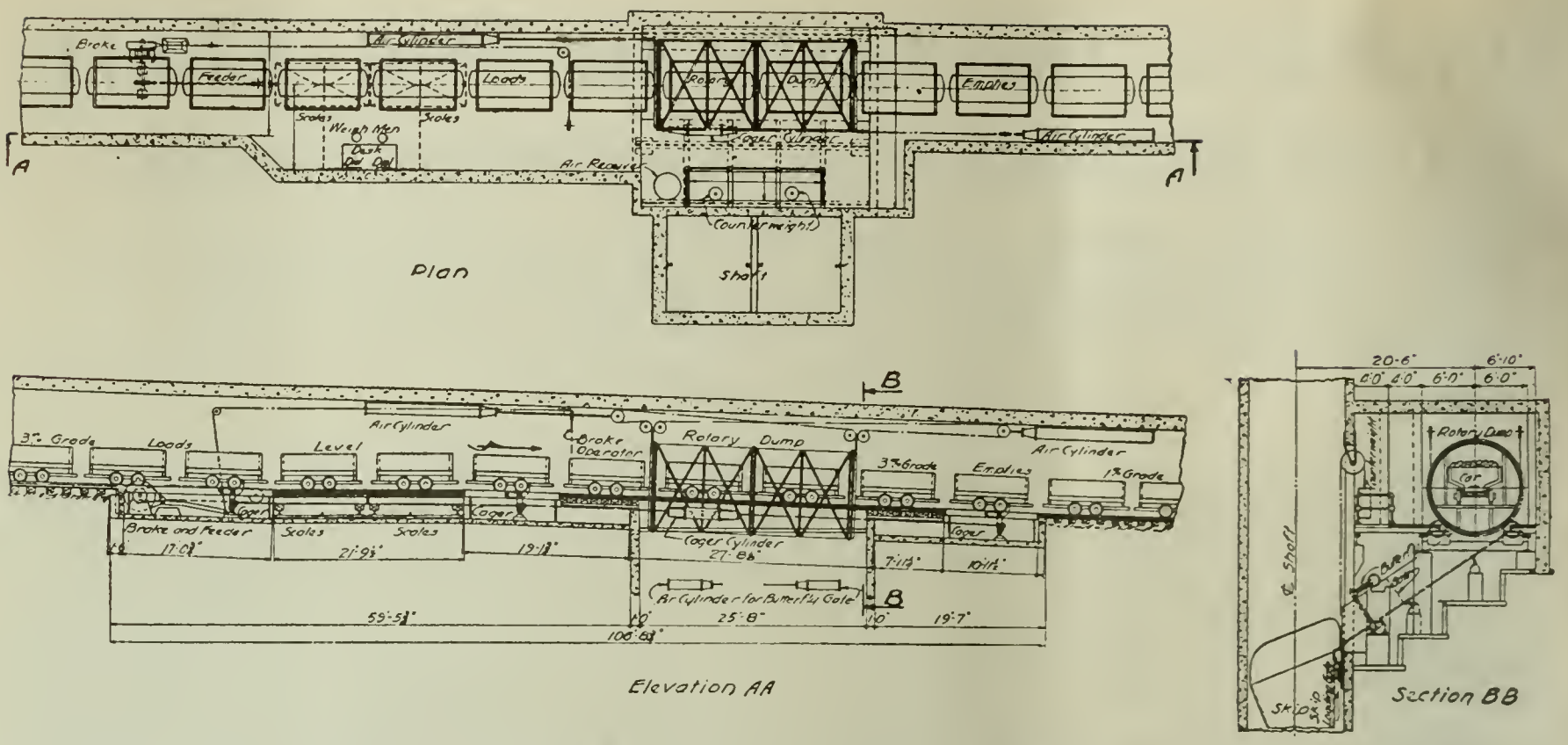


FIG. 1. LOADING STATION, KATHLEEN MINE, UNION COLLIERY CO., DOWELL, JACKSON COUNTY, ILLINOIS
Here, owing to the natural grade of the bottom, gravity with a retarding feeder conveyor is employed. Three men are needed, one to control the trip and operate the dump, one to weigh coal and one to pull checks and cut the trips below the dump into the required number of cars.

cables running to both ends of the dumping cage. The cylinders are operated by a four-way valve so arranged that one cylinder is filled with high-pressure air from the tank while the other exhausts into the atmosphere. When the valve is set near the cylinders and is sufficiently delicate in operation it is possible for a skillful operator to dump rapidly and with perfect control at all times.

He can cushion the dump so that it can hardly be heard when it strikes the stops, or he can give a blow when necessary to dislodge wet coal or rock. This type of machine handles the coal easily and without breakage. The cage is provided with a shield on the dumping side which delivers the coal to the chute without drop. The two-car rotary dumper of this type is now made with roller supports at the ends only, thus eliminating the expense of intermediate supports with their attendant uneven wear and the necessity for adjustment of the wheels.

Where the skip contains three or more carloads and the bottom is laid out according to the system shown in Fig. 1, it is necessary to use a dump handling the number of cars corresponding to the skip capacity. Where the system shown in Fig. 2 is used, however, there is no change in arrangement and it is necessary only to provide a weigh pan of sufficient capacity and to arrange the scales for multiple weighing of the requisite number of cars.

Coal Weighed in Car or in Weigh Baskets

In most mining fields the coal is paid for by weight. Even where this system is not in use the tendency is to adopt it because it encourages the full loading of cars. The coal can be weighed on platform scales or in weigh baskets. The platform scale is the most usual arrangement, and in some respects is the simplest. The principal objection to the platform scale is the variation in the tare weight. Few mines, even new ones, have cars exactly uniform in weight or capacity. In the type of bottom shown in Fig. 1, arranged for a two-car dump, there should be two scales so spaced that two cars can be weighed while two are being dumped.

In the Kathleen mine of the Union Colliery Co. the trips are handled through the dump, without uncoupling, two scales being used. These are on a level grade and cager dogs are set above and below the scale, so that the couplings over the scale platform are slack. This method is thoroughly satisfactory but requires much mechanism and a long bottom. This can be avoided if weigh baskets are placed under the rotary dump. The weigh-basket arrangement shown in Fig. 2 is more elastic, simplifies the handling of cars, and will take care of three or four cars to the skip. The baskets are designed to stop the coal on a well-rounded surface and give an easy discharge without breakage. Though their use entails one additional handling of the coal, the resultant degradation is negligible.

Where two-car rotary dumps are used with a two-car skip the weigh basket is designed to hold two carloads of coal, each dump being weighed separately by means of a sliding dial scale or tare beam. The dumping does not have to register exactly with the hoisting cycle, as is the case where the other system is employed. The movement of the trip is controlled by one man, who also operates the rotary dump. One man weighs the coal and dumps the weigh pan. The safety gate automatically opens and closes with the skip.

Safety Gate Keeps Coal from Spillage

In Figs. 1 and 2 the sump is guarded by a safety gate, which is opened by the skip and closed by a counterweight when the skip ascends. It is not the intention that coal shall be dumped against this gate at times when the skip is not in the loading position. The gate, however, is in place should a dump accidentally be made, and can be used, in the weigh-pan design, to hold rock while coal is being placed in the weigh baskets. The safety gate also catches lumps of coal that are retarded in the chute and thus enables the operator to bell the skip away more quickly than would be possible without it.

In operation the cars or the weigh pans are dumped when the skip is approaching the bottom at such a time as will theoretically bring the coal to the skip as soon

as it lands. This is the most rapid operation possible, as the skip is then loaded in less time than when the coal starts from rest, as is the case when a measuring hopper is used or when the coal is loaded into the skip direct from a bin.

The safety gate shown in Fig. 1 has a spring catch with which the skip comes into contact, so that the gate floats down from the skip and opens the chute with little impact. A curved lip on the chute makes contact with the skip and prevents spillage. Fig. 2 shows a design that is better adapted for resisting the impact of coal and rock in case such materials are dumped against it. This type of gate is operated by a sword-arm lever, which is engaged by the operating roller on the skip. Its motion is conveniently adjustable and the lip projecting from the gate follows the skip down and gives a perfect discharge without any possibility of spillage.

Rock Can Be Handled in the Coal Skip

A moderate amount of rock can be handled at the skip shaft with either design, provided the hoisting capacity of the plant is proportioned for the rock in addition to the coal. This also necessitates a certain percentage of single-car hoists. The loss of hoisting capacity arising from the handling of rock without an auxiliary installation varies in the designs shown. In the case illustrated in Fig. 1 the worst possible combination of coal and rock is encountered when single cars of rock are interspersed with single cars of coal. In this case 5 per cent of rock will require 10 per cent additional hoisting capacity, compared with the coal. Where the rock cars in a trip are in pairs, between pairs of coal cars, a net increase in hoisting capacity of only 5 per cent is necessary.

In the case of the second design, or that shown in Fig. 2, the weigh pan would be left open when rock is hoisted, so that this material might pass down against the safety gate. The worst arrangement of rock and coal would then occur when two cars of rock were alternated with two cars of coal, as this would require single hoisting of both coal and rock with the same loss of capacity that would occur in the other case. Where single rock cars are placed between single cars of coal or the cars of rock are placed all together in a trip there will be no loss in hoisting capacity.

Rock Cars Can Be Segregated by Feeder

In this design the bottom is level and a reversing power-operated feeder is used for handling the trips. It is, therefore, possible to consolidate the isolated cars of rock or coal without loss of hoisting capacity, when they are within three cars of each other, by running the cars through the dump without discharging and returning them so as to select the rock or coal cars and dump them as desired. Where isolated cars of rock occur in the trip, it is necessary to discharge them singly, but the reversing feeder avoids the necessity of dumping single cars of coal when the rock and coal cars are not placed in correct relation in the trip. The dumper can easily take care of such problems, so that the actual number of single-car hoists will be few. The process can be greatly simplified by a little care in making up the trips on the partings.

Where large quantities of rock are to be handled or where the rock will not flow in a chute it must be hoisted at the auxiliary shaft, which is the only way in which a maximum coal-hoisting tonnage can be attained. If an auxiliary rock bin is built under the dump, with mechanical means for feeding the rock to the skip, single hoists of rock will not be necessary but the amount of coal handled will be decreased by the amount of rock hoisted.

In every case the proper handling of rock requires careful investigation. This problem, however, perhaps is easier of solution in a skip-hoisting than in a cage-hoisting plant, both on account of the greatly increased capacity of the skips and because there are always two ways of getting out the rock.

Docking facilities can be arranged by placing a special docking table in the tipple, onto which the contents of a single car may be hoisted and dumped through a fly gate in the chute. This table and the fly gate should be in charge of the dock boss, who can operate the gate and start and stop the conveyor at will, so that each car of coal sent for inspection may be thoroughly examined and the docked materials removed and identified. In practice a single car of coal will be hoisted whenever its condition is suspected, or the dock boss may be given all the cars he can handle in a day's run without unduly shortening the hoisting capacity.

Fig. 3 shows such an arrangement in the tipple together with the rock gate and chute. As the docking table discharges directly onto the feeder or screen, further handling of the coal is unnecessary. The docked material can be piled and labeled and afterward thrown directly into the rock bin. The operation of the tipple

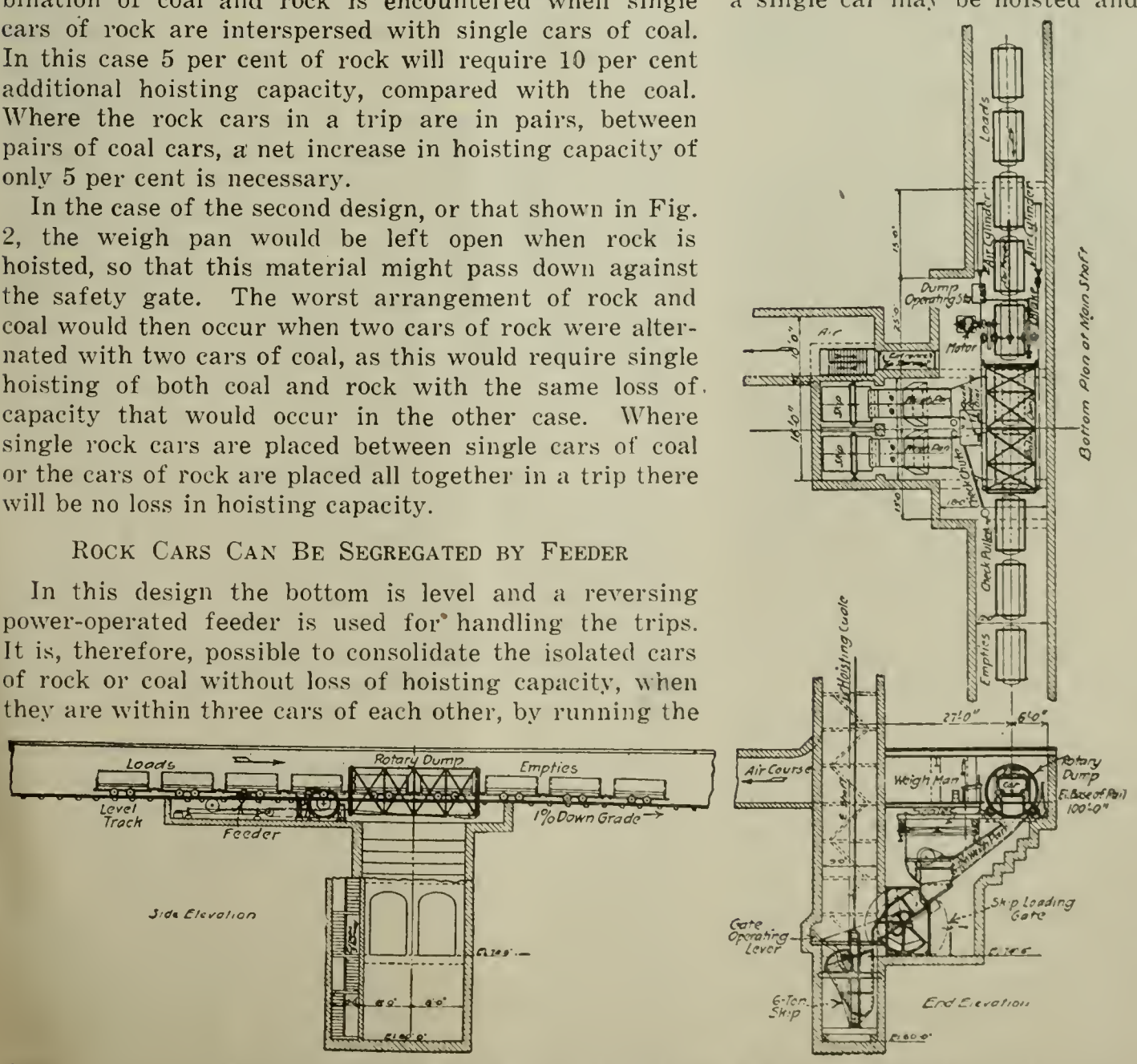


FIG. 2. BOTTOM OF SHAFT, ROSITA MINE, ROSITA, COAHUILA MEXICO, COMPAÑIA CARBONIFERA DE SABINAS, S.A., AMERICAN SMELTING & REFINING CO.

At this plant the bottom is level over the feeder, but down grade beyond the rotary dump on the track over which the empty cars travel. Note that the coal is weighed in a 6-ton weigh pan. The coal will be used largely for coking purposes.

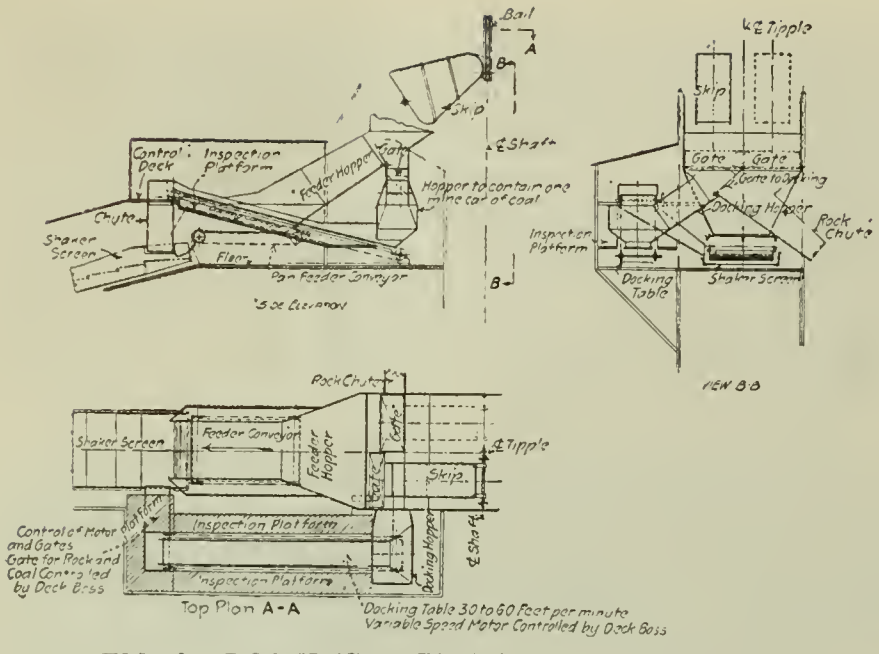


FIG. 3. DOCKING TABLE AT TOP OF SHAFT

The contents of a single car are hoisted and dumped through a fly gate in the chute. A picking table gives ample opportunity for inspection and raises the coal high enough for its delivery by a chute to the shaker screen which takes care of the uninspected skiploads.

will not be disturbed or delayed in the slightest degree.

The foregoing for the most part assumes that the cars are handled in trips without uncoupling, which method has proved successful. The labor of uncoupling cars and handling them singly or in pairs is not only expensive but dangerous. Furthermore, the ordinary handling of uncoupled cars through a dump or in a cage-hoisting mine is destructive to the cars as well as to the dump or cage and its mechanism. The only advantages of uncoupling are slightly greater elasticity of arrangement and a little higher speed in dumping.

Swiveling Hitchings Versus Swivel Drawbars

When cars are discharged without uncoupling, it is necessary to use some form of swivel hitching or drawbar. For a reversing rotary dump a three-link hitching properly designed will swivel through the necessary 135 deg., without sufficient loss in length to cause trouble. Swivel hitchings give good results for small cars and short trips, but when the swivel pin is large—say over 1¼ in. in diameter—the hitching becomes cumbersome and heavy. For large cars, either a swivel drawbar or a three-link hitching must be used. The spring and swivel drawhead shown in Fig. 4 has given excellent results and combines a spring both for tension and compression with a rugged and inexpensive swivel. The spring drawhead has special advantages where cars are dumped in trips, as the motion of the trip is effectively cushioned both in starting and stopping and the load is handled much more easily by the feeder.

The best arrangement at the foot of the shaft consists of a level bottom through the cage room and over the dump, but with a grade beyond the dump of about 1 per cent or less. The trips are then propelled through the dump, stopped and held in dumping position by a chain feeder operated by motor and brake set in the center of the track as shown in Fig. 2. This feed is reversible and the trip can be moved as desired, the cars stopped and accurately spotted by one man with the aid of no other mechanism. The grade of 1 per cent on the empty side keeps all couplings below the feeder in tension, so that, in dumping, the pins do not fall out and the cars are accurately spaced.

Where platform scales are used or where gravity is relied upon for moving the cars, cager dogs must be installed above and below the scale, and frequently below the dump. These dogs give slack couplings over the scale, as shown in Fig. 1, and a slack coupling below the dump where the trips can be cut apart.

Gravity operation of trips without uncoupling should never be attempted except with some kind of mechanical control. Where a two-car dumper is used, the trip must start from rest and run from 18 to 25 ft. into the dogs. A sufficient grade to assure prompt starting and reliable operation will give the cars an excessive speed when they enter the dogs on the dump. At the Kathleen mine (see Fig. 1), where, on account of the natural grade of the bottom, gravity operation was used, a retarding chain feeder was employed, similar to the power-operated feeder except that it was equipped with an air-controlled brake. This brake is applied after the trip gets under way and reduces the speed so that the trip lands in the cager dogs without excessive impact. Car retarders of the Fairmont type also have been used successfully for this purpose.

A power-operated feeder cannot be safely used with cager horns, unless such horns are mechanically interlocked. Successful plants have been constructed in this way, but they are quite complicated. Where the platform scales are omitted and the coal is weighed in baskets, the cager dogs are not necessary and the reversing feeder offers the most economical and effective means of handling the trips.

With continuous-trip operation it is possible to handle the bottom with three men—one to control the trips and operate the dump, one to weigh the coal, and one to pull checks and cut the trips below the dump into the required number of cars. The switches can be handled by this man or, in a large mine, by a special trip dispatcher. Where the trips must be uncoupled, at least two more men are necessary for this operation and for coupling up on the empty track. In a large cage-hoisting shaft mine, even with automatic cagers, at least two or three men are required at the bottom to couple and uncouple the cars; the weighman and check puller are located at the top.

Where the trips are uncoupled and a rotary dump is used, horns must be placed on the dump to hold the cars in proper position and some means must be provided for preventing the coupling pins from falling out. The impact of the cars against the dogs in the dump is destructive to the dump mechanism.

Auxiliary Hoist Shaft Essential at Big Mine

In a large mine an auxiliary hoisting shaft is necessary, especially with a skip installation. This shaft should be equipped with a small tipple, which can be used for handling coal during development and for hoisting whatever the main shaft cannot well handle.

In most cases a single counterweighted cage will be sufficient. This cage should be large enough to handle the mine equipment and to lower the men rapidly into the mine. It may be double decked, the upper deck being designed for cars and the lower for men only.

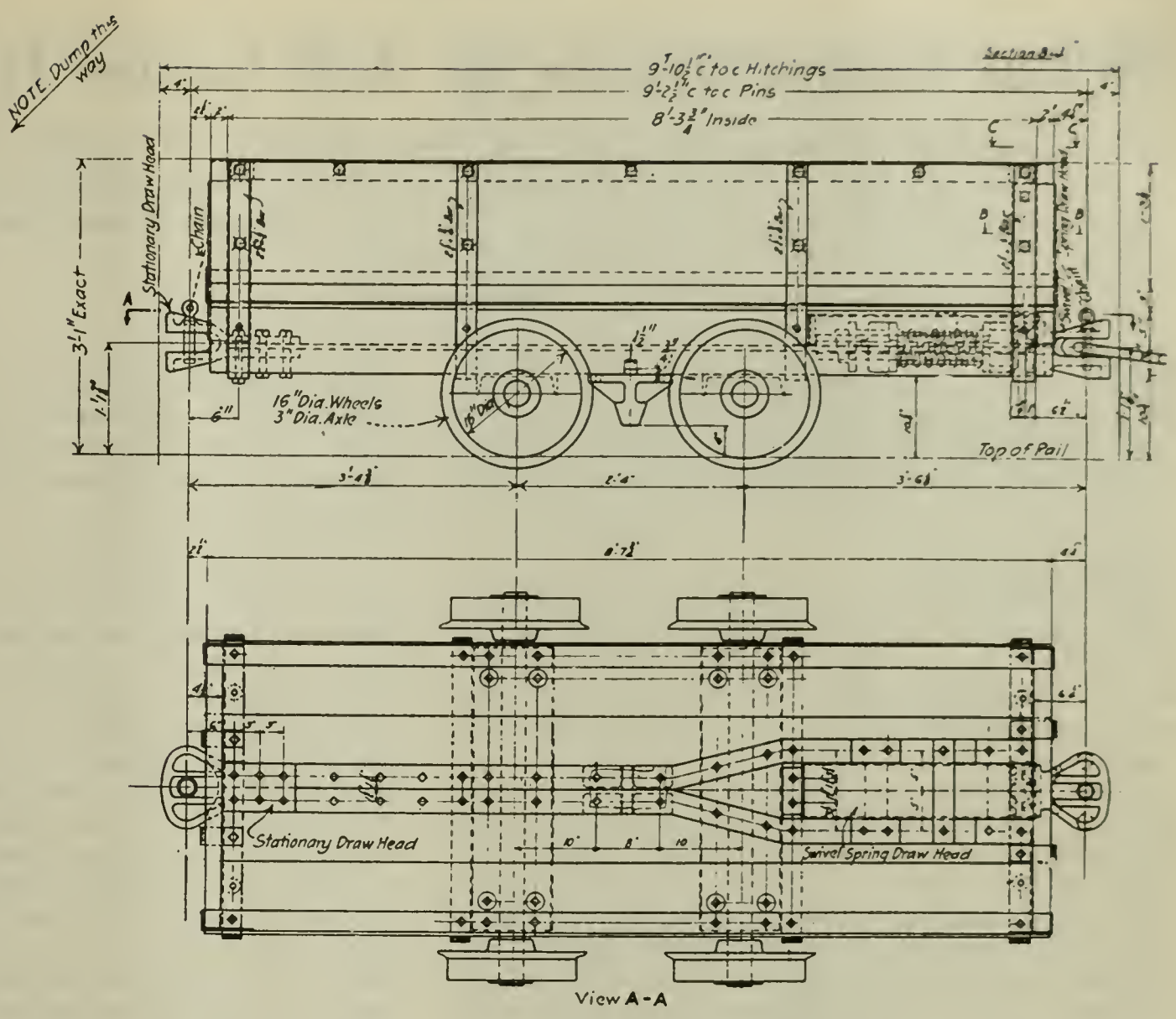
It may be noted that the use of solid-end cars in the rotary dump makes it impossible to use a self-dumping cage of the ordinary type at the auxiliary shaft. Formerly it was necessary to take the cars off the cage at the tipple landing and dump them singly in a rotary dump, or discharge them at the bottom into an auxiliary skip having a platform deck for the accommodation of men and material.

The overturning type of self-dumping cage has solved the problem of dumping at the auxiliary tipple. The

FIG. 4

Mine Car

This car has a swivel spring drawhead which provides both for tension and compression and for a swivelling connection between the cars, so that one or more of them can be reversed without disconnecting them from the trip. The spring drawhead has special advantages where cars are dumped in trips as the motion of the trip is effectively cushioned.



cage is a simple platform pivoted 3 ft. 4½ in. off center, the motion of the tilting platform being controlled by overhead rollers traveling in curved guides of large radius. Wheels pivoted on the tipple structure, over which the edge of the cage rolls when the rollers on the cage leave the circle guides, greatly shorten the dumping cycle and retain a large proportion of load on the cable, thus obtaining an easy dumping cycle under perfect control and a quick return of the cage into the shaft.

Cycle of a Self-Dumping Solid-Car Cage

The dumping cycle is arranged so that the edge of the car projects over the dumping plate just before the angle is reached at which the coal commences to flow from the car. As the dumping cycle progresses, the car turns over above the dumping plate with little drop until the coal is about two-thirds discharged, when the car rises and commences to draw back into the shaft. It is therefore necessary to provide a spill gate. The latest design of spill gate has a pantograph extension, which catches all spillage from the cage platform as well as from the car.

This spill gate is operated by a lever on the tipple which is engaged by angle guides on the bale of the cage. The gate is drawn back and nested under the dumping chute by means of its own weight aided by the counterweight.

The cars are retained on the cage by keepers similar to those employed in an ordinary self-dumping cage. Where brakes are not used a shelf engagement is provided over the wheels, in addition to dogs that engage either the wheels or lugs on the car. The latest designs of this cage have keepers of the Lepley type, which go partly around both wheels and hold them secure against the possibility of sliding and overturning. Objection is sometimes made to placing dumping equipment at the bottom of a downcast main shaft on the ground that the dust produced may be carried into the main haulageways. This objection may be overcome by making the hoist compartment of the auxiliary shaft the downcast and the air compartment the upcast, thus placing the main shaft on practically dead air. The opening connecting the dump to the shaft can be entirely sealed off, except for the chutes, which are open only while the skip is loading. It also may be possible or advantageous to provide a separate airshaft, possibly of circular form, in which case the auxiliary hoisting shaft will be downcast and the main shaft, as before, will be on dead air.

Consider Cars in Locating Auxiliary Shaft

It is desirable in arranging the mine bottom for either a skip or cage hoist to locate the auxiliary shaft so that cars may be readily shunted from trips and sent to the secondary hoist without serious interruption to main operations. This auxiliary shaft should also be located with full consideration for getting cars, mining machines, material and men to and from the main workings. The mine motor pits and repair shop, if any, are located where the haulage motors, crippled machines and cars may be readily shunted from the main haulage roads. They should also be convenient to the auxiliary hoisting shaft.

As in cage hoisting, the entries leading to the shaft may be arranged in many different ways. Numerous efforts have been made to adapt the revolving dump and skips to existing cage hoists but as far as I know no entirely satisfactory solution of this problem has as yet been worked out.

What Constituents in Ash Cause It to Fuse

Amount of Volatile Matter in Coal Not Important to Purchaser if He Gets Thermal Value—Silica in Quantity Gives High Fusion Temperature—Iron and Sulphur Lower Fusing Point—Temperature Should Exceed 2,450 Deg. F.

By G. A. de Graaf*
Bloomfield, N. J.

LARGE consumers of bituminous coal have realized for many years that the specifications under which they have been purchasing their fuel need modification and should be so changed as to meet the demands of boiler-operating practice. Most existing specifications are illogical. They fully cover items that are of little value, while other considerations of greater importance are entirely neglected.

Market conditions have recently been such that buying under specification is not possible. The time is not far distant, however, when consumers once more can select the coal they need to suit their particular purpose and equipment and buy it according to specifications.

If one examines the specifications ordinarily employed he will find that the following terms usually are mentioned: (a) Moisture, (b) volatile matter, (c) fixed carbon, (d) ash, (e) sulphur, (f) heating value, (g) fusing temperature of ash, (h) clinkering of ash.

The following table gives the proximate analysis (air-dried basis) of fifteen coal samples of which the ash was analyzed and its fusing temperature determined. The coal was of poor quality and not purchased under contract, but in the open market. The contract called for 22 per cent volatile matter, 8.50 per cent ash and 14,200 B.t.u.

TABLE I. ANALYSES OF FIFTEEN AIR-DRIED COAL SAMPLES, WITH THEIR HEAT VALUES

No. of Sample	Moisture at 105° C. per Cent	Volatile Matter, per Cent	Fixed Carbon, per Cent	Ash, per Cent	Sulphur, per Cent	Heat Content, B.t.u.
A*	0.47	20.21	62.62	16.70	3.51	12,887
B*	0.50	20.03	65.35	14.12	3.23	13,217
C*	0.41	19.24	64.11	16.24	1.78	12,439
D*	0.61	19.56	61.67	18.16	3.22	12,262
E*	0.42	18.95	62.76	17.87	3.67	12,421
F†	1.05	27.65	56.72	14.58	0.55	12,439
G†	0.99	28.70	53.93	16.38	0.78	12,260
H†	0.10	29.72	56.99	13.19	0.88	12,774
I	0.56	26.42	58.24	14.78	0.91	12,987
J	0.37	28.90	55.15	15.68	0.85	12,403
K	0.46	35.04	50.84	13.66	1.46	12,756
L	0.29	27.47	60.08	12.16	1.01	13,300
M‡	0.90	25.38	59.71	14.01	1.54	12,554
N‡	0.77	23.15	57.14	18.94	1.21	12,002
O	0.84	15.55	66.51	17.10	1.89	12,264

* Samples A, B, C, D and E were each taken from one of five hatches of a barge.
† Samples F, G and H were each taken from one of the three hatches of a barge.
‡ Samples M and N were taken from the same storage pile.

STANDARD SEGER AND ASH-TEST CONES

The grooved block in the foreground is used for making the paper envelopes in which the ground ash is formed into cones. Three of the envelopes can be seen lying with their mouths pointed toward the reader. One is still on the forming block.

*Chemist, Public Service Electric Co., Newark, N. J.

Almost without exception the purchaser will give great weight to the percentage of volatile matter and sulphur. The volatile matter as given in a proximate analysis, however, can determine only the general nature of the coal. It does not reveal anything about its burning qualities or heat content.

Why Low Sulphur Has Been Specified

It was once generally believed, and many still give credence to the idea, that sulphur in coal is deleterious, for three reasons: (1) Because of the sulphur dioxide formed during the combustion of the coal; (2) because of its relation to clinkering; (3) because of its being the probable cause of spontaneous combustion.

It is said that the sulphur dioxide in the flue gases upon cooling unites with water, forming sulphurous acid, and both the sulphur dioxide and the sulphurous acid, which may have been further oxidized to sulphuric acid, corrode the metallic parts exposed to them. A corrosive action, however, can take place only after sufficient cooling, hence corrosion of boiler tubes, etc., is scarcely possible under operating conditions.

Sulphur occurs in coal largely as iron pyrite (FeS_2), as organic sulphur combined with carbon or with carbon and hydrogen, as free sulphur and as sulphates of iron, alumina and calcium; the sulphates usually are found only in weathered coal. Pyrite and other mineral matter containing sulphur, either free or combined in the form of sulphates, may be scattered throughout the coal either in large lumps or in a finely-divided state. Free sulphur usually is present in extremely small amounts, as is also organic sulphur.*

Completely Burned Pyrite Will Not Fuse

When pyrite is burned with the coal in the fuel-bed, iron oxide is formed, which by itself would not produce clinkers. Besides other mineral constituents, the ash contains silica and silicates. When this iron oxide is exposed to high temperatures in the presence of these substances, easily fusible silicates, or clinkers, may be produced. If the temperature be high, the fusion will be greatly facilitated.

The temperature of the grate and of the fuel-bed near the grate determines whether a certain coal will form troublesome clinker or no clinker at all. The grate and that part of the ash-bed near it consequently should be kept at as low a temperature as possible during operation. Pyrite upon heating gives off nearly half of its sulphur, leaving ferrous sulphide, which fuses at a red heat.

As said before, the coal may contain pyrite in lumps or in small particles. In this case, if the lumps are of appreciable size, they may fuse before they are completely burned and start the formation of clinkers, thus hindering the combustion of the coal. Of course, if,

*The latter statement is hardly true of, at least, some coals.—Editor.

on the other hand, the pyrite and siliceous matter are scattered throughout the fuel in a finely divided state, clinkering may not occur at all. Moreover there is no possibility that organic sulphur will form clinker.

It may be concluded, therefore, that although high-sulphur may increase the possibility of clinker formation, it is not a definite indication that clinkers will be produced, as the action depends upon the form in which the sulphur is present. For the reasons stated above many coals high in sulphur burn without the formation of clinkers.

Other constituents that must be taken into consideration because they are of importance are moisture, ash content and heating value. In the language of analysis, the term moisture usually is applied to that part of the water which is given off by the coal upon subjecting a finely-pulverized sample for one hour to a temperature a little above 212 deg. F. In general, the moisture thus indicated as existing in coal is lower than that actually contained because during the process of grinding, for instance, the sample gives up a portion of the water it contains.

On the other hand, all the water that the coal holds cannot be expelled in this manner. The mineral constituents of the ash retain water that can be removed only by combustion of the coal or upon heating it to a high degree. This latter moisture must be looked upon, however, as forming part of the coal and should not be included with that mentioned in the specifications.

Water taken up by the coal as a result of weather conditions—rain or snow—usually is termed superficial moisture. This superficial moisture can be removed by air drying or by exposing the coal to a moderate temperature, as is done in the laboratory before a sample is analyzed.

Lump Coal Air Dries Slower Than Slack

Slack coal usually contains more moisture than lump, and the water which it holds, either inherent or superficial, is given off readily. Lump coal, on the contrary, is slow in giving off its moisture and lumps apparently dry may contain a high percentage of water. Hence it is important that the specifications cover this factor and name a fair percentage as a limit, based upon the region where the coal is mined, weather conditions, etc. To pay for water at the same price as for coal is not economical. It takes heat to remove the water which the coal may hold, and this heat could be utilized to raise steam if it were radiated to the boiler.

Ash is that part of the coal that is left after complete combustion of the burnable content; it is inert mineral matter consisting of silica, iron oxide, alumina, calcium sulphate, calcium oxide, magnesia, potassium, and sodium oxides. If its color is red it indicates that it contains much iron and that clinker trouble may be expected; if its color is grayish white it usually will be found to be high in siliceous matter and probably will not form clinkers.

The amount of ash in coal depends entirely upon the inherent nature of the material and upon the preparation administered before shipment. Clean coal may contain as little as 4 or 5 per cent of ash or even less, while dirty coal may have as much as 30 per cent.

As the ash content increases the heating value will decrease, hence the amount of incombustible in the coal must affect the price the purchaser is justified in paying. Usually he will lower the price per ton a certain amount

INTERIOR OF OVEN, SHOWING POSITION OF CONE

. The cone is placed on its side so that the observer can readily note when it begins to droop over. With the optical pyrometer the intensity of the light developed by the incandescence of the cone is compared with an electric light of measured strength, thus determining the temperature. The cone is put far enough back to receive the unmitigated heat of the oven.

for each per cent of ash found upon analysis in excess of the content permitted by the specifications.

The purchaser must bear in mind that the more refuse in the coal the more fuel must be fired; that the fuel bed naturally becomes heavier and heavier during operation; that this shuts off the draft, retarding combustion of fresh coal. Furthermore, keeping hot a thick layer of ash results in burning of the grates and boiler settings, as well as in the radiation of less heat to the boiler. The fires have to be cleaned oftener, meaning a waste of fuel and extra labor for removing the ash.

The heating value of coal is determined in an apparatus called a calorimeter, designed for that purpose. This heat content is expressed either in calories or in British thermal units. It represents when expressed in the latter nomenclature the number of pounds of water that can be raised one degree Fahrenheit by the combustion of one pound of coal.

The heating value of coal is governed by many factors, although it can be accurately calculated from its ultimate analysis. Ash, moisture, carbon, hydrogen, oxygen, nitrogen and sulphur control it.

Specifications Often Omit Essentials

Items hitherto not prominently mentioned in coal specifications but which nevertheless are of great importance are burning qualities, such as caking, non-caking, free-burning, etc.; clinkering properties and fusing temperature of the ash.

TABLE II. ANALYSIS OF THE ASH OF THE FIFTEEN COAL SAMPLES INCLUDED IN TABLE I

Sample No.	Moisture 105° C., per Cent	SiO_2 per Cent	Fe_2O_3 per Cent	Al_2O_3 per Cent	$CaSc_4$ per Cent	Ca O per Cent	Mg O per Cent	K_2O Na_2O per Cent
A*	0.48	49.44	41.64	0.80	4.90	1.42	0.36	0.96
B*	0.80	49.28	44.12	0.28	3.88	1.72	0.24	....
C*	0.84	67.52	26.76	1.72	1.70	2.82	0.36	....
D*	0.64	63.12	31.88	3.08	0.68	3.08	0.12	....
E*	0.44	57.24	37.24	1.88	2.52	0.88	1.00	....
F†	0.44	74.16	18.48	1.36	1.16	0.40	2.20	1.85
G†	0.60	71.00	20.92	3.60	2.18	0.90	0.88	....
H†	0.64	68.24	21.52	5.32	1.77	1.59	0.56	1.36
I	0.48	81.24	13.80	3.08	....	0.96	0.52	....
J	0.60	73.12	19.36	3.04	0.48	0.68	0.48	2.14
K	0.40	70.20	22.96	3.28	0.88	0.96	0.56	0.76
L	0.60	71.84	23.24	2.52	0.48	0.16	0.44	0.75
M‡	1.04	74.68	23.72	2.28	1.77	0.75	0.36	....
N‡	0.44	76.04	17.64	3.68	1.08	0.40	0.36	0.26
O	0.60	79.88	13.64	0.96	1.97	0.55	0.32	2.28

* Samples A, B, C, D and E were each taken from one of five hatches of a barge.
† Samples F, G and H were each taken from one of the three hatches of a barge.
‡ Samples M and N were taken from the same storage pile.

The burning qualities should be studied by men thoroughly familiar with boiler-operating practice. The

PHYSICIST DETERMINING OVEN HEAT

The Wanner optical pyrometer measures temperatures from 840 deg. to 7,000 deg. C. The observations are taken through the open oven door. An asbestos screen protects the observer from radiant heat.

fusibility of the ash is largely controlled by its chemical composition and by the distribution throughout the coal of the mineral matter forming it. From the analysis of the ash of fifteen coals made by myself one will observe that the chemical composition even in the same shipment of coal varies markedly.

The ash analyzed was a thorough mixture of the residue left after combustion of a well-mixed sample of coal. It does not represent the chemical composition of the ash throughout all parts of the fuel bed because of the fact that the mineral constituents may be there scattered either in lumps or in a finely-divided state. From the analysis we may be able to draw some conclusions as to the possible formation of clinkers or fusibility of the ash, but, for reasons just given and because of some other considerations, we cannot deduce from the chemical composition anything definite.

Complexity of Ash Makes Prejudgment Hard

If ash were not such a complex mixture it would not be difficult to draw conclusions. If it were a mixture of only silica, iron and aluminum oxides, for instance, we could make definite statements as to its fusibility and clinkering probabilities. Artificial mixtures could be made and studied while exposed to high temperatures and the results used for purposes of comparison.

It has been established that the fusibility of ash depends upon the ratio of the silica to the iron, aluminum, calcium, etc., present. A mixture of, for instance, 54.55 per cent FeO and 45.55 per cent SiO_2 has, according to Hofman, a fusing temperature of 1,110 deg. C., that is, at that temperature these two compounds combine to form a new one, namely, ferrous silicate.

If these new compounds, or silicates, are once formed, they will re-fuse, or melt, at a much lower temperature. It must be well understood that the formation of these new compounds, chiefly silicates, is in fact clinkering; we may thus have clinkers high in silica and low in other minerals and vice versa.

As a rule ash high in silica contains little iron and will not fuse easily; but if the silica decreases and the iron increases, fusing will take place at a lower temperature. If other bases, like the oxides of calcium, magnesium, sodium or potassium, are present, the fusing temperature, or rather temperature of clinker formation, may drop if the ratio of the silica to the bases is such that easily-fusible compounds will be formed. It must be borne in mind that the ash in the furnace under a boiler is far from being well mixed, hence clinkers of varying composition may be formed at different places in the fuel bed.

What has been tried, namely, to find a relation between the clinkering properties of coal and the chemical composition of the well-mixed ash, cannot be successful. Glancing over the accompanying charts, it may be noticed that it seems to be almost a fixed rule that silica, iron and sulphur control the fusing temperature of the ash; of course, they exert a great influence, as they form the bulk of the residue after combustion. To make a complete analysis of ash takes much time, hence other methods must be employed.

Thus far we have discussed clinkering only from a chemical point of view; we must not forget that there are many other factors which influence it also. The construction of the furnace, the combustion space, drafting, both under and above the fire, grates, the cooling of the grates, etc., as well as methods of firing influence clinkering and fusing of the ash, and all should be considered by the operating engineer. Some coal will form large clinkers that under certain conditions in any given furnace may be broken up readily, while the same fuel in the same furnace under different conditions will clinker only slightly or not at all.

Seger-Cone Method of Testing Fusibility

If a sample of coal is taken and the fusibility of its well-mixed ash determined by exposing it under certain conditions to a gradually increasing, well-controlled temperature in a small muffle or crucible furnace, a fairly reliable answer will be obtained to the questions: (a) Will this particular coal form troublesome clinkers? (b) At what temperature will clinkering take place?

It is not the object of this article to discuss the many methods which in course of time have been developed by different investigators, but to describe the method now generally followed by many of the laboratories. This is known as the Seger-cone method.

A fairly large, representative sample of coal is sent to the laboratory and after the superficial moisture has been driven off, this sample is ground to pass a 20-mesh sieve. It is then reduced by means of a riffler and ground to pass a 60-mesh sieve but to be retained on one of a 100-mesh. Sufficient of this material is burned completely in a fused silica dish or crucible to obtain enough ash for about six determinations. A fine stream of oxygen under low pressure is passed carefully through the ash after the combustion is completed, in order to remove all traces of unburned carbon, as its presence will affect the fusing temperature of the material. When the ash is cool it is mixed with water made into a paste and formed into "cones" of about the same dimensions as the Seger cone.

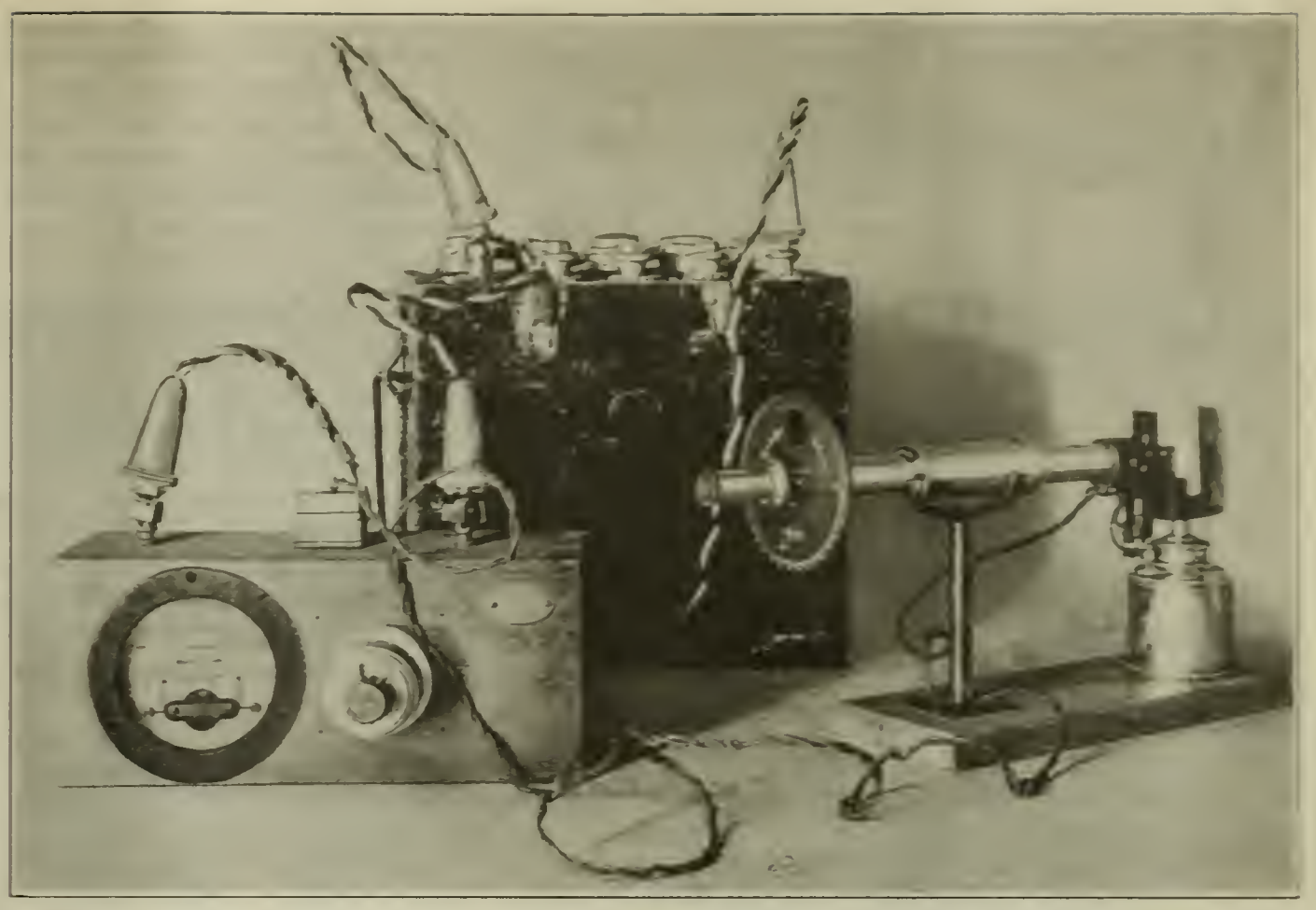
Making Cones for Fusibility Tests

This is accomplished by wrapping around a wooden "Seger-cone" a piece of thin paper, the overlapping edges of which are pasted together with a little dextrin. The paper cone when dry is removed to a block in which the exact forms of Seger cones are cut. The paper cones are kept in place by a movable side of the wooden mold and are filled with the pasty-like ash.

The resulting cones then are dried at a low temperature until the water has evaporated. When dry they are taken out of the form and placed in a horizontal position on a piece of firebrick or fused silica with the end projecting beyond the side of the brick, which is placed in a muffle furnace. The furnace is heated by

Optical Pyrometer

The lamp on the right burns amyl-acetate and is used only for standardizing the electric lamp with which the relative heat intensity of the observed object is compared. With this instrument, as with other optical pyrometers, any workman can take correct readings of temperature, and no deterioration except of the batteries takes place.



large bunsen burners to which the flow of gas and air can be regulated so that the temperature increases at the rate of from 4 to 5 deg. F. per min.

By means of a pyrometer temperature readings can be taken conveniently. An optical pyrometer is well suited to this purpose, as no space inside the muffle is taken up by the couple.

The temperature at which the cone starts to bend down is noted, as is also that at which the apex droops until it assumes a vertical position. The average of these two temperatures is considered to be the fusing temperature of the ash. If also the time elapsing between these two temperature readings is noted some important information is gained concerning the viscosity of the molten ash, and consequently about the kind of clinkers the coal will form.

A number of considerations govern this test. Some of these are: (1) The atmosphere in the muffle; (2) the location of the cone in the muffle; (3) its position, horizontal or vertical; (4) rate of heating; (5) method of supporting the cone.

The atmosphere in the muffle is oxidizing in nature. thus representing the atmosphere in the furnace during the combustion of coal. An excess of air is supposed to be flowing through the furnace so as to insure complete combustion of the fuel. The muffle, which is heated by gas and air under pressure, besides being open in the front is porous and this renders its atmosphere oxidizing. A tube connected to the air compressor leads into the muffle and supplies air, thus assuring an excess of oxygen.

Earlier investigators used a carbon-resistance furnace producing an atmosphere of a reducing nature, because oxygen was taken up in the consumption of the carbon forming the resistance. This is partly burned, producing carbon monoxide and some carbon dioxide. Others have employed an atmosphere both oxidizing and reducing in character. Here the gases were led into the furnace of muffle under pressure. This, however, is expensive and troublesome and probably does not duplicate conditions existing in the furnace under a boiler. The oxidizing atmosphere, everything being considered, is the one that duplicates with fair accuracy the conditions existing in the furnace during operation.

It is of importance where and how the cones are placed in the muffle. This furnace is, to all intents and purposes, equally heated on all sides except the front. Hence the observer should not place the cones too near the front; he must first investigate and ascertain at what distance from the muffle's mouth the temperature is uniform. A piece of firebrick or fused silica is suitable as a support for the cones.

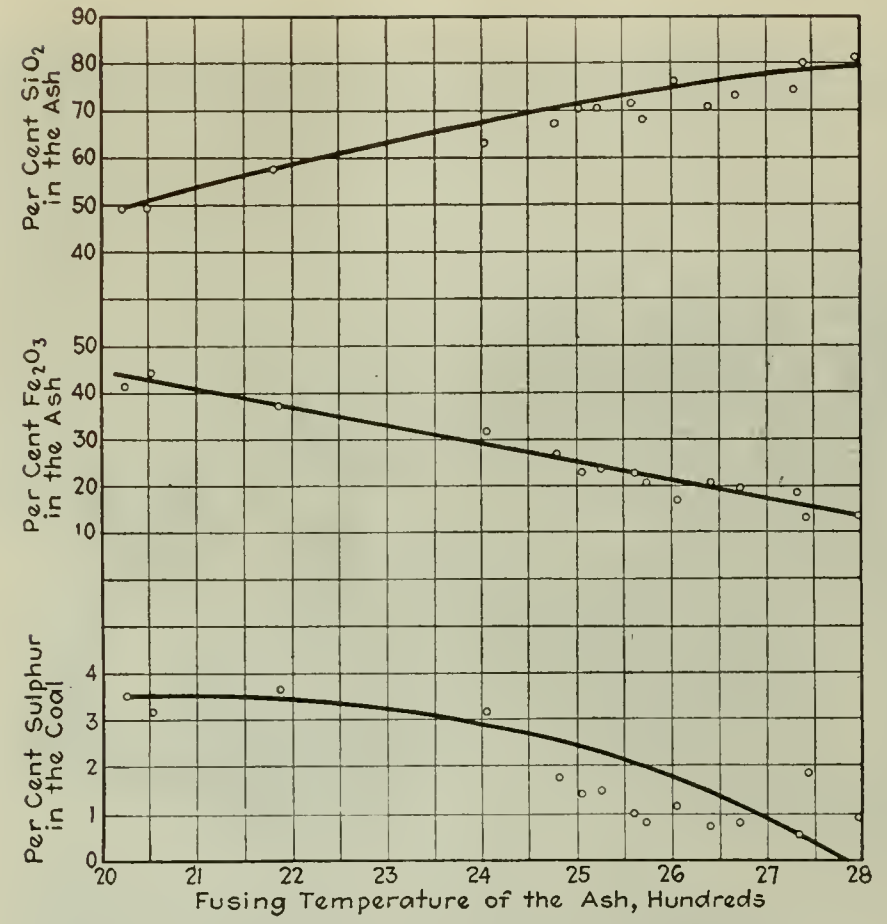
The next question is: In what position should the cone be placed, horizontal or vertical? Opinion on this detail is quite divided, but I believe from experience that the horizontal position is more satisfactory than the vertical, for the following reason: If the cone be placed horizontally, the moment that softening begins the cone will bend by its own weight, and this beyond doubt can be observed by the operator.

When the ash becomes to a certain extent fluid, the apex of the cone will extend directly downward, which is another detail that can be observed at the proper moment—after some experience of course. If the temperature be increased the fluidity of the ash also will increase, and it will be observed that the apex becomes heavier, rounded like a knob, while the cone grows longer and thinner.

Note Beginning and Completion of Fusing

The temperature at which the fusing of the ash takes place must be considered as lying between the beginning and the completion of the bending of the cone. For if we go beyond this latter temperature, there would be no limit—the cone will stretch appreciably and its apex may ultimately reach the bottom of the muffle. Hence two distinct points exist between which we may assume the fusing temperature lies.

If, on the contrary, we place the cone in a vertical position, the softening point cannot so easily be observed—the cone may for other reasons slightly change its position and the observer may take this for the



GRAPHS SHOWING RELATION OF FUSING TEMPERATURE OF ASH TO PERCENTAGE OF SILICA, IRON OXIDE AND SULPHUR

Increasing percentages of silica in the ash render it less fusible, whereas increasing percentage of iron oxide and sulphur make the ash more disposed to fluidity.

beginning of the fusion. Some ashes become quite fluid and the cone may then form a mere ball or a fluid mass from the center of which the apex protrudes and can be seen. Other cones will merely bend and stay bent, the weight and the softening of the cone being insufficient to change its position.

I have placed in the muffle several cones made of the same kind of ash, some in a horizontal and some in a vertical position. No certain determination of a point at which the fusing practically ended could be made by inspection of the vertical cones, while with those that were placed horizontally it was possible to decide beyond doubt the beginning as well as the completion of the fusing process.

The rate of heating has for obvious reasons a decided influence upon the fusion of the ash. The formation of the silicates, which has been previously mentioned, cannot take place instantly; the road must be paved, so to speak. The outer portion of the cone is heated first and reaches quickly the temperature of the muffle, while the inner portion is still at a lower temperature. If, therefore, the temperature increases rapidly, the fusing conditions are not the same for every part of the cone. A glaze may be formed on the outside, which may prevent further softening. Near the fusing temperature a rate of increase of 4 deg. to 5 deg. per min. is found to be satisfactory. If a pyrometer couple is used for measuring the temperature, an increasing lag will be noticed if the rate of heating is increased beyond the measure indicated. Even at the rate just mentioned this type of pyrometer would show some lag. An optical pyrometer overcomes this drawback. It may be added that the rise in temperature at the beginning of the heat should not be too rapid and should not exceed 35 deg. F. per minute up to a point about 350 deg. F. below the melting point of the ash.

The substance used as a support for the cone should be of a material that will not chemically combine with the constituents of the ash. A piece of fused silica or firebrick will be found to be quite satisfactory.

The pyrometer that I use is a Wanner optical instrument. As can be seen from one of the accompanying illustrations, the observer looks through an eyepiece similar to that of a telescope, and directs the instrument through the sighthole of the muffle furnace at the object the temperature of which he wishes to ascertain.

Light of Cone Compared with Standard

This illuminates the upper half of the field of vision; the light of the lamp inside the pyrometer is then adjusted until its intensity is the same as that of the light emitted by the object observed—in this case the cone or its surroundings. A reading is then made on the segment at the right of the instrument and the temperature obtained from a conversion table that comes with the instrument. The pyrometer is standardized by means of an amylacetate lamp and, if desired, can be checked against a pyrometer that is known to be correct.

TABLE III. FUSING TEMPERATURE OF ASH

No.	SiO_2, per Cent of Ash	Fe_2O_3, per Cent of Ash	Al_2O_3, per Cent of Ash	S, per Cent of Coal	Temp. of Fusion, Deg. C., Initial—Final	Temp. of Fusion, Deg. F., Average
A	49.44	41.64	0.80	3.51	1,090–1,125	2,025
B	49.28	44.12	0.28	3 23	1,100–1,140	2,050
C	67.52	26.76	1.72	1.78	1,345–1,375	2,480
D	63.12	31.88	3.08	3.22	1,290–1,345	2,405
E	57.24	37.24	1.88	3.67	1,180–1,215	2,185
F	74.16	18.48	1.36	0.55	1,475–1,525	2,730
G	71.00	20.92	3.60	0.78	1,430–1,470	2,640
H	68.24	21.52	5.32	0.88	1,395–1,425	2,570
I	81.24	13.80	3 08	0.91	1,510–1,560	2,795
J	73.12	19.36	3.04	0 85	1,460–1,505	2,670
K	70.20	22.96	3.28	1 46	1,350–1,395	2,505
L	71.84	23.24	2.52	1 01	1,390–1,420	2,560
M	70.68	23.72	2.28	1.54	1,370–1,400	2,525
N	76.04	17.64	3.68	1.21	1,405–1,455	2,605
O	79.88	13.64	0.96	1.89	1,490–1,520	2,740

(The percentages of three important constituents are given as of the whole ash. Consequently they do not even approximately total to 100. The sulphur percentage is that determined for the original coal.)

From the first of the accompanying curves showing the relation between the content of silica dioxide (SiO_2) in the ash and the fusing temperature it will be noticed that if the percentage of silica increases, the ash tends to have an increased fusing temperature.

The second curve shows the relation between the iron-oxide content (Fe_2O_3) in ash and its fusing temperature. From this it will be noticed that when the percentage of iron oxide increases, the fusing temperature decreases. This also has been observed by Palmenberg.

The third curve shows the relation between the sulphur content in the coal and the fusing temperature of the ash. It will be noticed that when the sulphur in the coal increases, the fusing temperature decreases. This also has been observed by Palmenberg.

Unfortunately, I did not preserve the cones from my tests; in that case I could have presented photographs showing the different shapes that they assumed and also their exterior appearance. Some cones were quite smooth and when exposed to a higher temperature became a molten mass.

Ash which Adheres to Grates and Brickwork

Ash of this nature clinkers badly. In such a case the partly-burned coal is fused together in big lumps or if the temperature increases the whole may form a sticky mass that runs through the grates or attaches itself to the grate bars, the brick furnace lining, etc., where it freezes upon cooling.

Coal represented by the ash analyses here presented

gave considerable trouble in the furnace. The large amount of ash contained, its low fusing temperature and the low percentage of silica in some instances were the causes of easily-fusible clinkers being formed. These stuck tenaciously to the grates and the brickwork.

It is difficult to say what is the critical temperature of an ash so far as fusion and clinker formation is concerned. This depends largely upon operating conditions, but it seems that 2,450 deg. F. is a good average fusing heat. If ash fuses below this temperature, as has been observed by others as well as myself, the coal will clinker badly.

Simple Operation of Tidewater Coal Exchange Cuts Transportation Expense

Procedure Is Advantageous to Shipper, Transportation Company and Transshipper—Savings Effected Through Elimination of Detention of Cars at Piers—In Fifteen Months No Demurrage Charges Accrued

By Dr. Henry M. Payne*

THE mechanism of pooling as it is done today under voluntary exchanges, although extremely simple, seems not to be well understood by many. All mines so located as to make tidewater shipments, and whose operators have requested classification, are officially listed by the exchange together with the pools into which they are entitled to ship. Such coal, when billed out at the mine, shows upon the way bill the pool to which it is consigned and for whose account. Upon reaching the scales this billing is checked by the scale clerk against his classified list, in order that no coal may be erroneously passed into tidewater terminals, consigned to improper pools.

All coal is billed to the Tidewater Coal Exchange, Inc., for the account of the consignee-member. Simultaneously with its way billing a notice of car number and pool to which shipped is sent to the consignee-member, who thereupon furnishes the Tidewater Coal Exchange, Inc., with advice of such shipment. This, in current idiom, establishes the amount of coal "rolling" to the piers, and forms a basis for the extension of credit to transshipping members, as well as regulating the issue of temporary embargoes against any pool or pools at any pier or piers, should considerable quantities of any particular grade of coal in excess of scheduled loading capacity appear to be en route.

Progress of a Car of Coal on the Piers

Upon arrival at the pier, each car is given a final inspection by the official inspector of the exchange, who checks the billing of same against the official classification, and finding it to be correct and the coal properly prepared, chalk marks the pool number on the side of the car. The shifting engine thereupon makes up the various cars into trains by pools on various tracks in the yard, so that a boat being placed for loading from any particular pool, sufficient cars to make up the cargo are drilled out and run over the dumping apparatus, regardless of the mine from which they were shipped, since, as has been explained above, the purpose of classification is to bring all coals within certain limits and tolerances into individual pools.

The advantages of this proposition to shipper, transportation company and transshipper are obvious. Should the transshipper be delayed in placing his vessel for loading, the railroad is not compelled to hold the cars for dumping should some member with sufficient credit have a vessel waiting to load coal from the same pool. On the other hand, should the member have a vessel placed, and for any reason part of his cargo be delayed en route, his bond being duly filed to cover the credit extended, the commissioner of the exchange may extend to him to complete the cargo, sufficient credit from coal already standing and covered by the member's coal already "rolling."

Eliminates Time and Demurrage Loss

As an illustration of the great saving effected through decreased detention of cars at piers the following table was prepared by the original Tidewater Coal Exchange for the port of Hampton Roads, and covers the eighteen months' period from Aug. 1, 1917, to Jan. 31, 1919:

Tonnage dumped	48,785,000
Cars dumped	967,800
Car days saved on gross detention basis	1,747,600
Saving on per diem basis	1,048,560
Number of cars saved	47,035

This represents an average of 2,613 cars, approximating 130,650 tons per month, more coal handled to tidewater at this port by virtue of the exchange than could have been handled without it. It also is worthy of note that from Aug. 1, 1917, to Nov. 30, 1918, not one cent of demurrage accrued at any port, notwithstanding the fact that at that time only three days' free time was allowed.

Average demurrage is computed during each calendar month, so that credits from prompt dumpings may apply against unavoidable delays. The total average cost of operation is pro rated each month on a tonnage basis between the participating railroads and the members.

Estimating Economy of Pooling Shipments

The present Tidewater Coal Exchange, Inc., has 195 members, and the exchanges at Hampton Roads and Charleston, S. C., have approximately 170 members. During seven months of 1920 for which figures are available the Tidewater Coal Exchange, Inc., at New York, Philadelphia and Baltimore dumped 8,809,979 tons at a total expense of $133,211.18, or 1.5c. per ton.

Another way of estimating the economy of pooling shipments is given in the following calculation based on the record of car saving effected at Hampton Roads, cited above. These figures do not include savings made

*Consulting engineer, Andrade-Eyre, Inc., 300 Madison Ave., New York City.

LAKE ERIE
Cleveland
PENNSYLVANIA
Scranton
Williamsport
Brookville
Clearfield
Butler
Pittsburgh
Greensburg
Indiana
Altoona
Huntingdon
Harrisburg
New York
NEW JERSEY
Columbus
OHIO
Somerset
Wheeling
Bedford
Waynesburg
Uniontown
Cumberland
Philadelphia
Fairmont
Oakland
Hagerstown
Wilmington
MARYLAND
DEL.
Athens
Parkersburg
Jackson
Portsmouth
Parsons
Elkins
Baltimore
Washington
W. VIRGINIA
Charleston
Huntington
Logan
Williamson
Thinton
KY.
Pikeville
Welch
Herndon
Bluefield
VIRGINIA
Richmond
Roanoke
Lynchburg
Hampton Roads

LEGEND
Coal producing districts and rate groups to tidewater
- Clearfield, Cumberland, Piedmont, Meyersdale
- Fairmont, Youghiogheny, Westmoreland
- Greensburg
- Kanawha
- New River
- Pocahontas, Tug River, Clinch Valley
- Thacker
- Kenova
- Anthracite region
- Fields with north and west bound differentials

Coal Age, March 24, 1921

in switching and terminal charges, large items of ordinary cost in this business.

Cost of 47 035 cars at $2 900 each	$136 401 500
Interest on investment at 6 per cent	8 184 090
Credits extended to members (excluding Government members) tons	3,000,000
Cost of operation	$470,844
Cost of operation, per ton	0.0099

Economies in the use of vessel tonnage by reason of prompt dispatch as well as the saving of a considerable sum in vessel demurrage is indicated by the number of tons (credits of 3,000,000 tons) it was necessary to extend to members to load their vessels.

Through the kindness of S. T. Snead, commissioner of the Sewalls Point Coal Exchange, Inc., I am able to reproduce (without disclosing the positions of individual shippers) a daily report of the Sewalls Point Exchange. This report shows the service extended to each member.

STATEMENT OF CREDITS AND VESSEL ASSIGNMENTS

At 12:01 A.M., Feb. 5, 1921

Consignee (Coded)	Pool	1	2	Consignee	Pool	1	2
A	2	2,250	....	AB	1	3 250	2 100
	3	550	....	AC	1	1,500	....
	8	1,350	....		2	3,900	....
B	1	100x	....		4	100	....
	2	10 100	....	AD	1	8,950	....
	4	100	....	AE	1	750	....
C	1	3,300	....	AF	1	6,800	....
	2	2 300	....		2	6,400	....
D	1	8,000	2 500		4	200	....
E	1	50x	....	BC	1	13 450	....
F	2	50	....		2	4,200	....
	4	500	....		4	50	....
G	1	700	....	BD	1	5 650	....
	2	8,250	....		2	9,850	....
	4	350	....		4	6,650	2,250
H	1	950x	....	BE	1	1.850	....
	2	6,050	....		2	2 850	....
	4	50	....		4	150x	....
	8	3,600	....		7	100	....
AA	2	2,400	....	BF	1	600	....
	4	4,350	2,500		2	6,050	....
BB	2	6 200	....		4	3.600	....
CC	1	200x	....	K	1	9,050	....
	2	750	....		4	50	....
	4	100	....	L	1	50x	....
	8	4 800	....		2	50x	....
DD	1	50	....	M	1	2 200	....
	2	800	....		3	5,700	....
EE	1	11,700	....	N	1	1,100	150
	2	3,650	....		2	6 650	....
	4	9,300	....	X	1	600	....
FF	1	7,550	....		2	50x	....
	2	50x	....				
	8	2 950	....				

1—Credits based on Form No. 1 reports received to 3 p.m. previous date.
2—Tonnage of vessels waiting and loading (gross).
x—Overdrawn based on Form No. 1 reports received and admitted to record.

COAL AND VESSEL SITUATION 12:01 A. M., FEB. 5, 1921

COAL

Pool	Tons at Port	Due 24 Hours	Due 48 Hours	Due After 48 Hours	Total
1	18,950	8,750	21.000	38,700	87.400
2	38,000	5 100	8,800	9.450	61,350
3	400	350	1.000	1,900	3,650
4	20,200	900	900	10,650	32,650
7	300	0	0	0	300
8	9,200	50	650	400	10,300
	87,050	15,150	32 350	61,100	195,650

VESSELS

No. Vessels	Pool No.	Cargo	Bunker	Total
3	1	4,600	150	4,750
0	2	0	0	0
2	4	4,750	0	4,750
0	8	0	0	0
Totals		9,350	150	9,500

LOADING AND DUMPING

		To-Day	To Date	Last Mo.
No. cars loaded at mines (Feb. 4, 1921)		338	.....	.....
No. empties at mines for today's loading		621	.....	.....
No. cars received past 24 hours		365	.....	.....
No. cars dumped past 24 hours		141	.....	.....
No. cars reconsigned		10	.....	.....
TOTAL CARS released		151	.....	.....
Cars on hand		2,089	.....	.....
Cars in transit		2,298	.....	.....
Total		4,387	.....	.....
Tons dumped last 24 hours—Foreign cargo		3,972	15 649	29 346
2—8-hr. shifts—	Foreign bunker	522	6,355	4,425
	New England cargo	1,277	17,610	20,029
	New Eng. bunker	0	989	306
	Other coastwise	406	904	259
	Panama	2,323	10,099	3,810
	Navy	0	5,000	394
Total		8,500	56,606	58,569
Tons dumped to date last year		.....	37,015	.....

The accompanying map shows the various freight rate districts in the coal fields tributary to tidewater. Six rate groups are indicated on the map by patterns covering the producing coal fields. The port of New York carries a flat rate for transshipment, which varies according to the location of the pier, the "lower ports" being South Amboy, Port Reading, Elizabethport and Arlington (St. George). The "upper ports" are Pier 18, Port Liberty, Harsimus Cove and Undercliffe. The rates now in effect (without war tax) are as follows:

District	New York Lower Pts.	New York Upper Pts.	Philadelphia Out-side	Philadelphia In-side	Baltimore Out-side	Baltimore In-side	Hampton Rds. Out-side	Hampton Rds. In-side
Clearfield, Cumberland, Piedmont, Meyersdale	$3.11	$3.16	$2.60	$2 93	$2 53	$2 93	. . .	
Greensburg	3.21	3 26	2 70	3 03	2.63	3.03	. . .	.
Fairmont, Youghiogheny, Westmoreland, Pocahontas, Tug River, Clinch Valley, Thacker	3 36	3.41	2 85	3.18	2 78	3 18	.....	.....
Kanawha, Kenova	...	....	....	....	....	....	2 90	3.14
Kenova	....	....	....	....	....	....	3 00	3 24

Many Employees Bought Stock Outright

FINAL figures of subscriptions to the company stock offered by the Lehigh Coal & Navigation Co. indicate that this campaign, the first of the sort in the anthracite industry, has been a success. Eight hundred and seven employees have subscribed for shares, under the limitation that five shares should be the maximum for any one person. This number includes the employees of the two subsidiary companies—the Alliance Coal Mining Co. and the Cranberry Creek Coal Co.

The plan, in brief, was that shares would be sold at 65. that they could be paid for on the installment plan with not less than $5 per month paid on each share, and that a special cash payment of $2 per share per year would be paid for five years, making the net cost per share to employees $55.

Although the installment provisions were so liberal, 53 employees, taking a total of 239 shares, preferred to pay in full, and a good proportion of the remainder chose to pay down considerably more than the minimum installment. Some of the latter intend to pay off the full amount within a short time instead of allowing their payments to run over the maximum period. Stock certificates are being forwarded daily to the employees who have completed payments on their subscriptions.

It is interesting to note that 33 per cent of the subscriptions were for the full amount of five shares, while of the subscriptions from the employees of the Lehigh Coal & Navigation Co. only 43 per cent were for five shares. The experiment has aroused interest among mining companies, particularly since the results became known.

THE DECREE OF THE U. S. Supreme Court of Feb. 4 last, reversing the decision of the U. S. District Court for the Southern District of New York rendered in 1915 regarding the suit brought in New York by the government against the Lehigh Valley Railroad Co. and a number of coal companies and individuals, charging combination in restraint of interstate trade and commerce, was filed in the U. S. District Court of New York on Feb. 25. The case was tried in November, 1914, and was determined in favor of the defendant, the decree being entered in February of the following year. The government appealed the case to the Supreme Court, which reversed the lower court, instructing that the decree be filed in the New York District Court.

MATTHEW VAN SICKLEN has been appointed assistant chief mining engineer of the Bureau of mines to succeed C. L. Colburn, who has been made safety engineer in charge of the co-operative work between the Bureau of Mines and the National Safety Council. Mr. Van Sicklen was graduated from the Columbia School of Mines in 1906. He has had an extended mining engineering experience in this country and in South America.

Problems of Operating Men

Edited by James T. Beard

Planning the Mine for the Use of Improved Equipment

The Rapid Development of Improved Mining Equipment Calls for the Careful Study of Underground Conditions with a View to Planning the Mine in Such a Manner as to Utilize New Equipment to Greatest Advantage

MINING men having a broad vision looking to the future will have read with interest the excellent letter of N. D. Levin, *Coal Age*, Jan. 6, p. 21, relating to the use of improved cutting and loading machines in mines, especially in the working of low coal.

For some time past, I have been anxious to obtain information from men of practical experience in mining who have given much thought and attention to the use of this style of equipment. Many regard such machines as wholly in the experimental stage and are unwilling even to give them a fair trial.

One of the reasons why the introduction of any new style of mine equipment is handicapped is the strong prejudice, so natural among mining men, causing them to continue the use of machines and methods with which they are acquainted. To such an extent is this true that old familiar practices in coal mining generally die a hard death. It explains largely the reluctance of the rank and file of mining men to make changes in equipment already installed and methods in use.

To overcome this degenerate tendency there is needed, first the enlightenment of mine officials in regard to the advantages to be gained by the use of the new equipment, even though it may be necessary to plan future development to conform to the requirements of the new machines. Then, after this has been accomplished there will yet remain the education and training of the men, who are prone to regard any new equipment with suspicion and disfavor.

Conditions Ideal for Use of Coal-Loaders

In this particular field where I am located many of the conditions are most ideal for machine cutting and loading, more so than in any district I have ever visited. However, owing to a machine having been installed here some time ago, that did not give satisfaction, it will take time to overcome the prejudice that prevails, and convince many of our operators that the improved machines can be worked to advantage, and will reduce the cost per ton for mining and loading the coal.

The machine to which I refer was a cutter and loader that was claimed to eliminate the need of blasting the coal. I visited the mine where the machine was at work, and my observation was that the difficulty arose from their inability to supply the mine cars as fast as the machine could load them. The result was that there was a great loss of time because of the frequent stopping and starting again of the machine.

It is quite natural for an operator to emphasize all the points in a new machine that are a hindrance in its use. Say there are three men required, as Mr. Levin states, to operate the machine in question—one man to run the machine, one to handle the scraper and a third to attend to the movement of the cars that are being loaded. If these three men must stand idle because there are no cars to load, the cost-sheet will at once show a high cost of operation; but that is not the fault of the machine.

What the Machine Will Do

Let us consider, for a moment, the figures given by Mr. Levin, who says the machine will load from 70 to 75 tons of coal in eight hours. He refers in his article to the working of a 35-in. seam in which the rooms were driven 24 ft. wide. Assuming the coal is cut 5 feet deep, there would be practically 13 tons of coal to be loaded from a single place, and this would require moving the machines at least six times in an 8-hr. shift.

This suggests the thought that much time is lost in moving the machine when working under such conditions. It may be as much as a third of the time will be lost in moving. It is clear if the plant could be arranged so that this time could be put to useful work, the cost-sheet would show a vast difference in favor of the machine.

Just here, let us see what this machine will do when cutting and loading the coal in a seam I have in mind, which is 5 ft. 8 in. high and where the rooms are driven 40 ft. wide. The cutter-bar of the coal cutter is 6 ft. 6 in. long. A single cut across the face of the room, in this seam, will bring down, say 54 tons of coal.

In the instance first considered, it required six moves of the machine to mine and load 75 tons. In the second instance mentioned, with two moves of the machine it would be possible to mine and load $2 \times 54 = 108$ tons. I refer to this merely by way of comparing the work of the machine under different conditions.

Working Out a Plan

Allow me, here, to suggest a plan of using to great advantage such cutting and loading machines in a seam where the roof will permit the rooms to be driven 40 ft. wide. I have in mind a district where rooms of this width are driven 300 ft. in depth, with 25-ft. pillars between them.

My plan would be to drive these rooms in sets of three, laying the track in the center of each room, so as to reduce the distance the scraper must pull the coal to the machine. A shortwall machine having a cutter-bar 6½ ft. long could cut six of these rooms in a single shift and keep well out of the way of the loading machine.

In a 4- or 5-ft. seam where a 6½-ft. cut would yield, say 35 or 40 tons, three loaders would load all the coal a single shortwall machine would cut, each loader loading the coal from two rooms. That would mean the cutting and loading of $3 \times 75 = 225$ tons of coal in an 8-hr. shift, as being possible in this field.

In order to expedite the work of moving the machine from place to place, I would arrange to move the switches up as each new crosscut is driven in the pillars between the rooms. Some time will necessarily be lost in switching the cars loaded by the machine and placing the empties, unless double tracks are laid.

Another Plan

Another plan would be to lay the track along the straight rib and extend it along the face of the room, slipping it forward as the face is advanced. This would enable more cars to be placed at one time, for loading, and would not require as frequent visits of the gathering motor. However, the arrangement should be such that as little as possible time would be lost. In any case, it should not require more than two or three minutes, at the most, to change cars.

For an output of 2,000 tons a day in a 5-ft. seam, I estimate that from 12 to 15 shortwall coal cutters would be required. Two of these would prob-

ably be employed in driving narrow-work. Mining and loading 50 tons of coal, in a single room, would require two loading machines for every three rooms.

There would then be $3(40 + 25) = 195$ ft. of entry required to keep ahead of the loaders, besides $3 \times 25 = 75$ ft. of crosscut, making 270 ft. of narrow-work to provide sufficient territory for two loaders.

The entire equipment, on this basis, would be 27 loaders and 10 or 12 cutters, working on rooms and narrow-work. One man operating an electric drill can do the drilling and shooting for each cutting machine, while two men will lift bottom and keep the timbering up to the face.

Where the haul is not excessive four gathering motors will be able to handle this output, in cars having a capacity from 2 to 2½ tons. Indeed, in this field, there would be no difficulty in handling 4-ton cars. This is an interesting subject and worthy of careful discussion, which I hope will be continued.

Hillside, Ky. OSTEL BULLOCK.

ANOTHER LETTER

Experience in the past reveals the fact that it has always been necessary to make whatever changes are required in a mine to adapt it to the use of improved equipment.

REFERRING to the interesting letter of C. R. Stahl, *Coal Age*, Feb. 17, p. 319, permit me to say that I am glad Mr. Stahl has written on this subject. He expresses clearly the opinion of the average mining man; and his comments furnish the best possible proof of the statements made in my previous article on loading coal by machinery.

Mr. Stahl, like most mining men, objects to making any changes in the mine, to suit modern machinery; but takes the stand that improved machinery must be made to suit the mine. That principle has not worked out in the past and it never will in the future. Our ancestors carried coal out of the mines in baskets; but in course of time, cars were used to haul the coal.

CARS REPLACE BASKETS

Had Mr. Stahl's idea been carried out at that time, there would have been no rails laid, but the cars would have been built to run on the floor without rails, as that was the condition when the coal was carried out in baskets.

The theory of adapting the improvement to the mine was no more practical then than now; and the conditions in the mine were changed to make it practicable to use cars for conveying the coal. In other words, suitable entries were driven and tracks laid.

From time to time since then, conditions in the mines have been changed, in order to permit the use of more modern equipment; trolley wire has been hung in the mines and plans made to haul the coal by locomotives in place of mules. It was recognized that changes were necessary in order to adapt the mines to the use of electric haulage.

Again, it was found to be necessary to change conditions in the mines in order to use coal-cutting machines; it was, and always has been necessary to change conditions in our mines whenever new machinery has been adopted, and conditions must now be changed to enable the use of loading machines.

In order to adapt a mine, however, for the use of the 38-A loading machine, but little alteration has to be made. Conditions can remain about the same as in an average room-and-pillar mine, except that suitable side tracks should be laid for standing cars close to the machine so as to reduce to a minimum the time required for shifting the cars as they are loaded.

Mr. Stahl probably does not realize the difference between a man and a machine. The man who loads coal gets tired, but a machine does not. If a man has to wait 10 or 15 min., or even half an hour, for a car his time is not wasted, because he can rest and there are other things he can be doing in the meantime. With a machine, however, it is different. To gain the largest success a machine must be run as nearly continuously as possible; any delay is that much waste.

The suggestion that a machine must demonstrate its superiority under average working conditions before it can form a part of the regular equipment of a mine in continuous operation is absurdly impossible. How can a machine show its value, may I ask, if it has to take its turn with the hand loaders in receiving cars? It cannot load more coal than the supply of cars afforded, any more than a person can swim if he is not to go near the water (as suggested in the little verse quoted by Mr. Stahl).

Allow me to say again, I am glad that this letter has appeared, and hope that the discussion will be continued in the columns of *Coal Age* till the practical utility of coal-loading machines in mines is demonstrated. It would be interesting and undoubtedly result in much benefit to the coal industry if practical men from various parts of the country will offer their suggestions as to how conditions in mines can be improved.

Columbus, Ohio. N. D. LEVIN.

Mine-Locomotive Haulage

Reducing the cost in mine haulage, by employing heavier locomotives and hauling longer trips, thereby requiring fewer passing tracks, which means less time lost by trips having to wait for each other.

KINDLY permit me to refer to the inquiry on mine haulage, *Coal Age*, Feb. 17, p. 321, asking for the number of 10-ton locomotives that will be required to handle a daily output of 2,000 tons in eight hours, up a one per cent grade, over a track three miles between terminals, the weight of rails being 50 lb. per yd. and the capacity of the cars two tons each.

The reply to this inquiry estimates that a 10-ton locomotive will haul eight loaded trips of twenty-five 2-ton cars each, up this grade, making 50 tons of coal hauled per trip per hour; and requiring $2,000 \div (8 \times 50) = 5$ locomotives to handle this output.

Incidentally, allow me to draw attention to an evident omission in the sketch or figure giving the plan of haulage, which shows but two passing tracks between the terminals. In the arrangement shown in that figure, it is clear there should be two more partings, as I have indicated by the dotted lines in Fig. 1. Otherwise, it would be im-

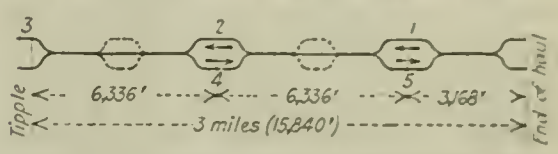


FIG. 1. ORIGINAL ARRANGEMENT

possible for Trip No. 2 to pass Trip No. 3, or for Trip No. 1 to pass Trip No. 4, on the single track shown in the original figure.

In reference to the proposition presented in this inquiry, allow me to suggest the advisability of using heavier locomotives than those designated by the inquirer. By so doing, it is possible to haul more cars and employ but four locomotives instead of five, as estimated in the reply. It is true that this will require a somewhat greater length of parting in each case and possibly heavier rails.

However, as indicated in Fig. 2, there will then be required but three passing

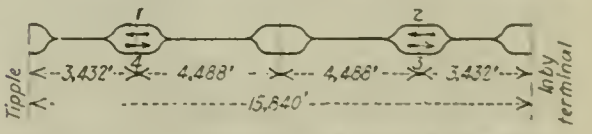


FIG. 2. PROPOSED ARRANGEMENT

tracks instead of four, and less time will be lost in trips waiting for each other. The cost of operation will be further reduced by the expense for upkeep of four locomotives instead of five and the elimination of one crew.

In the arrangement I propose using four locomotives; the distance between each terminal and the nearest parting should be enough less than the distance between the partings, in order to allow time for switching at the terminals. Assuming a speed of hauling of six miles per hour, or 528 ft. per minute, and allowing four minutes at each terminal for switching, makes the distance between the partings 4,488 ft., and the distance between each terminal and the nearest parting 3,432 ft.

In Fig. 2, I have shown Trip No. 1 passing Trip No. 4 at the first parting from the tipple and Trip No. 2 passing Trip No. 3 at the first parting from the inside terminal. While Trip No. 1 goes to the tipple, switches and comes back to the same parting, and Trip No. 3 goes to the inside terminal, switches and comes back to its same parting, Trips Nos. 2 and 4 exchange places, passing at the central parting.

EDWARD H. COXE,
Gen. Mgr. Snowden Coke Co.
Braznell, Pa.

Defective Rail Return in Power Transmission

Look well to the bonding of the rail return where there is difficulty in the transmission of the power required at the face. A good feeder is useless with a defective rail return.

IN THE issue of *Coal Age*, Jan. 13, p. 72, a mine foreman from Chambersville, Pa. told of his troubles in getting sufficient power in the mine. In the reply to this inquiry it is stated that the trouble probably lies with the engines driving the generators.

Without further investigation of the matter and judging from general experience, I would say the chances are ten to one that the trouble lies in the rail-return. Investigations made in a number of mines show that a 30 per cent loss of all power is quite common; and, furthermore, that this loss is due mostly to poor bonding.

It is rather common to see a good sized positive feeder running a long distance into a mine, only to find a very poor return. For instance, a 500,000 circ.-mil. feeder may be used, and the return will consist of only 20-lb. rail, which is equal to 200,000 circ.mil. with a 2-0 bond poorly attached to one rail only.

It is not sufficient to get the power to the working face in a mine; but the current must also be conducted back to the power station. For this return, a good electrical conductor is just as essential as the positive feeder.

In fact, good practice requires a greater capacity in the return than in the positive feeder. The excessive loss in these conductors is just that much power robbed from useful work.

I would advise this mine foreman to look after the bonding of his rails, and then not follow a too frequent custom of keeping new and good bonding near the face and entirely neglecting the old and wornout bonding nearer the power station. JOHN G. KJELLGREN.

Cleveland, Ohio.

ANOTHER LETTER

An instance cited where a poor system of rail-bonding disabled a 13-ton locomotive operating at 3,000 ft. from the power station.

MY attention was arrested by the inquiry in *Coal Age*, Jan. 13, p. 72, describing an electrical installation that failed to give satisfactory service. I agree with the statement made in the reply to this inquirer that his meaning is that the circuit-breaker was set to limit the current to 400 amp.

As has been stated, the two generators of 150-hp. each are doubtless working in parallel and developing a total of 300 hp. Operating on a 250-volt circuit, this would mean a circuit of $(300 \times 746) \div 250 = 895$ amp.

On the other hand, if operating on a 500-volt circuit, the current would be one-half of this amount or, say 450 amp. In the first instance, it would mean that the circuit-breaker is set at one-half of the proper allowance. In the second case, however, it is set about right.

It occurs to me that the actual trouble, in this case, is more apt to be due to poor rail-bonding, which would mean a large loss of power and would fully explain the trouble feared to be at the power station. It reminds me of a similar instance, in my own experience, where the trouble was found to arise from the poor bonding of the rails.

In that case, a 500-kilo-volt-ampere rotary converter was operating on a 250-volt circuit and transmitting power 3,000 ft., where a 13-ton locomotive was unable to haul twenty-five cars up a two per cent grade. An electrician located the trouble in the bonding of the rails and the old bonds were replaced with new ones, the result being that the locomotive then hauled forty cars up the grade with ease.

In the present instance, it is possible that insufficient feeder-lines or insufficient feeder-taps to the trolley wire may be the cause of the loss of power in transmission. It is certain, however, that the generators are not overloaded, as thought possible by the mine foreman. SAK.

————, Pa.

Inquiries Of General Interest

Power Required to Drive Fan

The Ventilating Equipment at a Mine Must Be Adequate in Two Respects: First, the Dimensions of the Fan Must Be Such That It Will Be Capable of Delivering the Required Air Volume at a Speed That Will Permit of Being Increased in Case of Need. Second, the Engine Driving the Fan Must Be Able to Develop the Power Necessary to Operate the Fan at the Increased Speed

IN THE ventilation of our mines, we are up against a proposition that we do not understand sufficiently to know exactly what is wanted. The development underground has progressed to a point that something must be done to improve the ventilation at the working face.

Having cleaned up the airways and done everything that is possible underground to increase the circulation of air, the problem appears to resolve itself into improving the ventilating equipment.

A study of the situation shows that the engine is not large enough to drive the fan much faster than it is running at the present time. Aside from this, however, we are not at all sure that the fan would give the required volume of air if operated at a greater speed.

Another thing I want to ask is: In what proportion must the power be increased to increase the speed in a given ratio? For example, if 65 hp. will drive the fan at a speed of 70 r.p.m., what power will be required to increase this speed to 90 r.p.m.? Also, what relation does the speed of the fan bear to the volume of air it will deliver under the same conditions in the mine?

Staunton, Ill. MINING ENGINEER.
Mt. Olive & Staunton Coal Co.

Assuming, as this correspondent has stated, that everything has been done to decrease the frictional resistance in the mine, which would increase its potential factor and make it possible to circulate a maximum air volume, with a minimum power consumption, the first question to determine is the mine potential, as expressed by the ratio of the volume of air in circulation (cu.ft. per min.) to the square root of the unit pressure (lb. per sq.ft.).

For example, suppose the present circulation in the mine is, say 165,000 cu.-ft. of air per minute, under a water gage of 1.5 in., corresponding to a unit pressure of $1.5 \times 5.2 = 7.8$ lb. per sq. ft. We will say this circulation is produced by a fan running at a speed of 70 r.p.m., and the engine driving the fan is developing 65 i.hp.

The power on the air is $Qp \div 33{,}000$; or $(165{,}000 \times 7.8) \div 33{,}000 = 39$ hp.; and the efficiency of the ventilating system is $(39 \times 100) \div 65 = 60$ per cent.

Now, let it be required to ascertain what air volume will result by increasing the speed of the fan from 70 to 90 r.p.m. In fan practice, the fourth power of the speed of the fan varies, practically, as the fifth power of the quantity of air in circulation. In other words. the quantity ratio is equal to the fifth root of the fourth power of the speed ratio. Hence, calling the required quantity Q, we have

$$Q = 165{,}000 \sqrt[5]{\left(\frac{90}{70}\right)^4} = 165{,}000 \sqrt[5]{\left(\frac{9}{7}\right)^4}$$

$$= 201{,}700 \textit{ cu. ft. per min.}$$

But, since the pressure varies as the square of the quantity and the power as the cube of the quantity, the water gage will increase from 1.5 to 2.24 in. and the power required to drive the fan will increase from 65 to 118.8 hp.

Before we can determine the size of

fan required for this increased circulation (201,700 cu.ft. per min.), it is necessary to calculate the mine potential (X), as expressed by the ratio of the original air volume (165,000 cu.ft. per min.) to the square root of the unit pressure (7.8 lb. per sq.ft.); thus,

$$X = 165{,}000 \div \sqrt{7.8} = 59{,}080.$$

From this value of the mine potential (X) and the increased air volume (Q) and speed (n) of the fan, the outer diameter (D) of the fan is calculated by the formula:

$$D = 467\,\frac{Q}{nX} = \frac{467 \times 201{,}700}{90 \times 59{,}080} = 17.72\ ft.$$

The water gage a fan will give is determined from its tip-speed (u), expressed in feet per second. For a diameter of 17.72 ft. and a speed of 90 r.p.m., the tip-speed of the fan is $(3.1416 \times 17.72 \times 90) \div 60 = 83.5$ ft. per sec. The water gage corresponding to this tip-speed is

$$w.g. = 0.00045\ u^2$$
$$= 0.00045 \times 83.5^2 = 3.14\ in.$$

This is the theoretical water gage developed by the fan. When the fan is properly designed two-sevenths of this theoretical gage will be absorbed within the fan, making the effective water gage in the fan drift, say five-sevenths of the gage estimated from the tip-speed, which gives in this case $5/7 \times 3.14 = 2.24$ in. as previously estimated.

For a double-intake fan, the diameter of the intake circle can be taken as approximately seven-eighths of the outer diameter of the fan; and the breadth of the fan as three-fifths of the diameter of the intake circle.

Examination Questions Answered

Examination for Mine Foremen, Eighteenth Anthracite District

(Selected Questions)

QUESTION — *Suppose a mine has two openings, one being 70 ft. higher in elevation than the other, on the surface. If the temperature of the air outside is 80 deg. and that inside of the mine 55 deg. will there be a current of air passing and, if so, in what direction will it travel?*

ANSWER — First, assuming that the average temperature of both shafts is the same as that given for the inside of the mine, it is evident that there would then be 70 ft. of outside air column opposed to 70 ft. of an air column in the upper portion of the shaft having the higher elevation at the surface.

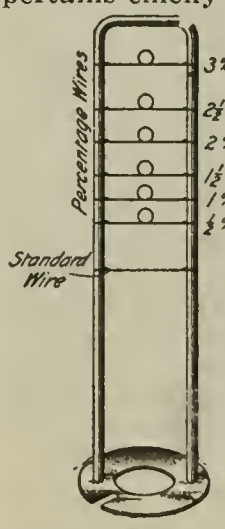
In that case, the 70-ft. unbalanced portion of the shaft column, having a temperature of 55 deg., would be heavier than the outside air column, whose temperature is 80 deg.; and there would result a current of air entering the shaft having the higher elevation and passing through the mine and returning up the shaft having the lower elevation.

In practice, however, the outside air entering a shaft has its temperature lowered or raised to that of the mine, not at once, but gradually, and the average temperatures of the two shafts will depend on their depth, respectively, below the surface.

Assuming natural ventilation only, the original temperature of each shaft being the same as the mine, a circulation will start and air will begin to enter the higher opening, making that shaft the downcast and the lower shaft the upcast. The gradual rise of temperature in the former, due to the warm intake, tends to lessen the effect of the downcast column, however, until a balance is reached between the effective air column of the two shafts and the resistance of the mine airways and the shafts. The circulation involves three air columns; namely, the outside 70-ft. column, and the respective downcast and upcast columns, the net effect of which is opposed by the resistance of the mine.

QUESTION—*Describe the instruments that are most useful in aiding the fireboss in determining the conditions in a mine. Explain the use of each fully.*

ANSWER — The work of the fireboss pertains chiefly to ascertaining the condition of the mine air with respect to gas and moisture, and ascertaining its temperature. To determine the percentage of gas present the fireboss should be equipped with an approved form of safety lamp and an indicator that will show the percentage of gas without requiring him to guess at the height of the flame cap observed in the lamp. The Beard-Mackie sight indicator shows the percentage of gas present in the air by the incandescence of the looped platinum wires. This device, detached from the lamp, is shown in the accompanying figure. The Burrell gas detector is also a valuable instrument for this purpose; but it does not give a sight indication as the previous device. Instead, it depends on the burning out of the gas contained in a sample of the mine air drawn into a tube for that purpose. The gas is consumed by the incandescence of a platinum-wire bridge, which is rendered incandescent by the current from a portable battery.



BEARD-MACKIE SIGHT INDICATOR

The hygrometer is used for determining the percentage of humidity in mine air. This is calculated from the difference of readings of the wet- and dry-bulb thermometers.

The anemometer and the water gage are two instruments used for determining, respectively, the velocity of the air current and the unit pressure producing the circulation.

QUESTION—*How would you ascertain the additional amount of gas given off in the mine when the barometer falls from 30 to 29 in.?*

ANSWER—This question probably refers to the expansion of the gas-charged air contained in old abandoned workings and gobs, due to a sudden fall of barometer. Estimate as closely as possible the volume of the old workings and, after making due allowance for any change in the temperature of the mine during the time of the two observations, find the expansion of this volume due to the change of pressure. For a given temperature, the volume of air and gas varies inversely as the pressure; or, the volume ratio is equal to the inverse ratio of the two readings of the barometer. Thus, the barometer ratio being 29:30, the volume ratio is 30:29, which shows an expansion of 1/29 of the estimated volume of the old workings, due to this fall of barometer.

QUESTION — *How many cubic feet of air should be mixed with one cubic foot of marsh gas (CH_4) so as to render it harmless?*

ANSWER—Marsh gas or methane, not being poisonous, its chief danger, in the mine, is due to the inflammability and explosibility of this gas when mixed with air in proper proportion. The danger is increased by the presence of fine coal dust suspended in the air and is much greater as the coal is softer and more inflammable.

In an anthracite mine, 2½ per cent of marsh gas approaches the danger point and, in order to render this gas harmless, in an anthracite mine, one volume of the gas should be mixed with fifty volumes of air, thereby reducing the percentage of the gas to 2 per cent. If forty volumes of air are mixed with one volume of the gas. the percentage is reduced to 2½ per cent, which is the safe limit.

QUESTION—*An air course is 1,000 yd. long, 7 ft. high and 9 ft. wide; what are the area, perimeter and rubbing surface?*

ANSWER — The sectional area of this airway is $7 \times 9 = 63$ sq.ft.; its perimeter is $2(7 + 9) = 32$ ft. and its rubbing surface $3 \times 1{,}000 \times 32 = 96{,}000$ sq.ft.

CORRECTION

A typographical error occurred in the answer to the fourth question on page 370, in the issue of *Coal Age*, Feb. 24, 1921. The formula is correctly given but the answer should read 399+ ft. per min., instead of 576+ ft. per min. as appears in that issue.

C. C. Morfit Appointed Secretary of Tug River Coal Operators Association

AT a meeting of the Tug River Coal Operators Association held recently in Welch, W. Va., it was announced that C. C. Morfit, general superintendent of the Solvay Collieries Co., had accepted the position of secretary of the association. Mr. Morfit resigned from the Solvay Collieries, effective March 1, to enter upon his new duties.

The employment of a secretary is the result of action taken at the annual meeting of the association in January and announced at that time. The increased activities and

C. C. MORFIT
Newly Appointed Secretary of Tug River Coal Operators Association

necessity for greater association work appealed to the operators as requiring the full time of a secretary and a fully equipped office for the purpose of centralizing these activities. Mr. Morfit was selected for the place of secretary because of his thorough knowledge of the Tug River and adjacent fields as well as mining conditions throughout the state. He has had extensive experience in connection with the business and legislative side of the coal business as well as practical mining experience. He began his West Virginia experience with the construction department of the B. & O. R.R. in 1899 and went with the Mononga Co. in Fairmont in 1902 as assistant chief engineer. Later he formed the Sinclair-Morfit Co., which dissolved on the death of his partner. For the past three and a half years he has been with the Solvay Collieries Co.

Railroad Taxes in 1920 Were 4½ Times as Much as Net Operating Income

TAXES paid by the railroads in 1920—or those for which they became liable, because some of the roads are behind in their tax bills as well as other bills—amounted to four and one-half times as much as the net operating income which the roads earned for their owners. Total operating revenues for the year, according to the Interstate Commerce Commission statistics made public recently, were $6,225,402,762, the largest in the history of the railroads and $1,041,000,000 greater than for 1919. Operating expenses, however, consumed $5,826,197,474 of this, or $1,406,000,000 more than in 1919, and taxes, $281,380,620, or $83,000,000 more than in 1919. Taxes include $33,349,938 of war taxes for the period from March to December after the roads were returned by the government. After deducting for uncollectible revenues and equipment and joint facility rents this leaves a net operating income, or profit from railway operations, of only $62,264,421.

This compares with an average of over $900,000,000 for the three years preceding the war. It represents a return of about one-third of one per cent on the valuation of $18,900,000,000, which the Interstate Commerce Commission used for the purposes of the rate case. It is less than the roads should earn in one month to receive the 6 per cent which the Transportation Act prescribes as the measure of a fair return on the investment. It is less than one-fourth of the taxes charged by local state and federal governments for the privilege of owning property and doing business and the protection of the laws, and it represents a profit of almost exactly 1 per cent on the gross business done during the year, when the railroads handled more freight and passengers than in any previous twelve-month in their history.

New York Emergency Coal Distribution Committee Reports on Work

EMERGENCY distribution of anthracite in New York City, put into effect last November, ceased Feb. 25, 1921, at the direction of the chairman of the New York Emergency Distribution Committee, J. F. Bermingham, of the Delaware, Lackawanna & Western Coal Co.

Between Nov. 10, 1920, and Feb. 25, 1921, the committee shipped on emergency orders 655 cargoes and 1,262 cars to dealers at rail points, the aggregate being 346,550 gross tons. These figures, and the fact that complaints of anthracite shortage in New York City subsided almost immediately after the emergency committee got to work indicate the efficiency with which the task was performed.

Every Thursday during the period Mr. Bermingham met with a committee of dealers representing the five boroughs, representatives of the Department of Health, and representatives of the Federal Department of Justice. Facts were there submitted upon which the committee of distributors, which met the following morning, would accept allotments and make shipments. Seventeen shippers of anthracite took part in this work, which was maintained until weather conditions and other circumstances combined to make the dealers decline any further shipments, upon which the weekly meetings of dealers and shippers were discontinued.

Co-operation of every interest involved enabled the committee to work effectively, Mr. Bermingham says. Shippers were prompt in acceptance of allotments and quick in shipment; the dealers co-operated to the extent of alloting to others tonnage which they could have placed themselves. while the New York Department of Health arranged so that the most needy should receive the first benefit. The main idea was to look out for the small consumer, and this end was attained.

Mine Workers Oppose Law Which Makes Unions Subject to Suit

THOMAS KENNEDY, district president of the Hazleton mine workers, declares that if the bill of State Senator Woodward, of Philadelphia, permitting unincorporated associations to be sued and allowing judgments to be entered against individuals of such associations, is passed he will advise organized mine workers to withdraw their savings from banks. Philip Murray, international vice-president of the United Mine Workers of America, declares that 235,000 organized miners are against the bill. George Rowan has made the same declaration about the railroad brotherhood.

Harrington Emerson Studies Bituminous Waste; Engineers to Complete Work April 1

HARRINGTON EMERSON has been selected to make the study of waste in the bituminous-coal industry for the American Engineering Council, of which Herbert Hoover is chairman. The work of the Committee on Elimination of Waste in Industry of the council is well under way. A definite scheme of operation went into effect on Feb. 7, and on Feb. 21 reports on the first investigation in each industry were made. The bituminous coal investigation is now reported to be practically complete. The chairman of the committee is J. Parke Channing, of New York, and the vice-chairman in active charge of the inquiry is L. W. Wallace, executive secretary of the council.

New York, New England and Pennsylvania Covered

The field work, covering principally New York, New England and Pennsylvania, will, Mr. Wallace announces, be completed by April 1. There is every reason to believe that the investigation will yield information that will have an important bearing on the nation-wide movement inaugurated by the engineers to wipe out waste in American industry.

In a statement explaining the task of the Committee of Elimination of Waste in Industry, Mr. Wallace said:

"Herbert Hoover when addressing the Federated American Engineering Societies, as president, in Washington in November, said: 'It is primary to mention the three-phase waste in production (1) from intermittent employment, (2) from unemployment that arises in shifting of industrial currents, and (3) from strikes and lockouts. Beyond this elimination of waste there is another field of progress in the adoption of measures for positive increase in production. In the elimination of the great waste and misery of intermittent employment and unemployment we need at once co-ordination in economical groups.'

Committee's Purpose to Find Cause of Waste

"At the organization meeting of the committee in January the purpose of the committee was stated to be: (1) determine the cause of labor, material and equipment waste in industry, the material and equipment phases of the problem to be studied largely in so far as they may cause labor waste; (2) in so far as possible determine the extent of the waste that arises through each major cause; (3) suggest means of removing the cause for such waste.

"It is proposed to give special consideration to the possibility of stabilizing industry. Through stabilization an even demand for production would ensue; hence periods of great fluctuation in employment would not obtain. Many seasonal industries could be reorganized so as to bring about a fairly uniform production throughout the year and thus greatly lessen the evils of unemployment. Ten representative industries have been selected because of their general importance and interest to the public. They are: Bituminous coal, building trade, transportation, men's ready-made clothing, printing, paper, metal trades, textiles, shoes and rubber.

Obtain Information Through Questionnaire

"From three to ten plants of each selected industry are being visited by an experienced engineer, who procures the information desired by the committee. A carefully proposed list of questions is placed in the hands of each field worker. The information obtained by the field investigator is supplemented by such authoritative data as may now exist in the form of reports made by reliable parties or agencies. Through this means sufficient information is to be obtained as to enable the committee to formulate specific conclusions as to the major causes of industrial waste."

The Committee on Elimination of Waste in Industry consists of J. Parke Channing, chairman; L. W. Wallace, vice-chairman; Robert B. Wolf, J. H. Williams, H. K. V. Scheel, Fred J. Miller, Robert Linton, C. E. Knoeppel, Herbert Hoover, L. P. Alford, George D. Babcock, F. G. Coburn, Morris L. Cooke, Harrington Emerson, Ira N. Hollis and E. E. Hunt.

British Coal Industry Is Losing Heavily: Higher Prices or Lower Wages Proposed

AT THE moment the outlook in Great Britain in regard to the labor situation is an extremely serious one, the position being far more dangerous than on the occasion of the last strike. The industry, according to the *Journal of Commerce* (London), as a whole is suffering a loss at the rate of something like £90,000,000 per annum, and in view of the fact that the Cabinet is understood to have decided that as from March 31 the state must be free from all financial liability for the industry, and that entire decontrol must be completed by that date, it necessarily follows that sooner or later, in order to place the industry in an economic position, either pithead prices must be increased or wages reduced to such a level as will make it self-supporting.

Various meetings of owners in the different producing districts have been held to discuss questions arising out of decontrol, and generally it is felt that prices are already high enough, and to further increase them is out of the question at present. The attitude of the owners is that before handing the mines back to them, the government should take off some of the wage advances that they gave almost without protest. Apparently, however, the government has no intention of doing this, and purposes handing back the mines (which were in a fairly prosperous state when taken over) to the owners in an insolvent position.

The miners' leaders are against financial decontrol, as they know it will be out of the question to deal with the owners in the same easy manner as they have done with the government. Even allowing for a certain amount of bluff on the part of the miners' leaders it must always be remembered that although they may know that the conditions of the industry are such as demand a substantial wage reduction, to openly suggest it to the workers would not add to their prestige.

The Miners' Federation has recently sent out a very voluminous circular letter in regard to the proposed new wage basis—which basis, by the way, fixes the wage per shift at the same levels as those in operation previous to the last strike. These letters have been sent out to all lodges to be voted on by show of hands. As the lodges are dominated by a mere handful of local leaders—mainly of the extreme type—it is not difficult to imagine the vote will be all against any wage reduction.

Unless the position is cleared (as a result of the series of meetings that are being held) within the next fortnight or so, then we shall be up against another serious crisis, as the owners are determined to again dominate the position when the mines are handed back to them.

The daily increasing stocks of coke and small fuels on the ground and in wagons, at pits and coke ovens, are constantly resulting in more pits being compelled to work short time, and consequently the shortage of large coal, cobbles and nuts—particularly of the best qualities—is becoming more acute. In some cases the accumulation of these stocks is bringing about a considerable amount of financial embarrassment. This cannot be wondered at when it is pointed out that the cost of producing coke is practically the same as the selling price (55s. per ton on rail at ovens), while in the case of slacks they cost just as much to produce as large coal. Each week onward will see the financial position intensified as, had there been no stocks at the end of January, collieries would have received payment for the bulk of January accounts by now. Since the beginning of this month stocks have increased very substantially,

so that by the end of March the financial embarrassment will be far more acute than at present.

There does not appear to be the slightest chance of any improvement taking place in the demand in the immediate future, and should short time working become more general —as in all probability it will—there is no doubt that the export of large coal cobbles and nuts will have to be entirely suspended from districts other than South Wales and the Tyneside, in order that the fullest possible provision can be made for inland requirements.

Utilities Manifest Increased Efficiency in Fuel Consumption in 1920

COMPARATIVE figures of electricity generated and fuel consumed for 1919 and 1920 by public utility power plants, are shown in the following tables:

PRODUCTION OF ELECTRICITY

	Water Power			Fuel Power		
	Kw.-Hr.	Per Cent of Total	Increase	Kw.-Hr.	Per Cent of Total	Increase
1919	14,600,000,000	37.5	....	24,300,000,000	62.5	.....
1920	16,500,000,000	37.6	13%	27,400,000,000	62.4	12.8%

CONSUMPTION OF FUELS

	Coal, Net Tons	Increase	Fuel Oil, Barrels	Increase	Gas, Cu.Ft.	Increase
1919	35,100,000	...	11,050,000	.....	21,400,000,000	.....
1920	37,200,000	6%	13,080,000	18.4%	24,300,000,000	13.6%

These figures show that the production of electricity by public utility plants in 1920 was 43,900,000,000 kilowatt-hours, an increase of practically 13 per cent over 1919. The percentage of the total kilowatt-hours of electricity produced by water power is the same for both years. The consumption of coal, fuel oil, and gas increased 6, 18.4 and 13.6 per cent, respectively.

If the fuel oil, gas and wood consumed in generating electricity is converted to equivalent coal, the coal consumption in 1919 would be 38,500,000 tons; in 1920 it would be 41,200,000 tons—a gain of 7 per cent. The gain in the production of electricity for the same period was 12.8 per cent, which indicates an increase of efficiency in the consumption of fuels during 1920. On the basis of equivalent coal consumed for each of the two years, a kilowatt-hour of electricity was produced in public utility plants in 1919 by 3.17 lb. of coal; in 1920 by 3.01 lb. of coal. These figures show a gain in economy of fuel consumption of 5 per cent, or a saving of about 2,000,000 tons of coal in the production of electricity in 1920 as compared with the rate of fuel consumption per kilowatt-hour in 1919. The coal required to produe the kilowatt-hours generated by water power in 1920 would be about 25,000,000 tons.

Canada's 1920 Coal Production Exceeded That of Any Previous Year

EARLY statements of the probable coal production of Canada during 1920, made in December, slightly underestimated the quantity of production, and considerably underestimated the values now reported by the operators, according to a statement recently published by John McLeish, chief of the Division of Mineral Resources and Statistics of Canada.

The total production of marketable coal in Canada during 1920 (comprising sales, colliery consumption and coal used in making coke, or used otherwise by colliery operators) was 16,623,598 short tons, valued at $77,326,853, or an average of $4.65 per ton. It was the largest tonnage that has been obtained in any one year.

The total production in 1919 was 13,681,218 tons, valued at $54,413,349, compared with which the 1920 productions shows an increase of 2,942,380 tons, or 21.5 per cent in quantity and $22,913,504, or 42.1 per cent, in value.

The total output of coal including waste and unmarketable slack in 1920 was 16,976,771 tons as against 14,080,655 tons in 1919.

Each of the provinces, with the exception of New Brunswick and Saskatchewan, has shown substantial increases over the previous year's production. Nova Scotia presents an increase of 675,172 tons, or 11.8 per cent; New Brunswick a decrease of 17,944 tons, or 10 per cent; Saskatchewan a decrease of 30,309 tons, or 8 per cent; Alberta an increase of 1,894,811 tons, or 38.2 per cent, and British Columbia an increase of 420,987 tons, or 17.3 per cent.

The exports of coal in 1920 were 2,558,174 tons valued at $18,014,899, or an average of $7.04 per ton, as against exports in 1919 of 2,070,050 tons, valued at $12,438,885, or an average of $6 per ton, showing an increase of 488,124 tons, or 23.6 per cent in quantity.

The total imports of coal of all classes in 1920, "Entered for consumption," as recorded by the Department of Customs, were 18,742,542 tons, valued at $98,033,598, as against imports in 1919 of 17,308,837 tons, valued at $61,160,799. The record shows a slight decrease in the imports of anthracite coal, but an increase in the imports of bituminous.

The estimated consumption of coal based on production, exports and coal imported as "entered for consumption," amounted in 1920 to 33,807,966 tons, as compared with 28 863,017 tons in 1919.

War Department Confers Distinguished Service Medal on Dr. Garfield

ONE of the last acts of the outgoing administration was the award of a distinguished service medal by the Secretary of War on behalf of the President to Dr. Harry A. Garfield "for exceptionally valuable services to the government as Federal Fuel Administrator during the war."

The citation of the War Department accompanying the conferring of the medal upon Dr. Garfield reads as follows: "Dr. Harry A. Garfield, for meritorious and distinguished service in a position of great responsibility. During the progress of the war, by his conduct of the Fuel Administration he stimulated the production, conserved the use, and supervised the distribution of those supplies of fuel necessary for the support and transportation of the armies of the United States, the maintenance of authority, the production of war supplies, and the health and well-being of the civil population upon which the successful prosecution of military activities depended."

Coal Consumed by Locomotives in Transportation Service Only, Calendar Year

(In Net Tons)

Region	1919	1920
New England	4,397,501	4,847,373
Great Lakes	16,338,191	19,324,623
Ohio-Indiana-Allegheny	23,886,290	27,423,858
Pocahontas	4,578,037	5,158,022
Southern	14,685,998	17,170,423
Northwestern	14,383,391	15,538,839
Central Western	15,888,127	17,734,288
Southwestern	6,365,680	6,376,701
ALL REGIONS	100,523,215	113,574,127

Average Cost Per Net Ton, Including Freight, of Coal Consumed by Locomotives in Road Service

(As reported by the Interstate Commerce Commission)

Region	1919 July	Aug.	Sept.	Oct.	Nov.	Dec.	Total Year	1920 July	Aug.	Sept.	Oct.	Nov.	Dec.	Total for Year
New England	$5 26	$5 01	$5 30	$5 59	$5.03	$5 55	$5 69	$9 49	$9 57	$8 84	$7.84	$9 52	$9.95	$8.15
Great Lakes	3 12	3 05	3 27	3.34	3.54	3.40	3 86	4.33	4 58	5.23	4 32	5 30	5.07	4 47
Ohio, Indiana—Allegheny	2 50	2 64	2 75	2 75	3.00	2 82	4 24	3 92	4 28	4.24	3.71	4 77	4.60	3.92
Pocahontas	2 45	2 65	2 59	2.62	2 90	2 68	2 93	4 06	4 48	4.38	3.62	4 74	4.75	3 83
Southern	3 06	3 02	2 91	3 14	3.23	3.19	3.62	3 97	4 42	4.15	3 78	4 61	4 54	3.92
Northwestern	3 75	3 72	3 43	3 70	3 79	3.79	4 64	4.38	4 79	4 43	4 22	4.96	4.83	4 34
Central Western	2 98	3 01	2 85	2 97	3 53	3.12	3.98	3.51	3 57	3.57	3 43	3.59	3.95	3.51
Southwestern	3 45	3 34	3 32	3 47	4 12	3 73	5 39	3 77	4 48	4 39	4 08	4 31	4 23	4 13
ALL REGIONS	3 12	3 11	3 10	3 24	3 48	3 32	3 92	4 25	4 56	4.54	4 05	4 82	4 80	4 20

Number of Bituminous Coal Mines in Operation as of January 1, 1919, 1920 and 1921*

SOME idea of the feverish activity in the coal fields during the high-price spurt of last year is offered by the accompanying figures, showing, as of Jan. 1, on three successive years, the number of mines in operation in the various coal fields. In the Eastern fields—Pennsylvania, Maryland and northern West Virginia—there was an increase during 1920 of 1,020 mines, with an average daily rating or capacity of 4.6 cars. From January, 1920, to January, 1921, the number of bituminous coal mines in the country increased 1,185. Eighty-six per cent of all the new mines were opened in the northeastern fields in which fields the total number of mines is but 47.5 per cent of the country's total. Seventy-seven per cent of the mines, or 912, opened in 1920 were on three railroads, the B. & O., 46 per cent; Western Maryland, 11 per cent, and the Pennsylvania 34.4 per cent.

Compared with January, 1919, the total number of mines increased from 6,857 to 8,722 on January, 1921, a gain of 1,865 in number, or 27 per cent. In southern West Virginia the increase in the number of mines in 1920 was 12 per cent. On the group of roads designated as the Ohio, Western Pennsylvania and Lake the increase was about 9 per cent. In Indiana, Illinois and Michigan the increase was 8 per cent. In the Southeastern territory the gain was only 7 in 1,000, and in the Western group, which includes Iowa and all the trans-Missouri coal fields, there was a decrease from 1,335 to 1,281 or 4 per cent.

GROUP 1. PENNSYLVANIA, MARYLAND, NORTHERN WEST VIRGINIA

Railroads	—1919— No. Mines Development	Commercial	Total	Car per Day Rating	—1920— No. Mines Development	Commercial	Total	Car per Day Rating	—1921— Total	Car per Day Rating
B. & O.	23	777	800	3,082	26	783	1,009	4,556	1,470	5,378
B. C. & G.	0	1	1	45	0	1	1	50	1	50
B. & L. E.	1	40	41	262	2	41	43	403	4	439
B. & Susq.	0	4	4	95	0	5	5	116	45	126
Beviar & Sou	1	4	5	52	0	4	4	52	4	66
B. R. & P.	14	86	100	720	8	100	108	830	58	703
C. & C.	3	65	68	139	7	67	74	209	119	326
C. & Pa.	0	47	47	187	2	45	47	224	52	223
Cum.	0	9	9	20	2	9	11	24	29	49
C. & Ind.	0	16	18	140	1	18	19	200	17	208
E. B. T.	1	10	11	30	1	10	11	37	10	80
Erie	0	22	22	115	0	23	23	123	25	120
H. & B.T.M.	2	44	46	107	4	41	45	100	46	101
J. & S. C.	0	7	7	35	0	6	6	38	24	63
Ligonier Val.	1	20	21	180	1	21	22	200	25	228
L. E. F. & C.	0	19	19	25	0	23	23	41	30	58
M. & K.	0	28	28	60	1	28	29	93	53	116
Monongahela	0	116	116	584	2	122	124	915	68	1187
N. Y. C.	0	156	156	762	6	165	171	805	232	868
Pitts. & Shaw.	12	40	52	197	6	47	53	234	64	245
P. R.R.	24	1,078	1,102	6,070	65	1,067	1,132	7,457	1,476	10,630
P. S. & N.	1	22	23	38	1	30	31	60	43	60
Pitts. & Sus.	0	20	20	16	0	23	23	16	27	54
W. Aleg.	3	11	14	21	0	14	14	23	19	61
W. Md.	0	74	74	307	0	69	69	404	176	724
W. Va. Nor.	1	12	13	50	4	16	20	65	9	39
Total	87	2,730	2,817	13,339	139	2,778	3,117	17,275	4,137	22,002

GROUP 2. SOUTHERN WEST VIRGINIA

C. & O.	7	476	483	2,380	10	510	520	3,482	558	4,286
N. & W.	1	272	273	1,876	5	271	276	2,392	330	2,995
N. & N.	12	0	12	12	13	0	13	15	12	15
S. V. & E.	0	17	17	97	0	17	17	154	19	220
Virginian.	3	76	79	568	0	95	95	884	113	488
Total	23	841	864	4,933	28	893	921	6,927	1,032	8,004

GROUP 3. OHIO, WESTERN PENNSYLVANIA & LAKE

D. T. & I.	0	69	69	69	0	69	69	69	9	12
E. Ky.	0	4	4	9	0	6	6	11	11	12
H. V.	0	144	144	544	10	143	153	605	197	813
K. & M.	6	77	83	401	4	84	88	480	112	673
Montour.	0	19	19	299	0	21	21	390	31	448
M. & O.	9	0	9	140	9	....	9	131	22	243
P. & L. E.	1	46	47	414	3	59	62	631	46	423
P. & W. Va.	0	29	29	464	0	29	29	464	34	468
P. L. & W.	0	16	16	12	2	16	18	17	18	29
T. & O. C.	1	91	92	540	2	98	100	718	121	748
Union.	0	2	2	244	0	2	2	244	6	251
W. & L. E.	1	60	61	394	1	62	63	530	68	716
Total	18	557	575	3,530	31	589	620	4,290	675	4,838

GROUP 4. INDIANA, ILLINOIS & MICHIGAN

Railroads	—1919— No. Mines Development	Commercial	Total	Car per Day Rating	—1920— No. Mines Development	Commercial	Total	Car per Day Rating	—1921— Total	Car per Day Rating
C. & I. M.	1	6	7	341	1	6	7	382	6	382
C. Ind.	0	4	4	9	0	4	4	3	2	4
C. & E. I.	12	72	84	1,544	11	70	81	1,839	93	1,914
C. & A.	0	30	30	450	0	30	30	319	28	503
Big Four.	1	38	39	1,089	2	43	45	1,197	51	1,227
C.T.H. & S.E.	1	43	44	542	3	48	51	515	48	714
C. I. & L.	0	19	19	186	0	23	23	200	24	319
E.St.L. & Sub.	0	2	2	80	0	2	2	100	2	100
E. J. & E.	0	11	11	250	0	11	11	263	11	262
L. T. S.	0	5	5	60	0	5	5	66	*5	66
Ill. Cent.	4	200	204	3,319	7	201	208	3,954	240	2,790
Ill. Sou.	0	0	0	0	0	0	0	0	0	0
L. & M.	0	3	3	220	0	3	3	220	4	221
L.H. & St. L.	0	2	2	8	2	4	6	14	6	16
M. C.	1	6	7	52	6	6	12	56	6	71
P. &P.U.	1	6	7	130	0	6	6	142	5	93
P. M.	0	6	6	70	0	6	6	70	4	60
St. L. & O. F.	0	2	2	90	0	2	2	90	2	100
St. L. B. & E.	0	4	4	45	0	4	4	60	4	60
St. L. T. & E	0	3	3	66	0	3	3	108	4	185
T. St. L. & W.	0	2	2	63	0	2	2	65	2	90
T. P. & W.	0	12	12	30	0	13	13	37	12	37
Wabash.	0	23	23	422	1	19	20	423	31	483
Total	21	499	520	9,066	33	511	544	10,123	590	9,697

GROUP 5. SOUTHEASTERN

A. B. & A.	0	5	5	19	0	5	5	40	5	41
Ala. Cent.	0	1	1	4	3	1	4	2	2	2
A. C. & I.	0	7	7	14	0	7	7	14	6	18
Birm. Sou.	0	3	3	132	0	2	2	9	0	0
C. of Ga.	0	7	7	52	0	7	7	48	14	56
C. C. & O.	10	15	25	124	4	18	22	173	10	166
Interstate.	0	31	31	165	0	31	31	137	21	222
K. & T.	0	7	7	60	0	7	7	63	9	74
L. & N.	8	436	444	2,409	24	473	497	3,354	595	4,205
N.C. & St.L	10	40	50	141	11	43	154	143	41	151
S. A. L.	1	0	1	1	1	0	1	1	3	3
Southern.	2	251	253	1,101	0	253	253	1,408	282	1,728
T. C.	3	14	17	80	1	16	17	85	19	81
Total	34	817	851	3,402	44	863	1,000	5,477	1,007	6,747

GROUP 6. WESTERN

A. T. & S. F.	14	87	101	575	11	90	101	626	145	776
Ark. Cent.	0	5	5	19	0	8	8	20	16	27
C. R. I. & P.	9	58	67	421	9	58	67	467	78	380
C. G. W.	0	1	1	4	0	1	1	2	0	0
Colo. Sou.	9	36	45	268	9	37	46	283	44	279
C. B. & Q.	6	110	116	2,306	3	116	119	2,974	129	3,031
C. & N. W.	0	28	28	766	0	28	28	766	26	477
Colfax Nor.	0	2	2	19	1	1	2	11	3	18
C. M. & St. L.	2	46	48	398	2	43	45	395	52	205
D. & S. L.	1	12	13	134	0	10	10	136	14	104
D. & R. G.	0	51	51	481	0	47	47	521	50	605
E. P. & S. W.	0	7	7	90	0	7	7	90	7	90
Ft. D.D.M.& S.	0	4	4	3	0	2	2	5	2	7
Ft. S. & W.	0	3	3	23	0	3	3	18	8	12
G. Nor.	1	42	43	183	3	43	46	203	41	36
Inter. Urban	4	1	5	12	0	5	5	33	4	31
K. C. S.	0	20	20	82	1	22	23	89	†23	89
K. C. C. S.	0	2	2	2	0	2	2	2	7	5
Mid. Val.	0	31	31	92	0	31	31	63	30	95
M. Pac.	143	80	223	605	162	94	256	718	151	1,750
M. & St. L.	12	0	12	85	11	0	11	131	11	125
M. W. & S.	1	6	7	43	0	7	7	26	7	90
M. K. & T.	67	15	82	167	70	16	86	203	54	194
K. O. & G.	3	18	21	85	2	20	22	94	25	133
Nor. Pac.	5	46	51	281	8	45	53	297	54	393
N.Mex.Mid.	0	3	3	5	0	2	2	5	2	6
O.W.R. & N.	0	1	1	20	0	1	1	24	3	11
O. S. L.	2	9	11	140	3	9	12	148	13	101
Pac. Coast.	0	2	2	20	0	2	2	29	3	51
Q. O. & K. C.	0	11	11	25	0	9	9	40	9	54
R. I. Sou.	0	2	2	15	0	2	2	15	2	24
R.G. & E.P.	0	2	2	5	0	2	2	5	2	6
S. Pac.	0	3	3	10	0	2	2	5	2	6
St. F. R & E.	0	2	2	8	0	2	2	10	2	17
St. L. & S. F.	12	149	161	505	15	215	230	643	233	975
T. & P.	0	6	6	39	0	4	4	13	4	42
Union Pac.	0	38	38	321	0	38	38	343	25	279
Total	291	939	1,230	8,246	393	1,024	1,335	9,453	1,281	10,524

SUMMARY

Group 1.	87	2,730	2,817	13,339	139	2,778	3,117	17,275	4,137	22,002
Group 2.	23	841	864	4,933	28	893	921	6,927	1,032	8,004
Group 3.	18	557	575	3,530	31	589	620	4,290	675	4,838
Group 4.	21	499	520	9,066	33	511	544	10,123	590	9,697
Group 5.	34	817	851	3,402	44	863	1,000	5,477	1,007	6,747
Group 6.	291	939	1,230	8,248	393	1,024	1,335	9,453	1,281	10,524
Total	474	6,382	6,857	42,518	668	6,658	7,537	53,545	8,722	61,812

*Data furnished by courtesy Car Service Division, American Railway Association.

† Previous years figures.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

DOMESTIC business during the past month, according to the Federal Reserve Board, in a statement just issued, has shown "an evident trend of improvement, although such gains as have been made have been moderate and by no means uniform throughout the entire commercial field." Prices, according to this authority, continued to recede in January, but less rapidly than in December. The price index of the Federal Reserve Board, constructed primarily for the purpose of international price comparison, showed a recession for January amounting to approximately 5 per cent, as compared with a 10 per cent decline in December. The statement of the board continues: "Demand for goods has by no means been firmly reestablished, and although there are abundant indications that stocks of goods have been greatly reduced and that a large volume of potential buying is in sight, it has not yet become actual."

Unemployment is the subject of a voluminous report issued under date of March 17 by the Employment Service of the Department of Labor. This report shows nine industries had a decrease in employment in February, ranging from 1.7 per cent for tobacco manufacturers to 7.3 per cent in the iron, steel and allied trades. Railroad repair shops and chemicals and allied products were the other important lines reporting greater unemployment. Five industries reported increases in men at work. The automobile, textile and leather industries leading the list with 18.8, 8.5 and 7.7 per cent gains in employment respectively. Among the cities reporting considerable decreases in employment were Denver, Youngstown, Indianapolis, San Francisco, Grand Rapids, Schenectady, Albany and Perth Amboy. Twenty-nine cities reported increases in employment, the larger percentages being at Chattanooga, Detroit, Peoria, Johnstown and Bridgeport.

The general business situation in New England was reported by the Department of Labor as considerably better than in the latter part of 1920, and there are many indications of greater improvement in the early spring. Running through the reports collected from cities all over the country are statements of construction work that is about to be begun, new housing projects on which work will be started within a few weeks, and numerous government, state and municipal projects for which appropriations have been made, and work to be begun early in the spring.

To Build Huge Dye Plant

Construction of the largest dry color plant in the world is being planned by the E. I. du Pont de Nemours Co., it was announced March 11. The company also is considering the erection of a new unit in its chain of lithopone plants. It is reported the works will be located at Carney's Point, N. J., and will eventually employ in the neighborhood of 30,000 men. Carney's Point is across the Delaware River from Wilmington, where the main plant of the E. I. du Pont de Nemours Co. is located, and several subsidiary plants of the company are located there. The company has recently been expanding its dye manufacturing facilities and a little more than a year ago built a large dye plant at Deepwater Point, N. J., near by.

Passaic Mills Reopen

The Passaic Cotton Mills, New Bedford, Mass., which had been shut down for six months, resumed operations on March 11. The corporation operates seven mills in New Bedford, employing 2,500 persons under normal conditions. No. 4 mill started first on a weekly schedule of forty-eight hours.

Textile Industry Improves

The central Berkshire textile industry is showing signs of recovery. Plants in Pittsfield and Dalton, Mass., employing about 3,000 hands, are running full time. Officials of the Pontoosuc Woolen Co., which was organized in 1826, say the business depression which began Nov. 1 and now apparently ending was the worst and longest in its history.

Ford Plant Has 2,000 More at Work

More than 2,000 employees of the Ford Motor Car Co. were rehired last week. An official stated that about 35,000 workers were now back on their jobs. When the Highland Park factory closed down in December about 55,000 were employed. Production in the factory has been increasing steadily, officials say. An average of 2,000 motors a day are being turned out. The company expects to build 60,000 cars in March.

Fisk Rubber Co. on Full Time

The Fisk Rubber Co. works at Chicopee, Mass., which had been operating on a three-day schedule since Dec. 1, resumed full time March 14 and a wage reduction on both day and piece work was put into effect which amounts to an average of 10 per cent. About 1,800 employees are affected.

N. Y. Shipbuilding Co. Cuts Force

The New York Shipbuilding Co., Camden, N. J., beginning March 11, discontinued night work at its plant and the night force of 200 employees was laid off. The day force also is being materially reduced, the announcement stated, by the laying off of extra gangs employed on war contracts.

C. F. & I. Adds 1,000 Steel Workers

The Colorado Fuel & Iron Co. announced March 11 that owing to improved conditions in the steel industry 1,000 additional men would be employed commencing Monday morning, March 14. It was planned to reopen four idle mills, running two eight-hour shifts.

Carnegie Co. to Close Sharon Plant

Notices of a complete shutdown, beginning Saturday, March 19, and continuing for an indefinite period, were posted at the Carnegie Steel Co. at Sharon, Pa., March 15. About 3,000 men are affected by the suspension.

Dodge Motor Plant Reopens

The plant of the Dodge Brothers Motor Car Co., at Detroit, closed since December, reopened March 17 with 3,500 to 4,000 men. The company normally employs 20,000 men. An effort will be made to reach one-third of the normal production soon. Additional workers are to be added from day to day.

Dearth of Orders and Resultant Low Production of Bituminous May Presage Another Coal Panic

By Paul Wooton
Washington Correspondent

ARE the lessons of the coal panic of 1920 to be disregarded by purchasers of coal? This question is being asked by government officials generally, who are watching with increasing anxiety the low rate of bituminous production. An official warning is understood to be forthcoming from the Interstate Commerce Commission reiterating points previously emphasized by the commission to the effect that a considerable portion of the responsibility for the 1920 situation can be laid at the door of those consumers who failed to contract for their coal when the mines needed orders and coal cars were stored on every siding.

Information reaching Washington is that the number of contracts being made at this time is almost negligible. Despite the predicament in which they found themselves last autumn, New England, the Northwest, public utilities and large consumers generally are staying out of the market. Railroad purchases also are being held at the lowest possible minimum. This is explained in railroad quarters as being due to the financial difficulties which the railroads are experiencing. They already owe coal producers more than $100,000,000. Railroad officials say they are having difficulty in obtaining partial payments under the Winslow Act, which is given as a reason why outstanding accounts are not liquidated and new purchases are not made. Treasury and Interstate Commerce Commission officials, however, take issue with the claim that there is any red tape or delay in meeting payments under the Winslow Act. All that is required is evidence that the claim is just. On March 10 the roads had received $49,702,990.05 of Winslow money.

It also is pointed out that many of the roads are not taking full advantage of the loan provision of the Transportation Act. Officials point out that it is poor policy for the railroads not to exert themselves to store coal at this time. Not only does it safeguard them against higher prices that are certain to come if the whole coal movement is put over until late in the year, but they could be using cars that now are standing idle, and by so doing would not have to use them for the transportation of railroad fuel when these cars could be filled with revenue freight.

The Northwest Has Hope of Lower Freight Rates

Hope of lower freight rates is ascribed as the principal reason why the Northwest is not making contracts. Lake shippers recently requested the carriers to allow them a lower rate. The carriers regarded the request sympathetically, as they are anxious to speed up the coal movement, but they hesitated to make the reduction on their own authority and took it up with the Interstate Commerce Commission. The commission declined to accept responsibility for lowering rates and now the railroads fear that such a reduction would place them in an embarassing position. They were insistent in their demand for the general rate increase and now that they have it they are wondering what the commission will think if they proceed to reduce it of their own accord. Contracts for Lake coal also are being retarded by the fact that there are considerable stocks in the Northwest and by the fact that there is a great deal of coal on the docks.

The unknown factor in the whole situation is the existing rate of consumption. The present situation emphasizes the need for comprehensive consumption figures. A certain government official believes that there would be brisk buying at this time if the public knew the rate of consumption and the cost of production. The public not only remembers the $1.15 coal of the pre-war period but also has clearly in mind the $2.50 coal of 1919. It is believed that if the figures were available, it would show that prices now are as low as coal can be sold, with all prospects for an upturn.

If business should improve quickly later in the year, a repetition of the 1920 situation is believed to be entirely possible. The railroads can handle 500,000,000 tons of coal even if they get a late start on the task, but if business should improve to the point where 550,000,000 tons or more should be necessary, it would be practically impossible for the railroads to handle that amount of coal without interfering seriously with transportation of other commodities.

In connection with this general situation Dr. George Otis Smith, director of the U. S. Geological Survey, makes the following suggestion:

"The consuming public must feel its part of the responsibility in the problem of an adequate coal supply. The coal user, large and small, is too much like the Arkansas man who failed to repair his roof in good weather. Today there is a supply of both coal and cars available, but the consumer seems to prefer to take his chances when the urgency will be great. He hopes for lower prices and thus delays his contracts. This procedure is not helping to put coal production and distribution on a twelve-month basis. A seasonal demand is injurious to coal operator, to the coal miner and to the railroads, and in the end the buyer of coal has to pay more than he would had he co-operated in helping to stabilize coal production and movement."

Thirty Firms Bid $3.50-$4.82 F.O.B. Mines On Coal for Government Fuel Yard

BIDS ranging from $3.50 to $4.82 per ton at the mines were received by the Bureau of Mines Friday, March 18, from thirty coal companies for supplying the Government Fuel Yard with coal for the federal departments at Washington during the year March 31, 1921, to March 31, 1922. Bids were received on bituminous coal, the specifications calling for coal from West Virginia, Pennsylvania and Maryland and gas coal. The Moyer Weaver Co. bid was the lowest submitted. The bids follow:

Steinman Coal Co., 12,000 tons Pennsylvania coal, $4.70.
Pittsburgh Coal Co., 1,600 tons Pa. gas coal, $4.48.
Moyer Weaver Co., full tonnage, $3.50.
Flat Top Fuel Co., 76,000 tons New River coal, $4.20.
P. & S. Coal Co., Inc., 76,000 tons New River, $3.75; 40,000 tons Pa., $3.55; 100,000 to 138,000 tons Pa., $3.65.
Line & Reed, 5,000 tons, $4.55; 36,000 tons Pa., $4.35; 24,000 tons Pa., $4.07; 1,600 tons gas coal, $5.75.
L. A. Snead Co., 25,000 tons West Virginia coal, $4.15.
B. Nicholl & Co., 50,000 tons Pa. coal, $4.09.
Equitable Fuel Co., 50,000 tons Pa. coal, $4.64; 20,000 tons Pa. coal, $4.69; 50,000 tons Pa. coal, $4.08; 75,000 tons Pa. coal, $4.36; 50,000 tons of Pa. coal, $4.[illegible]; 24,000 tons W. Va. coal, $4.08; 24,000 tons Pa. coal, $4.08; 20,000 tons Md. coal, $4.64; 25,000 tons Pa. coal, $3.63; 15,000 tons Md. coal, $4.92; 50,000 tons Pa. coal at $3.54; 10,000 tons Pa. coal, $3.75; 15,000 to 20,000 tons Pa. coal, $3.96½.
White Oak Coal Co., 76,000 tons New River, $4.48.
Wilson D. Althouse, 11,497 tons Md. coal, $4.10.
David E. Williams Co., 50,000 tons Pa. coal, $4.18.
Quemahoning Coal Co., 30,000 tons Pa. coal, $3.59.
Cushake Coal Mining Co., 34,500 tons Pa. $4.
Weston Dodson Co., 50,000 tons Pa. coal, $4.49; 1,600 tons Pa. gas coal, $4.20.
Emmons Coal Mining Co., 50,000 tons W. Va. coal, $3.92.
W. H. Bradford Co., 25,000 tons Pa., $4.45; if in equal monthly portions $4.15; 1,600 tons gas coal, $4.20.
Davis Coal & Coke Co., 39,000 tons Pa., $4.20.
Madeira-Hill Co., 60,000 tons Pa. coal, $4.40.
Consolidation Coal Co., 5,000 tons Md. coal by canal $8.05; 30,000 tons Pa. coal, $4.48; 1,600 tons W. Va. gas coal, $4.76.
Peerless Smokeless Smithing Coal Co., 3,000 tons W. Va. coal monthly, $3.75.
Fayette Smokeless Fuel Co., 36,000 tons, 3,000 monthly, New River coal, $3.90 from April to September, 1921, and $4 from September, 1921, to March, 1922.
H. P. Brydon Bros. Co., Inc., 69,000 tons Md. coal, $4.82; same amount Pa. coal, $4.82; 1,600 tons gas coal, $2.52
C. J. Rowe & Bros., 12,000 tons Md. coal, $4; 30,000 tons each Md. and Pa coal, $3.50.
Rockwood Coal Co., 20,000 tons Pa. coal, $2.
Lake & Export Coal Co., 76,000 tons New River, $4.48.
Commercial Coal Mining Co., 30,000 tons Pa. coal, $4.30.
James M. McIntyre & Co., 12,000 tons Pa. coal, $3.80.
C. & O. Coal & Coke Co., 3,500 tons monthly W. Va. coal, $4.40.
C. & O. Coal Agency Co., 76,000 tons New River coal, $4.29.
Johnstown Coal & Coke Co., 50,000 tons each Md. and Pa. coal, $4.50.

The freight rate on the coal is $3.18 from the mines to Washington, which will be paid by the government.

Bids Submitted by Twenty Companies for New York City Coal Needs Fail to Cover All Items

THE bids from about twenty coal companies received by the Board of Purchase on March 16 for furnishing coal for fourteen departments of the City of New York did not cover every item in the schedules submitted. The largest proposal for more than three million dollars was that of William Farrell & Son. The bid was submitted for 317,681 tons of anthracite and 85,814 tons of bituminous, contracts to run from April 1, 1921, to March 31, 1922.

There was only one bid received on item No. 1, which provided for furnishing the entire anthracite tonnage f.o.b. mine, and this proposal did not include all of the sizes. Weston Dodson & Co. offered to furnish 146,315 tons of buckwheat No. 1 for $3.89 per ton and 68,023 tons of buckwheat No. 3 for $1.92 per ton. The other tonnages in this item were: Broken, 1,517 tons; egg, 21,578; stove, 12,656; chestnut, 1,616; pea, 5,016; and buckwheat No. 2, 60,960 tons.

On item No. 2, calling for the delivery at the mine of 73,421 tons of run of mine and 12,303 tons of slack, there was only one bidder, B. Nicoll & Co., whose proposal was $3.85 per ton each.

Rubel Brothers, of Brooklyn, submitted a price of $13.50 per ton for furnishing and delivering to the various department delivery points 19,618 tons of egg and 1,486 tons of chestnut coal; $11.25 per ton for 4,122 tons of pea coal, and $9.25 per ton for 29,253 tons of buckwheat No. 1.

Three Firms Bid on Supply for Manhattan Armories

For furnishing and delivering 90 tons of egg coal, 185 tons of chestnut and 2,430 tons of buckwheat No. 1 to various armories in the Borough of Manhattan the Inter City Fuel Co. made a price of $13.85 per ton for egg and chestnut and $8.80 per ton for buckwheat, while the bid of Farrell & Son was $13.63 for egg and chestnut, and $9.59 for the smaller size. The Penn Fuel Co. offered to furnish buckwheat for $8.35 per ton.

For supplying the armories in the Bronx with 952 tons of buckwheat Farrell & Son bid $9.35 per ton and V. H. Youngman & Co.'s bid was $9.74.

Prices bid on 2,184 tons of buckwheat No. 1 by four dealers for the armories in Brooklyn ranged from $8.99 to $9.74.

The Inter City Fuel Co. submitted a price of $6 per ton for delivering 27,040 tons of buckwheat No. 2 by barge in cargo lots of about 500 tons each at the foot of East 29th Street for Bellevue Hospital. Farrell & Son's bid on this tonnage was $7.22 per ton. For furnishing various hospitals with stove and chestnut coal the bid of William Farrell & Son was $13.63 per ton and the Inter City Co. $13.85 per ton.

For delivering 3,248 tons of buckwheat No. 2 to Gouverneur Hospital three bids were received as follows: Penn Fuel Co., $7.99 per ton; Inter City Co., $7.90, and Farrell, $7.95; while for furnishing Harlem Hospital for 5,600 tons of the same size of coal Whitney & Kemmerer made a price of $7.65 per ton, against $7.90 and $7.95 by the Inter City Co. and Farrell, respectively.

Bids for Brooklyn Lower Than for Manhattan

For delivering by barge to Blackwell's Island Penitentiary 3,360 tons of buckwheat No. 3 the prices submitted ranged from $5 to $6.49 per ton; 2,352 tons of semi-bituminous, $7.05 to $9.19, and 168 tons of stove coal from $11.85 to $13.25 per ton.

Bids ranging from $13.63 to $14.05 were received for furnishing the Dock Department with chestnut coal.

For furnishing the Fire Department with egg and chestnut coal in small tonnages, the bids, by boroughs, ranged as follows: Manhattan, $13.63 to $14.30; Brooklyn, $13.50 to $14.14; Bronx, $13.63; Queens, $13.50 to $15.10; Richmond, $14.50 to $14.85.

Francis M. A. Leach bid $8.12 per ton for 7,223 tons of semi-bituminous coal for the fire boats while Farrell bid $10 per ton for 3,079 tons for the same purpose. The latter concern submitted a price of $9.99 per ton for twenty tons of George's Creek, Cumberland blacksmith coal.

Delay Trial of Indicted Coal Men; Outside Defendants Fight Removal to Indiana

PROBABILITY of an early trial of coal operators, dealers and miners indicted under the Sherman Anti-Trust law by Federal Grand Jury was killed by announcement of attorneys for the defendants living outside of Indiana that they would fight removal of their clients to that state. The decision was announced to L. Ert Slack, Special Assistant Attorney General of the United States, who by request attended the conference of attorneys held in Chicago Monday, March 14.

The Chicago conference, according to Mr. Slack, was attended by the leading attorneys of Chicago, Pittsburgh, St. Louis, Philadelphia and other cities outside Indiana where defendants to the suit reside. Attorneys representing the defendants in Indiana also were present.

The action, according to Mr. Slack, probably will result in long delay in the case, as it will take considerable time for the hearing of removal cases in each of the districts where the defendants reside, these being in Illinois, Ohio, Pennsylvania, Kentucky and Missouri, and in some of these states removal proceedings will be necessary in more than one district, as the state has several districts.

Decision Goes Against Alabama Miners

GOVERNOR THOMAS E. KILBY, sole arbitrator in the so-called Alabama strike, announced his award on March 19. The mines had been working almost full time for several months, but the strike, according to the union, was nevertheless still in full tilt when the Governor agreed to arbitrate it.

The Governor's personal representatives in the investigation were W. T. Sheehan, editor, *Montgomery Advertiser;* Richard Hobbie, whoesale grocer, and John W. Durr, wholesale druggist, all of Montgomery. The award declares that freedom of contract should be inviolate, but that agreements may be entered into by mutual consent.

The Governor declares that the existing methods of adjusting grievances are fair and equitable, that operators are under no obligation to take back the striking miners, though they are recommended to do so as soon as it can be done without displacing men who are now working. He adds that "as this strike was called wrongfully and without the slightest justification, the organization of the United Mine Workers of America is responsible for the present strikers being without employment and therefore the organization should support the strikers until they find work."

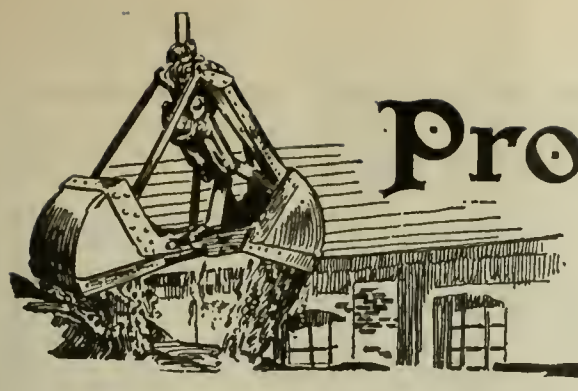
The committee said "We do not question the right of men to organize voluntarily, but we do question the asserted right to force other men against their wishes into the organization."

16 Mingo Miners Cleared of Murder Charge

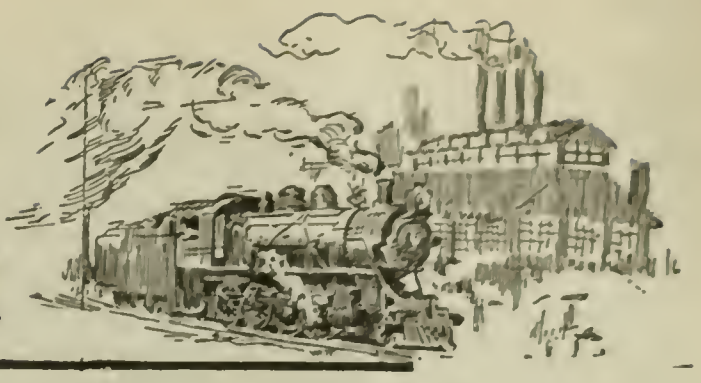
SIXTEEN coal miners charged with murder in connection with the wholesale shooting at Matewan, W. Va., last May were found not guilty at Williamson, March 21. The case was submitted to the jury late Saturday afternoon, March 19.

The trial grew out of the killing of seven detectives of the Baldwin-Felts agency who had been assigned to the district during the mine-strike troubles.

The trial lasted more than a month, with detailed testimony regarding the labor situation at the time and the revolver battle in which the detectives were slain.



Production and the Market



Weekly Review

ENTIRE lack of interest in the market best describes the attitude of the coal man today. The buyer has not yet come to a realizing sense of values and while many are beginning to ask for quotations on next year's business they are holding their ideas down to the level of the spot market and refuse to talk business for the year at figures the coal shipper thinks are reasonable on contracts.

It is a reminder of old times for the spring spot market to sag so far below contract prices and it is going to take a little more than the usual time for buyers and sellers of coal to shake down to the new basis after so many years of the other way around. As April approaches it is interesting to note that production for the coal year just closing is estimated by the Geological Survey as 523,000,000 net tons of bituminous coal as compared with 486,899,000 tons a year ago and 552,041,000 tons in 1918-19, the best previous coal year.

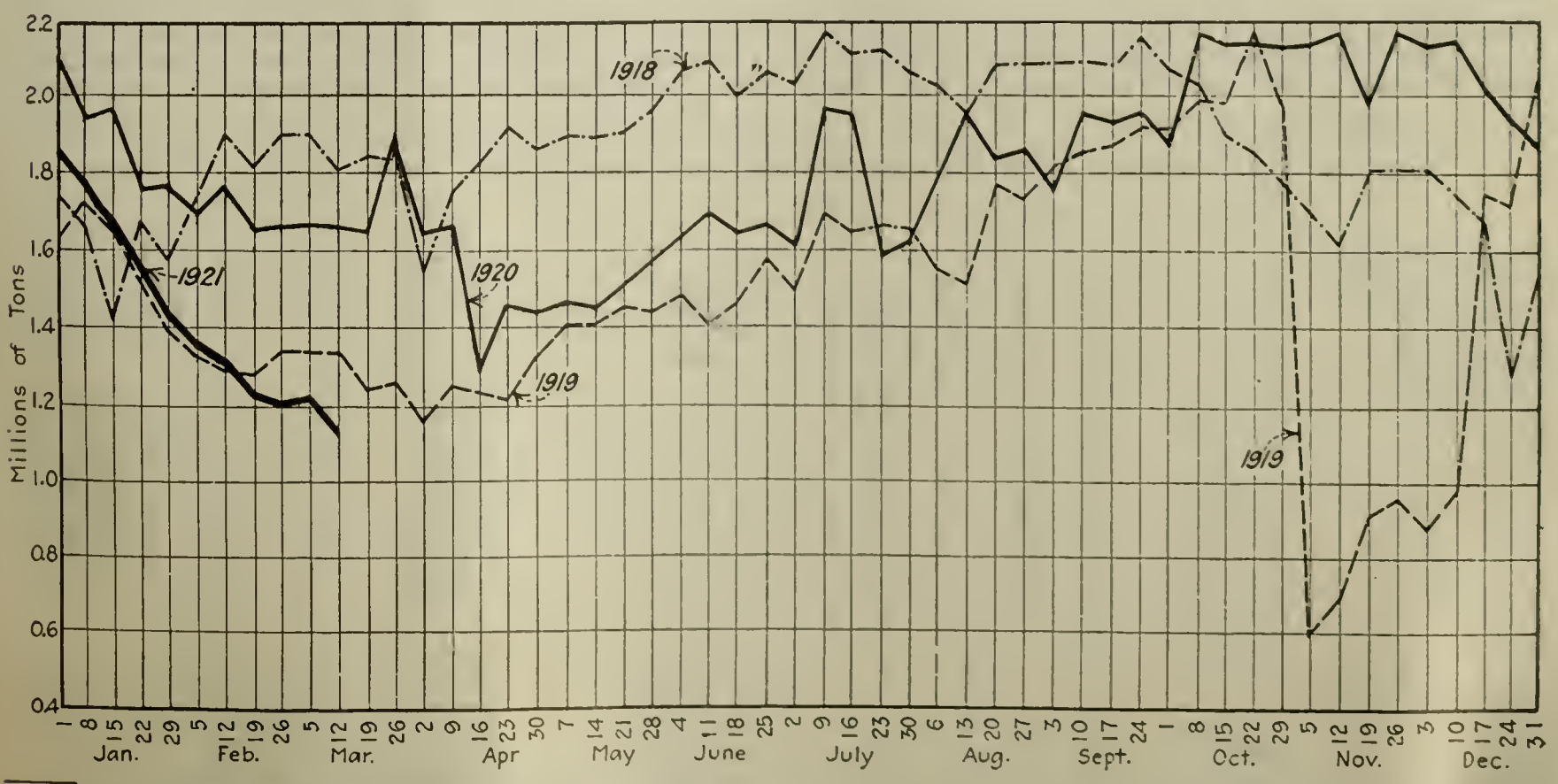
It is the next coal year, however, that really is of concern. It is felt that unless something is done to break the present deadlock in buying, the deficit in stocks may become so great as to precipitate a serious condition next fall. Seeking to penetrate the psychology of the coal buyers' strike, many in the trade find an absolute lack of understanding on the part of some consumers of the real reasons for coal prices and a resultant dogged determination to stay out of market until prices are lower, and on the part of others a keen appreciation of present conditions and a desire to play the game to a finish, patiently waiting for the best price that can be obtained.

Production from Now on a Matter of "Hunch"

The real difficulty now is that consumers are without knowledge as to how much coal they are going to need during the coming year—that is, they don't know whether to figure on as much as last year or only half as much. The buyer is uncertain. It is as if the coal man were faced with the necessity of deciding now on how many tons he will produce this year and then backing his judgment with his money by mining the coal and holding it until called for.

Many in the trade have adopted a half-hearted attitude toward the situation, saying that it is a matter of indifference to them whether the buyer takes the coal now at bottom prices or next autumn and winter at famine prices. In part there is an element in the

Daily Average Production of Bituminous Coal*



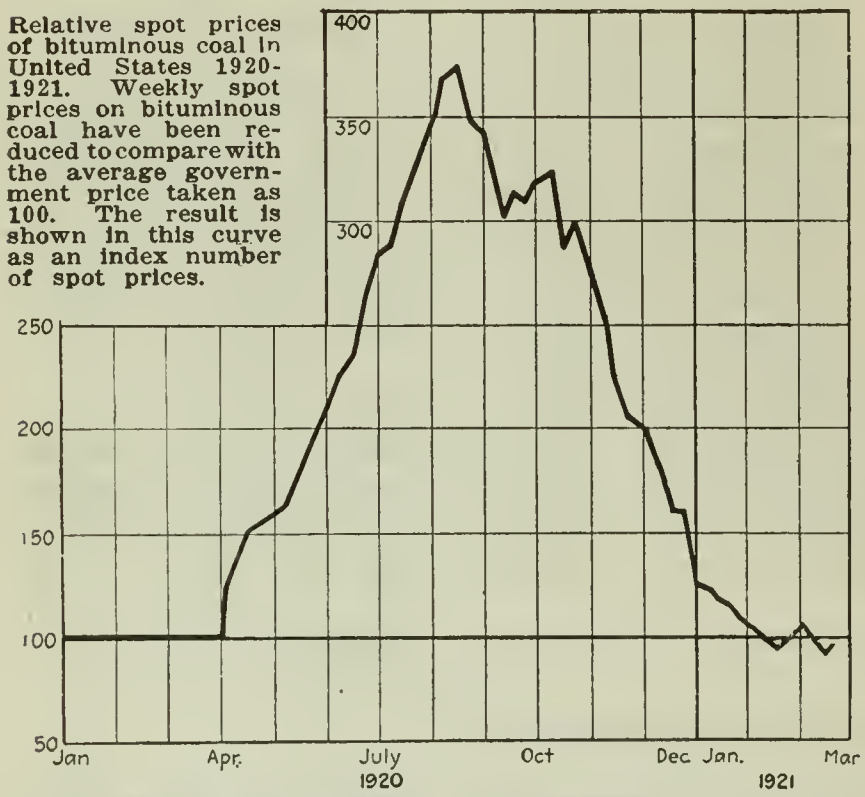
*From weekly report of Geological Survey.

trade that welcomes our present idleness as an opportunity to visit Florida and as holding out excellent chances of famine prices later. To break down the resistance of buyers of coal no other argument is offered (and that but half-heartedly) save that it is safer to stock up now and avoid the danger ahead.

Prices exhibit no marked changes. *Coal Age* index rose one point, from 98 to 99, this week. The cause of this slight rise is traced to stiffening of some Western circulars on spring trade. So "wabbly" is the market that a few cars of surplus has an undue effect. The recession of Pocahontas mine run at Columbus, while the same coal was picking up in price in Chicago, shows both the uncertainty of the market and its sensitiveness to local conditions.

BITUMINOUS

Production in the week ended March 12 was the lowest of any period in the last four years, with the exception of the 1919 strike period. The Geological Survey places the total output at 6,891,000 net tons, a decrease from the last preceding week of 372,000 tons. Loadings for the first two days of the week of March 14-19 indicate a further decrease of about 4 per cent. The temper of both buyer and seller portends a drop to 6,000,000 tons as a starter for the new coal year which begins on April 1.



Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.

Mine reports show that the spot market as a whole is practically non-existent. Some producers are still forcing unsold coal on their connections. This and a slight strengthening in steam sizes caused by lowered domestic production constitute the only price changes in the tonnage that is now moving. Spot quotations largely represent minimum figures at which producers can mine coal, and in some instances this range is brought below production cost by the policy of forcing sales.

Over the country approximately 60 per cent of full time operation is being lost because of lack of orders. And while the soft coal mines are down, the railroads are storing empty and idle coal cars on every available siding. The Pennsylvania Railroad reports that the number of

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date[a]
Feb. 26[b]	7,432,000	490,605,000	10,120,000	437,597,000
Daily average	1,239,000	1,756,000	1,687,000	1,560,000
Mar. 5[b]	7,263,000	497,868,000	10,304,000	447,900,000
Daily average	1,210,000	1,745,000	1,717,000	1,564,000
Mar. 12[c]	6,891,000	504,759,000	10,277,000	458,178,000
Daily average	1,148,000	1,732,000	1,713,000	1,567,000

(*a*) Less 2 days' production during first week in April to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date[a]
Feb. 26	1,816,000	83,491,000	1,767,000	84,053,000
Mar. 5[b]	1,902,000	85,393,000	1,604,000	85,657,000
Mar. 12	1,926,000	87,319,000	1,648,000	87,305,000

(*a*) Less 2 days' production during first week of April, to equalize number of working days covered for the 2 years. (*b*) Revised from last report.

BEEHIVE COKE

Week Ended Mar. 12 1921[a]	Week Ended Mar. 5 1921[b]	Week Ended Mar. 13 1920	1921 to Date	1920[c] to Date
162,000	178,000	407,000	2,257,000	4,527,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

	Market Quoted	Gov't Price	Feb. 22 1921	Mar. 15 1921	Mar. 22 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$3.50	$3.50	*$3.25*
Pocahontas lump	Columbus	2.60	6.00	5.50	5.50
Pocahontas mine run	Chicago	2.35	3.00	3.65	**3.50@4.75**
Pocahontas lump	Chicago	2.60	3.90	5.00	4.50@5.50
*Smokeless mine run	Boston	....	6.00	5.65	**5.75@6.00**
Clearfield mine run	Boston	2.95	2.60	2.50	2.00@3.00
Somerset mine run	Boston	2.95	3.15	3.00	2.40@3.60
Pool 1	New York	2.95	3.40	3.25	**3.10@3.50**
Pool 1	Philadelphia	2.95	3.20	3.50	3.50
Pool 1	Baltimore	2.95	3.15	3.00	**3.00@3.15**
Pool 9	New York	2.95	2.75	3.05	*2.50@3.00*
Pool 9	Philadelphia	2.95	3.00	3.25	*3.00@3.15*
Pool 9	Baltimore	2.95	3.00	2.85	2.75@3.00
Pool 10	New York	2.95	2.60	2.45	**2.35@3.00**
Pool 10	Philadelphia	2.95	2.75	2.50	2.25@2.75
Pool 10	Baltimore	2.95	2.50	2.50	*2.25@2.50*
Pool 11	New York	2.95	2.40	2.20	2.15@2.25
Pool 11	Philadelphia	2.95	2.25	2.30	2.25@2.35
Pool 11	Baltimore	2.95	2.50	2.30	2.25@2.35
Pool 71	New York	2.95	3.15	2.75	2.50@3.00
Pool 71	Philadelphia	2.95	....	2.75	2.75
Pool 71	Baltimore	2.95	3.15	2.65	....
High-Volatile, Eastern					
Pool 34	New York	2.50	2.10	2.10	*1.75@2.25*
Pool 34	Philadelphia	2.50	2.25	2.15	*2.00@2.25*
Pool 34	Baltimore	2.50	2.15	2.00	2.00
Pittsburgh mine run	Pittsburgh	2.35	2.35	2.25	2.00@2.50
Pittsburgh sc'd gas	Pittsburgh	2.35	2.70	2.85	2.75@3.00
Kanawha mine run	Columbus	2.70	2.60	2.25	2.25
Kanawha lump	Columbus	$2.95	$3.50	$3.50	*$3.25*
Hocking mine run	Columbus	2.50	2.25	2.25	*2.15*
Hocking lump	Columbus	2.75	3.65	3.50	*3.25*
Pitts. No. 8 mine run	Cleveland	2.35	2.40	2.15	2.00@2.25
Pitts. No. 8 lump	Cleveland	2.60	3.85	3.50	3.25@3.75
Midwest					
Franklin, Ill., mine run	Chicago	2.35	2.75	2.85	**3.25@3.50**
Franklin, Ill., lump	Chicago	2.55	3.80	3.40	**3.45@3.65**
Central Ill., mine run	Chicago	2.35	1.85	2.00	1.50@2.50
Central Ill., lump	Chicago	2.55	2.60	2.50	2.00@3.00
Ind. 4th Vein mine run	Chicago	2.35	2.20	2.65	2.25@3.00
Ind. 4th Vein lump	Chicago	2.55	3.30	3.15	2.75@3.50
Ind. 5th Vein mine run	Chicago	2.35	2.15	2.50	2.25@2.75
Ind. 5th Vein lump	Chicago	2.55	3.10	2.75	2.25@3.25
Standard mine run	St. Louis	2.35	1.95	1.90	*1.75@2.00*
Standard lump	St. Louis	2.55	2.60	2.60	2.50@2.75
West Ky. mine run	Louisville	2.35	2.15	2.45	**2.50**
West Ky. lump	Louisville	2.60	3.25	3.15	3.15
South and Southwest					
Big Seam mine run	Birmingham	2.45	3.10	2.95	2.95
Big Seam lump	Birmingham	2.75	3.75	3.75	3.75
S.E. Ky. mine run	Louisville	3.00	2.75	2.75	2.75
S.E. Ky. lump	Louisville	3.25	4.00	3.75	*3.50@3.75*
Kansas mine run	Kansas City	3.50	4.50	4.50	4.50
Kansas City lump	Kansas City	4.00	5.50	5.50	5.50

* Gross tons, f.o.b. vessel, Hampton Roads. Quotation on Pocahontas mine run, Boston market, heretofore quoted included both Pocahontas and New River and will henceforth be quoted as West Virginia "Smokeless."

† Advance over previous week shown in **heavy type**, declines in *italics*.

stored good-order freight cars increased from 14,065 on Dec. 15 to 89,258 on Feb. 28, and estimates that on all roads the number reaches 392,550 cars.

Production of bituminous coal in the Appalachian region in the week of March 5 was 4,206,000 tons, compared with an average in 1920 of 6,456,000 tons and with 5,600,000 tons in 1919, the lowest rate in five years. Despite the general slowness of the movement of soft coal New England continues to take around 3,000 cars a week, the figures for the week ended March 12 being 3,208, compared with 2,256 a year ago. New England is getting the greater part of her coal by all-rail now.

ANTHRACITE

The one bright spot in the coal fields is the anthracite region, where output is at war-time levels. The continued demand for hard coal promises to put the coal year ended April 1 next ahead of last year. The loss of 3,000,000 tons occasioned by the miners' vacation strike of last September has been overcome and with production close to 2,000,000 tons a week—it was 1,926,000 in the week of March 12, and 1,902,000 the preceding week—we find the hard-coal region the busiest place in the country, bar none.

Although the Reading and Navigation companies have announced that they will make no summer discounts, Williams & Peters and the Lackawanna will make the customary reduction and retail dealers generally have adopted a policy of announcing drops in delivered prices. It is expected that by this means household buying can be sustained well into April.

COKE

Production of beehive coke dropped from 178,000 tons in the week of March 5 to 162,000 tons the second week of the month. In the corresponding week of March last year output was 407,000 tons. Total production of beehive coke this year to date is but half that of last year. This corresponds to the activity in the iron and steel industry, where, now that the Steel Corporation is more than half shut down, output is at lower levels than recorded even in 1907. Coke prices are sliding downward and it is understood that wage reductions in addition to those made by Rainey are being quietly made by other independents.

Reports From the Market Centers

New England

BOSTON

Expiring Contracts Force Operators to Reach Out for Business—New England Market at Standstill—Hampton Roads Agencies Show Interest — Anthracite Basis Not Yet Determined.

Bituminous—There are few developments to report. Business in all lines is confronted with the "buyers strike" and the coal trade is certainly no exception. There is no material decrease in the reserves of steam coal and the prospect is that it will be well into the summer before consumers resume purchasing. Railroads also are well-stocked and there is small chance for increased consumption while traffic conditions remain as they are. We are sure to see a marked decline in receipts both all-rail and by water soon after April 1 when existing contracts in large numbers expire.

Not only in central Pennsylvania but in West Virginia the operating interests who can command any comprehensive business are reaching out for it with the longest of arms. Mines that are now operated on a 25 and 35 per cent basis, relying largely upon old contracts, find themselves facing complete shut-down and are once more re-casting their figures in the effort to determine the absolute minimum they can afford to quote for the sake of keeping their men. A few are striving to get orders on a 6 months basis, thereby netting a lower price than for delivery through the twelve-months period, this on the assumption that conditions in the fall are bound to show improvement.

In this territory, however, salesmen are able to accomplish next to nothing. The very few manufacturers who are running on small reserves are able to pick up stray lots at what to them are very satisfactory prices. Otherwise the market here is at a complete standstill.

With the end of March the smokeless agencies are conducting a close canvass of buyers in New England. There is a disposition to fix $3.50 as a net ton figure at the mines, but the recent bids for Navy supply at 50c. less have been noised about and it is hard to see where business in any volume can be closed on the higher basis. The fact remains, however, that the Hampton Roads agencies are keeping in touch with buyers and are getting ready to use their slight advantage over all-rail shippers for all it is worth. Coastwise freights are certain to be on a low range, the limit downward being controlled only by costs.

Cargoes of New River on consignment here have been sacrificed at prices well down to $7 delivered. Certain municipal institutions have profited by this, for few industrial plants have been in position to buy. Pier reports show continued accumulation at Norfolk and Newport News, but output is being better regulated and it is unlikely we shall see many more spot prices f.o.b. Hampton Roads at less than $5.50 @$5.75 per gross ton.

Current prices are shown in the Weekly Review.

Anthracite—All but three of the larger producing companies have now announced a reduction in prices, the spring modification amounting in most cases to 50c. There is no retail demand, however, and the dealers are not quite ready to take on coal in any volume. Very few sales are being made, even at new prices, but it is anticipated that when the program is all straightened out and the largest companies follow the lead already established there will be more confidence in buying. Most retailers have large stocks on hand at winter prices and are not anxious to reduce to the public until there is fairly clear going ahead.

BIRMINGHAM

No Improvement in Market Conditions —Spot Sales Extremely Light—Prices Without Material Change.

There are but few inquiries coming into the local market either for steam or domestic coal, and the general status is without change from a week ago. Relatively little coal is moving and idleness at the mines is rather on the increase. Indications of a more active market in the near future are not discernible.

Domestic producers have not yet announced the spring schedules usually effective April 1, but these figures will probably be available in a week or so.

Pratt mine run is being quoted $3.25 @$4; Black Creek and Cahaba $4@ $4.50, lump $5@$6; Carbon Hill mine run $3.25, lump $4.25; Big Seam mine run $2.70@$3.25 and lump $3.25@$4.25; Corona mine run $3.35@$3.75.

Tidewater

NEW YORK

More Anthracite Reductions Announced — Brisk Demand Expected Soon — Steam Coals Being Stocked — Bituminous Market Quiet.

Anthracite—Two more companies—Delaware, Lackawanna & Western Coal Co. and the Lehigh & Wilkes-Barre Coal Co. announced reductions of 50c. per ton in the prices of the domestic coals last week, at the same time reducing the prices for steam. Several retail dealers in New York and Brooklyn also reduced their prices 65c.@75c. Many independent mines are being operated on a curtailed schedule, if at all. These coals in most instances are being quoted slightly above the new price lists of the large companies. It is hard to move pea and some independent shippers ask for offers while others are quoting as low as $5.50.

Curtailed operation at many of the

collieries has resulted in less of the steam sizes being pushed on the market. Some operators are stocking their surplus. The general trend of the market for buckwheat is $2.50@$3.25; rice, $2@$2.50, and barley from 75c. up.

The new retail prices are:

	New York	Brooklyn
Broken	$12.75	$13.00
Egg	12.75	13.00
Stove	13.00	13.25
Chestnut	13.00	13.25
Pea	10.75	11.00
Buckwheat No. 1	8.10	8.10
Buckwheat No. 2	7.10	7.10
Buckwheat No. 3	6.10	6.10
Soft	9.00	9.00
Cumberland	10.00	....
Red Ash stove and chestnut	13.75	....

The prices for New York do not include putting the coal in bins while those for the domestic coals in Brooklyn include this extra work.

Current quotations for company coals per gross ton at mine and f.o.b. Tidewater, lower ports, are:

	Mine.	Tide.
Broken	$7.10@$7.75	$9.71@$10.36
Egg	7.10@ 7.75	9.71@ 10.36
Stove	7.35@ 8.10	9.96@ 10.71
Chestnut	7.40@ 8.10	10.01@ 10.71
Pea	5.65@ 6.40	8.12@ 8.87
Buckwheat No. 1	3.50@ 4.25	5.97@ 6.72
Rice	2.50@ 3.50	4.97@ 5.97
Barley	1.50@ 2.25	3.97@ 4.72

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight.

Bituminous—While demand is extremely quiet many look for a change around May 1 when the surplus stocks of manufacturers may run low.

There is considerable coal at local docks and embargo orders were in force at some of the piers. However, the supply has not proved troublesome as yet. Contract coals move easily and shippers of the higher grades do not find it hard to dispose of their holdings.

Salesmen report considerable coal in the inland yards but say that large consumers show no disposition to talk buying. Unless there is an improvement in the situation early in the summer coal men predict a runaway market in the fall and winter when the railroads wil be unable to move coal fast enough.

Operators continue to hold off on contracts where it means they would have to tie up more than a certain amount of their output. Most of them are holding tight to about $3.75@$4.25, according to grade, for new contracts.

The various pools were quoted about as follows at the local piers: Pool 1, $6.25@$6.50; Pool 9, $6@$6.25; Pool 10, $5.90@$6; Pool 71, $6@$6.25; Pool 11, $5.30@$5.50; Pool 18, $4.50@$5 and Pool 34, $4.50@$5. Mine quotations are shown in the Weekly Review.

BALTIMORE

Business Drags — Problems Both on Spot and Contract Relations — Everybody in Waiting Mood—Hard Coal Conditions Disturbed.

Bituminous—Business is slow in every line and is reflected in all classes of soft coal trading. Everybody is in waiting humor. The deterrent to contract business in many cases is the fact that coal of high grade can be bought on the spot market much cheaper than offered on contract.

Some contracts are being made, it is true, but they are not in the volume expected. Best steam fuels are offering on contract around $4@$4.25 for the most part, with some demands as high as $4.50 for specialized coals. And yet these coals are to be had in the open market as low as $2.50 in some cases, and the general run is $2.75@$3 per net ton. No one seems especially interested in buying largely at any price, however.

The export business still lags. There have been some days on which the Curtis Bay pier has reported no dumpings. For the first sixteen days of March the total export loading in Baltimore was 52,032 tons cargo and 4,643 tons bunker.

Anthracite—The question of price is causing disturbance in hard coal circles. Many dealers have felt that there would be no spring drop in wholesale prices and therefore no retail drop—at least that while wholesale prices might change the adjustment would give about the same purchasing basis as at present. A few Baltimore dealers, however, have followed the lead of some Philadelphia retailers in predicting a cut of about $1 a ton in spring retail prices. These dealers have advised customers not to buy at the present range. This has caused disturbance, especially to the man with a fair stock of coal on hand bought at high wholesale prices and with no present demand to absorb it.

PHILADELPHIA

Anthracite Demand Halted — Retailers in Price War—Bituminous Stagnant—Buyers Out of Market—Spot Prices Unchanged.

Anthracite—Retail trading is close to demoralization, due to severe price cutting. Recently several of the larger concerns made a flat cut of $1 in their effort to secure business. The lowest prices heard so far are $13.75 for stove and nut, and $10 for pea.

Despite these drastic cuts there is no buying whatever on the part of the consumer. Those with the money to buy, seem to take the stand that since the dealers have cut so deeply before April 1 they are likely to go even further. All yards are filled with coal and hardly anything is going out.

Yard capacity is so small that it is only a question of time when the mines will have to close down. Even now some of the lesser independents are offering stove and nut at $7.75. Among these shippers pea at $6 is a common quotation, and occasionally a little less.

While only one of the big companies has come out with a definite statement that they will not reduce prices on April 1, the fact that one of the other companies has now reduced steam sizes very considerably carries out the prediction that a reduction in steam coal would have to be taken care of by holding the family sizes at the old figures. It is believed the real motive behind the reduction is simply to indicate what the company's contract prices will be on these sizes for the coming year, as they are understood now to be closing contracts on the basis of these figures. Independents are still endeavoring to move buckwheat for $3@$3.25, and we have even heard of a few sales at $2.75.

Company mine prices per gross ton for line shipment and f.o.b. Port Richmond for Tide are as follows:

	Line.	Tide.
Broken	$7.75	$10.45
Egg	7.75	10.45
Stove	8.05	10.70
Nut	8.05	10.70
Pea	6.40	8.80
Buckwheat	3.50	6.00
Rice	2.50	5.00
Boiler	2.00	4.40
Barley	1.50	4.40

Bituminous—The stagnant condition of the market still prevails, with practically no inquiry whatever. Spot prices continue unchanged, although occasionally quotations are heard of Pool 9 at $3, but the average is closer to $3.15. Most producers seem to realize that they will simply have to bide their time for a revival of trade and that cut prices will be of no effect against the present mood of buyers. One important producer has made the statement that in his belief 90 per cent of the coal now being sold at present market prices is being moved at a loss, and his company refuses to make any sales for less than $3.50.

Brokers are beginning to receive more tonnage to be offered on a contract basis and we have heard of some fair coals being quoted for the year at $4, but it is the exception to hear of any agreements being closed.

Coke—Inactivity prevails, as the iron trade shows no signs of improvement. Recent quotations for 72 hr. have been $5.75 and 48 hr. $5.

BUFFALO

Trade Inactive—Consumers Urged to Buy—Wage Reductions Talk—Surplus Anthracite Growing.

Bituminous—Consumers seem to have taken the idea that prices are going still lower, even with most coal selling below cost, so they are holding off and using up what they have on hand. Shippers agree in urging all consumers to keep at least a three-months' supply on hand, so that if there is any difficulty they will be prepared for it.

The foolishness of not buying coal now is astonishing. If the railroad men strike coal prices will come up at once and if they accept the cut in wages that will be the beginning of better business. At any rate prices must be at the bottom. All reports of the condition of the trade are discouraging. In spite of the greatest care on the part of shippers, reports continue of coal on track. Such coal seldom brings more than enough to pay the freight.

It seems likely that if the railroad men accept lower pay there must be some move to cut down miners' wages also, for that would bring in many men who are now idle and who will remain idle till all wages are in line, so that business can go ahead on an even keel.

Bituminous prices remain weak; $3.25@$3.50 for Youghiogheny gas

lump, $2.75@$3 for Pittsburgh and No. 8 steam lump, $2.25@$2.60 for all mine run and $2 for slack.

Anthracite—Supply is increasing and demand is dropping off, so that a surplus has already appeared. Consumers are quite indifferent to the market. The announcement of one company that it will sell at a 50c. reduction for the present has hurt the demand, for it is taken for granted that the others will soon come down.

Failure of the leading anthracite companies to make uniform prices has been observed practically all winter. The difference has not been large, but it gives the consumers opportunity to look for still more of the same thing. Then the city retail trade is getting to be cut up badly by the appearance of new and strong dealers, who are bound to get trade if they have to cut prices to get it.

Lakes trade is getting into shape. So far three of the companies with water docks have taken tonnage and three or four cargoes have been loaded already. It is not common to route this coal or to make any rates until about sailing time, which is likely to be as late as possible on account of the failure of iron ore to move yet. Vessel owners are getting very anxious for they could sail now. Yet there is so little business in sight that they are holding back and making no move to fit out their steamers.

Coke — Jobbers get a little coke trade at bottom prices and do not look for more right away. Quotations remain at $5.75 for 72-hour foundry, $5 for 48-hour furnace, $4 for low grades and stocks and $6 for domestic sizes, to which add $3.64 to cover freight.

HAMPTON ROADS

Stocks Accumulating — Prices Firmer —Business Is Slow.

Business continued slow during the past week, with little coal on hand and waiting vessel tonnage somewhat reduced. Stocks, however, appear to be accumulating, especially at the Norfolk & Western and Chesapeake & Ohio piers. Prices are somewhat stronger, low-volatile pools selling for $6, with other pools, for which there has been slight demand, selling for $5.

The situation at the three coal exchanges as of March 17, was as follows:

C. & O. piers, Newport News—	
Cars on hand	2,637
Tons on hand	131,350
Cars dumped March 1 to 16, inc.	2,332
Tons dumped same period	190,910
Tonnage waiting	3,800
Virginian Ry. piers, Sewalls Point—	
Cars on hand	1,008
Tons on hand	50,400
Cars dumped March 1 to 16, inc.	2,695
Tons dumped same period	134,749
Tonnage waiting	10,850
Tons on hand outside pool	16,150
Cars on hand outside pool	323
N. & W. piers, Lambert's Point—	
Cars on hand	3,294
Tons on hand	153,615
Cars dumped March 1 to 16, inc.	2,919
Tons dumped same period	162,763
Tonnage waiting	2,449
Total tons dumped March 1 to 16, inc.	418,422
Total tons dumped week ended March 16	183,629

Canada

TORONTO

Market Very Quiet—Plentiful Supplies on Hand — No Improvement in Industrial Situation.

Due to the exceptional mildness of the season the coal trade continues very quiet. Dealers are merely marking time, orders being few and for small lots. The yards are well stocked with all grades as shipments are coming in considerably in excess of the demand.

So far the industrial situation shows little noticeable improvement, the call for bituminous being consequently very light. Quotations are as follows:

Retail	
Anthracite egg, stove, nut and grate	$16.90
Pea	15.40
Bituminous steam	11.50@$12.25
Domestic lump	13.25
Cannel	17.00
Wholesale, f.o.b. cars at destination	
Three-quarter lump	8.00@ 9.00
Slack	6.50@ 7.00

Northwest

MINNEAPOLIS

No Buyers in Market—Fair Carry-Over to New Season—Delayed Seasonal Program May Prove Serious — Opening Price Indications.

"Desperately dull" describes the coal market in the Twin Cities. There has been no life to the market at any time since Dec. 1. Buying has been upon a restricted scale. No one has felt that he had to buy at all, and so could always take his time, with the full knowledge that whenever he was ready to buy there would be ample coal waiting for his attention.

Now come some predictions that the buyers' reign may be short. Some fear a return of car troubles which would speedily bring about the same situation that existed before. The mines are now working only two or three days a week for lack of an outlet, and in a rush of buying would be unable to do any more because of inability to get cars to move additional tonnage.

Should any such thing prove true, there is very little coal in the Northwest upon which to draw. The docks have hardly more than 2,000,000 tons of bituminous on hand, including railroad coal. On a falling market this tonnage is large, but it is scattered over twenty or more docks, and would not last long in a rush of orders. It would prove a very short time from a surplus to a shortage, in the event of any serious tie-up of transportation. On hard coal, there is hardly any remaining, and any rail trouble would leave the Northwest in as bad shape as it has ever been.

The opening prices of the new season do not seem to have been definitely intimated though many assume that they will not be far from the present basis on soft coal, while anthracite is likely to show the usual 50c. reduction for summer, with a 10c. per month advance during the summer. There is a determined effort on the part of consumers to force lower prices. But this is easier said than done. There does not appear to be any vulnerable point accessible at this end of the market line through which any reduction can be achieved. Refusal to buy until the weather compels will have no effect upon prices, since that is what is expected, being the customary move on the part of buyers.

MILWAUKEE

Coal Market Dull—Demand Is Very Light—Further Cut in Soft Coal and Coke Expected.

Demand is light, and is bound to grow less from day to day, as the season advances, unless unusual weather conditions develop. The yards retain good stocks of bituminous, and there will be coal held over from what were considered deficient stocks last fall. The supply of anthracite, Pocahontas, Illinois and Indiana coal by rail is more than sufficient to meet all needs.

Prices are held without change. A further cut in soft coal and coke is looked for about April 1. There is some speculation as to the future of anthracite, but the general impression is that there will be no change from present figures, except, perhaps, the usual drop of 50c. at the beginning of the season, as a bait for early orders.

The quality of anthracite sold here continues to excite criticism. Coke piles at the byproduct and gas plants are growing fast, and there is a glut of this class of fuel.

Inland West

CHICAGO

All Markets Are Inactive — Delay in Buying Will Intensify Later Demand.

Developments very clearly show that the public does not wish to buy coal at this time at any price. Retailers appear to be contented with the supply they have on hand, while the manufacturers are in a state of complete inactivity. Another condition that has tended to affect the market adversely was the rumor that the stock yards would probably close down, thus throwing a very substantial tonnage of screenings on the open market.

Dealers are all of the opinion that what business there is to be had is going to be very light and very hard to get until late in August. They are moving practically no coal and what little they are sending out of their yards is going in very small lots. The public is disinclined to buy until it is absolutely necessary, or until they are frightened into buying coal on account of an expected car shortage, etc. For the sake of the public, we hope that they become frightened into buying coal before the middle of the summer,

because if they delay too long the chances are they will have to pay a great deal more than they can purchase it for today.

The buyers of steam coal are frankly puzzled. There has been no betterment in the industrial situation and they do not know when to expect an improvement. As a result, their purchases are being made in a hand to mouth way and although some of them see an opportunity to buy coal at a reasonable figure, their finances will not permit of them taking advantage of the situation.

Current anthracite prices are as follows:

	Line Companies.	Independents
Egg	$6.34	$6.34@$7.41
Stove	6.56	6.56@ 7.41
Nut	6.65	6.65@ 7.41
Pea	5.22	5.22@ 6.21
Buckwheat	3.76	3.79

COLUMBUS

Spot Market Quiet—Contract Inquiries Numerous — Lakes Trade Is Slow — Production at Low Ebb.

All grades are suffering from inaction with the possible exception of screenings which by reduced domestic production has gained some strength.

There is considerable speculation as to contracting and producers have received many inquiries for prices. But few contracts have been closed as both the buyer and the seller are loath to enter into agreements under present unsettled conditions. Railroads have asked for bids on certain tonnage but these inquiries are mostly to obtain market information. Large users still have considerable reserve stocks and are not inclined to buy. Buying in the open market is being followed for current needs.

The Lake trade is not showing much strength. Some producers who control their own docks have loaded a few bottoms to be moved with the opening of navigation. Contracting for Lakes tonnage is slow and the question of grade enters into this phase of the business.

Shippers are demanding lump and are not disposed to contract for mine run. Consequently the business is at a standstill and will not show much activity until conditions change materially. A considerable tonnage is being carried over on the upper docks.

Domestic trade is dead in every particular. Consumers are only buying what they need for the present and are disposed to wait until they are driven into the market. Dealers' stocks are large and will not need much replenishment. Retail prices probably can go little lower. Hocking lump retails $7.50@$8, while West Virginia splints sell $8@$8.50. Pocahontas sells $10 @$10.50.

DETROIT

Demand for Steam and Domestic Very Feeble—Receipts Are Not Burdensome.

Bituminous—Rather than attempt to force bituminous coal on indifferent or unwilling buyers, wholesalers feel the wiser course is to adopt a waiting attitude, with full confidence that a better buying demand will develop within a few weeks.

Though reports of improving conditions in industrial lines are becoming more frequent, the transition apparently is to quite an extent a matter of sentiment. Various automobile companies, however, have resumed production on a moderate scale and probably about 1,000 men daily have been taken back at work in factories in and around Detroit during the last six weeks.

Prices quoted as the nominal basis of contract negotiations are about as follows: Lump from Ohio $3@$3.75, mine run $2.60, slack $2.25. West Virginia 4-in. lump $4, 2-in. lump $3.75, egg $3.50, mine run $2.75, slack $2.25. Smokeless lump $6, mine run $3.75, slack $2.25.

With a large proportion of the mines closed while others are operating only to the extent necessary to fill orders, shipments of bituminous arriving in Detroit are far below normal. Jobbers say there is little free coal to be found on tracks.

Anthracite—As in the case of bituminous, the demand for anthracite has flattened out to unusual thinness. Consumers are buying in half-ton lots.

ST. LOUIS

Unusually Quiet Market—Demand Only for Steam Sizes — Frisco R.R. Entertains Bids.

In St. Louis business is unusually light. There is no domestic tonnage moving. Such of the larger sizes as are moving are mostly for steam. There has been a shortage of steam coal in the smaller sizes, but this is accounted for by the fact that the mines are not working on account of the congestion of "no bills" of lump and egg.

It is evident at this time that the tonnage of anthracite in this market will be unusually small this year on account of the price. It is likely that coke will largely supplant both anthracite and smokeless coals.

There has been no change in retail prices. Demand is sluggish on account of the summer weather of the past week or ten days.

The Frisco R.R. on March 8 sent out requisitions for contracts for the coming year on Standard nut minimum 2,100 tons weekly, maximum 4,200 tons; mine run, minimum 3,600 tons weekly, maximum 7,200 tons weekly, and southern Illinois mine run, minimum 1,800 tons weekly, maximum 3,600 tons weekly. Standard coal for delivery at St. Louis and southern Illinois for Chaffee, Delta, St. Genevieve or other nearby connections. Bids were opened on March 21.

CLEVELAND

Movement to Northwest Provides Only Stimulus to Quiet Market—Some Boats Already Started — Spot Prices Firmer.

Bituminous—Movement to the lower ports has injected the first real show of activity into an otherwise stagnant market situation. For some time railroads have been loading Lake boats in co-operation with shippers. At the present time all berths available for loading at Huron, Ashtabula, Toledo, Cleveland and Lorain are being filled with cargo coal.

H. M. Griggs, manager of the Ore & Coal Exchange, has granted shippers nearly 50 permits for Lake shipping. The superintendent of car service of the Wheeling & Lake Erie R.R. has informed all coal operators engaged in Lake traffic that the Interstate Commerce Commission has granted permission to cancel the Lake coal demurrage tariff until May 1.

The early coal movement to the Lake is considered a favorable development in the market, although some doubt is expressed as to whether it will broaden sufficiently to result in any far-reaching benefit. The Lake movement calls for prepared sizes which will create a proportionately large amount of slack. It is possible that this slack may become a drug upon the market unless industrial activity quickens. Some increase in operations at automobile and steel mills is reported, but this is not extensive as yet.

Production in the Ohio fields is not declining, but seems to be holding its own. A slight stiffening of spot prices for slack has occurred in the last few days. Slack quotations range $1.75@ $2. Receipts of bituminous coal during the week ended March 12 were some 200 cars less than the preceding week, amounting to a total of 1,292 cars; industrial 896 cars, retail 396 cars.

Anthracite and Pocahontas—Although there is a sharp contraction of buying for heating purposes prices remain unchanged, following their recent readjustments downward. Retailers report that they are receiving many orders for half-tons, buyers being disinclined to buy beyond the needs of the next few weeks. One large retailer is turning down all less than one-ton orders.

Retail prices of coal delivered in Cleveland are:

Anthracite—All grades, $14.50.
Pocahontas—Shoveled lump, $11.40; mine run, $10.30.
Domestic Bituminous—West Virginia splint, $10; No. 8 Pittsburgh, $8.75; Cannel lump, $12.15.
Steam Coal—No. 6 and No. 8 slack, $6.10; No. 6 and No. 8 mine run, $7; No. 8 3-in. lump, $7.25.

CINCINNATI

Retail Prices Drop — Industrial Situation Weaker—Spot Market Inactive.

Slight improvement in the retail market was noted during the past week. There was practically no change in the wholesale trade, the market for steam coal being very quiet. Dealers see very little hope for an early change in this regard.

While some plants are at present operating part time, there are a few manufacturers who have been operating for several days each week, who because of the lack of orders are contemplating shutting down their plants entirely within the next week or two.

"Barely existing" is the way wholesalers describe the present condition of the market.

Bituminous lump was quoted about $4 per ton at the mines, nut and slack at $3.50 and egg at prices ranging from $2.75 upward. Pocahontas lump ranged around $5.75, and mine run was quoted $3.50@$4.

A reduction of 25@50c. was noted in the retail prices. Bituminous lump was $8.50@$8.75; mine run, $8.25@$8.50; smokeless lump and egg, $10.50; mine run, $9@$9.50; anthracite egg, $15@$16.25; domestic egg coke, $14.50@$16.

South

LOUISVILLE

Prices Firm — Demand Unchanged—Lakes and Contract Markets Inactive.

Prices have been reduced so close to production costs that they are on approximately the same basis, with very little range between prices in any one field. Gas coal is in such good supply that it no longer carries any premium.

Mines are operating about two days a week. Considering that when demand was good, car supply was short and many mines were not doing better than two days a week, actual operations in many cases are as heavy as they were.

There is hardly a fair demand, the retail trade picking up a few fill-in orders, while jobbers are scalping an order here and there. Principal quotations are shown in the Weekly Review.

Some operators are figuring on an early Lakes movement due to low prices and possible car shortage or labor troubles later on, while others are of the opinion that the real movement will probably start as late as June.

The fact that contract prices are about 33⅓ per cent higher than spot, with May delivery about 25c. premium over spot, indicates that operators expect a much better movement or else they are not willing to take chances on having to fill contracts at present spot prices. The general feeling is that prices will improve with the season, as was the case after the Armistice.

Southwest

KANSAS CITY

Prices Firm—Steam Demand Stronger —Strike Threatens Further Consumption Decline.

Prices have changed but little in the past week. Arkansas lump remains at $6, mine run is $4.50, slack, $3,50@$4; Kansas lump is $5.50, mine run, $4.50, slack, $3.75; North Missouri lump is $4.50, mine run, $4, washed slack, $4.05, raw slack, $1@$3.15, depending on quality.

Demand for domestic grades is practically dead which is causing a shortage of steam sizes but as yet prices have not advanced. Storage price for Arkansas lump will start at $6 April 1 and advances are expected each month thereafter.

Packing houses, which purchase large amounts of steam grades in this territory, are faced with a possibility of a strike of employees in the event of a reduction in wages or increased working time is insisted upon by the packers. This would materially reduce consumption and further add to the extremely dull condition in the Southwest coal industry.

West

DENVER

Production Lowest in Four Years—Storage Season Expected to Stimulate Trade.

Production touched the lowest level of the winter during the week ended March 5, when 131,510 tons were mined of a possible full-time output of 260,182 tons. "No market" caused a lost production equivalent to 43 per cent.

In the face of this discouraging situation operators are working their mines part time, very few closing down entirely. The general belief is that the storage season which sets in April 1 will bring relief through stimulation of orders on a little lower price scale.

Retailers are not as optimistic. Figuring on an expected basis of $6.50 at the mine Sept. 1, bituminous lump will cost 10c. more if bought then than it will be if bought in April and carried until July, or will be no cheaper if carried until August.

The retailer does not want to stock up this summer, knowing that prices probably will remain firm and increase as the summer wears on, but feeling that the mine price over a year ago is not sufficient to afford him any real inducement. He realizes that the operator can do no better, facing a high labor cost.

Another disconcerting element has set in, for one so-called illegitimate "newspaper dealer" has already started selling Routt County lump bituminous for $11 in Denver, which is 50c. cheaper than the April storage price of other concerns which handle a superior grade.

Lignite is generally steady at $3.50 at the mine, although the market is weak, due to an open winter.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Production Stationary — Lake Trade May Check Decline — Spot Market Easier — No Contracting.

Coal production has been approximately stationary for a fortnight, at about 40 per cent of mine ratings, and there is a possibility that the decline is now ended. Much, however, will depend upon the stimulus of Lake trade, as some assistance from that quarter will probably be needed to maintain the present rate.

It is recognized that there will be no heavy shipments in the Lake trade prior to about July 1, on account of stocks in the Northwest as well as Lake shipping conditions, but a moderate movement is hoped for. The ore movement down the Lakes is bound to be light in the fore part of the season.

Sales of spot mine run steam coal at under $2 are less uncommon than formerly, and here and there a case is reported that indicates the operator made the sale in regular manner and not as a result of being unexpectedly caught with coal on track accumulating demurrage. The average operator is not content to sell at less than about $2.50.

No approach to active negotiation of contracts for the new coal year has occurred, except perhaps for gas coal, and it looks as though consumers in general will buy in the spot market when present contracts run out.

The spot market is quotable $2@$2.50 for steam mine run, $2.50@$2.75 for gas mine run and $2.75@$3 for screened gas. There is no market at all for byproduct.

CONNELLSVILLE

Some Further Wage Reductions—Spot Coke Easier—Production Still Declining—Contracting Inactive.

Although several smaller interests have quietly made wage reductions, the majority of operators are committed to the policy of awaiting action by the H. C. Frick Coke Co., which has always taken the lead in wage scale changes. Action by the Frick company may occur when the Steel Corporation makes a general change in wages at its plants, probably in the fore part of April.

It is perhaps on account of wage reductions that standard grade furnace coke has become readily available at $4.25 to consumers, while some operators will sell at $4 to brokers. Foundry coke is a shade easier as some can be picked up at $5.25. There is a moderate buying of spot carloads of foundry coke, reflecting the existence of few contracts rather than anything like normal consumption. Contracts are entirely neglected in both furnace and foundry coke.

Merchant production is so low that it is hardly trending to any lower level,

but with the rapid decrease in the Steel Corporation's operations, following the decrease in the past few months by the independent steel interests, there is promised further decline in the furnace oven output. The Carnegie Steel Co. has made a new record, in blowing out 13 blast furnaces in one week, reducing its number active to 25, against 48 in January.

The spot market is quotable $4@$4.50 for furnace and $5.25@$6 for foundry, with contracts nominal at $4.75@$5 for furnace and $6 for foundry. The *Courier* reports production in the week ended March 12 at 83,310 tons by the furnace ovens, and 25,490 by the merchant ovens, making a total of 108,850 tons, a decrease of 7,530 tons.

UNIONTOWN

General Wage Reduction Contemplated —Spot Market Very Quiet — Trade Awaits Return to Normal.

Tangible evidence of any improvement in the coal and coke industry remains lacking, but operators and trade observers have not departed from their policy of optimism in viewing the trade readjustment. There appears, however, unanimity of opinion that the worst stage of depression has passed and that the future will show a gradual return to normal.

Since no other operator has followed the lead of W. J. Rainey, Inc., in reducing the wage scale it would now appear that the remainder of the independents will wait until action along those lines is taken by the Frick company, U. S. Steel fuel subsidiary. The fact that the Rainey reduction met with neither direct nor indirect opposition reflects the attitude of the workers as accepting the inevitable with as good grace as possible.

The coal market continues to record only stray sales and quotations show little change. Some steam coal has been sold at $1.85@$2, and byproduct is quoted $2.50@$2.75, but hardly sufficient sales in that grade are made to establish a market. Furnace coke is practically off the market, but in its place heating coke is being sold in odd lots at $4@$4.50, while foundry coke is quoted $5.75@$6.25.

EASTERN OHIO

Lakes Tonnage Aids Production— Other Markets Inactive—Lakes Demurrage Tariffs Postponed—Prices Firm.

Stimulated by shipments to the Lakes, production for the week ended March 12 amounted to approximately 283,000 net tons or 44 per cent of the weekly potential capacity, a slight gain over the preceding week. About 358,000 tons of production was lost because of the "no market" situation. The output for railroad fuel account was increased during the week, carriers taking better than 50 per cent of present production. Although mines of association operators worked but 40 per cent of possible working time during the week, production was 52 per cent of the rated capacity based upon railroad ratings.

Railroads have suspended until May 1 their Lake coal demurrage tariffs, thus removing an obstacle which might militate against free movement of coal to the lower ports. Lack of orders would compel additional mine closings were it not for the bolster of Lakes demand, as industrial and railroad fuel markets are stagnant. Seven or eight boats are now lined up for cargo in addition to the 40 boats already loaded which will result in an aggregate amount of over 400,000 tons. About 30 per cent of this tonnage is from the eastern Ohio field.

There is little activity in the contract markets. Figures given out as a basis for 1921 contract negotiations are: ¾-in. lump, $3.50, mine run $3.25, and slack $3. However, in view of current prices, purchasing agents are reluctant to enter into agreements, preferring to take chances from day to day with spot coal. Prices in the open market remain unchanged about as follows: Domestic lump $3.25@$3.75, 1¼-in. lump, $3@$3.25, ¾-in. lump, $2.75 @$2.90, mine run, $2@$2.25, and slack, $1.75@$2.

CENTRAL PENNSYLVANIA

Mine Curtailment Continues — Much Unemployment — Market Is Extremely Sluggish.

With no relief in sight, the coal mining industry is in a deplorable condition. The Pennsylvania Coal & Coke Co. with 34 mines, mostly in Cambria County, has but three running and these on short time. The situation is the worst in many years and hundreds of miners are out of work.

Throughout the entire field, more than 65 per cent of the mines are closed daily. Operators are trying to convince consumers that it would be good business policy to place orders for coal now as surplus stocks are about used up and a rush of orders later would breathe a shortage and have the effect of increasing the price, but there is nothing doing. Production is now at the lowest ebb for many years and the suffering among miners is intense.

FAIRMONT AND PANHANDLE

Production Declines—No Life to Spot or Contract Markets—Freight Differentials Bar to Lakes Buying.

Fairmont

More mines were idle during the second week of March than at any time in recent years, about 300 being shut down in northern West Virginia. Only 50 mines in the Fairmont region were being operated at all. Not only was there no spot market but contract orders underwent a decline. Tidewater and Western business was virtually at a standstill and railroad fuel shipments were much less than normal.

The outlook for Lake shipments is not encouraging as there is apparently no prospect of securing relief from freight differentials on Lakes rates. So far there has been little or no coal contracted, either for railroad or general commercial use. Operators are declining to negotiate agreements at prices under $3@$3.25.

Northern Panhandle

Buyers and inquiries for spot coal were conspicuous by their absence. With demand so lacking there remained only a few contract orders, not sufficient to cause more than a third of the potential output of the region to be mined.

Middle West

INDIANA

R.R. Contract Negotiations Active — Industrial Resumption Slow.

Production is running around 325,000 tons per week or about 50 per cent of capacity. Bids on railroad contracts for the N.Y.C., Big Four, Santa Fé, Pere Marquette and others run $2.60@$3 for mine run and $2.85@$3.25 for lump, although there have been no contracts let as yet.

Screenings have improved materially and there is a ready market for that size around $2. Domestic coal is weak, Fourth Vein, $3.25@$3.50, Third, Fifth and Sixth Veins $2.60@$3. The revival among industries is coming slowly; however, clay products plants contemplate starting the middle of April. Stocks are large and there probably will be no great activity in buying for some time.

MIDWEST REVIEW

No Improvement in Industrial Situation — R.R. Contract Closed — Higher Prices Inevitable.

The week just passed stands out even amongst poor weeks, as a period of practically no activity so far as the coal industry is concerned. The weather has just about paralyzed the demand for domestic and the industrial situation is so unsettled and uncertain that very little steam coal was moved.

There is a very decided disinclination on the part of operators to make contracts. This is becoming more marked every day. The only large agreement we have heard of being made was closed a few days ago by some operators who have contracted with the Chicago & Alton R.R. It is said that three prices are on these contracts, the first price of $2.90 for mine run to apply for the first four months of the new year, beginning April 1. The price during the second four months will be $3 and during the last four months $3.10. It is the concensus of opinion of some of the big operators that the Alton will have cause to congratulate itself on this contract, and at the same time, it will be of some relief to the mines on this railroad.

Last week an error occurred in this column. It was said that the opening price of Franklin County lump, furnace and small egg, would be $3.50. This is a mistake, as the April price on this grade of coal will be $3.65 f.o.b. mines and during the next five months, beginning May 1, this price will increase at the rate of 10c. per month. Quite

wisely, no price has been set for the fall months.

Various railroad men say that their sidings are blocked with empty coal cars which are standing idle until the demand for fuel is once more felt. It is the personal belief of a great many operators that when the public once starts buying, the railroads will not be able to handle the business and it looks as if this opinion would be justified, as every day the coal production of the country is decreasing and the stock piles held by the various industries are also decreasing, slowly perhaps, but surely.

SOUTHERN ILLINOIS

Price Cuts Fail to Stimulate Buying—Screenings Stronger as Domestic Declines—R.R. Buying Bargain Lots—Suffering Among Miners.

Retrenchment continued last week in the Carterville field. Even with the new prices tonnage moved was short of expectations. Some mines are getting only two days a week although operations loading railroad fluel run up to four days. Screenings are in good demand at $2.25@$2.85. Mine run can be bought down to $2.75. Association mines will not produce coal unless the price at least covers production costs.

It is understood that the Frisco R.R. has been able to buy Carterville lump, egg and nut at $2.50 and that some railroads have been offered mine run at $2. Independent operators are asking $2.50@$2.75 for screenings, with less working time, however, than the association mines.

Working time is unusually poor in the Duquoin field with prices about the same as in the Carterville district. Mt. Olive field conditions are bad on account of railroads easing up on their contracts. Mt. Olive price has come down to $3 for domestic to the St. Louis market; outside price, $3.25.

In the Standard field the Belleville group continues to sell below cost apparently. Two-inch lump has been offered at $2.15, mine run, and nut and egg $1.75. Screenings are quoted $1.50 with an upward tendency due to better demand. As time goes on more mines continue to shut down and destitution among the miners is growing. Railroad tonnage is decreasing every week and the average working time is not more than two or three days.

The steam market looks good on account of the falling off in domestic demand and as the price of screenings and nut advances lump coal may be expected to come down. There is nothing encouraging in a tangible way in the outlook for the immediate future.

WESTERN KENTUCKY

Prices Firm — Industrial Demand Slowly Improving—Rate Decision Aids Operators.

Prices are rather firm as a whole, with demand showing some improvement. Mines average about two days a week. Industrial and railroad fuel demands are showing slow but steady improvement. Lump coal due to mild weather is off. Screenings are stronger than they have been.

It is claimed by western Kentucky operators that action of the Federal Courts in upholding the Interstate Commerce Commission, in the matter of interstate freight rates superceding intrastate rates in effect under the Public Service Commission in Indiana, will result in western Kentucky fuel again moving freely to points in competition with Indiana fields, which have been virtually cut off for several months, as a result of the low intrastate rates in Indiana, permitting movement at a ten per cent increase over old rates, as against a thirty-three and a third per cent increase on coal moving from Kentucky.

Middle Appalachian

HIGH-VOLATILE FIELDS

Freight Differentials Retard Lakes Agreements—Production Further Curtailed—Contract Market Unchanged.

KANAWHA

But few sales were made on a spot basis in the week ended March 12 and very little coal was being produced, owing to a continuance of the sluggish market. Comparatively few mines operated at all and even these were running not more than two days.

It is apparent that not many contracts will be negotiated before May 1. Buying for Lakes is inactive and unless the present differential is eliminated little coal wll be shipped from this region to the Lakes.

LOGAN AND THACKER

Logan production of 100,000 tons was one of the poorest since the present period of depression set in. Some increased production during the early part of the week was due to heavier contract shipments to Western automobile plants. Practically no spot demand existed. Slack coal was slightly strengthened owing to the lowered production of domestic.

Demand in the Thacker region was such as to hold production to the very minimum. The output was not much in excess of 30 per cent, the only coal moving being destined on contracts. As in other fields little contracting had been consummated as the coal year neared the close.

NORTHEASTERN KENTUCKY

Less coal was produced than at any time since the market began to fall. "No market" losses were placed at 82 per cent, representing 185,000 tons. Most of the mines were closed down entirely. Even those with contract orders were operated two days at the most.

VIRGINIA

Production estimated at 40 per cent represented what was left of contract business which was still somewhat better than in other high-volatile fields. Practically no spot market existed. Mines on the I.R.R. had a production equal to 42 per cent of potential capacity, representing a slight improvement.

LOW-VOLATILE FIELDS

Production Continues at Low Level—No Spot Demand—Lakes and Tidewater Markets Inactive—Contracting Is Slow.

NEW RIVER AND THE GULF

The week ended March 12 saw little variation in the Gulf production, the output being placed at 30 per cent, about 5 per cent in excess of that for the previous week. This was due to a slight increase in contract shipments, no improvement occurring in the spot market. Operators do not expect much contracting for the new coal year before May 1.

New River production averaged between 12,000 and 16,000 tons per day. Market conditions were unchanged with the exception of lump and egg, which were a trifle firmer. Contract-making was still in abeyance.

POCAHONTAS AND TUG RIVER

Pocahontas production was on about the same level as during the preceding week. Operators were able to find no outlet for any spot coal. This was especially true as to Tidewater. There have been numerous inquiries as to new contracts but few if any agreements have actually been signed. As a rule production has been vigorously curtailed and operators are simply marking time, awaiting the revival of demand.

Two days represented maximum working time of Tug River operations. There was almost a total lack of spot demand. Tidewater shipments were especially small and there did not appear to be any signs of early Lakes shipments, to judge from inquiries.

Producers and buyers are still deadlocked on the question of contract prices with an absence of demand as a contributing factor in retarding the consummation of agreements for the new coal year.

West

UTAH

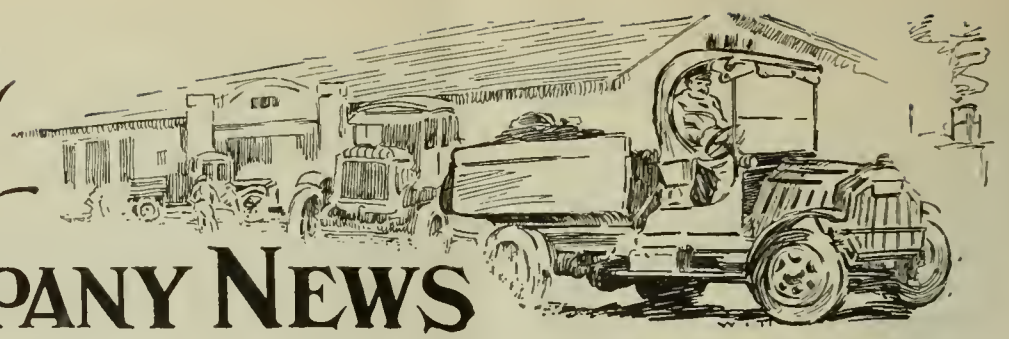
Little Coal Moving—Prices Firm—Wage Reductions Not Contemplated.

Very little coal is moving and producers are merely marking time. Prices remain firm, however, and there is not likely to be any change for another six or eight weeks, if then.

Retailers report business as a little better this week. They are drawing on their storage coal which is getting very low. None of them seems willing to stock up for fear prices may take a sudden and unexpected drop.

The wage reduction which has taken place in the Northwest is not likely to be followed here, unless the move becomes national.

MINE And COMPANY NEWS



ALASKA

Ground has been broken for the Government's $250,000 coal washing plant at the Matanuska field. The plant will be accessible to private operators. New beds of smithing coal have been discovered near Mears. In the Matanuska field more than 250,000 tons of coal have been blocked out.

COLORADO

Safety conditions at mines of the **Colorado Fuel & Iron Co.**, in 1920 were better than for many years. There were fifteen fatal accidents and the total production was 4,151,220 tons, a production of 296,515 tons per fatal accident. The record for all other coal mines in Colorado was 146,628 tons per fatal accident. Eight mines of the company had no fatal accident either in 1919 or 1920. One mine lost no shift on account of underground accidents, fatal or non-fatal, for seven consecutive months.

Compensation insurance premiums paid by coal operators in Colorado were reduced March 1 from $5 per $100 of pay roll to $3.85 by the Colorado Industrial Commission. The new rate was approved by the commission after an agreement had been reached by insurance stock companies handling this class of insurance. The rate charged by mutual companies will be $4.60 per $100.

ILLINOIS

The highest coal production in the history of the country was moved in 1920 by the Rock Island R.R. system. The annual report shows that after the roads were returned from federal control the movement of freight cars per day was increased 6.3 miles, from 22.3 miles to 28.6 miles. The average load per car was increased 1.7 tons from 28.3 to 30 tons. Arrangements have been made to buy 50,000 new freight cars, 1,500 new locomotives and 1,000 passenger cars.

The Franklin Coal & Coke Co., of Chicago, operating two large mines at Royalton, has announced that one mine will be closed down for some time, until better conditions prevail in the market. The two mines are in rank with some of the largest in the state. Many other mines in the section are also ceasing operations indefinitely, partially for the purpose of making repairs and some on account of the dull market.

The Missouri-Illinois Coal Co., of St. Louis, has recently closed a deal whereby it has rights over a large tract of coal land south of Belleville at Wilderman Station. The property is an ideal location for a coal mine and sinking will probably be started there in the future. The deal entailed a transaction of over $50,000.

The **Groveland Coal Co.**, operating at Pekin, will sink a new mine near that place in order to take care of a new and large contract recently acquired. The location of the mine will be on the P. & P. U. R.R. Houses will be erected near the location and in all probability a town will be established in time to come.

INDIANA

The Victor Colliery Co. has filed notice of company dissolution under state laws.

The Grimm Coal Co., of Evansville, has incorporated under Indiana laws with a capital stock of $100,000. The directors are: Fred Grimm, Casper Grimm, L. E. Grimm, Oscar Birch and B. F. Zieg.

The American Coal Mining Co. of Brazil has increased its capital stock to $200,000, all of which is preferred stock.

Announcement has been made of the organization of the **Dugger Domestic Coal Co.** of Indiana. The company will do a general mining business.

The Walker Coal & Mine Co. of Fort Wayne, has completed its organization with a capital stock of $50,000. The directors are J. J. Voors, E. A. Walker and A. J. Lassus.

Word has been received in Indianapolis that the Supreme Court of the United States has affirmed decrees of the lower courts refusing an injunction to the **Lower Vein Coal Co.**, restraining the industrial board of Indiana from involving the compulsory features of the state workmen's compensation act. The company based its application for an injunction on four grounds: That sections of the act violated the new process clause of the constitution; the equal protection clause and two separate sections of the Indiana bill of rights. The coal company filed its suit in the Federal Court at Indianapolis and Judge A. B. Anderson held that the section in question was valid and the plaintiff appealed to the U. S. Supreme Court. The suit was filed in April, 1919.

Coal companies in Parke and Daviess counties are preparing to take over leases on more than 25,000 acres of coal land bordering on the right-of-way of the old Evansville & Terre Haute R.R., recently acquired by the New York Central. It is expected that this coal development will be started with the reconstruction of the E. & I.

Dering mine No. 8, in the Clinton field, shut down recently for an indefinite period, until there is an increase in orders. The stopping of this mine throws about 225 men out of employment. Three mines of the **Crown Hill Co.** made a similar stop.

A motion to dismiss the suit brought almost two months ago by James T. Dunigan of Cleveland against William Schrolucke of Indianapolis, Will H. Voslon of Bloomfield, Nicholas and Charles Goodman of Linton, the Linton Trust Co. and the **Rosehill Coal Co.** was overruled in Federal Court, March 10. The case grew out of a dispute as to the ownership of coal lands near Linton, for which the owner, Nicholas Goodman, gave two warranty deeds, one to Dunigan and the other to Schrolucke and the Rosehill company.

KENTUCKY

Announcements of developments indicate much increased activity during the present year, insuring the expenditure of large capital. Near Seco, on the main line of the L. & N., West Virginia corporations are making plans to develop about 200 acres of Elkhorn coal lands. A modern plant will be put in. At Thornton Creek the **Elkhorn Colliery Co.** will make extensions. Just out from Blackey, the **Eden Coal Co.**, with offices in Whitesburg, will soon begin shipping coal from a modern plant. **The Elk Creek Coal Co.**, just below Blackey, will soon be in readiness to begin shipping coal. In the same section the **Consolidated Fuel Co.** is making a number of expansions. Their output will be easily doubled before the end of the year. **Nat B. Sewell**, of London, and others are to develop several hundred acres just below Cornettsville near the Perry County border.

The Winchester Coal Co. has a lease on about 200 acres in the vicinity of Emma, and plans for immediate development work. A complete coal-mining plant will be installed, including tipple, machine shop, forge shop and other mechanical buildings, with power plant for general operation. The company has also secured options on adjoining coal lands for later development. It was recently organized with N. M. White, Jr., as president, and W. D. Judy, secretary and treasurer.

The Bailey-Ferguson Coal Co., recently organized with a capital of $200,000, has acquired a tract of land totaling about 1,500 acres. The property will be developed and a coal mining plant installed with aggregate capacity of about 1,000 tons per day. A power plant will be constructed at the property. J. G. Bailey is president; S. C. Ferguson is vice-president, treasurer and manager.

The Western Kentucky Coal Traffic Bureau at a recent meeting in Louisville discussed the status of appeals pending before the I. C. C. for lower rates to Arkansas, Atlanta and the lower peninsula of Michigan, with intervening petitions entered by the Illinois Coal Operators' Association, Illinois Coal Traffic Bureau, Illinois Coal Trade Bureau and the I. C. R.R.

MARYLAND

W. D. Althouse of Philadelphia, who has large coal interests in the Georges Creek region, has purchased about 500 acres of the old Fort Pendleton tract, near Gorman, on the Western Maryland Ry. at the town of Mason, and has already begun mining.

Increase in its capital stock from $300,000 to $2,000,000 is planned by the Georges Creek Coal Co., of Lonaconing, together with incorporation, by which the name will be changed to **Georges Creek Coal Co., Inc.**

MINNESOTA

A test is being made at the power plant of the Minnesota state capitol building in St. Paul, to use pulverized peat for fuel. It has been used in Minneapolis during the winter in a downtown office building. A new company is just being formed by the same interests which compose the **Hennepin Atomized Fuel Co.**, of Minneapolis, to put in a plant for St. Paul, similar to the one in Minneapolis.

MISSOURI

Mine No. 3 of the **Big Creek Coal Mine Co.**, employing 200 men, has been shut down indefinitely because contracts held have been cancelled. Mine No. 1, employing 400 men, will be operated part time

NEW JERSEY

Fire recently destroyed a large portion of the plant of the **International Coal Products Co.**, Irvington, with loss estimated at about $90,000, including machinery.

OHIO

Two suits for damages aggregating $58,000 were filed in the Franklin county courts last week by the **Ohio Consolidated Coal Co.**, against **Harry B. Summers** and the **Lexl Coal Co.** as principals and the American Guaranty Co., as security for alleged breach of contract for the delivery of a certain tonnage of coal.

Railroads in the Columbus district are preparing their equipment for the opening of the Lake trade. The H. V. Ry. Co., is receiving a large number of coal cars which have been repaired in outside shops, where 1,750 cars were sent for repairs. The shut-down of a large number of mines has caused an excess of coal-carrying equipment so time is now being taken to make minor repairs.

John Stronjek has been rendered a verdict of $1,225 against the **Cambria Collieries Co.** The plaintiff alleged that the defendant company had removed coal unlawfully from under his premises.

The Lick Run Coal Co. has been chartered with a capital of $200,000 to develop mines in the Hocking Valley field. The incorporators are D. R. McGill, P. J. Mertz, R. Green, M. A. Krieg and N. E. Green.

Quite a few of the mines in the Moxahala district are being re-equiped electrically since the power lines of the Ohio Power Co., Newark, have been extended into that field. Operators are taking advantage of the lull in the demand to make the improvements.

A bill has been introduced in the Ohio General Assembly designed to stop profiteering in coal. If the bill should become a law there is just one penalty that can be imposed and that is imprisonment for a period of not less than 30 days nor more than a year. The bill limits retail profit to 30 per cent above the cost at the mine, plus the freight charges and war tax. Only three agencies are permitted in the selling of coal, the producer, retailer and the consumer. No commission is permitted for brokerage and the product of the mine must go directly to the retailer. The only middleman allowed under the bill is the retailer. The measure also provides that all dealers in coal must register with the auditor of the county in which they do business and pay an annual license fee of $2 when a certificate will be issued giving the right to retail coal for one year.

The Vocational Schools for Miners, in Bellaire, Martins Ferry, Neffs, Rayland and Bridgeport will take up the study of "Mine Ventilation." Sessions are held evenings either in the public graded schools or high schools at the points named. The course in mine ventilation will continue until the first of July, when the session will close. The complete course extends over a period of four years and it is said a graduate is capable of filling any mine position.

The Stover Coal Co., of Newark, has been incorporated with a capital of $34,000 to mine and sell coal. Incorporators are T. McKenna, J. Wildman, F. C. Bausch, Perry Ray and F. B. Wurm.

Many Ohio coal operators are backing the movement started by the Ohio Board of Commerce to secure amendments to the workmen's compensation law in the Buckeye State. Operators believe that the rate on coal mining and work about mines is entirely too high and that they are charged an unreasonable sum for the insurance. As compared with other states the rate is from 50 to 100 per cent higher, without any apparent reason. A large number of the operators favor a plan whereby private insurance companies can enter the field, under the jurisdiction of the Ohio Industrial Commission and thus have competition in the field.

The Ohio Consolidated Coal Co., which has headquarters in Columbus is making extensive repairs to its mine located at Wirbren. Entries are being driven to reach new areas and additional machinery is being installed. This mine will be in shape for operation with the opening of the Lake trade.

The annual stockholders' meeting of the **Sunday Creek Coal Co.,** held in Columbus resulted in the re-election of the former board of directors. J. S. Jones is chairman of the board and president; George K. Smith, secretary, and C. C. Cook, treasurer. These officers with H. B. Arnold and W. E. Tytus constitute the board of directors.

Mine No. 5 at Murray City, owned by the **Pittsburgh Coal Co.,** and operated through the Columbus office has been closed down for about four weeks for necessary repairs. No radical repairs are being made but the changes consist of arranging the power house to better advantage and to making extensions of the tracks and entries.

PENNSLYVANIA

Commencing with February shipments, coal traffic through the locks of the Monongahela River are measured by the ton unit instead of the bushel as heretofore. The traffic for that month was 840,200 tons or 22,111,000 bushels, 7,121,000 bushels under the January shipments.

One fifth of the coal tonnage produced in the **Twenty-first Bituminous District** is credited to the Vesta Coal Co., according to the annual report of Mine Inspector C. P. Byrne. Total tonnage in the district was 8,043,690 tons of which the Vesta company produced 3,885,036 tons.

The entry for record of the deed of the **Stauffer-Quemahoning Coal Co.** to the **Barnes-Quemahoning Coal Co.,** for the holdings of the former at Listie, shows that the consideration in the transaction was approximately $912,000.

A state-wide referendum of Chamber of Commerce members is being taken to determine the attitude of business men on the proposed new taxes on anthracite and bituminous coals.

A barge with a capacity of 1,400 tons has been launched at Brownsville to carry coke from the Pittsburgh Steel Company's Alicia plant to its steel mill at Monessen. The barge was commenced by W. Harry Brown before he sold the Alicia plant to the steel company and was finished by that concern. It displaces six feet nine inches of water and cost approximately $200,000. It is the largest barge in the Monongahela River trade.

The Pittsburgh Coal Co., for the year 1920, made a very favorable showing, though labor troubles and car shortage reduced the tonnage to 12,348,386, a decrease of 1,504,055 tons, from 1919. The results of operations compare as follows:

	1920.	1919.
Gross receipts.....	$48,596,589	$37,303,131
Net earnings	14,302,505	8,090,896
Depletion, depreciation, interests, etc.	3,369,789	3,531,181
Balance	10,932,715	4,559,716
Dividends and taxes	4,175,366	4,896,736
Surplus	6,884,197	.....
Deficit	.....	337,020
Total surplus ...	$30,369,829	$23,485,632

T. J. McClerman of Uniontown, has closed a deal for the purchase of 412 acres of the Smith Creek block coal in Greene County, from John H. Strawn, receiver of the Farmers and Brovers National Bank of Waynesburg, for a consideration of $92,-250.

J. Frank Dawson and **Taylor N. Dawson,** of Uniontown, have sold all the Sewickley, or Mapletown seam of coal on the Monongahela River front that lies between Big Whiteley and Dunkard creeks, including the Mapletown Coal Company's works, for $525,000 to **Senator John L. Hatfield** and associates of Morgantown.

The Fort Hill Coal Co., made up of Johnstown business men, has been organized to develop coal land in Somerset County and have holdings totaling 1,500 acres in the vicinity of Fort Hill.

The labor situation in the coal fields of northern Cambria County seems to be sliding between two extremes. **The Monroe Coal Co.,** with operations at Colven and Revloc are working five days a week. **The Pennsylvania Coal & Coke Company** at Hastings have closed down all mines, **The Jasa Hill Coal Company** plans to erect 250 houses at Flinton. Material for fifty of the buildings has been placed on the ground.

The Evans Colliery Co. is arranging for the immediate reopening of its No. 4 and No. 7 slopes. It is proposed to extend the operations to reach coal that could not be mined when the workings were first operated.

F. J. McClaren is planning for the development of coal property at Waynesburg, recently acquired. The acquisition includes a total of about 600 acres of land, with price reported at $225 an acre.

The Pittsburg Coal Co. has purchased about 51,700 acres of coal land in Morris Township, heretofore held by David M. Van Scyoc, Dunn's Station, and plans for early development of the property. A consideration of $15,535.80 was given for the lands.

The One Hundredth Annual Report of the Board of Managers of the **Lehigh Coal & Navigation Co.** to the stockholders for the fiscal year ended Dec. 31, 1920, has been made public. The net income carried to profit and loss amounted to $4,045,053.06.

UTAH

The Price Oil & Coal Leasing Co. is the name of a new corporation which has just been formed at Price. C. R. Marcusen is the president and A. E. Gibson secretary. The capital stock is $15,000.

The Lion Coal Co.'s holdings in Carbon County have been valued at $318,340.

Nita Laverne Butte, through her guardian, has filed suit against the **United States Fuel Co.,** Salt Lake City, for $20,000 damages for injuries alleged to have been caused last July when the girl was injured by a rock which was being blasted from the mine at West Hiawatha in Carbon County.

VIRGINIA

The Bundy Coal Co. has commenced development work on about 75 acres of coal lands in the vicinity of Johnson's Mill, and is considering the installation of considerable new equipment. A. N. Gilly is president.

WEST VIRGINIA

It has just been learned that the **Hutchinson Coal Co.** which operates on an extensive scale in the Harrison and Marion counties has added to its holdings to the extent of 200 acres of coal in the Pittsburgh vein, this coal land being on Simpson's Creek. There are said to be five or six different tracts in the acreage acquired.

The Commissioner of Chancery in the Circuit Court of McDowell County has allowed Colonel I. E. Tierney, $72,813.04 and the Flat Top National Bank $27,209.54 in the case of Col. Tierney against the **United Pocahontas Coal Co.** in which the plaintiff claimed to have been eliminated from his interest in the Zenith and Indian Ridge Coal Companies merged, as the plaintiff claimed unlawfully, into the United Pocahontas Coal Company. The case had been appealed from the circuit to the Supreme court and remanded.

Another large coal deal has been consummated in Cass district of Monongalia Count, the **Soper-Mitchell Coal Co.,** having purchased several tracts of Pittsburgh and Sewickley coal aggregating 380 acres for which the sum of $202,634.80 was paid. It is understood that the company will develop this coal in connection with its other properties in Monongalia County.

New equipment has been added to and installed at the mines of the **Diamond Coal Co.,** located on Scott's Run in the Monongalia field. Included in the new equipment are three short-wall coal cutting machines and two electric locomotives.

Provision having been made by the **Forest Coal Company** of Fairmont for additional directors, the stockholders of the company have elected to fill that post. James Christopher of Osage, W. Va. and F. E. Christopher of Morgantown, W. Va.

One of the big deals of recent months has just been consummated under the terms of which the **Guyan Collieries Corporation** has acquired from the Gilbert Creek Land Company and others a total of 6,700 acres of coal land in the Mingo and Wyoming fields paying for this acreage a total of $300,000. The corporation plans development work only on 2,700 acres for the present, the other part of the property not as yet being within the reach of railroads.

In connection with the organization of the **Seminole Gas Co.,** a Detroit concern, capitalized at $150,000, it is learned that this company will open mines not far from Clarksburg, where 50 miners' houses will be built, an office and store building erected and the usual mining equipment installed.

A drift mine is being opened near Grafton by **R. L Marple.** As the mine to be opened is on the side of the Tygarts Valley River opposite the railroad it will be necessary to install a bucket conveyor system.

The Chesapeake Coal Co. is arranging for the immediate installation of machinery at its properties in the Barracksville section. The company has a tract of over 700 acres of land and will open a number of mines.

The Leckie Coal Co. has purchased about 2,800 acres of coal property in the Big Clear Creek district, and has preliminary plans under way for the development of a section of the land. Machinery will be acquired at an early date.

The Low Volatile Collieries Co. is planning for increased production at its plant. The company has recently increased its capital from $50,000 to $100,000 for expansion.

Although the coal business in the Morgantown district has been pretty well paralyzed by the slump in the coal market, indications are that the companies are making every preparation for an early resumption of business by putting their plants in the best condition. **The New England Fuel & Transportation Co.** is reported about ready to start work on 700 new houses at Lowesville on the Monongahela River R.R. south of Morgantown. **The Bethlehem Steel Co.** is building 50 houses at two of its mines. Most of the other companies are similarly active, repairing machinery or plant, or putting in new equipment. The 2,000 to 3,000 idle men in

the district are mostly loaders or such other men as can not be used in general repair work. There is no indication of a cut in wages, although poor workmen may find themselves without work when business is resumed.

Claiming that minority stockholders of the **Flat Run Coal Co.** had entered into negotiations with the **Wheyel Coal Co.** for the sale of the property to that company the Wheyel company has secured an injunction to restrain the sale of 1,500 acres of coal land near Mannington to a number of Morgantown coal people, including Ben Chaplin, Raymond Kerr, Perry Beaumont, M. L. O'Neil, A. W. Bowlby, E. F. Bowlby and others. The injunction was secured from the circuit court of Marion County. Although the sale to the Morgantown people was announced a short time ago, it has not been fully consummated and the injunction was secured to prevent this. The greater part of the stock of the company is under the ownership of D. S. Myers of Pontiac, Ill.

Coal land to the extent of 251 acres on the headwaters of Paw Paw Creek in Monongalia County has changed hands, having been purchased by **Charles Powell** of Fairmont from H. H. Rose and W. Kenneth Barnes, special commissioners. The sum involved in the transaction was $14,478.

BRITISH COLUMBIA

An inquiry has been ordered by the Provincial government into the cost of the production of coal on the coast of British Columbia, the cost of its transportation, screening and delivery by the dealers, the profits made by the collieries and the profits of the dealers. Alexander Henderson, K. C., a prominent lawyer of Vancouver, B. C., has been commissioned to make the investigation.

There is another development to the litigation between the E. & N. Ry. Co. and the **Granby Consolidated Mining & Smelting Co.** as to the ownership of coal rights in certain sections of the Vancouver Island railway belt. Recently a judgment was handed down that one of the two adjoining areas, the Dunlop estate, belongs entirely to the Granby company but that the other, the Ganner estate, in respect of the undersurface rights, belong to the E. & N. Ry. Co. It appears that one of the mine entrances in connection with the Cassidy Collieries is on the Ganner estate and the Court of Appeal has given permission to the operating company to use this approach to the workings located within its property. The Granby company states that if access to the company's workings was forbidden 1,700 people would be thrown out of employment and plant representing an investment of $19,000,000 would be closed down. The question of the ownership of the underground rights within the Ganner estate will be fought out in the courts to the final Court of Appeal; namely, the Privy Council.

Personals

Arthur W. Covert, has been appointed advertising manager for the Imperial Coal Corporation.

Phillip E. Thomas, treasurer of the Imperial Coal Corporation was in Boston and New York City recently.

David White, chief geologist of the U. S. Geological Survey, is delivering a series of lectures on fossil fuels at the University of Wisconsin.

N. H. Darton, of the U. S. Geological Survey, is making a geological study of the structure in Pennsylvania of the northern Appalachian coal fields.

Thomas K. Maher, president of the Maher Collieries Co. and also president of the Pittsburgh Vein Operators' Association of Ohio, has returned from an extended trip to the West Indies and Central America.

Michael Gallagher, general manager of the Wheeling & Lake Erie Coal Mining Co., spent a few days in Washington where he attended the Inaugural ceremonies.

The Reeves Coal & Dock Co., of Minneapolis, announces the appointment of **George W. McGill** as general sales agent, with offices at 712 Plymouth Building, Chicago. **L. L. Benjamin,** of the Minneapolis office, will be under Mr. McGill in charge of Northwestern sales, with offices in Minneapolis. Mr. McGill is regarded as one of the best coal men in the West. He started in the coal business 32 years ago, with the Clark Coal & Coke Co., at Peoria, as office boy, and worked his way up with that company for 24 years. Eight years ago he went with the Reeves company, and these two companies are all that he has ever been connected with.

C. W. Proctor, president of the Calumet Coal Co., New York City, has gone on a business and pleasure trip to Bermuda. He expects to be away about a month.

Fred Kerner, manager of the export department of W. A. Marshall & Co., New York City, who sailed on the Aquitania on Feb. 26 for Europe, was tendered a dinner the previous evening by the employees of Marshall & Co. When the Aquitania sailed the next morning a specially chartered tug bearing Mr. Kerner's fellow-workers and the members of his family, followed the vessel to Sandy Hook. Mr. Kerner expects to be away three or four months and during that time will make an extensive study of the export situation.

D. H. McDougall, president of the Nova Scotia Steel and Coal Co., has been appointed vice-president of the British Empire Steel Corporation, according to announcement made at the general office of the Dominion Coal Co., Glace Bay. His appointment places him as second in charge over the Dominion Iron & Steel Corporation, the Nova Scotia Steel and Coal Co. and the Halifax Shipyards.

F. W. McCullough of Huntington, who recently resigned as assistant district attorney for the southern district of West Virginia, has been named as a vice-president of the Buffalo-Thacker Coal Co., according to an announcement just made by L. R. Reese, president of the company.

C. H. Mead, president of the Mead-Tolliver Co. and other companies in the New River and Winding Gulf fields, broke down from overwork late in February. Mr. Mead had had much sickness in his family and among officials of the company in which he was interested.

E. P. Weddell, connected with the Weddell-Albright Coal Co. at Monongah, W. Va., was a recent visitor at Scottdale, Pa.

The Kanstine Co. of Buffalo, was represented in the Fairmont region recently by **E. J. Tart.**

Traffic News

In the complaint of the **Central Steel Co.,** the I. C. C. holds that the rate charge on coal from points in the Kanawha district of West Virginia to Massillon, Ohio, were inapplicable and unlawful.

The Old Ben Coal Corporation, of Chicago, in a complaint alleges unreasonable rates on rock or shale dust from West Frankfort to Christopher and Sesser, Ill.

In the complaint of the **Duquesne Coal & Coke Co.,** an I. C. C. examiner recommends that interstate rates on bituminous coal from mines west of Pittsburgh in the states of Pennsylvania and West Virginia on the Pittsburgh & West Virginia Ry., to points North and East be held to be prejudicial to the extent that they exceed rates from the Pittsburgh group by more than 10c. per ton.

In the complaint of the **Driscoll Coal Co.,** involving rates on coal from the Walsenburg and Trinidad districts to Pueblo, Colo., the commission has permitted the Union Coal and the Mark Coal companies to intervene.

Association Activities

Morgantown Coal Club

Some idea of the activities contemplated by the recently organized club, may be gleaned from the different committees appointed, announcement of which was made during the first week of March by President G. L. Rodgers. The personnel of such committees is as follows:

On Finance—W. E. Glasscock, R. L. Brock and W. A. Gadd.

On Membership—M. L. Taylor, S. F. Elkins and E. H. Gilbert.

On Publicity—Harry C. Ownes, C. M. Lyons and C. E. Gadd.

On Entertainment—Claude Scott, F. M. Lucas and C. E. Watson.

On Attendance—P. H. Keener, H. G. Hodges and Clarke L. Reese.

On Sickness and Distress—R. M. Davis, J. R. Blackburn and G. E. Smith.

On Sports—C. F. Sutherland, N. W. Brownsfield and R. H. Bowlby.

On Business Ethics—C. D. Jenkins, W. R. Harris and E. S. Baumbartner.

Rocky Mountain Coal Mining Institute

Greater efficiency in mine operation than is generally admitted centers in the fire boss, and an effort to determine whether it would be better to put him under state supervision, rather than company control, was started in the winter meeting of the Institute, held Feb. 25 and 26, in Denver. A committee was authorized to look into the matter and report at the summer meeting, which probably will be held in Glenwood Springs. The mine boss may take a risk that the fire boss deplores, although the latter generally is subservient to the decision of the former, according to a paper read by R. S. Morton. It was suggested that he be given as much liberty as a coal mine inspector under state direction.

D. A. Stout of Pueblo, chief engineer of the Colorado Fuel & Iron Co., read an interesting paper on the "Unwatering of the Rouse mine," the third in the Walsenburg district and the second of the company's in that district. Other technical papers were read by George A. Brown of Cumberland, Wyo., Robert Marshall and Sam Andrew of Farr; Robert McAllister of Trinidad, and Tom Ollier and Parley Potter of Tremont County.

B. J. Matteson, the president's industrial representative of the C. F & I. Co., presided, and later was succeeded as president for the ensuing year by Robert M. Magraw of Hiawatha, Utah. F. W. Whiteside, chief engineer of the Victor-American Fuel Co., Denver, was re-elected secretary and treasurer.

The operators visited a mine owned by John McNeil near Frederick, and while there witnessed a performance of the Oldroid mining machine. Fifty operators from Wyoming, Utah, New Mexico and Colorado attended the convention.

Coming Meetings

Nova Scotia Mining Society will hold its annual meeting April 5 and 6 in Halifax, N. S. Some interesting coal papers are to be presented.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7. Secretary, G. H. Merryweather, Woodward Bld., Washington, D. C.

Canadian Retail Coal Association will hold its annual convention April 6 and 7 at the King Edward Hotel, Toronto, Ont., Canada. Secretary, B. A. Caspell, Brantford, Ont., Canada.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill., May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The National Coal Association will hold its next annual convention at the Waldorf Astoria Hotel, New York City, May 19 and 20. White Sulphur Springs hotel reservations have been cancelled. W. B. Reed, secretary, Commercial National Bank Bldg., Washington, D. C.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary Calvin W. Rice, 29 West 39th St., New York City.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

National Retail Coal Merchants Association Sixth Conference of Secretaries and Executives to be held at the Baltimore Hotel, Kansas City, Mo., May 15 and 16. For reservations address H. S. Mitchell, New York Life Bldg., Kansas City, Mo.

National Retail Coal Merchants Association will hold its annual meeting May 12, 13 and 14 at the Jefferson Hotel, Richmond, Va. Secretary, E. G. Gordon, Philadelphia, Pa.

The National Foreign Trade Council will hold its eighth annual convention May 4, 5, 6 and 7 at Cleveland, Ohio. Secretary, J. G. Hammond, 409 Park Bldg., Cleveland, Ohio.

Illinois Mining Institute will hold its spring outing the latter part of May on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on May 26 and returning on May 28. Secretary, Martin Bolt, Springfield, Ill.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Astonishing Moderation

ONE may well read with care the section on coal of the report made to the Senate by the Select Committee on Reconstruction and Production, presented by Senator Calder and released for publication this week. We confess to agreeable surprise at the temperate tone of the document. It is not argumentative; it appears to be a carefully-prepared digest of opinions and statistical data followed by a simple set of recommendations as to legislation. The report has none of the earmarks of the F. T. Miller style of publicity that accompanied the hearings of the Calder committee.

The recommended legislation affecting the coal industry covers the same ground as the amended Calder bill as reported by the La Folette committee, providing not for regulation of the industry but simply for collection and publication by the government of current facts on coal. An amendment suggested to the Transportation Act, tying the hands of the Interstate Commerce Commission in handling transportation emergencies, indirectly affects coal.

Excessive prices and profits are stressed, and the quarrels within the coal industry itself, the need of protecting the public which paid the excessive coal bills of last year, are headlined.

The Calder report is convincingly written. It will require much careful explaining.

The Value of Coal Properties

CONTEMPLATING the established fact that there are in the United States more bituminous coal mines by 40 per cent than are necessary to produce the half billion tons of coal we require in a year and the further fact that so far this year the market for soft coal is so indifferent that but little business is being done, one seeks an explanation for the quiet but persistent activity in coal lands, coal mines and the development of both old and new properties.

The wise man in the coal business—the one who succeeds year in and year out—is he who buys his properties when the price of both coal and coal land is low and who buys only the best. The price of coal itself was no more out of line last year than the price of coal land and coal mines. The "sense of value" of the owner of coal properties is returning to normal more slowly than the price of coal descended, but trade in mines has been picking up in recent weeks.

Why should anyone open a new mine now? What possible warrant is there for increasing productive capacity? There never has been a time in the history of our coal industry when there were sufficient mines producing the highest grades of coal to meet the demand. A large public utility advises us that whereas before the war the coal it received averaged 8.5 per cent ash, during the war and in 1920 its coal—the best it could get—was 20 per cent ash, and it has not this year been able to get coal averaging less than 15 to 18 per cent ash. From a commercial standpoint one is fully warranted in opening up a new mine that will furnish high-grade low-ash low-sulphur coal. Such a product is salable any day in any year. The new mines that are being developed and the old mines that are being rejuvenated and enlarged this spring are of this character. The dirty coal mines, whose number is legion, cannot and do not expect to operate when they must meet competition. The consumer may not know the meaning of B.t.u. but he knows good coal from bad and he buys good coal by preference. Therefore mines that produce poor grades of fuel automatically close during such periods as the present and become standby reserves, as it were, against times of high demand and maximum output.

A second factor that governs the selection of a mine for purchase or the development of a new property in such times as these is the cost of operation. The variation in this is well illustrated in the cost reports of the Federal Trade Commission. The reports of 425 companies operating 789 mines in central Pennsylvania in 1918—a boom year—show that 33 per cent of the companies with 55 per cent of the total output had costs below the average for all and that 67 per cent of the companies producing 45 per cent of the total had costs above the average. The range of costs above and below the average is even more striking—the lowest cost reported for 1918 in this field was $1.55 per ton, or 66c. below the average, which was $2.21, and the highest was $3.73, or $1.52 above the average.

Likewise in the southern field of Illinois the report of the Federal Trade Commission shows that of the 54 companies reporting costs in 1918, 27, or one-half, representing nearly 60 per cent of the total output, had costs equal to or less than the average—$1.93 per ton—and that for the upper 40 per cent, costs ranged from $1.95 to $2.60 per ton. The highest cost was 67c. above the general average and the lowest cost was 38c. below the average. The range in costs thus exhibited as between companies in the same field, striking as it is, is no more marked than that of costs at mines of the same company in the same field. It is at times like these that operators shut up their high-cost operations and push the low-cost properties. It is also at times like these that consumers turn from the mine that produces inferior coal to that with a high-grade product.

It is therefore the operation of the law of the survival of the fittest that has closed several thousand of the 8,722 mines that were producing coal at the end of last year and that encouraged the opening of a number of new properties at the same time. In fact the next few months will be the opportune time in which to develop a source of supply of the best coal.

A Good College Ill-Housed

FOREMOST among mining states is the Commonwealth of Pennsylvania. Oldest and largest, one would expect that the college which the state has built and fostered as its own, the institution which it knows as Pennsylvania State College, would have a building second to none.

You are, therefore, surprised, in passing down the main street of the village known as State College, when shown a series of abutting ramshackle wood buildings you are told that here is the more important of the two structures which the state has dedicated to the use of its mining students. At variance with all that has been taught about the need for buildings such as will promote public safety and in startling contrast with the housing advocated on behalf of the toilers in the mines is this inflammable, unsightly frame building in which are to be found all the machinery and apparatus for the instruction of students.

Your guides would have you look elsewhere. Here is the large Mechanical Engineering Building, the Carnegie Library, the Chapel, the Liberal Arts Building, the Gymnasium, the Chemistry Hall. Well beyond are the agricultural buildings—substantially built, well equipped, modern, thoughtfully designed. Agriculture at least is well cared for. Even the live-stock barn with its decorative silos and the hall where the stock exhibitions are held are better than that which a great mining state allots to its mining students.

Yet State College has a good mining school which has given the state and the nation worthy, well-equipped mining men. A start has been made toward a better future. A substantial mining building already has been erected large enough to contain the mining museum with two main and accessory offices, and plans have been laid for its extension. All that is needed is the appropriation to make the project an accomplishment.

The agglomeration of sheds on the main street of the village eventually will be vacated for better quarters, but why not soon? The need is immediate. Should a fire occur—and no earthly power could halt it if started—the state would not only have to erect a new building but buy new equipment and find some way of caring for the 150 or more students meantime.

State College was built by the state and accepts the state's direction. It has not gone to generous minded plutocrats for its sustenance. Something has been said lately of the questionable value of such universities as are financed by the wealthy rather than by taxes. State College is a reminder that, at least in Pennsylvania, the care and interest of the body politic in mining education is not as devoted as it might be, and that after all, the bequests and gifts of the wealthy are a safer basis for success and prosperity than the revenues of the state, even in a commonwealth like Pennsylvania, a rich mining state which might be expected to provide liberally for the training of its mining engineers.

The public has been somewhat restive of late as to the progress in the coal industry. It is thought that it displays too much respect to tradition and too little inventive ability. Nothing will do more to put the breath of progress into its lungs than the inspiration for advance and research which a college training gives.

The legislators should be urged by every mining man not to overlook their duty to this educational establishment. The state is in need of men of trained minds to direct its mining enterprises as well as to cultivate its farms or manage its shops. The present session of the Pennsylvania Legislature should provide the funds for the necessary construction. The present year is not a time for unreasonable economy. When business halts, the state and national governments should not by an excessive parsimony add to the number of the idle.

By Mule or by Locomotive

SO MANY and varied are haulage problems that it is hard to visualize them all. Mr. Kingsland in his article in this week's issue, entitled "Advice to Those Who Propose to Install Locomotives for Gathering Purposes," reflects peculiar conditions which have to be met in some regions. The Connellsville system of mining, which is in operation in the Connellsville mines, in those of the Consolidation Coal Co. and in McDowell County, West Virginia, is not conducive to concentration in operation. Still less is work concentrated when pursued according to the modified Connellsville system adopted by R. A. Magraw in his Utah mines, and also described in this issue.

Not infrequently is safe and complete mining attained by methods which prevent concentration of effort. Few methods are so favorable to effective haulage as the old plan of rooms to both right and left with small pillars in both rooms and entries and a pillaring angle in the rooms which is but slightly inclined to the direction of the entry. The tonnage from such entries is so large that four or five of them will keep a mine of fair output busy. Consequently the gathering radius can be kept small, which is a manifest advantage where the gathering unit is one able to travel only slowly.

The need of concentration is readily apparent, but in most mines the work really is concentrated. Especially is this true in low coal, for it is hard to keep development enough ahead, and while the area opened does not perhaps produce a large tonnage the number of cars delivered from a given area is greater than where the cars are larger and take longer to fill. In low coal wherever the gathering unit has to take cars into, and remove them from, the rooms, there is a need for mechanical operation into which the lack of concentration cannot enter as a disturbing factor. The mule and horse require such generous headroom that their employment for this service is unprofitable.

Besides, where men are indisposed to push their loads to the room entry and push the empties back again, the driver is equally disinclined to chase the tail chain into the room and bring out a load and then hitch to an empty and after its delivery follow the trace chain to the room neck. He likes to ride better than to run. Driving a gathering mule is a hard job and one which does not result in much accomplishment. It is extremely tiring to the man who does it eight hours, day after day, for the going is not easy where the roof is low and where, cars being small, trips are many.

Even if he is relieved of half of these trips by the good offices of the miner, he likes to make them on a locomotive rather than largely on foot and he is more disposed to keep going when the locomotive does the work than when the energy expended is his own.

In short both in thick and thin coal there is generally the needed concentration, and in thin coal whether the work is concentrated or not does not answer the question of locomotive or no locomotive, because in low coal other conditions make a locomotive imperative.

Labor and Uncertainty in Moving Cars Saved by the Use of Go-Devils

Gravitation of Cars Upon the Surface Is Uncertain, Depending Much Upon Weather Conditions—The Installation of Go-Devils at the Scott Anthracite Colliery Greatly Reduced Tramming Expenses and Rendered Operation Far More Reliable

By Dever C. Ashmead
Wilkes-Barre, Pa.

GRAVITY as a means for moving mine cars upon the surface is rarely advantageous and never dependable because it is impossible to grade the tracks so as to suit the diversity of equipment and its varying condition. A fall that is adequate at one time of the year may be utterly inadequate at another when frost is on the tracks or the oil becomes stiff and therefore a poor lubricant. A gradient that may serve admirably to move one type of car may not be sufficient to budge one of another type, and an inclination that was designed for an old car may be entirely unsuited to a new one of similar character, or vice versâ. Cars moved by gravity are continually traveling either too fast or too slow.

Around anthracite mines mine cars of many different types are likely to be found. Some of these may have roller bearings, whereas the majority are fitted with plain journals. Furthermore, cars of different sizes may come to the same breaker, as the beds worked may not be all of the same thickness. Then, again, not infrequently two collieries are combined. In this case it may be necessary for this reason to handle two different types of cars. Furthermore, new cars are always being put in service to replace those worn out or to augment the number already in use. Conditions of this character signify that a gradient that may be established for one type of car soon will become useless, and it is practically impossible to establish any inclination that will accommodate all types of cars and conditions of operation.

Gravity Here Failed to Do the Work

At the Scott Colliery of the Susquehanna Collieries Co., at Kulpmont, Pa., conditions exist somewhat similar to those outlined above. Here the cars were formerly moved from the shaft landing to the breaker and back again by means of gravity. From the shaft to the breaker the distance was about 400 ft. The grade over this road, however, did not give the same amount of trouble as did that over which the empty cars had to travel. When the cars returned to the surface from the top of the breaker they moved by gravity a distance of about 400 ft. to the foot of a car haul, by which they were elevated sufficiently to enable them to make the 600-ft. return trip to the top of the shaft.

Although the short distance from the shaft landing to the breaker, as stated above, did not give the same

TRIP OF EMPTY CARS ASCENDING INCLINE ON WAY TO SHAFT

The shaft headframe can be seen on the right. The track on that side is for the use of loaded cars. Between the rails of the empty track can be seen the roadway on which the go-devil travels. Along these rails a small steam pipe is laid. Exhaust steam runs through this pipe and keeps the track thawed out at all times. In the left-hand corner of the illustration can be seen the go-devil returning for more cars. It has taken the empties almost to the knuckle and is going back for more, leaving the trip resting on the safety catches. Evidently there was insufficient room at the top to hold all the cars brought up on that trip.

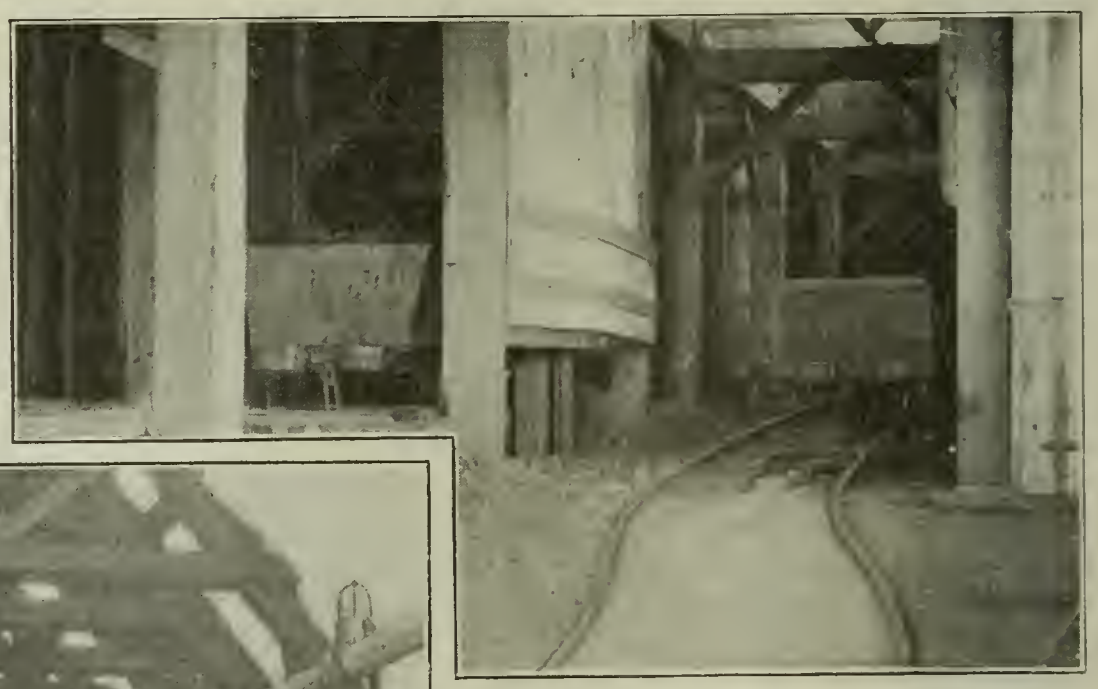
amount of trouble that the longer return journey for the empty cars entailed, it was found necessary, nevertheless, to employ a trolley locomotive to assist the loads. This motor did not operate on the main track but on one parallel to it. A pole was placed upon this locomotive sufficiently long to reach and push the cars upon the loaded track whenever this became necessary.

On the empty road the cars that rolled easily would move with such speed that it became necessary to sprag them so that they would not strike too hard those that were in front of them. Those that were stiff would not move on this grade in the winter, and it became necessary to push them. This meant that during the cold months men working in the blacksmith and machine shops frequently would be called out to move these empty cars. At times it took as many as twenty men to handle the empties. This was not only expensive but men who should have been working at their proper jobs were performing other tasks for which laborers should be employed and not skilled workmen.

It was impossible to keep a regular crew for this work, as it was necessary only at times, and when the necessity was over these men would be without a job. Utilizing the services of high-priced mechanics at this kind of labor meant that their work was always behind, and as a result other departments of the mine were interfered with, causing either a loss in efficiency or in the amount of coal produced. It became necessary, therefore, to devise some means to take the place of the man power required to move the empty cars. A number of different plans were proposed, but the idea of using go-devils to facilitate this car movement finally was adopted.

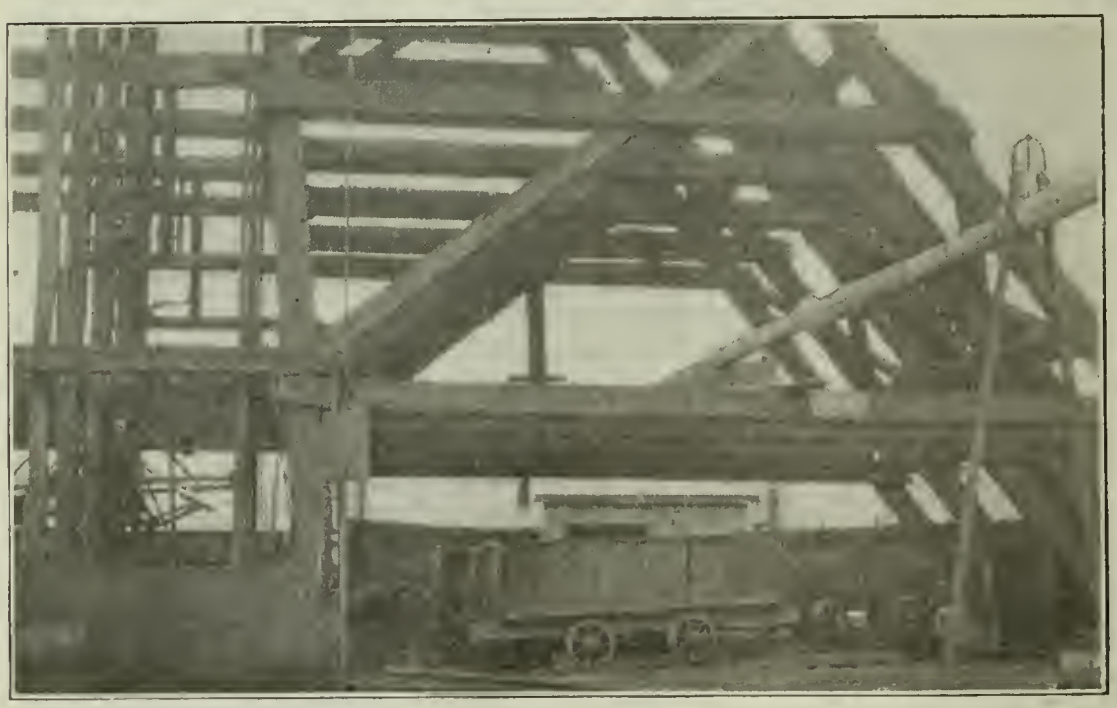
In the system that has been developed at this colliery, mine cars kicked off the cage at the top of the shaft are permitted to gravitate as far as they will. In many cases they travel all the way to the breaker. When they stall upon the grade, however, they are picked up by the go-devil, which pushes them to a point where they will run freely. This device is operated by a small electric hoist from a brick building, so constructed as to afford the hoist man a clear view of the track. The go-devil is so arranged as to move upon its own rails independent of the mine-car track and also so that it may pass under the cars in the direction opposite to that in which they are moving or are to be moved. When pulled in the same direction as that in which the cars are to travel, an arm extending upward engages the axle of the car and moves it along the track.

When a loaded car has arrived at a point near its destination, the go-devil releases its hold and the car gravitates for a distance of about 53 ft. to the car hoist at the foot of the breaker. This 53-ft. grade is sufficiently steep so that even the stiffest car will not only traverse it freely but arrive at the hoist with sufficient momentum to kick the empty car off the cage. The empty car moves onto a transfer table. It is then transferred to such a position that it will clear the breaker headframe, from which point it travels by gravity a distance of about 100 ft. to the foot of the empty-car incline. The grade from the breaker to this point is sufficiently steep to insure that the cars will not stick, and as the distance is short, they will not attain such momentum that they will strike with a disastrous blow any car that may be in front of them.



Bottom of Breaker Hoist

On the left is a mine car on the cage ready to be hoisted, and on the right is a car on the transfer table about to be run to the foot of the incline.



Top Landing of Shaft

A transfer table places the cars in the proper position for caging. One mine car is on the transfer table and the other is ready to run on the cage.

Trip Usually Consists of Five Cars

From the foot of the empty-car incline a second go-devil then returns to the bottom for another trip. Safety stops are placed at intervals along the incline, so that the cars may be stopped at any point and the

TRIP OF EMPTIES STARTING UP INCLINE

At the bottom of the slope is a curved piece of steel which the go-devil on its return pushes down as it passes, thus signalling the hoistman at the top of the incline that he must stop the engine or the go-devil will run into the sheave wheel at the bottom.

go-devil brought back to the bottom for more empties. The ordinary trip from the bottom to the top consists of five cars, but in many instances as many as six are thus moved. Near the top, if cars are left standing on the grade, the go-devil can push as many as twelve or fifteen past the knuckle.

From the knuckle to the shaft there is a down grade sufficiently steep to allow the cars to move freely by gravity. Here the empties are run upon a transfer table and delivered to the proper track leading to the shaft. This shaft has four compartments, and as many as 560 mine cars are raised and lowered during a day's run. Thus it may readily be seen that the go-devils are likely to be kept busy throughout the entire shift.

The advantages that have resulted from the installation of this arrangement are many. In the first place, the number of men regularly employed on the surface tracks has been reduced by six. Furthermore, it is now unnecessary in winter time to call upon men employed in the blacksmith and machine shops to come out and help move mine cars. The old car haul that was used to raise the mine cars to a sufficient height to permit them to drop back to the shaft by gravity has been dispensed with. Furthermore, the cars now move when such movement is necessary and not alone when weather conditions permit.

The mine locomotive referred to as being required to handle the loaded cars has been released for use within the mine. What probably is of as much importance as anything else is that the worry, care and attention that the old method imposed upon the management has been lifted, so that the various officials may now devote their time to the more essential details of the handling and preparation of the mine output. Half the inefficiency around a mine results from the time and effort expended on transportation worries which with proper equipment, forethought and expenditure would not arise.

THE INTERSTATE COMMERCE COMMISSION reports that during 1920 the pay of enginemen and trainmen, the cost of fuel, locomotive and train supplies, and engine-house expenses was $2.05 per train mile in the case of freight trains as compared with $1.65 the year before. For passenger trains the expense in 1919 was $1.08 per train mile. The expense for fuel for freight trains averaged 63.8c. per train mile compared with 49.6c. during 1919. Coal used in the transportation service increased 88c. per ton over 1919.

Setting Sights in a Silesian Mine

SIGHTS usually are set in American mines by a transit used either as an instrument for measuring angles or as a compass. Something is to be said in favor of a method of sight setting by a compass swung on a cord, the end of the cord being moved till a point is reached that gives the line the desired direction. The surveyor or foreman thus setting sights is not troubled by having to carry a lot of heavy equipment, and he needs no assistance except such as can be obtained at the mine face. He does not hinder traffic as much as when backsighting and foresighting, nor does he need air clear from powder smoke.

His work with such a compass is lacking in accuracy, but it is close enough for room and crosscut sights, and even for back-heading work it is readily available, provided there are no iron rails to lead the compass needle astray. Celerity, convenience, low cost and the ability to use men of lesser training are advantages.

When sights are needed they should be given promptly and they should always be set where they are needed. Ready availability will fill the want more truly than will mere accuracy. Extreme meticulousness is needed only in main haulageways. The transit alone will perform such work. The illustration shows a German official (in the inevitable uniform) reading the compass by the light of an acetylene lamp in the Ferdinandhütte mine in Silesia. Apparently he has clamped the needle before taking the reading.

RAPID WAY OF SETTING SIGHTS

Sights are set far apart; nevertheless, in narrow places they can be set with this instrument, as no focal length has to be accommodated and room does not have to be provided for the crouching engineer.

Advice to Those Who Propose to Install Locomotives for Gathering Purposes*

Storage-Battery Locomotives Suited to Concentrated Work Where Grades Are Under Five Per Cent—Combination Locomotives Adapted to Gradients Under Ten Per Cent—Cable-Reel Locomotives Can Work Satisfactorily on Pitches up to Fifteen Per Cent

By R. L. Kingsland†
Fairmont, W. Va.

COMPARISONS between costs of gathering with different mechanical equipment cannot be safely made, because the conditions under which the work is performed are so exceedingly diverse. Costs also vary very greatly from time to time. A case cited from records of the Consolidation Coal Co. shows the influence of outside conditions on the cost of gathering.

During 1916 coal was gathered for 5c a ton. During 1920 it was gathered for 20c. a car with the same locomotives from the same mines and under mining conditions more favorable to the locomotives. This increase in gathering costs is accounted for by higher wages, poor and irregular railroad-car supply and a decrease in the efficiency of labor. Into these changes the physical condition of the miner did not enter except as it helped to hold down costs which rapidly mounted by reason of the causes mentioned.

Mules Still Gather Most of Coal Mined

The simplest form of gathering is where the miners themselves push the cars in and out of the rooms. Obviously this method has marked limitations, but it is still being employed in some places where the grades are in favor of the loads and where small cars are used. Horses or mules probably still gather the greater part of the coal mined in the bituminous fields. The experience of the Consolidation Coal Co. has shown that a fair average for live-stock gathering is two and one-half cars per hour, or a total of twenty cars during an eight-hour day.

Mechanical gathering is comparatively new and, I believe, should be approached by the average mine operator with much caution. In my opinion, the instances where a decrease in gathering cost can be made by changing from live stock to mechanical gathering are the exception rather than the general rule. By this I do not mean to say that mechanical gathering does not have an important part to play in the coal mining of today but that the reason for its establishment is often not to save cost but to meet other problems, among which may be mentioned: Scarcity of labor, objections of laboring men to the pushing of cars, and the fact that at some mines increased tonnage can be obtained when coal is gathered by mechanical means because there is then less congestion in traffic.

The only power that the Consolidation Coal Co. has used for the propulsion of gathering locomotives has been electric energy, so I shall limit myself strictly to a consideration of electrically-driven locomotives. Of these there are three principal types: crab-reel, cable-reel, and storage-battery machines.

Owing to the excessive amount of labor required in pulling the cable into the rooms, favorable results could not be obtained from the straight crab-reel locomotive. Furthermore this type of gatherer cannot push an empty car into a room. The Consolidation Coal Co. has found, however, that in some mines it was handy to have crab reels on some of its locomotives, as they were thus made suitable to odd jobs.

The cable-reel locomotive is one of the types most readily adaptable to gathering. These machines are highly flexible and have been successfully operated where long cables had to be used. The most important source of trouble is the cable itself. Inexperienced motormen frequently run over it and cause much delay as a consequence.

The third important type is the straight storage-battery locomotive. This has a maximum of flexibility, as it can run anywhere on its own power, irrespective of feed or return lines. There are, however, several limitations to the battery machine. It is restricted in its day's work by the size of the battery and by the amount of energy it can store. Owing to the weight of the battery, the locomotive can be abused by causing it to pull excessively large trips. Under such conditions energy of the battery will be expended before the end of the day. The batteries require expert and systematic attention.

Combination Locomotive for Scattered Work

The Consolidation Coal Co. has had much experience with combination trolley-and-storage-battery locomotives. In one of its divisions about fifty of these machines have been installed. They are standard 250-volt two-motor 6-ton locomotives of the type usually used with cable reels. It has discarded these reels, and in their place has provided storage batteries. Throughout the day, whenever the locomotives are running on the trolley, they receive boosting charges. The special field for this machine is where the mining work is scattered. The locomotive can gather a few cars in one place on the battery, and then run on the trolley to some other section for a few more cars. As compared with the reel locomotive it has the greater flexibility. In comparison with the straight storage-battery machine it has a much wider range of operation, because of its high speed on the trolley and the extra drawbar pull which it is capable of exerting while so connected.

So far no mention has been made of room hoists. The Consolidation Coal Co. has found it necessary to use such machines in some parts of its mines where the grades are too heavy for locomotives. As a general rule

*Article entitled "Gathering in Coal Mines" read before joint meeting of Pittsburgh section of the American Institute of Mining and Metallurgical Engineers and the American Institute of Electrical Engineers, Jan. 21, 1921.

†General superintendent, power and mechanical department, Consolidation Coal Co.

I would say that grades averaging 15 per cent are about as steep as locomotives can successfully meet. It is true, of course, that locomotives have been, and are still being, used on grades much exceeding this. The maximum inclination on which I have seen a locomotive operate was 25 per cent.

Right Type to Fit Need of Particular Mine

The big question the mining man has to solve is what type of locomotive to apply in any operation that he may have under consideration. In some mines this problem is simple, but in most of them the conditions are such that it would be feasible to install either one of two or more types of locomotives, and it is extremely difficult to determine which variety will give the best results.

Let us assume as an average condition a mine that is at present gathering with live stock. In most cases the operation will be so developed that the grades will be in favor of the load. Some of the empties will be delivered to the face by animal haulage and some will be pushed from the room necks to the face by the coal loaders. On the other hand, some of the loads will be pulled from the face by live stock, and some dropped from the face to the room necks by the men that have loaded them.

In practically all cases the loads are not taken farther than the end of the room entry by animal haulage. In most instances rooms are driven only one way from the room entry, and in consequence in few entries are there more than 6 or 8 rooms being worked. Under such conditions the live stock will average about twenty cars a day per head. In changing over to mechanical gathering, in order to make a favorable showing it would be necessary for each locomotive to replace four head of live stock. This would mean that two men with one locomotive must do the work of four men with four head of stock.

Locomotive Should Not Serve Many Entries

It should be understood from the beginning that this result cannot be accomplished unless changes are made in the method of mining and in the condition of the mine tracks. The Consolidation Coal Co. has found in all cases where this change in the method of gathering has been made that it is necessary to improve track conditions materially in order to prevent derailments. Also the development work in the mines should be laid out so that each locomotive, if possible, can get its full quota of loads from one room entry and in no case from more than two room entries.

Another important point in changing the gathering system is to avoid increasing the length of haul from the working faces to the side track. The tendency with most mine superintendents is to believe that gathering locomotives should be able to haul farther than live stock, and they therefore expect them not only to gather as much as four head of stock but to haul these cars to a more remote side track than that to which the live stock had been delivering it.

Storage Battery Locomotive Needed in Gas

Turning now to the question as to the precise use that should be made of each of the different types of locomotives, it may be said that an undisputed field for the straight storage-battery machine is in gaseous mines where no other type of locomotive is permissible. On the other hand, there is a field from which they are positively excluded, namely, where heavy grades against the loads are encountered. Straight storage-battery locomotives will not give good results on heavy grades, for they cannot store sufficient energy for a full day's work. Between these two limitations is left by far the biggest field, where the different types of gathering locomotives meet on nearly equal ground.

Before leaving the battery locomotive I strongly advise against the installation of any such type of machine unless several of them are installed and unless these are so disposed that a trained battery man can give every one of them regular and systematic inspection. Under general conditions I do not believe that it is advisable for the management of an isolated mine to install one or even two battery locomotives unless it happens to have a man familiar with such equipment who will give the batteries the necessary supervision. My strongest argument in support of this recommendation is the fact that under that plan we have been able to operate lead batteries in combination locomotives in such a manner that we have obtained from them on an average about 50 per cent more than their guaranteed life.

Combination Locomotives Hard on Batteries

It should be noted that the batteries of combination locomotives are subject to a service even more severe than that experienced by the batteries of storage-battery locomotives. This is due to the fact that in straight storage-battery locomotives there is only one charge and one discharge per shift, while with combination machines the battery starts in the morning fully charged and is given boosting charges at frequent intervals throughout the day. They thus receive on the average the equivalent of at least two full charges and two full discharges per shift, which is twice the service demanded from straight battery locomotives.

In a new mine where the work will be concentrated and each locomotive can get its full quota of coal from one or two entries and where the grades are not prohibitive, I would recommend the straight storage-battery machine as being best suited to such conditions.

For non-gaseous mines the straight storage-battery locomotive has the smallest range of applicability. It should be applied to mines where the work is already concentrated or to those where the larger part of it will be concentrated within a short time and to those where the maximum average grade is under 5 per cent.

Reel Locomotive Suited to Heavy Grades

The reel and the combination locomotives have yet to be considered. I would recommend the reel machine for maximum average grades up to 15 per cent and the combination locomotive for maximum average grades up to 10 per cent. The latter is suited to heavier grades than the storage-battery machine because its stored energy is not so closely limited. I have already advocated that storage batteries be not used unless sufficient of them are installed and operated close enough together so that one battery man can keep close watch on their care and operation. Where the number of storage batteries to be installed will be insufficient to justify the services of one man for their care, I would recommend cable-reel machines. Where there are sufficient locomotives in use to justify the services of a battery man, I would recommend combination machines. I have found these units more flexible than others because of their lower speed when running on the battery. The battery should give about 125 volts against a potential for reel locomotives of 250 or 500 volts. Experience

has shown also that fewer delays arise from failure of storage batteries and accessories than are experienced from similar mishaps to cable reels and accessories.

Locomotives with cable reels cost less than similar machines equipped with storage batteries. I have found that the maintenance cost on both is about the same, but there probably is some small difference in the power consumption of the two types. The Consolidation Coal Co. has not made any accurate tests on this point, because in general the results show that there is no appreciable difference. Our records prove, however, that the combination locomotive will gather from three to five cars more per day than will the reel type of machine. This increase more than outweighs the extra investment that must be made when the combination trolley-and-storage-battery locomotive is installed.

System Must Conform to Mechanical Needs

So far no mention has been made of mechanical gathering except as regards that done by locomotive and room hoists. Many conveyor and scraper-loader systems have been suggested, but to date the Consolidation Coal Co. has not found any that it could apply to its methods of mining with any prospect that it would show a saving over locomotive gathering. Neither has this firm seen its way clear to change its mining systems so as to suit any of the methods suggested.

When considering mechanical gathering for a mine too much emphasis cannot be placed on the necessity of making mining conditions suitable for such gathering. For a new operation, where mechanical gathering will be used from the start, this should cause but little extra expense. For an old mine where live stock has been employed extreme care must be exercised in selecting the method of mechanical gathering best suited to the individual operation. All track must be put in good shape; the feed lines and returns must be ample for the service and adequate side tracks must be provided as close as practicable to the working faces. Furthermore, the more the mine workings are concentrated the better will be the results achieved with mechanical gathering.

Unless all these requirements are watched closely the cost of mechanical gathering will show an increase over that performed by live stock. The weight of the gathering locomotive can always be suited to the weight of the cars. Under given conditions a locomotive should gather a given number of cars per day, the weight of the cars thus handled not influencing their number. The larger the cars the larger should be the locomotive, but the number of cars gathered per day remains practically constant. Obviously the larger the car the cheaper the gathering cost per ton of coal mined.

Wisconsin Steel Makes Single Machine to Remove, Transport and Sprinkle Water

MINES sufficiently dusty to require sprinkling, as a rule, make but little water. A part of the regular equipment of such operations is one or more water-bailing cars. In not infrequent instances as many as eight to ten men do nothing but bail water from small local sumps while at the same time an extensive spray system may extend throughout the mine for sprinkling purposes. In other operations tank cars equipped with sprinkling heads and accompanied by air compressors are used for laying dust.

Officials and men of the Wisconsin Steel Co., at the works at Benham, Ky., have recently put into operation the combined bailing and sprinkling machine shown in the accompanying illustrations. This device is the result of the ingenuity and efforts of several people. R. A. Walter is responsible for the basic idea. Details were worked out by R. E. Galbreath, chief engineer, and the machine was built by J. J. Gregory, master mechanic, and his assistant, J. C. Fawbush, together with the regular shop forces. The total cost of the machine was slightly less than $1,100.

This machine consists essentially of three elements, a motor-driven pump, a tank and a discharge or spray head. Water may be drawn from a sump, ditch or other source, and discharged either to the tank to the spray head or to a small spray hose; or water may be drawn from the tank and discharged either to spray head or to the hose, as may be desired.

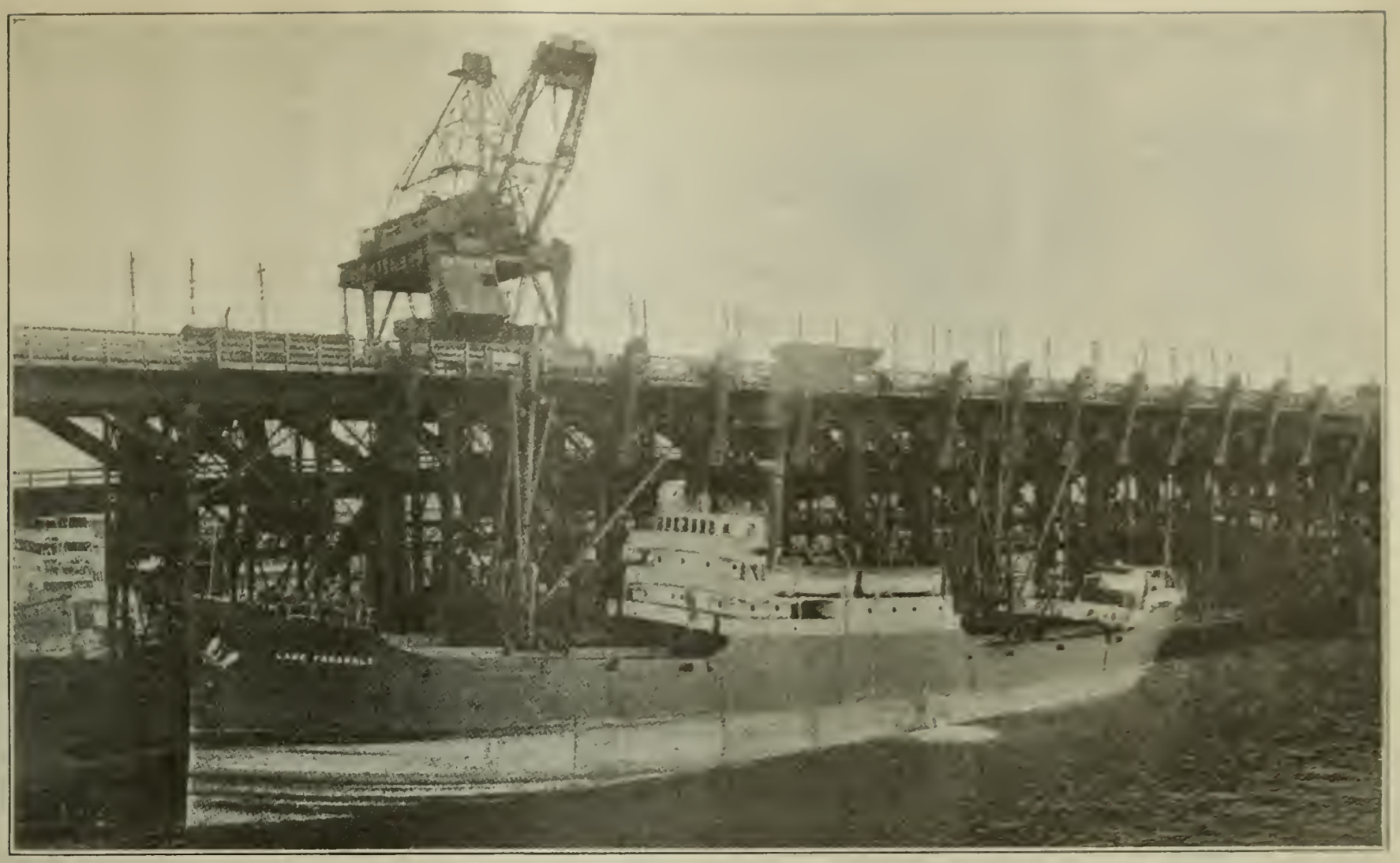
One Man Can Operate the Machine

As ordinarily used this machine is coupled to a Goodman "speedy" cable-reel gathering locomotive. Only one man is required for its operation. It accomplishes two purposes. It voids the water from the wet portions and local sumps of the mine and effectively wets down the dry headings and rooms. The tank holds 600 gallons and the machine will spray 1,200 ft. of heading in six minutes. Under ordinary conditions one man can easily bail the water from and sprinkle a mine with a production of 1,500 tons per day.

That the work performed by this machine is effective may be judged from the accompanying photograph showing the sprinkler in action. Those who have seen the device in operation say that it is highly efficacious. Most mines require sprinkling, and various means have been devised and adopted to accomplish the desired results. Here, as in most other devices used in and about the mines, simplicity and reliability are cardinal virtues—both possessed by this new machine to a marked degree.

WILL RID THE SWAGS OF WATER, WET DOWN MINE PROPS AND WASH DOWN MINE ENTRIES

The machine is shown on the left bailing a surface sump, but it shows quite well how the work is done underground. Props in the hot, dry sun are apt to dry and split. A little water keeps them moist and fit. In the middle illustration the sprinkler is shown serving that office. The principal function of the machine is shown on the right—sprinkling headings—but it also washes them down, dislodging the dust and soaking it.



TELESCOPIC CHUTE ENTERING THE HATCH OF A SHIP

Machine vs. Hand Loading of Ships With Coal for Foreign Markets

Norfolk & Western Briquet Equipment at Lamberts Point Supplants Method of Loading Cardiff Coal — Installation Includes Fourteen Power-Operated Adjustable Chutes—Keeping the System Full of Briquets and Lowering Them Gradually Prevents Breakage

By William S. Campbell
Philadelphia, Pa.

In 1917 the Virginia Navigation Coal Co. erected a briquet manufacturing plant at South Norfolk, Va., on the Norfolk & Western Ry. The purpose of the plant was to furnish coal to the South American trade, which, because of the war, was cut off from its normal supply of Cardiff coal.

The South American trade demanded that vessels be very carefully loaded to avoid breakage of the coal, consequently Cardiff coal was loaded by hand. The Norfolk & Western Railway Co., being confronted by this problem of loading, installed on one of its piers at Lamberts Point equipment, hereinafter described, which was designed especially for the careful handling of the material.

The installation comprises fourteen power-operated adjustable chutes complete with track hoppers and chute machinery and a traveler having suspended from its boom a vertical telescope chute provided with a discharging apron at the bottom.

The method of operation is shown in Fig. 1. When loading a vessel the complete system from track hopper to discharging apron is kept full of material at all times. As fast as the material is discharged from the apron at the bottom of the chute fresh material is drawn from the hopper-bottom pier cars into the track hopper. As a result there is a gradual lowering of the material, which prevents the breakage that would surely occur if material were dropped unhindered through the system.

A view of the complete installation may be seen in the frontispiece. The fourteen adjustable chutes were designed especially for use in conjunction with the telescopic chute, but they can be, and frequently are, used without the telescopic chute when it is desired to load ships in the customary manner, breakage not being considered undesirable. They are provided with cover plates to make possible their operation at an angle greater than the angle of repose of material being handled.

Reference to Fig. 1 will show that a gate is provided at the discharge point of the track hopper, while another is at the discharge point of the sliding box, and a third

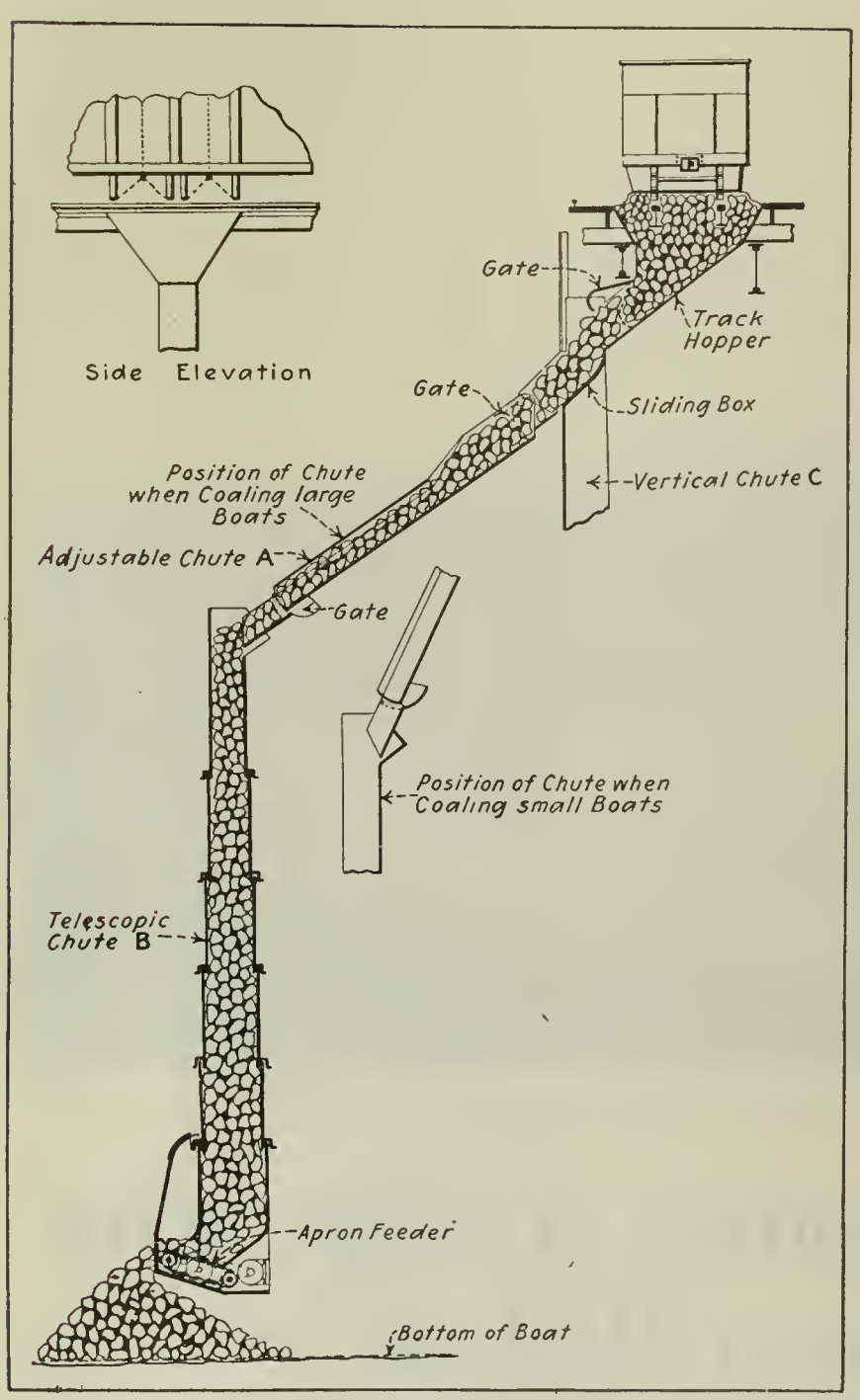


FIG. 1. BY KEEPING CHUTE FULL COAL IS NOT BROKEN

at the discharge point of the inclined chute. These gates make possible the gradual filling of the system when starting operation, thus avoiding the high velocity that material would acquire without their use. Each chute is provided with two 10-hp. compound-wound motors of 30-minute rating. One motor is used to change the elevation of the sliding box; the other for changing the elevation of the discharge end of the chute.

Electric upper-limit automatic switches are provided to prevent over-travel of these two movements when hoisting. Drum-type controllers are supported on pier railing in front of the machinery, so that it is possible for the operator to see both the machinery and the chute. The gates at the discharge points of the track hopper and the sliding box are operated by independent hand wheels, located adjacent to the machinery. The gate at the end of the inclined chute is operated from the ship's deck by means of a hanging hand chain.

The telescopic chute traveler is of the gantry type, to permit the passage of the pier cars beneath. Within the machinery house on the gantry floor are located the traversing machinery, rail-clamp machinery, and the hoisting engines for operating the boom and telescopic chute. The travel speed of the tower is fifty feet per minute, and a 35-hp. series-wound motor of 30-minute rating was provided for propelling it. Two power-operated gravity rail clamps were installed, one to grip the front rail and the other the rear rail.

The boom hoist has one drum which is spur-geared to a 35-hp. series-wound motor of 30-minute rating and a solenoid brake, motor mounted, serves to hold the boom in any desired position. Lowering is accomplished by means of a dynamic circuit. In case of emergency a gravity band brake acting upon the drum shaft can be applied by tripping a release in the operator's house.

The telescopic chute is operated by two double-drum hoisting engines. One engine serves the purpose of adjusting the top of the telescopic chute to any desired position, or holding the top of the telescopic chute at a fixed elevation while telescoping, and the other engine serves the purpose of telescoping or adjusting the elevation of the bottom of the telescopic chute. Both engines are spur geared and each is provided with a 60-hp. series-wound motor of 30-minute rating. Solenoid brakes, motor mounted, are provided with both engines to hold the load at any desirer point. Lowering is accomplished by means of dynamic circuits. Gravity band brakes acting on the drum shafts of both engines can be applied, in case of emergency, by tripping release pedals in the operator's cab.

The apron at the bottom of the telescopic chute is 3 ft. wide, is composed of $\frac{5}{16}$ in. steel double-headed slats, mounted on two strands of SS-96 chain, all with K-2 attachments. It is driven by a 7½-hp. fully-enclosed adjustable speed motor (continuous rating), which can adjust the speed of the apron to discharge from a minimum of 200 tons per hour to a maximum of 400 tons per hour.

A cab was provided at the bottom of the telescopic chute to house the signal man, whose duty it was to have been to signal to the operator in the house on the traveler when he desired to start or stop the apron, or shorten or lengthen the telescopic chute. Signaling was

FIG. 2. DISCHARGE END OF TELESCOPIC CHUTE. AS THE PIT GROWS THE TELESCOPE IS SHORTENED

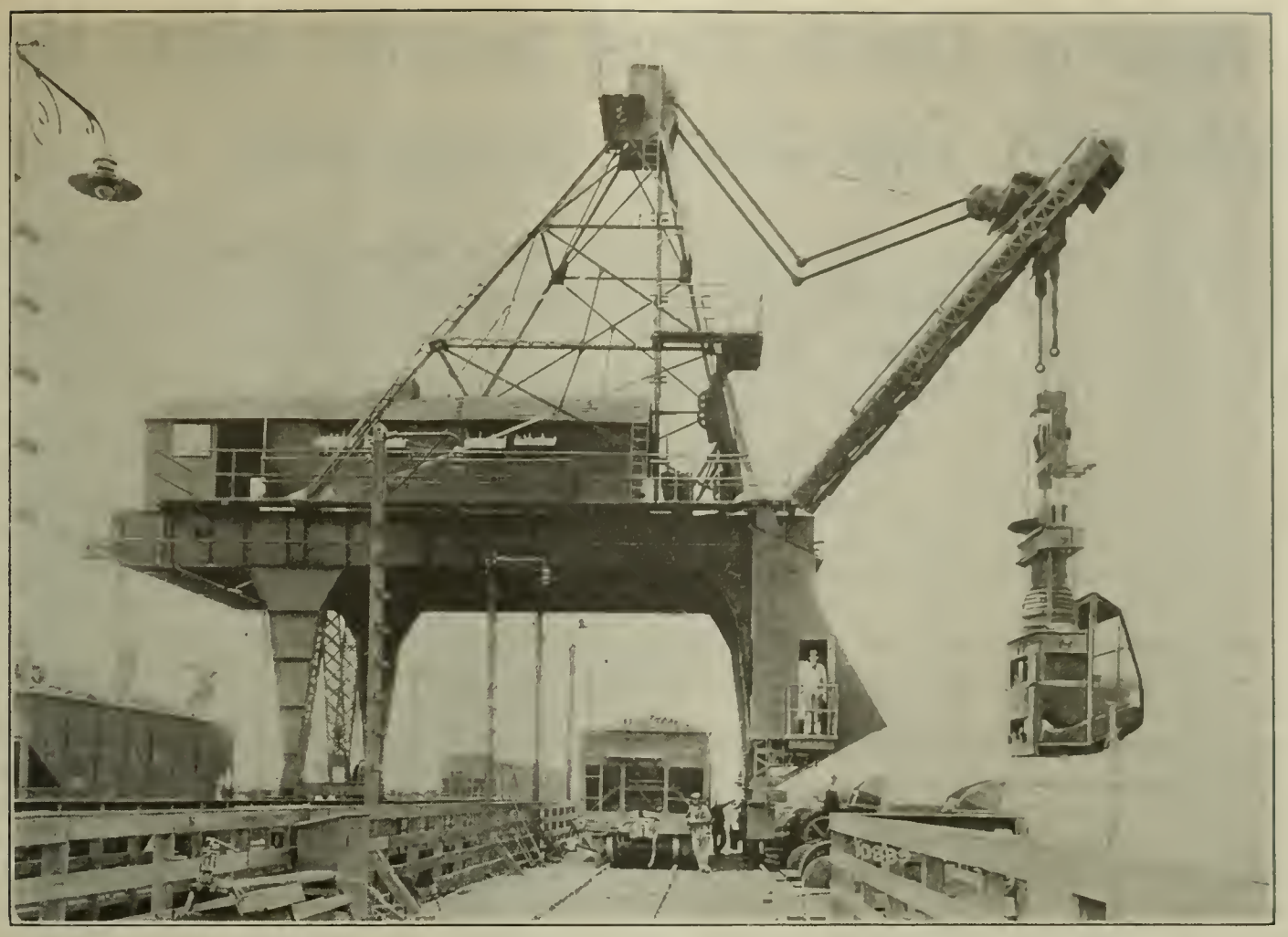


FIG. 3

Traveler with Hoisted Telescopic Chute

Chute is shortened and lifted out of the way of passing ships. When a vessel has been brought into place and the traveler has been adjusted to meet it, then the telescopic chute is lowered until the discharge point of the inclined chute can be slipped into the top of the long telescoping chute, which is lowered by sections into the hold.

to have been accomplished by means of push buttons located in the cab at the bottom of the telescopic chute, with electrical connections to an annunciator located in the operator's cab attached to the traveler. In actual practice, however, it was found that the signal man could not operate satisfactorily in the cab because of the dusty atmosphere. Therefore it was found more convenient for him to walk around the hatchways of the intermediate decks, giving signals either with his hands or voice.

To begin operating the traveler is brought in line with the hatch to be filled, and the telescopic chute is lowered in a closed position until the discharge point of the inclined chute is slipped into the top of the telescopic chute. The hopper gate is then opened, allowing the coal or briquets to fill the system down to the sliding box. The sliding box gate is thereupon opened, thus allowing the material to fill up the inclined chute. The gate at the end of the inclined chute is then opened, resulting in the filling up of the telescope.

When the telescopic chute has been filled it is lengthened until the bottom reaches the bottom of the ship, the material flowing in at the top while the lengthening process is going on. The apron is now started, and the material forms a pile, as shown in Fig. 2. As the pile grows in height signals are transmitted to the operator in the cab (on the traveler) to hoist the bottom of the telescopic chute.

The motor for the telescopic engine and the motor for the apron are so interlocked as to prevent danger of shortening the telescopic chute against a column of coal without operating the apron. The apron can, however, be operated independently of the telescopic engine. The telescopic engine can lengthen the telescopic chute without operating the apron, but the interlocking feature prevents the shortening of the telescopic chute without operating the apron.

Electric upper-limit automatic switches are provided to prevent over-travel of the three hoisting engines in the hoisting directions. The success of the equipment is proved by the quite small number of briquets broken.

A close-up view of the traveler, showing the telescopic chute in closed position and hoisted to clear ships, is given in Fig. 3. In Fig. 4 retouching of the photograph more clearly illustrates the equipment.

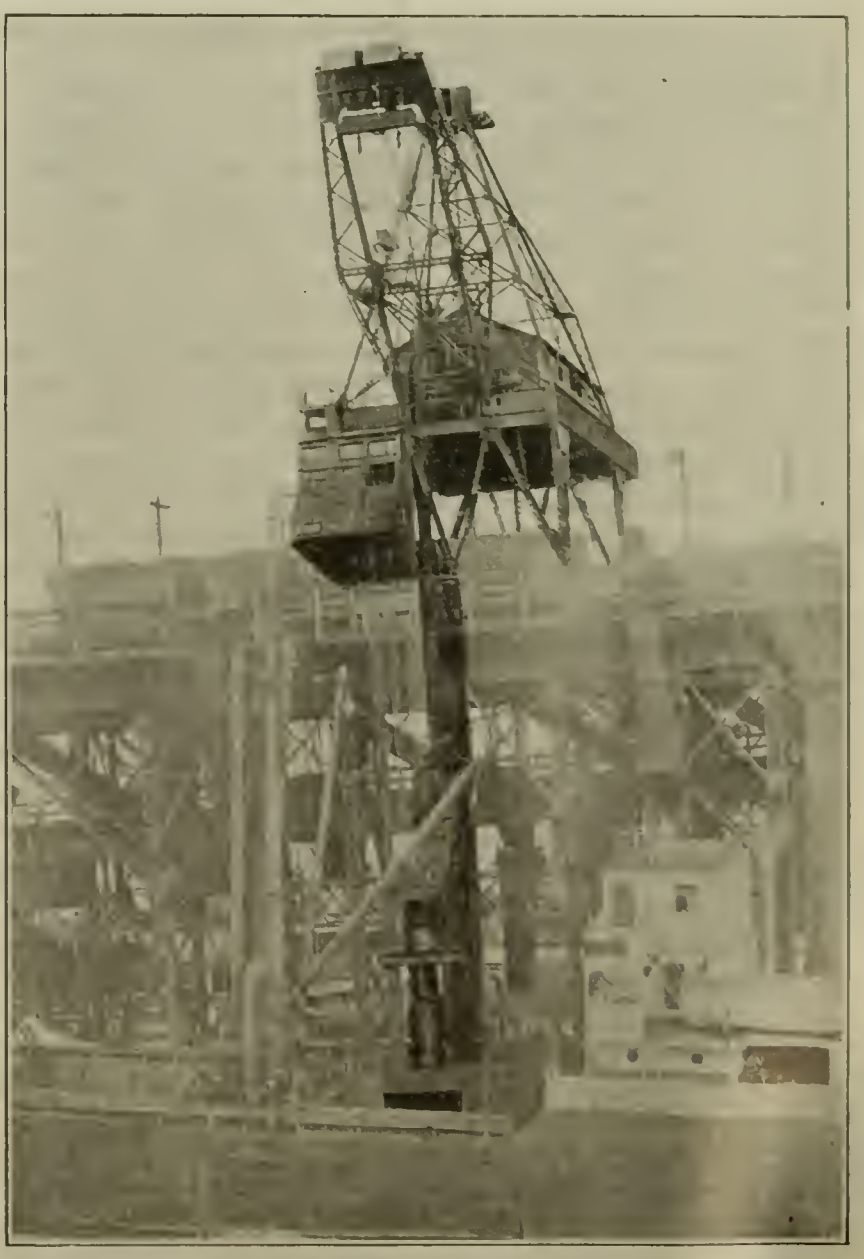


FIG. 4. FRONT VIEW TRAVELER AND LOADING CHUTE

Ways in Which Thick Coal Seams May Be Safely and Efficiently Removed*

Use of Retreating Panel and Operation by Blocks of Five or Ten Rooms Recommended—Break Lines in Adjacent Entries Should Not Be Continuous—"Break Rows" Not Relied On to Break Roof but Used to Give Warning—Operating Methods at Rock Springs

By G. B. Pryde† and R. A. Magraw‡

IN LAYING out a new mine provision should be made for the ultimate recovery of as much coal in any given bed as is consistent with safety and economical mining. Though each mine district, if not each individual mine, has problems that make the adoption of any hard and fast rule impossible, certain basic principles are adapted to practically all conditions. One of the most vital is the provision for barrier pillars of ample dimensions to protect all haulage roads and permanent airways throughout the life of the property.

Where coal is thick, 6 ft. of the seam is mined first. Later 5 or 6 ft. more is blown down, but the first slice is kept 30 to 40 ft. ahead of the second, so as to insure the loaders of steady work should the cutters fail to keep the place cut and so as to afford an opportunity for setting machine jacks. The third and last slice is left in place until the pillar is drawn, the coal being shot down and loaded with the pillar coal on the retreat.

Where conditions permit, room or butt entries should be driven on the strike or slightly to the raise, with rooms turned at right angles to them. The width of rooms and room pillars is governed by conditions prevailing in the mines under consideration. A safe rule is: In advancing, extract not more than 25 to 35 per cent of the entire bed; in exceptionally thick deposits much less than 25 per cent should be taken.

Rooms usually vary in length from 250 to 350 ft. with a barrier pillar of not less than 80 ft. between the end of room and entry above. Entry and room crosscuts should be driven on sights with room crosscuts at right angles to the direction of the rooms. In mines under excessively heavy cover or where the roof is bad, rooms should be driven narrow and a barrier pillar left at every fifth to tenth room. This barrier should be of such dimensions that one or more rooms, with pillars of usual size, may be turned through it when the barrier is no longer required.

Two of the advantages of such a barrier are the protection of the panel against peaking of roof load during pillar extraction and the easy closing of the entry in case of fire. Where economic conditions permit, it is preferable to adopt the retreating panel system of mining. In the case of coal that outcrops, and even in cases where no outcrop is exposed, it is preferable to commence pillar extraction on the high side of the mine.

Where the retreating panel system is used, rooms should be turned in blocks of five to ten on the inside end of the uppermost panel, and, as soon as this block of rooms is completed, the pillars should be attacked and another block of rooms started on the same entry outbye. Until a break line of appreciable length is established, it is well to hold back the turning of additional rooms on an entry, unless the roof is good and the structure of the coal and roof is such that danger from caving, fires and squeezes is minimized.

When extraction of a block of pillars is begun the upper outer corner of the pillar in the first room is lopped off at an angle of 45 deg. with the entry. Successive slices are taken until the face prolonged will intersect the upper outer corner of the second pillar when work at the same angle is there commenced. This operation continues until the break line thus established extends from the head of the pillars being robbed to the head of the rooms from the entry below.

Break Line of Adjacent Entries Stepped

In the meantime, rooms may be started on the inside end of the entry below, so that they will be completed at about the time that the chain pillar on the first entry is attacked. As soon as the chain pillar on the first entry has been drawn back 50 to 100 ft., one or two rooms on the second entry may be driven through the barrier pillar and extraction on the second entry begun. Not more than two rooms should be driven through the barrier pillar at any one time, and the break line on the first entry should be at least 150 to 200 ft. in advance of the break line on the second entry.

Where roof conditions permit the track can be carried square across the pillar end and moved down as the pillar retreats; but where the roof is bad, it is necessary to crosscut the pillar and leave a small stump of coal to protect workmen from caves. Most of this coal can be recovered before the final room settlement occurs, but usually a small amount is lost each time the roof breaks. Where this plan is followed, room No. 1 extracts pillar No. 2, and so on. The miners thus are not forced to work under the loose end, as they would if the tracks were turned in the opposite direction.

In mines where the retreating panel system cannot be

*Paper presented at the February meeting of the American Institute of Mining and Metallurgical Engineers, New York City. Title of paper was "Pillar Drawing in Thick Coal Seams."

† Assistant general manager, Union Pacific Coal Co., Rock Springs, Wyo.

‡General superintendent, United States Fuel Co., Hiwatha, Utah.

adopted the same general rules as to width of rooms and pillars, spacing of crosscuts, and plan of procedure for pillar extraction should be followed. Only under dire necessity should the extraction of pillars be commenced on an entry containing working rooms on the inbye side. Nor, unless ample barrier pillars are provided or some peculiar natural conditions exist, such as a fault or a thinning of the bed, should pillar extraction be started in the middle of the mine.

Thick Coal To Be Extracted Under Heavy Cover

In Carbon County, Utah, the coal is from 7 to 30 ft. thick; the cover rises rapidly from the outcrop to 1,500 to 2,500 ft. The coal is bituminous and furnishes a fine steam and domestic fuel. For years the formation was classed as Laramie-Cretaceous, but recently it has been reclassified as Mesa Verde. In the Black Hawk and Mohrland mines the coal is massive in structure, seldom showing either vertical or horizontal cleavage. It is extremely hard and dense, and breaks with a distinct conchoidal fracture. The bed is clean throughout. Overburden is composed of alternate layers of sandstone and shale, the immediate roof being a massive sandstone about 125 ft. in thickness.

The average dip of the coal floor is about 3 per cent, and entries are driven on sights at an angle of 45 deg. to the strike. Room entries are driven 12 ft. wide and rooms 22 ft. wide with a 50-ft. pillar. Room crosscuts are spaced 100 ft. apart and driven on sights. A 50- to 60-ft. chain pillar, with crosscuts 125 ft. apart, is maintained between the main and back entries. A barrier pillar from 100 to 150 ft. thick, according to cover, is provided between the tops of rooms and the back entry of the level above.

In Rooms the Seam Is Removed in Three Slices

The coal is machine-cut to a depth of 6 ft. and is shot to a height of 6 ft. in the first bench. Five to seven holes, charged with an average of two and one-half sticks of 1½-in. ammonium-nitrate permissible powder, are required to break down the face. The practice is to keep back 30 to 40 ft. of the second bench at all times, not only to insure a more stable supply of coal for the loaders but in order that shorter jack pipes may be used with the mining machines. The second bench is shot 5 to 6 ft. in thickness, making the ultimate height of the room 11 to 12 ft. The remainder of the top coal, ranging from 8 to 15 ft. or more, is brought back immediately in advance of the line of pillar drawing.

Before pillar extraction was begun a series of parallel lines conforming to the 45-deg. break line were projected at 50-ft. intervals. Wherever one of these lines intersected a pillar, a vertical mark was painted, and the lines were numbered consecutively outward, each line carrying its number wherever encountered, hence the relationship of any retreating face to that of all the others could be told by noting the nearest numbered line.

Precautions Adopted to Isolate Squeezes

Maps of pillar workings are extended monthly. The mine foreman not only has a copy of this map but is furnished also with a blueprint of the pillar section drawn to a larger scale than the regular pocket map. On this is shown the exact relationship of the retreating faces to the uniform break line.

At first, progress was slow, for work could be started

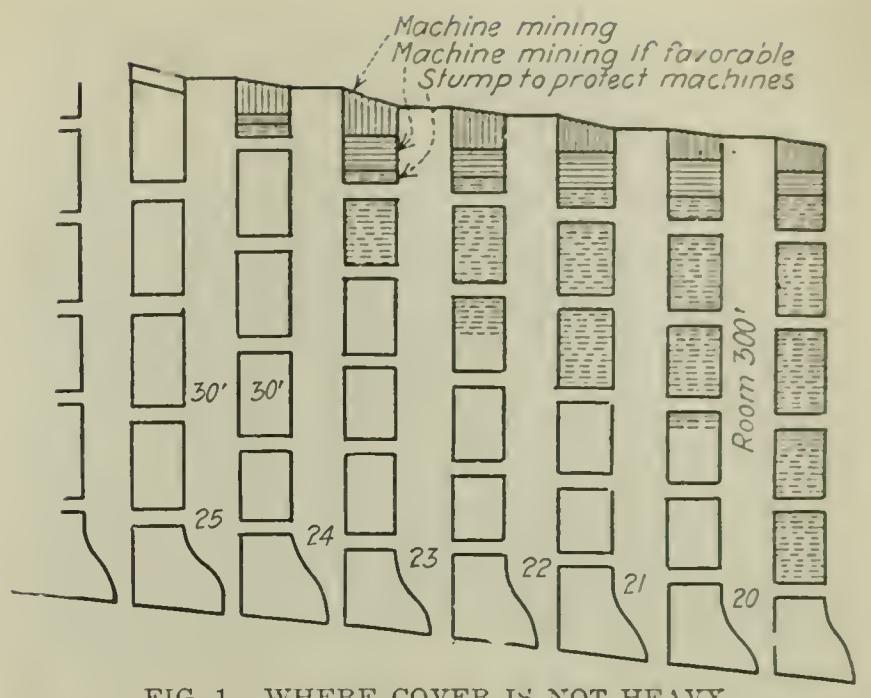


FIG. 1. WHERE COVER IS NOT HEAVY

When the room has been extended the length planned a crosscut 15 ft. wide is driven by machine through the pillar at the face. If the roof is strong another 15 ft. may be removed from the end of the pillar by machine; otherwise, as in room 25, a crosscut must be driven in the pillar, leaving a 7-ft. slab to protect the machine man. By making 15 ft. cuts and leaving 7 ft. slabs, the pillar may be withdrawn. These 7-ft. slabs can be removed by hand mining while the next crosscut is being cut by machine.

on only one pillar; but by working two shifts this first pillar was soon brought down far enough to permit starting the second, and so on until the break line extended from the back entry of the level above to the chain pillar of the entry upon which the pillars were working. It was not considered advisable to carry a continuous break line through the pillars on two entries, hence when extraction was commenced on the second level an offset of 100 ft. was maintained between the two break lines.

Rooms from the lower level are driven through the barrier pillar one at a time as the line of retreat above permits. This insures a large block of solid coal for protection should a squeeze start in either section. Work is so planned that the top level will be about finished when work is begun in the third, so that no more than two or three entries will be worked at the same time.

Machines were used at first, but it was soon deemed too dangerous to undermine the coal either by hand or otherwise. Top coal is kept about 20 to 30 ft. in advance of the pillar faces. Props 6 in. or more at the small end are set under the lip of coal in order to prevent falls of material that may have become loosened by shots or by strain. No effort is made to set break rows, the timber being used simply for its warning effect when the roof is working for a break. Much of the timber is salvaged, but the height is so great that a slight subsidence breaks props and renders them valueless, except for use as ties or cap pieces.

With 2,000-Ft. Cover Nine-Tenths Removed

Whenever the roof breaks, pillar faces are invariably lost. Sufficient warning usually is given to permit the loading of loose coal and the removal of track and other material to a safe place. Caves seldom extend beyond the end of the pillar. Places usually settle within thirty-six to forty-eight hours, so that work can be resumed. If pillar faces are lost, it is necessary to drive crosscuts, starting about 10 ft. from the cave before continuing retreat. Small stumps remaining after completion of crosscuts are robbed of as much coal as possible; if it is unsafe to remove all the coal, stumps are shot in order to enable the roof to fall. In

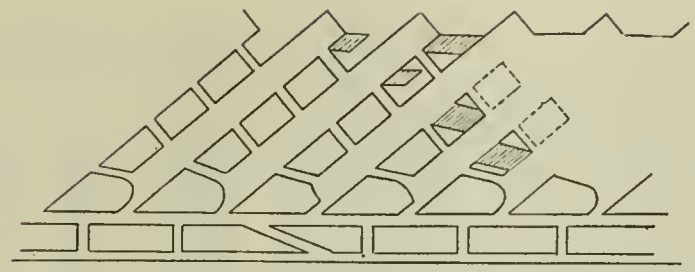


FIG. 2. WITH ROOMS DRIVEN AT ANGLE TO PITCH
In this scheme the pillar is removed by crosscutting, the crosscuts being driven on the strike and not at right angles to the room.

many instances practically the entire stump is recovered.

Up to date extraction has been highly satisfactory. In one area of over 10 acres, with coal 30 ft. thick in places (the average thickness being about 24 ft.) and with about 2,000 ft. of cover, the extraction exceeded 90 per cent. In another area of about the same acreage with thinner coal and less cover, the extraction was about 85 per cent, the necessity of leaving up some top coal to support a friable roof causing loss. In a third area of about four acres, with coal 20 ft. thick and cover increasing from the outcrop to a thickness of 800 ft., the extraction has been as near complete as conceivable.

Breaks When Over Half Acre Is Cleared

As some uneasiness was felt with regard to the possible action of the roof, considerable areas were extracted clean, but the roof showed no tendency to cave even when props were pulled or shot. After a break line 200 ft. long developed and the space worked out was 150 ft. wide, caves from 5 to 10 ft. deep occurred. No further caving took place until the open area was approximately 250 by 200 ft.

In the Mohrland mine the roof arched above the cave, and large openings remained between the caved material and the dome. The roof being massive sandstone, the fragments of rock were extremely large and for the most part angular. After this cave the roof continued to break at intervals of about 50 ft., the caves going higher each time; at a height of about 90 ft. the inspection party was stopped, but from rays of an electric hand lamp the cave seemed to be completely choked about 50 ft. higher.

It is probable that caving extended much higher than this, but as little weight has been shown on pillars it is thought that the void has been closed. In the Black Hawk mine, the roof on experiencing its second cave broke through to the surface, though only about 100 ft. had been cleared of coal, the crevice being about 50 ft. wide by 200 ft. long. The miners worked for several weeks by daylight.

The roof over the pillar section of the Hiawatha mine is composed of shale, with a small bed of coal

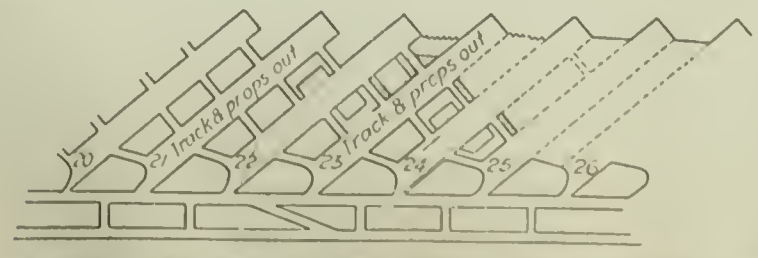


FIG. 3. PILLARS ARE DRAWN FROM ALTERNATE ROOMS
After rooms 20 to 26 are driven up the track and props are removed from alternate rooms 21, 23 and 25 and track is laid along the high side of the pillars which are on the low side of rooms 20, 22, 24 and 26. The pillars are removed by making machine crosscuts with thin slabs left to protect the machine man, as in other cases.

(resulting from a split of the main seam) about 20 ft. above the main measure. The caved material is finely-broken shale and coal, and apparently the cave chokes completely, as no undue pressure has been noted on the pillars.

In this method of mining absolute adherence to plan is required, and while there is no certainty that trouble will not develop, it is believed that whatever success has been attained has been due to this strict adherence to the breaking line. A uniform break line insures even distribution of load over all pillars and prevents the peaking of roof pressure in one or more places, as is the case where the break line is jagged and irregular.

Drawing Pillars in Rock Springs Field

In the Rock Springs field the system above described is modified to suit local conditions. The method followed when the rooms are driven up the pitch is shown in Fig. 1. The rooms are driven for a distance of 300 ft. on 60-ft. centers, the rooms being driven 30 ft. wide, leaving a 30-ft. pillar.

When the room has been driven up its predetermined distance, a place 15 ft. wide is driven across the top end of the pillar on the strike of the seam, mining machines being used for that purpose. When this block is taken out the remainder of the pillar is extracted by hand labor. The roof generally caves immediately after each successive block is removed.

Fig. 2 shows the method employed where rooms are driven on an angle to the pitch, the pillars being recovered in blocks of four. A breaking line is maintained by keeping the outside pillar in the lead. When roof conditions are good and cover is light 75 per cent of the pillar coal may be extracted with mining machines and the remainder by pick mining. In this case a place 30 ft. wide is driven through the pillar, a 7-ft. stump being left on the upper side. This stump is then recovered by hand mining while the machine is cutting another 20-ft. place below the first one, leaving a 7-ft. pillar as before.

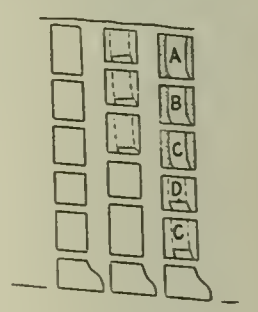


FIG. 4. COVER LIGHT AND ROOF WEAK
Here the pillars A, B, C are split simultaneously by machine cuts and the small pillars left are removed by pick miners. By this means the coal is extracted with extreme rapidity.

In Fig. 3 the rooms are driven at an angle to the pitch, but the props are drawn out of alternate rooms and a branch track is laid up the high side of the pillar. Both pillars are then recovered from the same room. This system is workable only where the roof is strong and reliable. It lends itself readily to machine mining, as does the system shown in Fig. 2. This method insures a fairly complete extraction of the coal and in alternate rooms all timber can be recovered.

Fig. 4 shows a system that lends itself more readily to thick pillars. It is adapted to places where the roof is weak. By working blocks A, B and C simultaneously a rapid recovery of the pillar coal is insured. The mining machine cuts these blocks entering by tracks in each crosscut; the small ribs are recovered by pick miners. This splitting system generally is followed on retreat in the recovery of the entry pillars.

In drawing pillars in thick beds where spontaneous combustion is likely to occur, no pillars are taken out until the boundary is reached; then the pillars are removed in blocks of three, a solid block being left at

each sixth room to facilitate sealing off the workings in case of fire. Rooms are driven on 65-ft. centers when the cover is light, the rooms being 21 ft. wide and the pillars 44 ft. thick.

The work is started on the pillar nearest the face

FIG. 5. WHERE COAL TENDS TO FIRE

Rooms 29, 30 and 31 are robbed, and the adjacent rooms are left with their pillars, so that the area can be sealed off should heating in these rooms occur.

of the entry, three men generally working on each side of the pillar, taking off successive skips as shown until the working parties meet in the center of the pillar; stumps are left to prevent the rock from sliding when caving occurs.

The withdrawal of pillars on the panel system is best accomplished as shown in Fig. 5, except that it has been found advisable to draw back the pillars on one panel in a uniformly straight line. Much of the success of drawing pillars depends on systematic work along predetermined lines, and, when the roof is strong, the withdrawal of standing timber is highly necessary if successful results are to be obtained.

Welding Machine Having Self-Controlled Current Affords Only a Short Arc

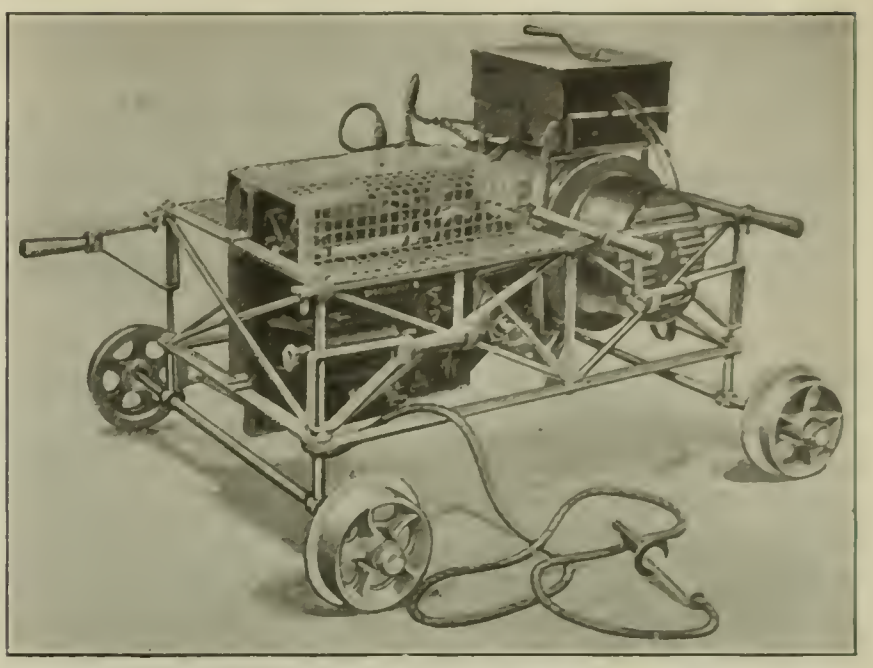
THE new electric-arc welding machine shown in the accompanying illustration has been especially designed for rail bonding and track work. The fundamental principle involved is that of uniform heat per unit area of weld. This is accomplished by means of a short arc and an automatically controlled current.

It is generally conceded that the best electric welds are made with a short arc. This is because the heat is localized, the metal flow is well controlled, and the weld is never burned or hard. In the machine illustrated the potential across the arc is only 18 volts. Consequently it is impossible to hold a long arc, and when the operator has acquired the knack of short-arc welding, which is not a difficult matter, he produces uniformly good welds.

Current control is accomplished by means of a solenoid operating in conjunction with a carbon pile. During welding this regulator automatically maintains the current at a practically constant value regardless of line variations. Short-circuit current is held to within about 10 per cent of welding current. Heat is controlled within 4 per cent.

This plastic-arc rail-bond welder is unaffected by line surges. It is in reality a dynamotor using the metallic-arc process. The device is wound for two voltages; one machine operates on 350 to 650 volts direct-current and the other on 150 to 350 volts.

Although the machine is specifically designed for and adapted to rail bonding and track work it also is valuable for general repair and shop welding, as it has been made for continuous service at full rated welding current. The Wilson plastic-arc rail-bond welder here described and illustrated has been developed by the Wilson Welder & Metals Co., at the request of the Ohio Brass Co., of Mansfield, Ohio, by which firm the welders are distributed.



MACHINE CONTROLS CURRENT AND MAKES GOOD BOND

By means of a solenoid operating in conjunction with a carbon pile the current is controlled at a practically constant value despite line surges.

May Provide That Only Closed Lamps Be Used Hereafter in British Columbia

BY AN amendment to the Coal Mines Regulation Act of British Columbia which has been introduced to the Legislature by the Honorable William Sloan, Minister of Mines, the use of open lamps in coal mines in that province would be forbidden in all cases.

The opening lines of the proposed amendment contain the essence of the change. They read: "No lamp or light other than a locked safety-lamp of a pattern approved by the Minister of Mines shall be allowed or used underground in any mine."

As a matter of fact the regulations have been so strict of late years as to the use of open lights in coal mines that they have seldom been found underground. Only where the gas content of the air has been infinitesimal have they been permitted at all. As a result the large collieries have largely adopted electric lamps.

Now, however, the Minister of Mines has decided that open lamps must go altogether. He has concluded that the danger to the underground workers is too great to warrant their use under any circumstances. Even where conditions seemed absolutely safe there have been instances of men receiving burns more or less serious because of the unprotected flame.

It is expected that when the new regulation comes into effect on July 1 next, the result will be the general use of electric lamps in British Columbia coal mines.

FLOTATION OF COAL is being tested by *La Compagnie des Mines de Noeux*, the method used being that of the *Minerais et Métaux*, a subsidiary of the Minerals Separation, Ltd., of London, England. The experiments will be made with a plant having a capacity of 100 metric tons a day, the object being not to reduce the ash in the good coal but to treat slate and bone coal and obtain from them combustible material and to take the middle products from the washer containing 25 to 35 per cent of ash, reducing the ash to 2 to 7 per cent and using the product for briquets, coke or powdered coal.

Oxide of Iron Ash Separated from Coal by Magnetic Action

Coal in Boiler Ash Reclaimed in Germany by Sizing and Passing Over Magnetic Separators — Oversize Is Crushed, Resized and Magnetically Picked

By H. O. Herzog
Berlin, Germany

THE Gruson Werk, a branch establishment of Krupp, has developed a new process for reclaiming unburned coal from ashes and combustion residue which it is asserted is much simpler and quicker than any hitherto known. Present methods of cleaning are based on the difference in the specific gravities of coal and clinker. The new process makes use of the magnetic qualities of the oxides of iron into which burning transforms the pyrites. These oxides are retained in the clinker. The basic principle of the process is the fact that, owing to its content of ferro-oxides, the clinker responds to electro-magnetic action while the coal does not.

In the accompanying illustration is shown a plant that has been designed for treating combustion residue at the rate of ten tons per hour. The ash carted to the plant is first put through the screen (1) with meshes 3½-in. square. Pieces of unburned coal that do not pass through this screen are separated by hand from the clinker and carried away separately. All small pieces pass into the hopper (2) underneath and thence through the feeder (3) into a bucket elevator, which lifts them to the top of the square building containing the separating plant.

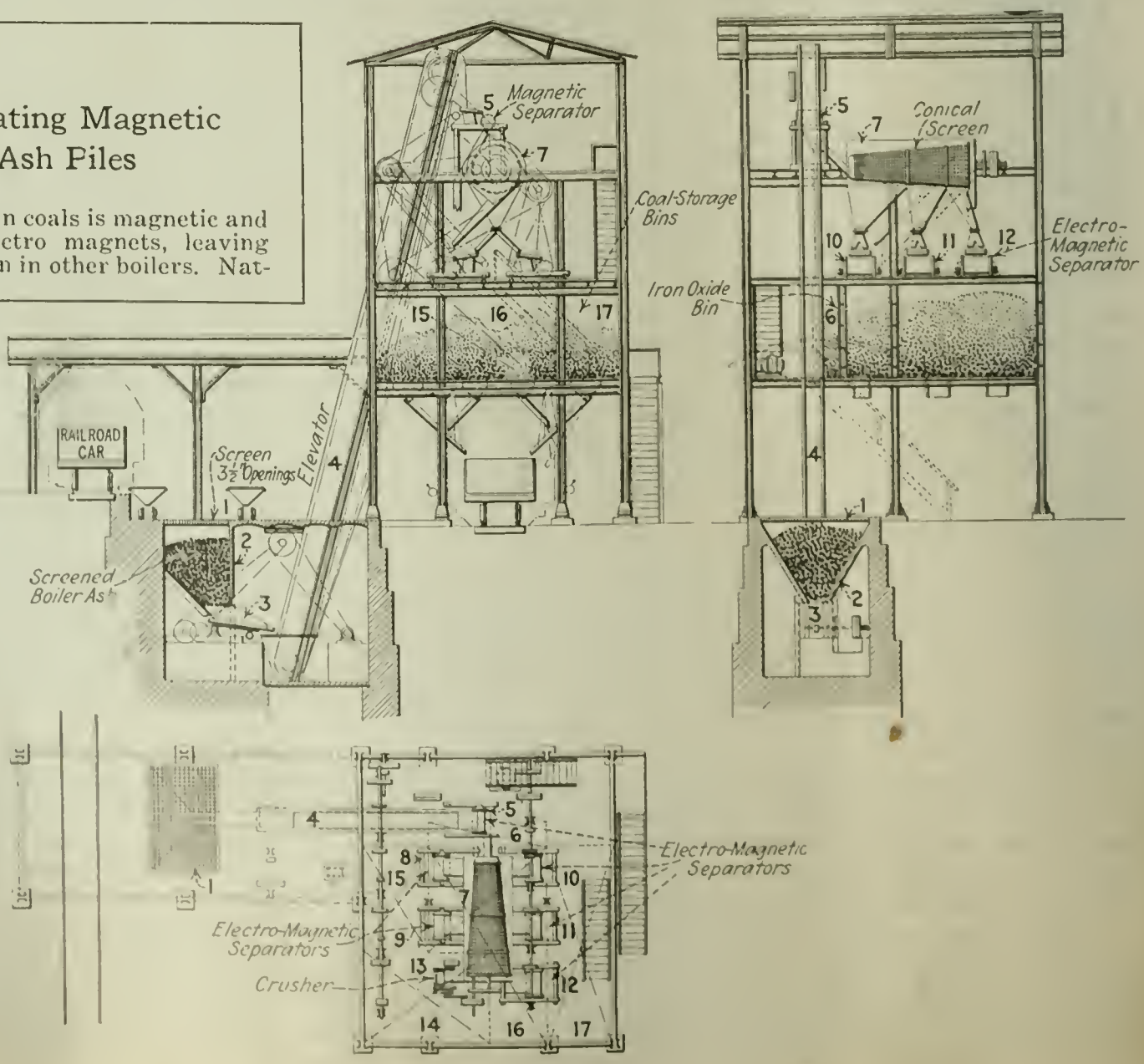
The next step is the separation of particles containing iron from the balance of the material. This is performed by the iron separator (5). The clinker sorted out by this means falls into the bunker (6), while the remaining material goes into a conical revolving screen with different sizes of mesh. This screen separates the ash into four different sizes, 0 to $\frac{5}{16}$, $\frac{5}{16}$ to $\frac{3}{4}$, $\frac{3}{4}$ to $1\frac{3}{8}$ and over $1\frac{3}{8}$ in. The first three sizes are charged onto electro-magnetic separators (8, 9, 10, 11 and 12), while the material over $1\frac{3}{8}$-in. size is taken to the crusher (13) and reduced to a smaller size.

Separation of the clinker from the coal is performed by the electro-magnetic action of the drums, on the surface of which the clinker is retained to a certain degree, while the pure coal is thrown out by centrifugal force. The electro-magnetic action to a limited extent counteracts the centrifugal force produced by the rotation of the drum. This results in depositing the coal and the clinker in different places. In the bins they are kept apart by a wall. The pure coal is collected in compartments 15, 16 and 17, which are provided with chutes at the bottom, by means of which it can be loaded onto trucks and carted away.

It has been found that a considerable amount of coal can in this way be recovered from combustion residue. This amounts to as much as 30 per cent from some stationary plants and 40 to 45 per cent from locomotives. It is asserted that this new process in addition to other advantages has the merit that coal particles of every size can be recovered, whereas small-sized particles are lost by the wet treatment hitherto used. Furthermore, the clinker obtained is absolutely free from coal and therefore better adapted for commercial use.

Plant for Separating Magnetic Ash from Ash Piles

Most of the ash in certain coals is magnetic and can be removed by electro magnets, leaving pure coal for consumption in other boilers. Naturally complete combustion is better than any such reclamation methods, but unfortunately it is hard to stoke boilers so that there will be no loss. One would imagine that it would be hard to make this system pay except where the loss of coal was large and the distance to be hauled short. In fact, it hardly seems an operation suited to railroad transportation with its large minimum charges. On a modest scale the system might be found readily available to the needs of a relatively small boiler plant at a coal mine.



Fuel Research Bureau Advocated to Solve Problems Of Scientific Use and Handling of Coal

Lancashire and Cheshire (England) Coal Research Association, Suggested as Model, Resembles U.S. War Research Board, but Is Broader in Scope—Has Coal-Testing Plant and Laboratory and Also Makes Commercial Investigations—Plan for American Commission Outlined

By F. R. Wadleigh
New York City

At A recent meeting of the Manchester (England) Geological and Mining Society a most interesting paper was read on "The Organization of the Lancashire and Cheshire Coal Research Association," by R. A. Burrows and F. S. Sinnott. The contents of this paper should be brought to the attention of every coal operators' association in this country, giving as it does a clear and detailed account of one most promising development toward solving some of the problems of coal mining and coal utilization.

The formation of the Research Association apparently was furthered by the work done by the Fuel Research Board of the Department of Scientific and Industrial Research, organized by the British Government in 1916 as a war measure, but kept in existence since the end of the war. The work of this department was somewhat similar to that of our War Research Board in this country, but was of broader scope, including the entire coal industry, production as well as utilization.

The Fuel Research Board of the British department included in its membership some of the ablest technical men in the country, and valuable and most promising results were obtained through its researches, more especially along the lines of fuel utilization, with particular reference to the use of low-grade coals, carbonization and improved methods of combustion. The department now has a well-equipped coal-testing plant and laboratory near Greenwich, and is carrying on further investigation of a more permanent nature on a commercial scale, as well as in the laboratory.

The British Association for the Advancement of Science also appointed a Fuel Economy Committee in 1916. This committee stated in its second report (1919) that "The resources, both of existing laboratories which have been established in this country for the special investigation of fuel problems, and of other laboratories where the technique of the subject has been developed, might be utilized more than they are in this connection, and the time is ripe for the organization of a scheme of systematic co-operative research, aided by national funds, in which all such laboratories may participate."

Previous to the formation of the Lancashire association somewhat similar research organizations had been formed in South Wales and Yorkshire, and numerous bulletins and reports of their investigations had been published, all of value to both mine owner and coal user. To give an idea of the kind of work being carried on by the Lancashire association, the following list is given of some bulletins and papers already, or shortly to be, printed for distribution:

"Ten Lectures on Organic Chemistry with Special Reference to Coal."
"The Sampling of Coal."
"Notes on Coal Analysis."
"Coal Dust and Explosions."
"Determination of the Carbon Dioxide in Coal."
"A New Characteristic for Coal—The Agglutination Curve."
"A New Method for Determining the Spontaneous Ignition of Solid Fuels."
"The Organic Constituents of Coal."
"The Calorific Value of Coal."
"The Composition of the Chief Seams of the Lancashire Coal Field."

In addition to the regular research work, special confidential investigations are carried on for any member of the association. The investigations now being pursued include complete chemical analyses and calorific value determinations of each seam from top to bottom, coking properties, relative friability, composition of the ash, character and composition of the associated strata, heating of coal, etc.; every effort being made to suggest commercial uses and methods of treatment for the various materials and conditions.

According to recent advices from H. O. Herzog, of Berlin, a German scientific society for coal research has been organized in the form of a limited liability company, with the object of developing and testing new methods and improvements to be used in the manufacture of coal products. Twenty-one mining companies of the Dortmund district have joined the society. These companies are thus enabled to save expenses for individual research work, the work being carried on a more efficient and extensive scale. The company's plant will be modeled after the Coal Research Institute at Muhlheim. Three laboratories are already completed.

Meager Appropriations Limit Research

In this country, as far as the writer knows, work of the kind described is left entirely to government or state departments and to a few individual companies; none of the various associations of coal men have interested themselves, as a body, in the technical possibilities of coal, as distinguished from the purely commercial side. Of course, the U. S. Bureau of Mines has done and is doing excellent work along the lines mentioned, but some part at least of its work has to do with metals and other minerals and with strictly government work. Furthermore, the bureau's investigations are limited by the amount of money allotted to it by Congress, which so far has been meager and not in any degree commensurate with the importance of the work.

In October, 1918, shortly before the Armistice, the matter of appointing a Fuel Research Board was brought to the attention of the director of the Central Bureau of Planning and Statistics at Washington, Dean E. F. Gay, who requested me to prepare a memorandum on the subject for submission to the President, to include a brief outline of the proposed plan, with a

tentative list of members and some subjects for investigation. The question was never submitted to the President, as, of course, the Armistice stopped all new government activities, and it was not thought advisable to bring the matter up at the time under the circumstances existing.

The memorandum submitted was as follows, omitting the list of names suggested:

Proposed National Fuel Research and Conservation Commission

(For the Investigation of Technical and Economic Questions Connected with the Various Fuels)

This commission to be made up of men of wide reputation and known ability and accomplishment in their respective lines of work, who would serve without compensation and whose private researches would be available for government use. Commission to have seven members and a director or chairman, the latter preferably on salary; a trained investigator and executive, the best man obtainable in the country.

To enable the commission to make researches along all lines, it should have a building at some central point (not Washington), to be erected by the government and equipped with all necessary appliances for actual commercial testing and research work, not merely laboratory equipment.

A partial list of subjects open for investigation—all of them of importance to the country, its fuel producers and fuel users:

COAL

Production and Mining:
Mining methods, present and future.
Mining systems.
Costs of production.
Preparation—Washing, inspection, screening.
Coal cutters and conveyors.
Haulage.

Economics:
Methods of government control of fuels, U. S. and foreign.
Coal trade, pre-war and after the war.
British coal situation.
French coal situation.
Italian coal situation.
Scandinavian countries' coal situation.
Holland and Belgium coal situation.
South American coal situation.
Labor at coal mines, efficiency, etc.
Public power schemes, consolidation of plants, etc.
Coal production, economics of.
Coal requirements.
Export trade.
World's coal consumption.
World's coal production.
Germany, coal situation after war.
Valuation and taxation of coal lands.
Government ownership of mines.
Coal and the railroads.
Coal traffic on inland waterways.
Regulation of fuel prices.
Public education on fuel questions.
Education of fuel experts.
Conservation of coal, economics.
Steam power plant, its economics.
Coal, distribution methods.

Distillation:
Byproducts from coal.
Oils from coal.
Low-temperature distillation processes.
Byproduct coking coals.
Byproduct coke ovens, types and operation of.
Coke, production, consumption, distribution, uses.
Artificial gas industry, fuels, methods, etc.
New processes.

Combustion:
Steam boilers and furnaces, combustion methods.
Surface combustion.
Gas-firing boilers.
Fuels for internal combustion engines.
Pulverized coal.
Colloidal fuel.
Mechanical stoking.
Stationary Boilers.
Locomotives.
Ships.
Conservation of coal, technical.

Transportation and Handling:
Coal storage and spontaneous combustion.
Coal-carrying ships.
Coal-carrying railroads of the U. S.
Transportation and distribution of coal, system of.
Mechanical bunkering appliances.
Coal loading and discharging at tidewater and lakes.
Coal piers and docks.

Coal Fields:
Coals of the Appalachian Field.
Our high-grade bituminous coals.
British coals, competitive.
South American coals and development.
Coals of the United States, fields and classification.
Coals of the United States.
Coals of France and their development.
Coals of Spain and their development.

Coal, Classification of:
Domestic—Domestic fuels.

Railroads:
Locomotive fuels.
Fuel consumption of railroads.
Transportation of coal and coke.

Power Plants:
Use of coal at power plants, consumption, conservation, etc.
Power production from coal.
Power production from oil.

Coal, Marine Use:
The world's bunker coals, kinds, sources, distribution and use.

Coal, New Uses for and New Methods of Using.
Motor Fuels.
Metallurgical Fuels, Solid, Liquid and Gaseous.
Briquetting of Coal.
Coal for Chemical Processes.
Coal for Industrial Processes.
Fuels Other Than Coal, Oil and Gas, Their Derivatives.
Fuel Economy in the Manufacture of Iron and Steel.

Chemistry and Physics:
Nature and modes of decomposition of the ammonia-yielding nitrogenous constitutents of coal.
Constitution of coal, micography and physical examination of coal and coke.

Producers, Gas, Use of and Possibilities of.
Geology—Systematic examination of United States coal fields.

Petroleum:
Oil vs. coal as fuel, uses, etc.
Distillation processes and products.
Fuel oil, production and consumption and combustion processes.
World's fields, production, etc.

Oil Shales:
Deposits, location and description.
Development, distillation processes and products.

Lignites—Development and uses.

Peat—Development and uses.

Our purpose in bringing the whole question to the attention of those interested in fuel production and use in this country is to suggest to the larger United States coal associations, both operators and wholesalers, the advantages to them of emulating the action of the British associations by establishing their own fuel-research bodies or one central research association for all. The problems of the industry are so many and so important, especially today and for the future, that all questions pertaining to fuel and its use need careful and thorough investigation by men of special training and qualifications.

Such an association as is suggested would be available not only for research work but would actually serve as a bureau of information on all current technical questions; as a consulting or advisory department to which each member could apply for any desired data. Some idea of the possible scope of the subjects that would be suitable for investigation may be had from the partial list given in the foregoing memorandum.

The cost of such a research bureau would be comparatively small to each member and would be a legitimate charge on the cost of coal. The work of the association need not interfere in the least with

that of the Bureau of Mines and other government departments, but could be made of great help to them in numerous ways.

One of the world's greatest authorities on fuel utilization and conservation, Prof. W. A. Bone, in an article on "Research Upon the Chemistry of Coal and Combustion" (*Combustion*, September, 1920), emphasizes the importance of fuel research and its value to any coal-producing country. Professor Bone writes:

"It is of the utmost importance to any coal-owning nation that there should be available for the use of its fuel technologists a complete knowledge not only of the characteristic qualities of the coals found in the different fields but also of the variations in the chemical properties of the coal as actually found in each individual seam throughout a given field. Such a detailed chemical survey of the principal seams in a particular coal field can be undertaken much better by a staff of chemists on the spot, who have an intimate knowledge of local conditions and who devote their whole attention to the work, than by the officials of some central institution which may perhaps be hundreds of miles away. Hence there ought to be established in every important coal field a well-equipped research station for the investigation of the special features and uses of the coals produced in the area of the proper correlation of the various seams. Such stations ought to be maintained at the public expense, and the reports issued therefrom should be made available without restriction to all users of coal."

Co-ordination by Central Research Board

The work of the station as a whole should be co-ordinated by a central board, in connection with which there should be a research committee composed of the directors of the several stations *plus* other eminent coal chemists and fuel technologists. Such an organization should also be charged with the duty of making general investigations upon the carbonization and gasification of coal (including the recovery of byproducts therefrom), and all other technical matters relating to the handling, distribution, and utilization of coal should be referred to it with a view to insuring that the nation's coal shall be used to the best and fullest advantage by every class of consumer. For, as I have pointed out in a previous article, true economy in coal lies not so much in using it sparingly as in using it well.

Important as it undoubtedly is to set up some such national coal-research organization as a necessary part of the internal economy of every industrial state, the utmost benefit will not be realized unless a "coal conscience" is created among the people as a whole by means of a well-directed educational movement. Coal is a gift of Nature which, regardless of the well-being of the present and of the interest of future generations, we squander for the most part in all sorts of foul and wasteful ways, polluting the air of heaven with the smoke and stink of it, thereby depriving the dwellers in our great manufacturing centers of that fulness of sunshine which is so essential to public health. Thus the "smoke nuisance" which, as an ever-present but curable evil, deprives our city population of much beauty of form, color and light that they might enjoy, and spells disease and stunted development to countless thousands of them, is a constant reminder that the health, as well as the wealth, of the community will be conserved and extended by the better use of coal.

Hence it is of the greatest importance that the people as a whole should be educated up to a proper recognition of their duty in the matter. The beneficial results attainable by the general application of scientific principles in handling and using coal should constantly be kept in the public mind by educational propaganda among all sections of the community. The fuel technologists should be men not only of wide knowledge and sound judgment in their special line but also of commanding personality and apostolic zeal, so that they may the more effectually convert the heathen around them to the acceptance and practice of the gospel of coal economy.

In short, the "coal research stations" should be centers (a) for extending our knowledge of the nature and constitution of coal, and for constantly improving the means of utilizing it; (b) for the training of fuel technologists, and (c) for the education of public opinion so as to obtain its effective co-operation in "fuel economy" as a fundamental condition of national health and prosperity. The whole question is recommended to the coal trade as being well worth discussion and action.

Use of Coal-Cutting Machinery Spread in Great Britain in 1919

STATISTICS with reference to the use of coal-cutting machines in the United Kingdom as given in Part II of Mine and Quarries General Report with Statistics issued for 1919, according to *The Iron and Coal Trades Review*, show that in that year there were 729 collieries where coal-cutting machines were at work as against 695 in the preceding year. The total number of machines employed was 4,482 (as against 4,041 in 1918), of which 1,950 were worked by electricity and 2,532 by compressed air. The total quantity of mineral obtained in 1919 by the aid of these machines was 28,081,017 tons, which is an increase of 207,371 tons, compared with 1918.

The Scotland Division (No. 1) and the Northern Division (No. 2) take the lead as regards the number of machines employed, more than 49 per cent of the total number of machines in use being employed in these two divisions. The following table shows the number of machines and of collieries where used, motive power employed, and quantity of mineral obtained by their use in the various inspection divisions during the year 1919, also the number of conveyors in use at the coal face:

	No of collieries where machines are at work	No. of machines	Worked by Electricity	Worked by Compressed Air	Mineral obtained, tons	No. of conveyors at coal face
Scotland	247	1,189	1,053	136	10 379,495	105
Northern	108	1,025	171	854	4,383,475	87
York and North Midland	134	880	443	437	6,995,244	162
Lancashire, North Wales and Ireland	106	795	58	737	2,780,092	45
South Wales	56	182	61	121	897,047	285
Midland and Southern	78	411	164	247	2,645,664	28
Total in 1919	729	4,482	1,950	2,532	28,081,017	712
Total in 1918	695	4,041	1,797	2,244	27,873,646	613

Of the various types of coal cutters in use at the different inspection districts 1,950 were driven by electricity, divided as follows: Disk, 876; bar, 489; chain, 573; percussive, 7; rotary heading, 5. Compressed-air driven machines totaled 2,582, distributed as follows: Disk, 388; bar, 128; chain, 400; percussive, 1,598; rotary heading, 18.

The quantity of coal in gross tons cut by machinery in the various divisions was as follows:

Division	Electricity	Compressed Air
Scotland	9,394,739	852,328
Northern	1,246,560	3,134,033
York and North Midland	3,779,798	3,199,656
Lancashire, North Wales and Ireland	323,298	2,456,794
South Wales	315,620	581,427
Midland and Southern	1,257,439	985,950
Total in 1919	16,317,454	11,210,188
Total in 1918	16,204,653	11,118,327

Problems of Operating Men

Edited by James T. Beard

Breathing of Sealed Areas in Mines

Several Letters Emphasize the Effect That Any Change in Barometric Pressure Will Effect a Corresponding Change in the Breathing of a Sealed Section in a Mine

HAVING noted carefully the description given by a fireboss, regarding the changes observed in the breathing of a sealed section of a mine, *Coal Age*, Jan. 27, p. 186, I would like to venture a suggestion as to their probable cause.

In the beginning, let me say that I am familiar with the particular section of the mine at Bruceville, in this state, to which reference is made. It was also my privilege to observe the so-called "breathing" of this and other sections in that mine. These observations led me to study the matter closely and reach some conclusions.

In order to understand the situation clearly, we must not overlook the influence of barometric pressure on a sealed area. One who has observed the barometer, from day to day, knows that the pressure exerted by the atmosphere is exceedingly unstable. Reference to any barometric chart, such as illustrated in the accompanying figure, will show the truth of this statement.

Influence of Barometric Changes

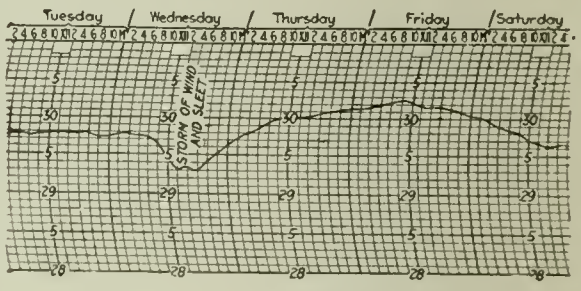
Were we to assume that this section was closed by a perfect seal, we might rightly conclude that the pressure behind the seal would be the barometric pressure at the time the place was closed, plus the accumulated gas pressure; while the pressure in the entry outside would be the variable atmospheric pressure, plus or minus the ventilating pressure, according as the mine is ventilated on the blowing or the exhaust system.

In this connection we must admit, however, that a perfect seal is a practical impossibility, and the pressure within the seal is more or less affected by the changing pressure without.

To more fully appreciate the powerful influence of a barometric change, let us remember that it is nothing uncommon for the barometer to rise or fall an inch in twenty-four hours. The corresponding variation in pressure is equivalent to 13.6 in. of water gage, or 70.7 lb. per sq.ft. of atmospheric pressure. Now, if a seal measuring 6 x 12 ft. was perfectly tight such a change in barometric pressure would mean a change, in the total pressure exerted on the seal, of $70.7 \times 6 \times 12 = 5{,}090.4$ lb. say 2½ tons.

It is true that a rise or fall of one inch in barometric pressure, in twenty-four hours, is extreme. However, a change of only 0.0735 in. in the barometer, or the equivalent of one inch of water gage would produce a change in the total pressure on the seal of $5.2 \times 6 \times 12 = 374.4$ lb., which is sufficient to cause a very appreciable breathing when the valve in the seal is opened.

At other times, when the top of a mine shaft has been sealed, I have observed the same action, and studied the effect of changes in barometric pressure. Indeed, it was nothing unusual to observe a complete reversal of the breathing of the mine, within a few hours. The chart here given shows a fall of one-half inch in ten hours, followed by a rise of seven-tenths inch in fifteen hours.



BAROMETRIC CHART DURING A STORM

It must be remembered that, in the case of a sealed area, that portion of the mine outside of the seal and open to the atmosphere is instantly responsive to any change in atmospheric pressure. The air or gas within the seal is also like affected, but slowly, by leakage through the seal, which tends to establish an equilibrium of pressure. If the valve is opened, the breathing will be in or out through the seal, according as the barometer has arisen or fallen, until perfect equilibrium has been established.

It is possible, too, as suggested by the editor, that an increased outflow of gas released by a roof fall in the section may complicate the effect due to a barometric change. But I am of the opinion that these are exceptional cases.

Vincennes, Ind. W. E. Buss.

ABSTRACTS FROM OTHER LETTERS

I TOO have been reading with interest the discussion regarding the flow of gas out or in through the valve in a sealed off portion of the Bruceville mine. It does not seem to me that the change from the drawing in to the blowing out of the air observed by this fireboss was due to a fall of roof releasing more gas within the seal.

For five years, I was employed in the American No.-1 mine, which was about seven miles from the Bruceville mine. I believe the conditions in that mine were the same as those at Bruceville, as both of the mines were working the same coal, No.-5 seam. The No.-1 mine generated much gas, which made it necessary to seal off the old workings, from time to time.

Seven Sealed Sections in Our Mine

When I left the American mine there were no less than seven sealed sections of old workings. It was noticeable that when one of these sections was blowing out, all of them were doing the same. Again, when one was drawing in, they were all drawing in, alike. I often noticed that these sealed sections would blow out into the mine at a time when the barometer was low, and would change and draw air in when the barometer was high.

At the American mine, we even measured the pressure of the air and gas behind the seal by means of a water gage. The greatest pressure observed when the air was blowing out through the valve was a 3½-in. gage; but it was generally much less, depending on how low the barometer fell. We also took samples of the air and gas that escaped when the sections were blowing out, and these were analyzed, showing the mixture contained marsh gas (CH_4), carbon dioxide (CO_2) and a very little common monoxide (CO).

Before closing, let me say that I believe the only safe way to deal with old workings, in mines generating gas like the one at Bruceville and other mines in that locality, is to seal them off and watch carefully to observe the conditions existing behind the seals.

Wheatland, Ind. Alban Ricketts.

MY ATTENTION has been called to a letter that appeared in *Coal Age*, Jan. 27, p. 186, describing an observed change in the breathing of an abandoned section of a mine that had been sealed off from the live workings for a long period. I notice the editorial comment suggests, as the most plausible reason for the observed change of breathing, a possible fall of roof within the sealed area releasing fresh volumes of gas.

The editor evidently bases this suggestion on the fact stated by the fire-

boss that this coal is overlaid with five feet of black slate and that when the roof breaks up to the "steel band" above the slate much gas is generated. While it is possible that a fall of roof, under these conditions, may open a strong gas feeder, there appears to be a more satisfactory explanation of the observed change in the breathing of this sealed section.

Let me say that, unless a sealed area contains very strong feeders of gas, it will breathe in and out with each corresponding change of barometer. In fact, such a sealed section is itself a huge barometer, giving its indications by the observed movement of the air and gas, in and out, through the pipe in the seal when the valve is opened.

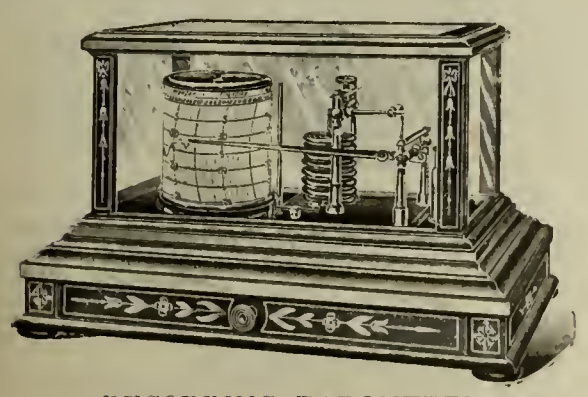
Effect of Quarter-Inch Change

An atmospheric change of $\frac{1}{4}$ in. of barometer, above or below an average line is not at all unusual. Such a change is equivalent to $13.6 \times \frac{1}{4} = 3.4$ in. of water gage. This change of pressure is felt uniformly throughout the mine, except in the sealed areas, which are like stoppered bottles, if the seals are well made.

That being true, when the atmospheric pressure drops below the average line the pressure within the sealed area will be that much greater than the pressure in the adjacent airway. This excess of pressure will cause an outflow of air and gas into the mine when the valve is opened in the pipe in the seal.

On the other hand, if the atmospheric pressure should rise above the average line, the pressure within the seal will then be less than that in the airway without; and, as a result, if the valve is now opened fresh air will rush into the sealed section. In other words, the breathing of the section will be inward, instead of outward as before.

If this correspondent will make a habit of observing the mercurial barom-



RECORDING BAROMETER

eter, whch should be at or near the mine entrance on the surface; or, better still, if he will study the barometric chart of a recording barometer or barograph, such as shown in the accompanying figure, he will generally find that the breathing in or out of a sealed section, in the mine, corresponds to the rising or falling of the barometric pressure.

Assuming, on the basis suggested by the editor, that a large outflow of gas has taken place within the sealed area, under a pressure above that of the atmosphere, the average pressure line determining the flow through the seal would be raised thereby. This condition would extend the period of outward breathing. In other words, the duration of the outward breathing might then be continued and, perhaps, overlap an observed fall of barometric pressure; or may even anticipate a rise in barometer, as storm centers approach and recede in passing over the country from West to East. The movement of these storm centers is shown by the daily chart of the Weather Bureau.

George S. Rice,
Chief Mining Engineer,
U. S. Bureau of Mines.
Washington, D. C.

PICKING up the issue of *Coal Age* for Jan. 27, the other day, my attention was drawn to the discussion on page 186, regarding the "breathing" of an abandoned section that had been sealed off from the rest of the mine.

Judging from the wording of the fireboss' letter, the valves in the pipes through the seals are kept closed, except when an examination is to be made of the atmosphere within the area. If this is true the change that he observed in the reversing of the breathing, on certain days, is not at all surprising to my way of thinking.

Conditions When Section Was Sealed

Let us assume that, at the time the abandoned workings were sealed, there existed a certain atmospheric pressure, as indicated by the height of the barometer. The valves were then closed and we will assume, as the fireboss states, that there are no breaks extending to the surface, nor other openings by which the pressure of the air in the enclosed space could change, except very slowly as a result of a possible subsidence of the overlying strata.

Under these conditions, I would say that, during periods of low barometer, the pressure in the sealed off portion will be greater than the mine pressure; and the result will be that the air will flow out if the valve in the seal is opened at such times. On the other hand, should there be a rising barometer at the time when the valve is opened, I would expect air to flow from the mine into the inclosed space behind the seal, because of the high barometer.

As has already been suggested, the system of ventilation employed in the mine will make the mine pressure greater than that of the atmosphere when a pressure fan is in use, or less than the atmospheric pressure if an exhaust fan is in operation. But, the same would be true when the place was sealed off and the fact would not alter the reasoning in respect to the breathing in or out of the sealed portion of the mine.

However, it might prove that a reversal of the fan, from blowing to exhausting, or *vice versa*, would materially alter the mine pressure with respect to that behind the seal. For example, when exhausting, the reduction of pressure due to the action of the fan, may be so great that the pressure behind the seal will cause the air to flow out through the valve at a time when the barometer has risen.

Sheldon Smillie,
Pittsburgh, Pa. Mining Engineer.

"Equally Competent" Mine Foreman and the Bituminous Mine Law

The discouraging effect of the "equally competent" clause, in the Bituminous Mine Law of Pennsylvania, on many mine foremen, is plainly seen by the attitude they assume toward taking the examination for that position.

WITH much interest I read the letter of the correspondent who signs himself "In the dark," which appeared in *Coal Age*, Feb. 3, p. 234. I often wonder why many operators will employ an uncertified man who holds no legal certificate of qualification, and place him in charge of his mine as foreman.

The term "equally competent" that was introduced into the Pennsylvania bituminous law, at the time when the Workmen's Compensation Law was passed in that state, makes the holder of a certificate no better in the eyes of the law than the person who has none, provided the employer of the latter thinks he is equally competent with the man who has passed an examination and gotten his certificate.

Judged by the law, both of these men are supposed to have the same familiarity with mining conditions and general work underground, and both are considered as being equally capable in respect to the safety of employees and the preservation of property; and it would seem further that both the certified and the uncertified man would be expected to comply with the several provisions of the mining law. But it often happens that the man without the certificate is a mere "straw boss."

Could Not Pass Examination Required by a Board

Let me ask this "straw boss," if he is equally competent with the other fellow, why it is he has never taken the examination and gotten his papers. The only reason he can give, in answer to my question, is that he never cared to go before the examining board or ask for his papers. The fact is he is simply a common miner and has not the knowledge to pass the examination.

In one instance, I remember, a miner was asked to act as assistant foreman, temporarily, to fill a vacancy in that position. He stated frankly that he did not care for such a job. One reason he gave was that he had no papers and did not believe in taking the examination to get them. He said, in England, it was very different and the position was worth while.

Though I let the speaker proceed and made no attempt to alter his opinion, in my own mind I blamed his attitude toward taking the examination wholly to this wording of the mine law. It has

lowered the position, in his eyes, and the same is true of many others who have no desire to try for their papers or to assume a position where incompetent men are their equal in the eyes of the law.

It goes without saying that a superintendent can appoint a relative, a friend, or a pal in one of his clubs. For myself, I would feel cheap to take charge of a mine as foreman, without having my papers. I would fear the men would make fun of me, instead of giving me their respect and obedience.

To my mind, a man's papers show whether or not he is competent. They are evidence of his ability and apparent to all with whom he comes in contact. Any uncertified man should, like the person I have mentioned, refuse to take the position as foreman or assistant foreman if one is offered to him.

Avella, Pa. P. MOLANI.

ANOTHER LETTER

READING the letter that appeared in *Coal Age*, Feb. 3, p. 234, by one who signs himself "In the dark," leads me to ask: Does he believe that the man without papers, who has failed in his duty in the mine, should not be punished the same as if he had had his papers?

We all know that our 1911 mine law (bituminous) is doubtful, to say the least, regarding the penalty that it imposes on an uncertified man who fails in his duty in the mine. Regarding mine foremen and assistant foremen, the law first states that they must hold certificates, but then adds, or be equally competent, in the judgment of their employers, with certified men.

ANY MAN CAN RUN A MINE IF EMPLOYER THINKS SO

According to this later ruling any man can run a mine if the superintendent thinks he is fit for the job. To my mind, there is only one conclusion possible and that is: A court must be governed by the reading of the law. In that case, it seems to me that no court will be able to pass judgment on a man that is not certified under the law.

There is nothing that would cause a person to be "in the dark" on this matter. My opinion is that the law does not reach the uncertified man, although it permits his employment on the strength of the superintendent regarding him as equally competent with a certified man.

Much as the Compensation Law has benefitted the mining industry in this and other states, in Pennsylvania it has unfortunately been responsible for striking out the most important provision of the old law, in respect to the safety of men employed underground and the security of the mine.

It is foolish for men to think that a man who cannot take his examination and get his papers is competent to act as a foreman or assistant foreman. A man that can neither read nor write, or one who has not the education that would enable him to go before an examining board, cannot be fit to run a mine.

If this letter is read by a mine foreman or assistant foreman who has charge of a mine but has been granted no papers, I would say to such a one: This letter applies to *you*. That does not mean, however, that the man should be discouraged, for opportunities are open to every one to get the necessary education if he will.

In closing, let me say that the Scranton Correspondence Schools, mine inspectors and many of our large coal companies are doing everything possible to place this education within the reach of their men. It is only through these means that we can hope to reduce the accident list in mining. The better class of mine officials, without exception, are averse to employing uncertified men as foremen or assistant foremen.

JOHN H. WILEY.

Oliphant Furnace, Pa.

Inquiries Of General Interest

Engine-Plane-Haulage Proposition

An Electric Hoist, Now Hauling Three-Car Trips Up an Engine-Plane Having an Average Grade of 17 per Cent, Is Claimed To Be Capable of Developing 250 Horsepower — It Is Desired To Know If the Size of Trips Can Be Increased to Four or Five Cars with Safety, Using 1⅛-In. Wire Rope and ⅞-In. Car-Couplings, the Length of the Plane Being 2,200 Feet

FOR a while back, we have been having considerable argument as to whether or not it is possible to increase the size of trips now being hauled up an engine-plane, at one of our mines. I have made some calculations, which seem to show that the strength of part of the equipment is not equal to the test, and we have decided to submit the question for the consideration of *Coal Age* and its readers.

The plane is 2,200 ft. long and has an average grade of 17 per cent; except near the head of the plane where the grade increases to 36 per cent (21 deg.). An electric hoist of 250 hp. is located at the head of this plane and, at present, hauls three-car trips up the incline, at a speed of 700 ft. per min. with ease. A 1⅛-in., 6-strand, 7-wire, haulage rope is used and the size of the car couplings is ⅞ in. The weight of a single loaded car will average 5 short tons (10,000 lb.), which makes the weight of a three-car trip 30,000 lb.; a four-car trip, 40,000 lb.; and a five-car trip, 50,000 lb.

The question I want to ask is, first: Is this engine big enough to hoist five-car trips up this plane, at the same speed? Also, are the rope and car couplings strong enough to stand the test? Second, if it is not possible to hoist a trip of five cars safely, will it be possible to hoist four cars at a time, at the same speed?

My estimate runs about as follows: Weight of a five-car trip, $5 \times 5 \times 2{,}000 = 50{,}000$ lb. Weight of 1⅛-in. rope, weighing 2 lb. per ft. and 2,200 ft. long, $2 \times 2{,}200 = 4{,}400$ lb. The total weight to be hoisted when the trip is at the foot of the plane is, therefore, 54,400 lb., or 27.2 tons.

Taking the track resistance as $\frac{1}{40}$ of the moving load, it is $54{,}400 \div 40 = 1{,}360$ lb. The gravity pull due to a 17 per cent grade is $0.17 \times 54{,}400 = 9{,}248$ lb. This makes the total resistance or load on the rope, say 10,600 lb., or 5.2 tons.

Then, assuming the efficiency of the engine is 80 per cent, the required horsepower will be

$$H = \frac{10{,}600 \times 700}{0.80 \times 33{,}000} = 281 \; hp.$$

If this is correct it shows that our engine is too small to hoist a five-car trip. Again, estimating the strength of the couplings, for the 36 per cent grade at the head of the plane, the load on the first coupling, supporting four cars weighing 40,000 lb., is $0.36 \times 40.000 = 14{,}400$ lb. or 7.2 tons. But, according to tables given by manufacturers of chains, a wrought-iron, ⅞-in. chain has a working stress of only 4.4 tons, which shows that the couplings would not hold.

Please say if my calculations are practically correct. Also, show what horsepower of engine will be required, and the size of couplings necessary to hoist four-car trips on this plane, at a speed of 700 ft. per min.

HOISTING ENGINEER.

Wilkes-Barre, Pa.

For all practical purposes the calculations made by this correspondent are correct. They show that neither the engine nor the car couplings have sufficient strength to hoist five-car trips on this plane. Taking the frictional resistance as $\frac{1}{40}$ of the moving load, as he has assumed, however, is equivalent to a track resistance of $2{,}000 \div 40 = 50$ lb. per ton, which, though high does not materially affect the result.

It may also be remarked here that the allowable working stress of a 1⅛-in., 6 strand, 7-wire, cast-steel haulage

rope is given in standard rope tables as 8 tons, which shows that the rope also would not be safe when the trip reached the steep grade at the head of the plane where the load on the rope is 50,000 × 0.36 = 18,000 lb., or 9 tons.

Estimating on a four-car trip, weighing 4 × 5 × 2,000 = 40,000 lb., plus the weight of a 1⅛-in. rope, 2,200 ft. long, makes the total load to be hoisted when the trip is at the foot of the plane 44,400 lb., or 22.2 tons.

Not knowing the style of car equipment, we will assume a track resistance of, say 30 lb. per ton. The grade resistance is, practically, 20 lb. per ton, for each per cent of grade, which gives 17 × 20 = 340 lb. per ton. This makes the total resistance 340 + 30 = 370 lb., per ton of moving load.

Finally, for a grade of 17 per cent, the load on the rope when hoisting a four-car trip at the foot of the plane is 22.2 × 370 = 8,214 lb., or 4.1 tons. Hoisting at a speed of 700 ft. per min. and assuming an efficiency of 80 per cent, the required horsepower of the engine, in this case, is

$$H = \frac{8{,}214 \times 700}{0.80 \times 33{,}000} = 217\ hp.$$

The strength of the rope and car couplings, however, must be estimated for the steep grade at the head of the plane; although this is not necessary in estimating the required power of the engine, because the speed of hoisting will naturally be reduced on this short steep grade; and the engine will be able to land the trip at the head of the plane.

When the trip has reached the steep grade the load on the rope is that due to the four cars only, weighing 40,000 lb. or 20 tons, which gives 20 × 370 = 7,400 lb., or 3.7 tons. This is well within the strength of both the rope and the couplings. Safety requires, however, that the wear and tear of both rope and couplings be carefully watched, in order to avoid accidents.

Examination Questions Answered

Examination for Mine Foremen, Eighteenth Anthracite District

(Selected Questions)

QUESTION—*When a fan is exhausting the air from a mine how does it produce ventilation? State, also, how a force fan produces ventilation.*

ANSWER—The action of a centrifugal fan always causes a depression at its center and a compression at its circumference. When exhausting, therefore, the central openings of the fan must be connected with the fan drift and the spiral space within the casing and surrounding the fan open to the atmosphere. In that arrangement, the fan acts to cause a depression in the fan drift. A current is created in the airways of the mine by reason of the atmospheric pressure acting on the downcast shaft or intake opening and forcing the air into the mine. In this case, the mine is ventilated under a pressure below that of the atmosphere. The depression in the fan drift exerted on the entire sectional area of the drift is the total pressure producing ventilation.

On the other hand, a force fan is so arranged that its spiral casing is in direct connection with the fan drift, while the central openings are exposed to the atmosphere. In this case, the action of the fan produces a pressure in the fan drift above that of the atmosphere. This excess of pressure creates a circulation of air in the mine, the current now passing from the fan drift into the mine from which it is discharged through the upcast shaft.

QUESTION — *Doubling the velocity of air in roadways without altering their dimensions, in what proportion does the pressure and power increase? Work out fully.*

ANSWER—For the same dimensions of the airway, the pressure producing the circulation varies as the square of the velocity of the air current. Thus, increasing the velocity two times, increases the pressure as $2^2 = 4$ times the original pressure.

Again, for the same airway or mine, the power on the air varies as the cube of the velocity of the current. Thus, to double the velocity requires that the power be increased $2^3 = 8$ times the original power.

QUESTION — *If the barometer stands at 29.4 in., find the pressure on a square inch.*

ANSWER—Since a cubic inch of mercury (standard, 32 deg. F.) weighs 0.491 lb., the pressure corresponding to a mercury column of 29.4 in. is 29.4 × 0.491 = 14.435 lb. per sq.in.

QUESTION—*A pump at the bottom of a slope 560 ft. long, pitching 47 deg. is discharging water to the surface through a 10-in. column pipe. What is the pressure per square inch at the pump? What is the total weight of water in the column pipe?*

ANSWER — The vertical head under which the pump is discharging, in this case, is 560 × sin 47 deg. = 560 × 0.73135 = 409.55 ft. The static head on the pump is, therefore, 409.55 × 0.434 = 177.74 lb. per sq.in. But when the pump is in operation there must be added to the static head an amount equal to the sum of the friction and velocity heads.

Assuming a discharge velocity in the column pipe of, say 400 ft. per min., the quantity of water discharged through a 10-in. pipe is 400 × 12(0.7854 × 10^2) ÷ 231 = say 1,600 gal. per min. The sum of the friction and velocity heads is then calculated by the formula:

$$h_1 = \frac{G^2}{800\,d^4}\left(\frac{h}{d} + 2\right)$$

$$= \frac{1{,}600^2}{800 \times 10^4}\left(\frac{560}{10} + 2\right) = 18.56\ ft.$$

Adding this result to the static head gives for the effective head against which the pump must operate, 409.55 + 18.56 = 428.11 ft. The pressure due to this total head is 428.11 × 0.434 = 185.8 lb. per sq.in.

The total weight of water in a 10-in. pipe 560 ft. in length is 560(0.7854 × 10^2)0.434 = 19,088 lb., say 9½ tons.

QUESTION—*If, with a pressure representing one inch of water gage, 30,000 cu.ft. of air passes, what height will the water gage be when the quantity passing is 50,000 cu.ft.?*

ANSWER—For the same mine or airway, the unit pressure or water gage varies as the square of the quantity of air in circulation. In other words, the water gage ratio is equal to the square of the quantity ratio. Then, calling the required water gage x, we have:

$$\frac{x}{1} = \left(\frac{50{,}000}{30{,}000}\right)^2 = \left(\frac{5}{3}\right)^2 = \frac{25}{9} = 2\text{-}7\ 9\ in.$$

QUESTION—*What mode of ventilation reduces the dangers of an explosion and reduces the friction? State the reason it is so.*

ANSWER — By splitting the air current, the danger of an explosion is minimized and the frictional resistance to the passage of the air is reduced. There is less danger of an explosion taking place when the mine is ventilated by separate splits of air, because the velocity of the current is reduced in each section of the workings; less dust is carried in the air current and there is less opportunity for gas to accumulate at the working face. The ventilation of each district is also under better control, the quantity of air in each split being proportioned to the need.

Where the air is divided and made to travel with a less velocity, the friction is reduced, because the friction varies as the square of the velocity of the current. Thus, dividing the air into two splits reduces the velocity one-half and the friction is then one-fourth of what it was previously.

QUESTION—*At a certain colliery, the shaft is 6 ft. in diameter and the quantity of air passing is 17,600 cu.ft. per min. What is the velocity of the air in feet per second?*

ANSWER — The sectional area of a circular shaft 6 ft. in diameter is 0.7854 × 6^2 = 28.27 sq.ft. and the average velocity of the given volume of air is, therefore, 17,600 ÷ 28.27 = 622.5 ft. per min., or 10.37 ft. per sec.

Foreign Markets and Export News

Exports of Coal and Coke From the United States

BY CUSTOMS DISTRICTS, JANUARY, 1921*

Customs Districts	Coal: Anthracite, gross tons	Coal: Bituminous, gross tons	Coke, gross tons
Maine and N. H.	170	1	.....
Vermont	1,366	18,320	27
Massachusetts	204	4	.....
St. Lawrence	86,587	402,196	782
Rochester	4,855	44,910	220
Buffalo	174,718	502,577	15,786
New York	4,988	19,483	876
Philadelphia	5,853	80,267	1,257
Maryland	.....	157,847	3,325
Virginia	.....	736,448	1,450
South Carolina	.....	24,271	.....
Georgia	.....	6,706	.....
Florida	.....	8,010	1,778
Mobile	.....	5,049	.....
New Orleans	.....	1,026	28
San Antonio	7,939	4,935	1,387
El Paso	32	21,451	3,305
San Diego	.....	19	.....
Arizona	.....	4,872	29
San Francisco	5	.....	.....
Washington	125	1,897	23
Dakota	2,189	3,151	90
Duluth and Superior	6	29,314	118
Michigan	303	117,286	7,087
Ohio	.....	58,222	175
Porto Rico	.....	186	2
Total	289,340	2,248,448	37,745

BUNKER COAL SUPPLIED TO STEAMERS IN FOREIGN TRADE

Customs Districts	Tons
New York	291,333
Philadelphia	28,664
Maryland	46,545
Virginia	238,113

*Data compiled by Bureau of Foreign and Domestic Commerce.

INDIA'S COAL EXPORTS have been prohibited, with the exception of a limited amount to Colombo, Ceylon. Restrictions have also been placed on bunker coal for steamers. The necessity for the limitation is considered particularly unfortunate at this time, in view of India's unfavorable trade balance. In the six months, April to September, 1920, India exported 739,000 tons of coal, or more than three times as much as in all of 1919.

Stocks of Coal in France Trebled in Year

The following figures of France's production of coal in 1919 and 1920 are furnished by the French Minister of Industry: (All figures are in metric tons).

	1919	1920
French production	17,945,821	20,348,020
Sarre production	2,503,354	4,478,703
Imported from Germany	1,030,500	6,959,656
Imported from other countries	17,801,377	17,122,831
Totals	39,281,052	48,909,210

On Jan. 1, 1920, there were stocks on hand of 1,500,000 tons. On Jan. 1, 1921, stocks on hand totaled 4,500,000 tons.

The price of coal in France has varied as follows:

January, 1920	Frs. per Ton	January, 1921	Frs. per Ton
French coal	122	French coal	124
Sarre coal	125	Sarre Coal	110
German coal	125	German coal	125
Belgian coal	78	Belgian coal	134
English coal	304	English coal	196
American coal	313	American coal	195

A NUMBER OF APPLICATIONS for loans to assist the exportation of coal to Europe have been received by the War Finance Corporation. It is said the principal exports are for Italy, of from 10,000 to 15,000 tons. It is expected that authorizations for the loans will be made soon. Details as to companies are withheld pending action on the applications.

French Coal Production

French production of coal, including lignite in 1920, amounted to 25,276,304 tons, or 2,000,000 tons in excess of 1919. The December output was 2,444,221 tons which led the monthly production for the year.

The Douai district produced the greatest amount of coal in December. Returns are as follows:

District	Tons	District	Tons
Arras	705,709	Toulouse	164,554
Douai	323,599	Marseille	72,670
St. Etienne	323,097	Nantes	7,754
Lyon	210,947	Bordeaux	10,731
Clermong-Ferrand	119,726	Nancy	8,870
Alais	179,444	Strasbourg	317,120

The December total for the mines of the North and the Pas-de Calais was 1,029,308 tons and for the Sarre basin, 873,224 tons. In 1913, France's coal and lignite production amounted to 40,844,218 tons.

January Port of New York Exports Gain

Export of anthracite and bituminous coal and coke through the Port of New York during January, 1921, amounted to 25,347 tons as against 13,126 tons in January of last year. Of this tonnage the anthracite shipments amounted to 4,988 tons; bituminous, 19,483 tons and coke 876 tons as compared with 10,515 tons; 95 tons and 2,516 tons respectively.

Of the anthracite shipped, Canada is credited with receiving 2,552 tons and Netherlands 1,140 tons. France received 9,050 tons of bituminous; Portugal 1,580 tons; Turkey 4,500 tons; Trinidad 1,358 tons and Egypt, 1,000 tons. Of the coke shipped, Norway received 205 tons and the Argentine 424 tons.

Better Production of Coal by Devastated Mines in Northern France

December, 1920, coal production of the mines devastated in northern France during the war totaled 323,599 tons, distributed as follows:

Aniche	71,174 tons
Anzin	117,251 tons
Azincourt	1,877 tons
Crespin	4,084 tons
Douchy	9,138 tons
Escarpelle	11,484 tons
Thivencelles	5,680 tons
Vicoigne	4,250 tons
Courrières	9,040 tons
Dourges	11,911 tons
Lens	1,210 tons
Ostricourt	76,500 tons

The production of the above mines in November totaled 314,830 tons.

The total production of these mines in December, 1919, was a little over 35,000 tons. At present the mines employ 23,896 miners underground and 29,954 aboveground. Up to the present time, the number of workers employed above ground has been greater than those employed underground.

Production in the devastated collieries reached 8,449,665 tons in 1920, an increase of 1,381,939 tons, or 19 per cent, over the production of 1919.

Swiss Coal Imports in January, 1921

According to the return of the Swiss Co-operative Society for Coal Supply, the following imports of coal were made in January, 1921:

	Tons
America	120,630
Sarre districts	5,679
Ruhr districts	7,751
Rhenish brown coal	15,004
Belgium	1,055
France	5,636
England	58,262
Total	214,017

High Costs Justify Price of Vancouver Island Coal

Output of Vancouver Declines—Field Is Strictly Limited—Likely to Have Coal Shortage When Imported Fuel Fails —Flotation Being Tried by Canadian Collieries, Ltd.

BY OUR VANCOUVER CORRESPONDENT

OWING to the continued protest of the Canadian Pacific coast to the price of domestic coal the Canadian Institute of Mining and Metallurgy at its meeting of Feb. 9 to 12 spent much of its time discussing the causes for the high cost of coal, addresses being delivered by Thomas Graham, general superintendent of the Canadian Collieries, Ltd., and George Wilkinson, general manager, Pacific Coast Mines, Ltd.

Mr. Graham said that the coal production of the province in 1920 was 500,000 tons less than in 1910. This decline arises from the competition of fuel oil, which has displaced approximately 600,000 tons of Vancouver Island coal per annum. This means that at present prices $6,000,000 is being spent in the United States which would otherwise be expended in the support of Canadian industries, in meeting the balance of trade and correcting the depreciation of the Canadian dollar.

Mr. Graham then exploded some of the fallacious beliefs regarding the coal fields of the island. There was no truth, he said, in the commonly accepted theory that a barge could back up against any portion of the east coast of the island and be loaded with coal that could be obtained by the simple expedient of shoveling. Mr. Graham said:

Downthrow and Glacial Action Spoil Field

"In the West we find coal in rocks belonging to the Cretaceous period and lying upon trap or igneous rocks. It is to the Cretaceous period that the Vancouver Island coals belong. The seams are interlarded with many intrusions of shale, some of these bands varying from inches to as much as four to six feet in thickness. The area of the deposit undoubtedly was large, but long after the formation of the seams the great uplift, which formed the mountain range now comprising the background of Vancouver Island, and the corresponding drop, which formed the area now known to us as the Gulf of Georgia, destroyed the greater part of the field. Following this came the Glacial period, which completed the work and eroded much that the uplift had spared, until today we find that instead of the greater part of the island being underlaid with coal, there are only a few isolated basins left and these are much faulted and disturbed.

"It is the general belief that the E. & N. land grant on Vancouver Island is all underlaid with three seams of coal. At least one and one-half million acres of the two million acres in this belt cannot possibly contain that mineral, being nude of coal-bearing strata. Of the half million acres remaining which may be coal bearing the greater portion is unproven. We know, however, that there are large areas that do not contain coal in seams sufficiently thick and advantageously placed to have any commercial value.

New Areas of Good Coal Not Discovered

"Some good, although small, detached basins of coal on Vancouver Island have been operated, as at Old Wellington, Extension, Nanaimo Harbor, and adjoining Comox Lake, and it is probable that there are more basins of similar character on the island, but they have to be found and proven.

"There are, however, no large areas of unbroken and regular coal measures similar to those of the eastern parts of the continent and the plains and foothills of the Rocky Mountains. Our basins are small, much faulted and contorted and have many barren spots. They contain seams dirty in character, and their operation presents problems to the mining engineer unequalled by those to be encountered in any other mining country in the world.

"The areas being operated at present are in the main those which were opened soon after the discovery of the field. In consequence the mines are now old and cover immense areas. The coal being produced is chiefly that which in the early days of the mine was either lost or left because it was too dirty or too thin to work at a profit."

Exploration Costs More than $100 Per Acre

During the past two years Mr. Graham said his company had been prospecting a basin that gave promise of producing good coal. Twenty-one miles of road had been built for the transportation of diamond drills and supplies and twenty-five holes had been drilled an aggregate of 15,000 ft. The area under exploration contains not more than from 1,000 to 1,200 acres, yet the work has cost $100,000. and the information obtained to date is not sufficient to fully convince the company that the field has commercial possibilities and would justify the cost of development and the building of ten miles of railroad to connect the field with tidewater. Concluding the speaker said:

"The day is not far distant when the city of Vancouver must return to the use of coal for power and heating purposes. When that day comes the coal industry of the land will be found in no shape to take care of the wants of the city. It has been neglected and starved, and will be unable to respond. The mines will then be called upon to provide a production large enough to sustain the industries which in the last ten years have been built up on the use of imported fuel. The city will then pay for past neglect not only in price but in the curtailed output of its factories."

Consumer Likes to Break Lump to Mine Run

In his paper Mr. Wilkinson showed that on the Pacific coast the costs of coal mining were higher than in most other fields and the production per man per shift comparatively low. Some surprise was expressed that the consumer insisted on obtaining the finest lump coal, which could be produced for him only at the highest of prices. He did this apparently solely for the purpose of having the pleasure of going into the cellar to break up the lumps. The ultimate result of his exercise was to convert the lump which he had obtained at such an expense into run-of-mine coal that he could have purchased at a much lower price.

Alexander Sharp gave a paper in which he referred to the possibility of increasing the production in the province by the greater use of mine machinery. He stated that there was less of this in use in this province than anywhere else on the continent and that, if the operators kept up to date in this respect, the production per man might be expected to grow.

In reply Charles Graham, of the Canadian Collieries, said that his company had introduced cutting machinery at Comox. They had all of such appliances which they could satisfactorily use. As a matter of fact the seams of the island were not sufficiently even to make such machinery adaptable.

Trying Flotation in Canadian Collieries

Discussing the possibility of recovering the very fine combustible material at present wasted in washing, Thomas Graham said that the Minerals Separation Co. was already experimenting with methods by which it was hoped to save this class of the product of the Canadian Collieries. The results heretofore had not been altogether satisfactory, but those engaged were confident that they would be able to work out a method for a substantial recovery by this process.

Canadian Mine Institute Meets at Montreal

By Edward H. Robie
New York City

MEETING at Montreal, far from any of the coal-mining centers, the Canadian Mining Institute had many good metal papers but not much about coal. The chief paper on that subject was read by F. W. Gray, editor of the *Canadian Mining Journal*, who pointed out the problems with which Canada was confronted in endeavoring to supply herself with coal to the exclusion of United States fuels of various kinds.

James McAvoy opened the discussion, showing the evaporative efficiencies of the different kinds of coal found in Canada and pointing out the relative prices that could be paid at the mine mouth for the different varieties. Some coals probably could be shipped further than others, because of their great evaporative efficiency, and for this reason it would not always be advisable to obtain coal from the nearest field. Mr. McAvoy discussed the advantages of a reduction in transportation and marketing cost.

The only other references to coal were contained in the opening address of O. E. S. Whiteside, the retiring president, and in the report of John McLeish, the chief of the Division of Mineral Resources and Statistics. The former dwelt on the disadvantage of having the Montreal headquarters so far from the mining districts of Nova Scotia and the West and emphasized the importance, therefore, of expanding branch organizations. These should establish friendly relations with the various provincial governments, but should be careful to act as counselor rather than critic.

Suffers From Unequal Distribution of Coal

Mr. Whiteside said that the coal resources of Canada are greater than those of any other country except the United States, but it is all in the Far East and West, and as a result, central Canada has been importing about twenty million tons annually. The task of molding public opinion on this subject, he said, was worthy of the institute's highest endeavors. The new president, C. V. Corless, in his banquet speech also referred to the coal needs of Canada. He complimented F. W. Gray, editor of the *Canadian Mining Journal*, for his fight for the more active development of the Canadian coal resources.

Mr. McLeish was obliged to express his regrets that he had not been able, as in other years, to make a complete report of the output of Canadian mines during the past year. No reports were available from British Columbia, Nova Scotia or Alberta. The coal production of Alberta in 1920, however, was stated to be about 6,900,000 tons, an increase of almost 50 per cent over that of the previous year. Coal production in Nova Scotia, according to Mr. Gray, amounted to about 5,600,000 tons.

Mr. McLeish's talk was followed by some discussion by Mr. Gray, Dr. Miller, Mr. Denis and others as to the wisdom of the new government regulation that the collection of mineral statistics be henceforth intrusted to the Dominion Statistical Bureau instead of the work being done, as formerly, by the Department of Mines. The general opinion was that the transfer of this work was a mistake, and that it was a case of carrying centralization too far. It was pointed out that statistics are of value only if comparative, and that the continuity of the work was likely to be interrupted by the change.

The Canadian Institute received $31,700 in 1920 and showed a surplus for the year of $4,629, although it was later said that this did not include certain items for depreciation, and that the actual surplus was only $12. Without raising the dues, the institute expects to have a surplus of $2,000 for 1921. The meeting opened on Feb. 2 and adjourned on Feb. 4.

Magraw President Rocky Mountain Institute

CONVERSION of the fireboss into the real safety boss of the coal mine was the burden of a paper by R. S. Morton at the Rocky Mountain Coal Mining Institute. Mr. Morton questioned whether this official should not be made directly answerable to the state instead of to the mine foreman, for that official in his anxiety to perform his duties as the executive of the operator might be disposed to ignore the findings of the fireboss and take a risk in order to keep the mine in operation.

The question is not a new one. *Coal Age* has deplored the dual responsibility of the mine foreman who was answerable to the state for safety and to his employer for results. He receives his emoluments and advancement from his employer, yet many of his duties are prescribed by the state.

Rocky Mountain operators, especially in Utah, have been disposed to seek to influence legislation in favor of stricter mining laws, which would make all the competitors in the coal business provide conditions making for maximum safety. The suggestion of Mr. Morton consequently did not fall on deaf ears. A committee was appointed to look into the matter and to report at the next meeting.

"Unwatering of the Rouse Mine" was the subject of D. A. Stout of Pueblo, Col., chief engineer of the Colorado Fuel & Iron Co. George A. Brown, of Cumberland, Wyo.; Robert Marshall and Sam Andrew, of Iowa; Robert McAllister, of Trinidad, and Sam Allier and Parley Potter, of Tremont County, also contributed papers of interest.

Robert M. Magraw, of Hiawatha, Utah, succeeds B. J. Matteson as president. F. W. Whiteside, of Denver, chief engineer of the Victor American Fuel Co., succeeds himself as secretary-treasurer. The vice-presidents are George B. Pryde, general superintendent, Union Pacific Coal Co., representing Wyoming; B. W. Snodgrass, of the Victor-American Fuel Co., representing Colorado; Allan French, general superintendent of the Swatiska Coal Co., representing New Mexico; William Littlejohn, general superintendent of the Utah Fuel Co., representing Utah.

In a trip to a mine of John McNeil near Frederick, the fifty visiting coal men had an opportunity to see the Oldroyd mining machine in active operation. The summer meeting probably will be held at Greenwood Springs, Col.

Nova Scotia Mining Society to Meet in Halifax April 5 and 6

GEORGE D. McDOUGALL, vice-president of the Nova Scotia Mining Society, will preside at the 1921 annual meeting to be held at Halifax, April 5 and 6, the president, A. J. Tonge, being at present in England. Among the papers will be the following: "The McKune System of Applying Byproduct Gas to Open-Hearth Furnaces," by F. B. McKune, superintendent of the open-hearth department of the Steel Company of Canada; "Mine Fire in Springhill," by J. C. Nicholson, New Waterford, district superintendent of mines, Dominion Coal Co.; "New Coal Raising and Screening Arrangements at the Jubilee Colliery of the Nova Scotia Steel and Coal Co. of Sydney Mines," by A. Dawes, division engineer, Nova Scotia Steel and Coal Co.; "Description of the Longwall Method Adopted by the Scotia Co. in the Jubilee Mine," by John Murphy, manager; "Experiences in Deep Undersea Mining in the Princess Colliery of the Scotia Co.," by Alex. A. McNeil, general superintendent of collieries, Sydney Mines; "Sleeping Sickness, Its Deadly Effect on Mining and Metallurgical Engineers in Eastern Nova Scotia with Photographs," by Thomas J. Brown; "Compressed Air," James P. Cotter, of Rand Drill Co., Sydney.

The National Coal Association is urging modification of the present reconsignment rules on coal. It is held that the railroads as well as the coal trade will benefit by changing the rules so that the through rate will apply from the point of origin to the final destination when there has been a reconsignment. Under the present rules, through rates apply from the point of origin to the point where the reconsigning is done. From the point of reconsignment to final destination local rates are applied, as if the shipment were loaded originally at the reconsigning point.

The modifications of diversion and reconsignment rules which are proposed by one of the examiners of the Interstate Commerce Commission apply only to perishable goods, and do not affect coal or coke.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

"NOTHING is more significant and encouraging at this time," says Archer Wall Douglas, chairman of the Committee of Statistics and Standards of the Chamber of Commerce of the United States, "than the belief in many quarters that better business conditions will prevail as the season advances. As a natural consequence of this growing cheerfulness there is actually more business being done today, both materially and mentally, as it entails the buying of seasonable goods. A general decline in prices is realized to be the only way out of the existing unnatural situation, and while it is a painful process, it is none the less essential. The sooner it is over, the sooner we shall arrive at an enduring basis.

"The almost forgotten slogan 'back to the farm' is being heard once again. This means that farm labor will not be so scarce as a year ago, nor will the hird man command such high wages. Also it now seems very sure that there will not be such acreage of staple farm products as last spring. For there is not the same incentive. Nor will the cost of production be so great. Thus the farmer's problem of the relation of his cost and selling prices seems likely to be solved by supply matching itself with demand. Decreased production will ultimately tend to bring about higher prices, while decreased cost of production insures a better margin of profit. This is the way the natural laws of trade take care of such problems. Resumption in industrial life usually is accompanied by reductions in wages.

"There is a steadily growing interest in the European situation as the conviction deepens that there can be no permanent nor lasting prosperity in this country until the political and economic status of Europe is upon a firm basis. In every productive activity in the United States of great moment we produce more than the domestic demand can possibly consume. So we must needs find a market for this surplus if production is to continue on an efficient and economic basis.

"Europe is our 'best bet' in this regard, and will be so for a long time to come because of her great consuming population whose need of articles of every-day life corresponds closely to our own. Moreover if Europe is ever to pay the huge debt she owes us we must take her goods chiefly in payment. Nor can we expect her to buy our surplus of production unless we resort to the elemental methods of barter and exchange, and take her goods in return."

Italy and France Sign Trade Pact

The main provisions of the preliminary draft of an Italo-French agreement as outlined in advices received from Rome March 23 are as follows: France is to export to Italy 100,000 tons of coal monthly from the Sarre and other mines at the domestic consumer's price and to assure Italy of scrap iron and steel to the amount of 150,000 tons this year, to be sold at current market prices, and on leaving France to be exempt from export duty. The amount of scrap iron and steel may be increased by an amount equal to the weight of pig iron which Italians may export from France at the same time. Italy shall be bound by the agreement to import 35,000 tons of French pig iron this year and to pay for it the market price.

Carnegie Steel Mill Reopens

Officials of the Carnegie Steel Co. announced a resumption of operations at the Clairton plant, near Pittsburgh, last week after a ten-day shutdown. Three thousand men returned to work in the blast and open-hearth departments and in the 20-inch and 28-inch mills.

Increased Demand for Steel Noted

Better buying of steel for construction purposes and the reinstating of a few cancelled orders by automobile builders were features of the steel market, according to the *Iron Age* of March 24, which states that a large number of buyers with small orders have been heard from. These contracts, however, have not resulted in an increase in the average of steel plant activities. The Steel Corporation, it was stated, has been taking new business at the rate of about 15,000 tons a day, or about one-third of capacity.

More Railroad Shops Reduce

Employment of 1,000 men in the New York, New Haven & Hartford car shops in the Readville (Mass.) district was suspended March 19. Reduction in revenue was given as the reason. The shops usually employ 2,500 men, but only 250 now have work.

A bulletin posted at the Monon R.R. shops at Lafayette, Ind., March 20 notified the employees that the shops would be closed indefinitely after March 24. Approximately 600 men are affected. The roundhouse will be the only mechanical department kept in operation.

Ford Plants Approach Normal

The Ford factory in Highland Park, Mich., beginning last week, was again on a six-days-a-week schedule for the first time since it was closed in December. After the reopening of the factory in February the men were brought back in four-day shifts. The shifts were on an alternating basis, each group working two weeks. Production gradually grew from 1,000 cars a day, however, until at the present time close to 3,000 are being turned out. With additional men being put on in the various departments daily and the added working hours, officials say conditions in the plant are rapidly approaching normal.

Railroad Takes on More Workers

Maintenance-of-way employees on the Chicago, Burlington & Quincy R.R. lines west of the Missouri River will be increased by approximately 1,500 men on April 1, according to an announcement made March 23 by W. F. Thiehoff.

The Southern Pacific lines' notice of a reduction in working force effective March 23 has been recalled and the present force of 24,000 men will continue at work.

Canadian Pacific Lays Off 5,000

More than 5,000 men employed in the Angus shops of the Canadian Pacific Ry. at Montreal were notified March 22 that work would be suspended the following day and resume again April 4.

Commerce Chamber Creates Transportation Department; to Discuss Coal

CREATION of a department of transportation and communication was announced in Washington March 22 by the Chamber of Commerce of the United States. This department is one of eight into which the chamber has been divided. The manager of the new department will be James Rowland Bibbins, who comes to the chamber from the Arnold Co., Chicago, where he was personal representative of Lieutenant Colonel Bion J. Arnold, consulting engineer and president.

The new department of transportation and communication will have a wide range of activities. It will cover shipping, ocean and inland; steam and electric railroad transportation, air transportation, cables and telegraphs, postal facilities, and highways.

The government's relation to the coal industry will be among the subjects to be considered at the annual convention of the chamber at Atlantic City, N. J., April 27 to 29. The chamber has already gone on record against government regulation of the coal industry as expressed in the Calder bill, and it is expected that it will reaffirm its opposition at the coming meeting.

Federated Engineering Societies Opens Headquarters in Washington

WITH the opening last week of its suite of offices in the National Savings & Trust Co. Building, in Washington, the Federated American Engineering Societies will direct its work in the future from the national capital. L. W. Wallace, executive secretary of the organization, has been in Washington completing arrangements for the opening of the national headquarters. He will not be able, however, to take up his residence in Washington for another month. In the meantime the offices will be in charge of A. C. Oliphant, assistant secretary.

The principal effort being made at this time at the offices of the Federated Societies is in connection with the extension of the employment service of the organization. In addition to having one central controlling office, it is planned to have branch offices in several of the larger cities. A full report on the employment service is to be made when the executive board meets in Philadelphia on April 16. Secretary Hoover, of the Department of Commerce, president of the organization, expects to attend the executive board meeting. At this meeting, a comprehensive report also is to be made on the activities looking to the establishment of a Department of Public Works.

Copies of a model bill on the matter of licensing engineers now are available at the office of the executive secretary. These bills are being sent out to those interested, not with the idea of offering a recommendation one way or the other in the matter but in the hope that any state legislation which may be enacted will follow the general lines of the model bill which is the result of extended study.

Right of Railroads to Confiscate Coal Has Not Been Settled

WHILE refusing to review decisions of Pennsylvania courts in a case involving confiscation of fuel by a railroad company in a particular case, lawyers in touch with coal cases do not regard the action of the U. S. Supreme Court as finally settling the question as to the authority of railroads to confiscate fuel destined for a consignee for its fuel use.

The case in question was that of the Phoenix Portland Cement Co., of Nazareth, Pa., which contracted with the Piedmont & Georges Creek Coal Co., of Frostburg, Md., for 25,000 tons of gas slack coal from West Virginia mines for delivery at its plant at Nazareth. In September, 1916, the Baltimore & Ohio R.R. confiscated forty-four cars of the coal consigned to it for delivery to Nazareth, and defended its action on the ground that it was part of its fuel contract with the mine, the railroad contract being later than the cement company contract. The District Court for the eastern district of Pennsylvania in 1919 decided in favor of the railroad company in the suit brought by the cement company, on the ground that title to the coal never passed to the cement company with its removal from the mine, and its decision was sustained by the Circuit Court of Appeals for the third circuit. The cement company asked the Supreme Court to review the case, but it declined, and in doing so gave no reasons, as is the custom; hence the conclusion that the court has not definitely passed on the question.

W. L. Mapother Chosen President of Louisville & Nashville Railroad

THIRTY-ONE years ago W. L. Mapother got a job as office boy at $2.50 a week in the offices of the Louisville & Nashville Railroad Co. On March 16, 1921, he was elected to the presidency of the road he had served in the intervening thirty-one years as office boy, clerk, assistant to the secretary, assistant to the vice-president and finally president. During the war he conducted the road for the government as federal manager, and has assumed responsibility since the death of Milton H. Smith, for many years president of the Louisville & Nashville.

Directors of the road met in New York and after a brief session announced that they had promoted Mr. Mapother from executive vice-president to the presidency.

The new railroad head is forty-four years old, and early in his career attracted the attention of Mr. Smith, who took him into his own office and finally, in 1905, made the young man his assistant. On the recommendation of Mr. Smith he was made an assistant vice-president and director, succeeding Walker D. Hines on the Louisville & Nashville board. Mr. Mapother lives in Louisville.

"Open Shop" Upheld by Court

THE "open shop" has been upheld in another phase by Supreme Court Justice Erlanger of New York City, who on March 8 granted an injunction against the officers of the Amalgamated Clothing Workers of America, forbidding interference with the business of Joseph Skolny & Co., clothing manufacturers, 906 Broadway. The company, beginning Jan. 27, has been on an open-shop basis, and a strike of the union workers began the same day.

Justice Erlanger ruled that picketing was lawful, but that the application of insulting epithets and in general such actions as may intimidate those choosing to remain at work may bring about a situation of which equity courts will take cognizance. The injunction was granted *pendente lite*, awaiting the trial of the union for $250,000 damages. All told, damages amounting to more than $2,000,000 are asked in various suits against the union.

Pennsylvania Railroad to Reduce Wages

NOTICES were placed on bulletin boards of the Pennsylvania Railroad system Thursday, March 17, informing officers, subordinate officials and employees that "changed conditions since the present rates of pay became effective warrant a reduction of salaries and wages," and that the management, therefore, proposes to make a reduction in salaries and wages effective April 20.

This action is taken in pursuance of the resolution adopted by the Board of Directors March 9, instructing the executive officers "to give, as promptly as possible, proper notice that it is the intention of this company to reduce salaries and wages of officers and employees to accord with economic conditions."

For the purpose of discussing the proposed revision of salaries and wages a series of conferences has been scheduled, which the representatives of subordinate officials and employees are invited to attend. The object is stated to be that of reaching an agreement as to what constitutes just and reasonable rates of pay in the light of present conditions.

Purchasing Agents Propose Uniform Coal Contract

FOR some time past the Fuel Committee of the National Association of Purchasing Agents has been engaged in formulating recommendations for reasonably uniform provisions in coal contracts. The purpose of the committee has been to express its idea of a fair contract to be used for the purchase and sale of coal. To avoid overlooking important details and to prevent any bias in its suggestions, the committee conferred with a number of leading producers and wholesalers in the coal field, holding a meeting for this purpose at the Hotel Pennsylvania, New York, on March 15.

The conclusions of the committee are expressed in the form of contract appended. It is believed that the form can be advantageously used for most commercial contracts for the purchase of coal, and where special conditions require special clauses these might be added to the contract.

The form has been prepared simply as a convenience to the members of the National Association of Purchasing Agents and the trade, and is submitted by the committee for the use of those whose requirements it will meet. It has been carefully worked out to cover all general conditions and is particularly designed to prevent misunderstandings between buyer and seller such as arose from the loosely drawn agreements in effect last year.

The administrative council of the Fuel Committee of the National Association of Purchasing Agents is as follows: Chairman, E. H. Hawkins, of E. I. du Pont de Nemours & Co., Wilmington, Del.; H. M. Mitchell, of Rome Mfg. Co., Rome, N. Y.; J. E. Stauffer, of A. M. Byers Co., Pittsburgh, Pa.; R. M. Sedgwick, of Standard Chemical Co., Toronto, Ont.; H. M. Cosgrove, of J. H. Markham, Jr., Tulsa, Okla.; H. L. Ogden, of Gas & Electric Improvement Co., Boston, Mass.

W. B. Symmes, Jr., Assists in Preparing Contract

In the preparation of the proposed contract from the committee has had the guidance and advice of W. B. Symmes, Jr., of New York, formerly solicitor for the U. S. Fuel Administration. Following is the contract:

AGREEMENT entered into this.....day of..... 19..., between.....of....., hereinafter referred to as Seller, and.....of....., hereinafter referred to as Buyer.

The Seller hereby agrees to sell and deliver and the Buyer hereby agrees to purchase, between the.....day of..... 19... and the.....day of..... 19..., the quantity and kind of coal and at the price hereinafter stated upon the terms and conditions herein contained, to wit:

QUANTITY.....net tons
RATE OF SHIPMENT (approximately).....net tons per month
DESCRIPTION
.....
.....

Proximate Analysis:
Moisture..... Fixed Carbon..... Sulphur.....
Volatile Matter..... Ash..... B.t.u.....
PRICE $..... per net ton of 2,000 lb. f.o.b. cars mines.
POINT OF DELIVERY: f.o.b. cars mines.
TO BE SHIPPED TO.....
DESTINATION .....
ROUTING .....
KIND OF CARS PREFERRED.....

TERMS AND CONDITIONS

1. Invoices shall be paid on or before the ..... day of each month for all coal shipped during the preceding calendar month. Non-compliance with said terms of payment shall give the Seller the right to suspend further shipments until all previous shipments are paid for, and if in the judgment of the Seller the financial responsibility of the Buyer shall at any time become impaired and written notice thereof be given by the Seller to the Buyer, the Seller shall have the right to suspend further shipments until adequate security for payment hereunder is furnished by the Buyer. If such security is not furnished within thirty days from such notice, the Seller shall have the right to cancel this agreement.

2. All settlements shall be governed by the actual railroad weights ascertained at the usual points at which railroad shipments from the mine or mines producing the coal shipped hereunder are weighed.

3. Strikes, fires or accidents at the mine or mines where the coal sold hereunder is produced, embargoes, shortage of car supply or other similar occurrences beyond the control of the operator of such mine or mines which prevent or interrupt the shipment of such coal, shall excuse Seller's failure to ship hereunder during the continuance of such occurrence, *provided*

(a) The Seller is the owner or exclusive sales agent of the mine or mines at which the coal sold hereunder is produced, or prior to or simultaneously with the execution of this agreement has entered into a written contract for the purchase of a sufficient quantity of coal from such mine or mines to fulfill the obligations of the Seller under this agreement;

(b) The name of the owners and location of such mine or mines is stated in this agreement;

(c) The Seller gives the Buyer written notice within five days after such occurrence of the exact nature, extent and probable duration thereof with sufficient detail to enable the Buyer to verify the same;

(d) The total available tonnage of said mine or mines during prevention or interruption of shipments as aforesaid is applied pro rata on all contracts then in force or any renewals thereof for the output of such mine or mines exclusive of contracts or sales made after such occurrence;

(e) Shortage of car supply shall not excuse failure to ship hereunder if at the time of such failure there are in force contracts for the sale of more than the rated output of such mine or mines based on the car rating given such mine or mines at the date of this agreement by the railroads on which the same are located.

4. In case of strikes, fires, accidents or causes beyond the control of the Buyer which wholly or partially stop the works of the Buyer, shipments contracted for shall be suspended or partially suspended, as the case may require, upon written or telegraphic notice to the Seller.

5. If the Seller shall fail to ship or the Buyer shall fail to accept the monthly shipments herein provided for and shall be excused for such failure under Articles 3 and 4 hereof, the other party at any time after the expiration of the first three months of the contract period may, by written notice to the party who has so failed to ship or accept, reduce the monthly tonnage thereafter to be shipped and accepted hereunder to an amount equal to the average of the monthly shipments for the three months preceding such notice.

6. The purchase price of the coal specified herein is based upon present agreements with mine employees as to wages, and any increase or decrease in the cost of production of the coal shipped hereunder caused by changes in such wage agreements or by the imposition by State or Federal Statute of a direct tax on coal or the mining thereof or subsequent changes in the rate of such tax shall correspondingly increase or decrease said price of coal on any tonnage thereafter shipped hereunder and affected thereby.

7. The coal covered by this contract is to be used only in the plant or plants of the Buyer and is not to be sold or diverted by the Buyer to other purposes without the consent of the Seller.

8. Waiver by either party of any default by the other hereunder shall not be deemed a waiver by such party of any default by the other which may thereafter occur.

9. Notice sent by telegram or registered mail, addressed to the party to whom such notice is given, at the address of such party stated in this agreement, shall be deemed sufficient written notice in any case arising under this agreement.

10. No understandings, agreements or trade customs not expressly stated herein shall be binding on the parties in the interpretation or fulfillment hereof unless such understandings, agreements, or trade customs are reduced to writing and signed by the respective parties.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed in duplicate by their respective officers duly authorized the day and year first above written.

_____Seller
By

_____Buyer
By

Strike to Compel Miner to Pay Union Fine. — A miner at the Inkerman Colliery of the Pennsylvania Coal Co. was fined $20 by the union on the charge that he had compelled his laborer to do a miner's work. The miner returned to work without having paid his fine, and the 400 mine workers at the colliery went on strike, declaring that the coal company should not have permitted him to go back to his working place till he complied with the demand. The strike affected only No. 5 shaft of No. 6 colliery.

Navy Awards Partial Contracts, Asking Supplemental Bids, To Be Opened March 29

PARTIAL contracts for coal have been awarded by the navy on bids received March 8, and supplemental bids have been called for to be opened March 29. The latter are on bituminous coal under schedules 7,400 and 7,401 and on anthracite coal for delivery at Washington, D. C.; Yorktown, Va.; Norfolk, Va., and Charleston, S. C. The awards, all of which are in gross tons, include the following: H. B. W. Haff, New York, 2,675 tons Brooklyn delivery, total contract $14,471; 240 tons Rockaway Park, N. Y., $8.74; 3,800 tons Iona Island, $18.75; 4,050 tons at $6.75 per ton.

Metropolitan Coal Co., Boston, Mass., 6,800 tons, at $10.24 per ton.

Newport (R. I.) Coal Co., Newport delivery, 2,800 tons, $11; 11,000 tons, $10; 4,300 tons, $10; 224 tons, $15, and 4,000 tons, $15.40.

Peabody Coal Co., Chicago, 25,000 tons, $3.25.

C. Reiss Coal Co., Sheboygan, Wis., 700 tons Great Lakes delivery, $15.57.

Thorne Neale & Co., Philadelphia, 1,900 tons Philadelphia delivery, $3.70.

Whiteley & Foedisch, Philadelphia, for delivery at Philadelphia and vicinity, total contract of $109,500 on basis of $6.90 a ton.

C. G. Blake Co., Cincinnati, contract of $201,600 on basis of $3.36 a ton for Hampton Roads delivery.

Castner, Curran & Bullitt, New York, contract of $1,008,000 on basis of $3.36 a ton, Hampton Roads delivery.

Coney Island (N. Y.) Coal Co., 2,675 tons Brooklyn delivery, $12.49.

Clark Coal Co., Bar Harbor, Me., 520 tons for Bar Harbor delivery, $20.

Davis Coal & Coke Co., Baltimore, contract of $95,750 for Washington and vicinity delivery, $3.83.

Flat Top Fuel Co., Bluefield, W. Va., contract of $80,800 for Norfolk and vicinity delivery, $3.80 a ton, and $57,000 contract at $3.80 for Hampton Roads delivery.

Weston Dodson Co., Inc., Bethlehem, Pa., several contracts for tonnages ranging from 375 tons to 3,800 tons at from $12.14 to $15.24.

Quemahoning Coal Co., Somerset, Pa., 2,400 tons at $7.16 and 2,000 tons at $6.87.

Imperial Coal Corporation, New York, $3.92 a ton for small quantities.

Washington Mine Workers Strike Against Wage Reduction

Operators Declare They Have No Contract with Their Men and That Prices Must Be Lowered to Meet Competition

NEARLY all the coal mines of western Washington closed March 16, mine workers to the number of 3,000 men, according to the operators, refusing to accept the reduction of approximately 23 per cent which the coal operators demanded. About twenty-five mines operated by sixteen mining companies are idle. All but one of the large companies operating on the west side of the Cascades have had their mines closed down by the strike. On the east side of the Cascades one large company is idle and several smaller ones. The union leaders say there is no prospect of a local settlement and that the controversy has been left in the hands of the national officers of the United Mine Workers at Indianapolis.

The Northwestern Improvement Co., operating ten big railroad mines on the Roslyn-Cle Elum field is not involved, nor in fact are most of the mines in that field, though they are producing coal for the open market. These mines are not attempting to reduce the wages of their men. The mine workers call the strike a lockout. They assert that only 2,500 men have been thrown out of work.

The state has about 4,000 mine workers and nearly half of them are working in the railroad mines and in other mines that have not been closed. Of the seventy mines in the state about two-thirds are shut down. In a statement the operators declare that they are not breaking any contract or agreement with their men. When the award was made by the federal commission the operators put it into effect but refused to give a written agreement when the miners' representatives made a formal demand for it.

There will be sufficient Wellington and Utah coal to meet any demand, but it is a higher-priced fuel than that from Washington, and if consumers pay more for their fuel it will be because the supply of the cheaper kinds is exhausted rather than because of any increase in the price.

To Investigate Car Distribution: Service Order 18 Vacated

AN INVESTIGATION has been ordered by the Interstate Commerce Commission as to the reasonableness and propriety of the present car distribution rules as they apply to privately owned coal cars and cars furnished for railroad fuel coal, with a view to prescribing reasonable regulations. The commission has vacated Service Order No. 18, which required carriers to have a contract for the entire output of the mine before it could give that mine any preference in car distribution.

NO SETTLEMENT OF THE new wage scale in western Kentucky had been reached on March 23. On that date secret sessions were still being held by operators and mine workers at Madisonville, Ky. The contract expires tomorrow. The settlement affects only the mines in Hopkins, Christian and Webster counties and parts of Union and Henderson counties.

Tidewater Coal Exchange Rescinds Penalty Section of Rule 33

AT a meeting of the Tidewater Coal Exchange, Inc., March 24, 1921, it was decided to abolish so much of Rule 33 as levies a penalty for failure to dump credits. The action was retroactive, it is understood, taking effect as of the date Rule 33 was adopted, and therefore all penalties collected for failure to dump coal are to be refunded and all assessments cancelled.

The exchange is economizing. A special committee on reducing expenses of operation has studied the question and as a result the clerical force in the offices at the three ports will be reduced by 25 per cent and all salaries of those remaining will be cut 10 per cent. A net reduction in overhead and operating expenses of 35 per cent thus will be effected.

THE FOLLOWING BIDS to furnish 45,000 tons of bituminous slack coal to the city waterworks were opened by the water department of Buffalo on March 22: Wabash Fuel Co., $2.40 (lowest); also same for different coal, $2.70; Valley Camo Coal Co., Cleveland, $1.80 to $2.75 on a sliding scale, average $2.439; Weaver Coal Co., $2.69; Pittsburgh Coal Co., $2.75. The followuig bids were declared informal for failure to agree to certain specifications, such as B.t.u. and other tests; McVicker Coal Co., Cleveland, $2.35 and $2.50; F B. Sankey, Pittsburgh, $2.50; Weaver Coal Co., $2.54; Pittsburgh & Shawmut Coal Co., $2.88. All bids are net, mine price, subject to $2.51 freight.

News from the Capital

By Paul Wooton

THAT THE COUNTRY is running headlong into a major transportation disturbance is the belief of George H. Cushing, managing director of the American Wholesale Coal Association, after a visit to ten of the large coal-consuming centers of the East and Middle West. He expects to see belated buying of coal this year, with the result that the latter half of the year will develop the keenest competition for open-top cars. He has figures which show that the movement of road-building material this summer will be heavier by far than ever before. Indications seem to be that building materials will move in very large volume, as will other classes of freight which use open-top cars.

In his inquiry in the centers visited Mr. Cushing found a determined sentiment against priorities in the use of railroad equipment. This feeling has grown so strong that Mr. Cushing believes that priority for coal is a thing of the past. He believes that in the future it will be a case of first come first served.

He finds a strong demand for freight-rate adjustment as between fields and thinks the whole matter of coal rates is destined to be brought before the Interstate Commerce Commission for general readjustment. He expects to see increasing quantities of Indiana and Illinois coal used in the Northwest as a result of the favorable freight rates now in existence. This is coupled with the fact that through forced use of Illinois and Indiana coal for several years the people of the Northwest have learned to burn it and no longer have any particular objection to it.

THE REMOVAL PROCEEDINGS which the government will have to institute against the non-resident defendants in the case recently brought in Indianapolis will be resisted by the defendants generally. It is understood that steps are being taken to prepare the defense of various non-resident defendants in connection with these removal proceedings. It is expected that a considerable length of time will be required to conduct these proceedings, inasmuch as it is understood that special Assistant Attorney General Slack expects to give those proceedings his personal attention instead of turning them over to local district attorneys. The defendants, so far as is known, have not been advised as to where Mr. Slack will begin this work.

The greatest surprise is expressed at the fact that the Washington wage agreement is cited as a conspiracy between the operators and the representatives of labor. This wage agreement was brought about by Dr. H. A. Garfield, at that time the Federal Fuel Administrator. Industry generally has assumed that agreements made with the sanction of government officials would not be subject to prosecution under the Sherman Act.

THE CONVENTION OF THE American Wholesale Coal Association will be held in Washington June 7 and 8. The hope is expressed by George H. Cushing, managing director of the association, that operators and retailers will sit in at the convention, so as to get the wholesalers' orientation. With the exception of the banquet, there is to be no set program. The sessions are to be taken up entirely with discussion on the floor. This will be conducted under prepared leadership with the idea of bringing out what the members of the association think of proposed legislation, trade conditions and of the methods which could be adopted to stabilize the coal business.

ANNOUNCEMENT BY THE Interstate Commerce Commission that it expects to call for all the facts in the matter of assigned cars to be presented at a formal hearing came as a surprise to all concerned. The announcement was made simultaneously with the cancellation of Service Order No. 18, which cancelled the existing authority for the railroads to use assigned cars in the procurement of fuel coal. There is some uncertainty as to just why such prominence is given in the statement to the use of privately-owned cars on an assigned basis. Only an insignificant number of privately-owned cars is involved in the transportation of coal for railroad purposes.

THE PUBLIC UTILITIES made an eleventh-hour impression on the Calder committee, as is evidenced by their having been dragged prominently into the final report. This constitutes, it is pointed out, another example of the tendency of the committee to depart from its sphere. The Calder committee was authorized to make its investigation with the general understanding in the Senate that it was to look into housing matters only. It developed, however, that the authority had been so drafted as to permit the investigation of any activity in the country.

PROBABILITIES POINT TO the resumption of coal activities on the part of the Senate early in the extra session which will convene on April 11. It is expected that there will be some competition between Senators Frelinghuysen and Calder as to which one is to direct the activities in this regard. In this the advantage is with Senator Freylinghuysen, who is known to be close to the administration, as the investigation falls more properly within the field of the Committee on Interstate Commerce and from the fact that his ideas of the legislation needed are much less drastic than are those advocated by the New York Senator.

When Senator Calder introduces a revised bill at the next session, it is expected that it will be referred to the Interstate Commerce Committee. In case the bill is committed to the Committee on Manufactures it is believed that such action will be contested.

IN A LETTER TO the Secretary of the Interior George H. Cushing says in part:

"Speaking the mind of my associates, we hope that while co-operating with your department in every practical way we will not have to combat the efforts of your Geological Survey to persuade Congress to put our industry under government control and thus deprive us of our liberty. The work of the Survey is valuable in many ways, and we can only regret that it has taken such a decided turn toward experimental legislation that it is found now advocating almost anything which heads in that direction."

IT IS UNDERSTOOD THAT Franklin T. Miller, formerly special adviser to the Calder Committee on Reconstruction and Production, is being considered by the Secretary of Commerce for an important assignment in the Department of Commerce, where he will have to do with matters pertaining to the building industry. In connection with his work with the Calder Committee Mr. Miller made an extended study of the coal situation. Secretary Hoover already has stated that he feels that the Department of Commerce should have a voice in coal matters, in which event Mr. Miller's services would be available in that connection.

Formation of Charleston Exchange Nears Completion; New Rule on Bunkering

SHIPPERS of coal through the new Tidewater Coal Exchange at Charleston, S. C., met in Washington on Friday, March 25, 1921, with Vice President Green, Freight Traffic Manager Shaw, I. L. Graves, district freight agent, and Mr. Andrews, general superintendent of transportation of the Southern Ry., to complete details of the organization of that exchange. O. P. Hood, chief mechanical engineer of the Bureau of Mines; H. M. Payne, representing the New York exchange; W. A. Johnson, of Johnson & Co., bunkering agents at Charleston, S. C.; Mr. Van Dobler, shipping agent of the Carolina Co., Charleston, S. C., and S. T. Snead, of the Sewall's Point exchange, also were present.

Arrangements were made with the Bureau of Mines to sample and analyze coal that will be shipped through the exchange, according to the method that has been adopted by several other exchanges. A contract is being drawn up for consideration at the next meeting to provide for participation of the Southern Ry. in this exchange. Gibbs L. Baker is preparing articles of incorporation.

Following the meeting, the Southern Ry. issued an order cancelling its present rule which requires a vessel bunkering at the piers to move away after the expiration of eight hours even though its bunkers have not been filled. Under the new rule ships taking on cargo receive preference, but ships taking bunkers hereafter will be allowed to complete the work before being required to move.

Anthracite Shipments Set February Record

SHIPMENTS of anthracite in February, as reported to the Anthracite Bureau of Information, in Philadelphia, established a new record for that month, amounting to 5,966,101 gross tons. The nearest approach to this figure for February shipments during a normal year was in February, 1912, when shipments amounted to 5,875,968 tons, and the next nearest approach was in the war year of 1918, when 5,812,082 gross tons were shipped. The shipments last month exceeded the previous month of January, a long month, by 225,563 tons and exceeded February of last year by over 900,000 tons.

Shipments by originating carriers were:

	February, 1921.	January, 1921.
Philadelphia & Reading	1,170,753	1,172,873
Lehigh Valley	1,063,508	1,058,127
Jersey Central	515,551	470,704
Lackawanna	920,788	910,260
Delaware & Hudson	813,191	814,491
Pennsylvania	426,350	451,879
Erie	633,706	606,602
New York, Ontario & Western	153,017	156,564
Lehigh & New England	269,237	99,038
Total	5,966,101	5,740,538

Says Many Sellers and Buyers Do Not Know Coal as Product; Early Buying Urged

PURCHASING agents of Connecticut, meeting with the Fairfield County (Conn.) branch of the American Society of Mechanical Engineers at Bridgeport on March 24, 1921, enjoyed an interesting program, the central topic of which was the fuel question. A. Brewer, chief engineer of the Bridgeport Brass Co., the presiding officer, introduced in turn C. C. Phelps, of the Uehling Instrument Co., who spoke on "Fuel As the Engineer Burns It," and W. T. Birney, purchasing agent of the Winchester Repeating Arms Co., who discussed "The Purchasing Agent's Problems." These speakers were followed by G. C. Squiers, of the George E. Warren Coal Co., and Dr. H. M. Payne, who gave the meeting the operators' and transshippers' viewpoint on the coal question.

One of the striking statements made by Mr. Squiers was that too many coal salesmen do not know coal as a product and some purchasing agents are no better. There is lack of knowledge here that can be overcome, but too much dependence should not be placed on analyses of coal. An analysis gives a good idea of the product but does not always tell the whole story. The average operator uses analyses for advertising purposes and the buyers use them to guide in making purchases. Mr. Squiers urged the purchasing agents not to stay out of the market too long, because of prospective railroad trouble and possible mine labor disturbances.

Miners Likely to Ask Change of Venue in Indiana Conspiracy Case

WITH copies of the indictments, comprising 125 pages, against miners and operators for violation of the Sherman Anti-Trust law ready for distribution by officials of the District Attorney's office of the Indiana district of the United States court, attorneys for the defense have begun a careful study of the indictment itself. The hearing is set for May 3, but in all probability there will be a postponement at that time. There are many speculations as to what course the case will take when it finally does come up for trial. Many persons who are said to be very close to the miners' organization predict that they will ask for a change of venue from Judge Anderson's court.

British Miners Refuse Local Wage Scales

FINAL decision was reached on March 24 by the miners of Great Britain as to the terms offered offered by the mine owners. They refuse to accept a wage based on district conditions. They argue that the work of mining is a standard work and should be paid a standard wage regardless of the tonnage obtained in return for the labor expended and regardless of the price obtained for the coal sold.

The difficulty has arisen out of government decontrol. Yorkshire and Northumberland mine workers are ready to accept the owners' terms but South Wales, Scotland and Lancashire are not. On March 31 the government will release the mines from its control, and the operators are demanding that on that date the mine workers accept the new wage schedules. Those operators who have mines that are losing money cannot reconcile themselves to a uniform schedule, and the public cannot look with equanimity on the closing of large numbers of mines needed for industry.

Jermyn Coal Co. Demands Lower Wage Rate

AFTER having closed its mine at Old Forge for ten days the Jermyn Coal Co., through J. J. Jermyn, announced on March 19 that wages must be reduced or the mine would not be reopened. Mr. Jermyn said that when the mine was closed it was losing $1.35 on every ton of coal mined.

As the retail dealers in Scranton cut the price on March 18 50c. a ton, the loss per ton according to Mr. Jermyn would be $1.85. Public surmise is that the Pennsylvania Coal Co. which has closed its mine at Old Forge will make a similar proposition. The anthracite agreement to which the larger companies are all parties prevents any reduction till March 31 of next year.

Geological Survey to Investigate Coal Stocks as of April 1

STOCKS of coal on April 1 will be investigated by the Geological Survey. Only less uncertain than how much coal is being consumed and yill be required this year is the subject of how much coal is on hand. Thousands of consumers—industrials, by-product coke plants, steel mills and public utilities—and also retail coal dealers are being asked to report their stocks as of Jan. 1 and April 1, 1921, and the quantity of coal consumed in the intervening three-month period. Through the courtesy of A. G. Gutheim, manager, Public Relations Section, Car Service Division, American Railway Association, data on railroad stocks will simultaneously be acquired by that organization.

Everyone receiving a questionnaire from the Geological Survey is urged to report fully and promptly, as the final report will be of value in proportion as it is full and prompt.

Calder Report, Denying Coal Shortage Existed Last Year, Arraigns Big Companies as Well as Wagon Mines

By Paul Wooton
Washington Correspondent

SENATOR Calder made public on Monday his report to the Senate of the finding of the Select Senate Committee on Reconstruction and Production. The transcript of the hearings before the committee fill three volumes, but the report boils down its conclusions into sixty-one printed pages. The major part of the voluminous record concerns coal, but the report devotes only sixteen pages to that subject.

Reviewing the coal situation in 1920 the report states that no coal shortage actually existed and had there been a real shortage there was no justification or excuse for the "exorbitant prices" that were charged. Depleted stocks in April and a temporary falling off in production are stated to have existed, but, continues the report, "Production, however, was sufficient with proper distribution to have taken care of all current need."

Government purchases of coal in 1920 are reviewed with particular reference to the War Department contract with the Wentz Co. The extent to which jobbers shared in the high prices for coal charged the War Department is illustrated in the report by a table giving the names of middlemen, cars sold and margin taken in the transactions.

Cites High Prices Charged for Coal

Prices paid last summer by public utilities in New England and New York are quoted as high as $21, delivered, and it is stated that retail dealers in New England paid on a substantial tonnage of anthracite $6 per ton above the company circular.

"Proof of Excessive Prices" for coal, "Responsibility for Excessive Prices" and "Location of Highest Prices" are three successive chapters in the report's indictment of the coal industry, which in judicial language hammers on the facts that of the high prices there is no doubt, that they were profiteering prices the public is convinced, that no one in the coal trade defends them, that the operators, jobbers and retailers were prone to quarrel about the responsibility, and that big companies as well as wagon mines shared in the huge profits. Associations of coal operators are stated to be factors influencing high prices but jobbers and retailers' organizations are not mentioned. Anything that "seriously affects the coal, either in unreasonably raising the price thereof or in cutting off the actual supply in any portion of the country, approaches a public calamity," it is stated, because "coal is such a universal public necessity."

The committee finds conflicting evidence and great divergence of opinion as to the causes of high prices, but states that there is no doubt that "operators, operator-brokers, wholesalers and retailers," and a "horde of speculators" participated in the embarrassment of coal prices.

As relates to coal, the report concludes with the statement that "it would be a gross dereliction of duty for Congress to shut its eyes to such possibilities or probabilities [as a return of the condition of 1920] and to fail to take some steps to prevent the control in such recurring emergencies from being left in the hands of those whose conduct during the last year amounted to a national scandal."

Particular stress is laid by the report of the committee on the authority given the Interstate Commerce Commission by the Transportation Act to declare "ex parte an 'emergency,'" it being stated that priorities in practice invariably create situations which eventually are worse than those which they are intended to mitigate. In the words of the report "the granting of priorities or preferential transportation service may easily lead to insidious and predatory practices, favoritism, special privileges, unjust discriminations, and profiteering in the sale of human necessities." One of the recommendations made by the committee for legislations has for its purpose limiting the power of the Interstate Commerce Commission to declare emergencies because "that commission, by its priorities orders, has delayed the carriage of structural material." It will be remembered that it was the preference given coal in the use of open-top cars that first aroused the ire of Senator Calder and Franklin T. Miller against the coal industry.

Turning to the section of the report dealing with the building industry one looks in vain for any charge of "unconscionable profiteering in price" in the building industry. In a discussion of the trend of general and building prices it is stated that "after the supply of commodities is liquidated, there may be a wave of upward prices," but there is no suggestion, as in the case of coal, that it would be a "gross dereliction of duty for Congress to shut its eyes to such possibilities or probabilities."

It is simply "to be hoped that prices may become stabilized at a proper new level." Fuel, transportation and the direction of credit and labor are stated to be the fundamentals affecting the building industry, and apparently any large profits taken in the building industry last year were the result of conditions in these fundamentals, although Senator Calder does admit that the Lockwood committee of New York City developed the fact that certain agencies in the building industry "united in action," possibly to restrain trade.

The very high prices of building materials, acknowledged to be one of the contributing causes of the housing shortage, a subject which it was presumed Mr. Calder's committee was authorized to investigate, are "yet to be exactly determined" with reference to "what proportion of these high prices is due to the high cost of fuel, etc." The committee makes a bid for further life by stating that more time than has been available would be necessary to determine this factor.

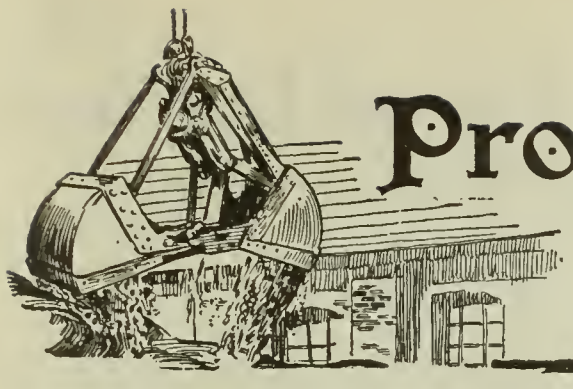
Supreme Court Decides Against Eldorado Co.

ON Monday, March 28, the U. S. Supreme Court, in an opinion by Justice Clarke, sustained the imposition of income taxes on the Eldorado Coal & Mining Co. by the Collector of Internal Revenue for the First District of Illinois, this being one of the important tax cases which has been pending for some time. The Eldorado Company sought to recover the assessment of income and excess profits taxes for 1917 on the ground that the tax was not based on income.

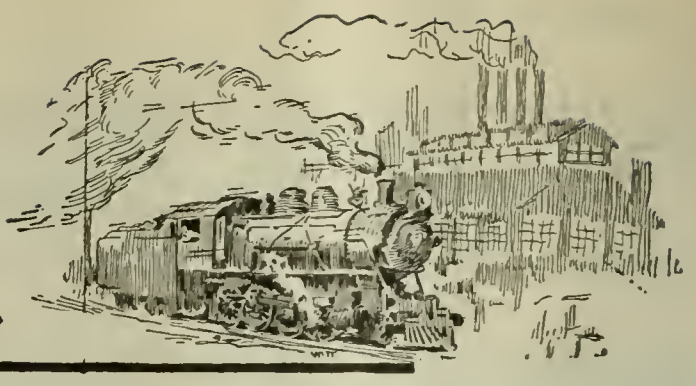
The coal company, an Indiana corporation, operated a bituminous coal mine which it sold in May, 1917, for cash. The company retained its accounts receivable and prior to September, 1917, distributed to its stockholders proportionately to their ownership of stock the cash received from the sale of the accounts receivable in question. The corporation, however, was not dissolved nor its charter surrendered, because there were unsettled liabilities against it for Federal income and excess profit taxes. Otherwise its affairs were wound up.

It was asserted that, taking the fair market value as of March 1, 1913, or the capital assets of the company invested and employed in its business, and adding thereto the cost of additions and betterments and subtracting depreciation and depletion to the date of sale there was an appreciation in the value of the property from March 1, 1913, of $5,986, and it was on this profit realized by the sale that the assessment of $3,073 was made which the company paid and which it sought to recover. The court sustains the tax on the ground that gain derived from the sale of personal property is taxable.

In the case of Henry Friedman vs. the U. S. the court in an opinion by Justice McKenna sustained the decision of the Court of Claims denying recovery by Friedman of $3,600 paid for Government coal lands which he claims were in excess of charges for the lands authorized by law.



Production and the Market



Weekly Review

GENERAL and genuine alarm is voiced in all reports from market centers and coal fields over the soft-coal situation. Thousands of mines have not had orders for a pound of coal for two months, and with a general average for the country of a bare two days a week operation those fortified with some business are seldom making over three or four days a week. Production has steadily dropped during fourteen weeks from more than 2,000,000 tons a day to 1,000,000 tons. From the middle of December to the middle of March output has been halved, because there is no demand for the coal.

That the country is drifting into another spasm of car shortage and high coal prices through improvident buying by steam-coal users is the fear generally expressed in all quarters. All that is needed to bring on a repetition of coal trouble is for consumers to hold off thirty to sixty days more and for business to pick up even moderately.

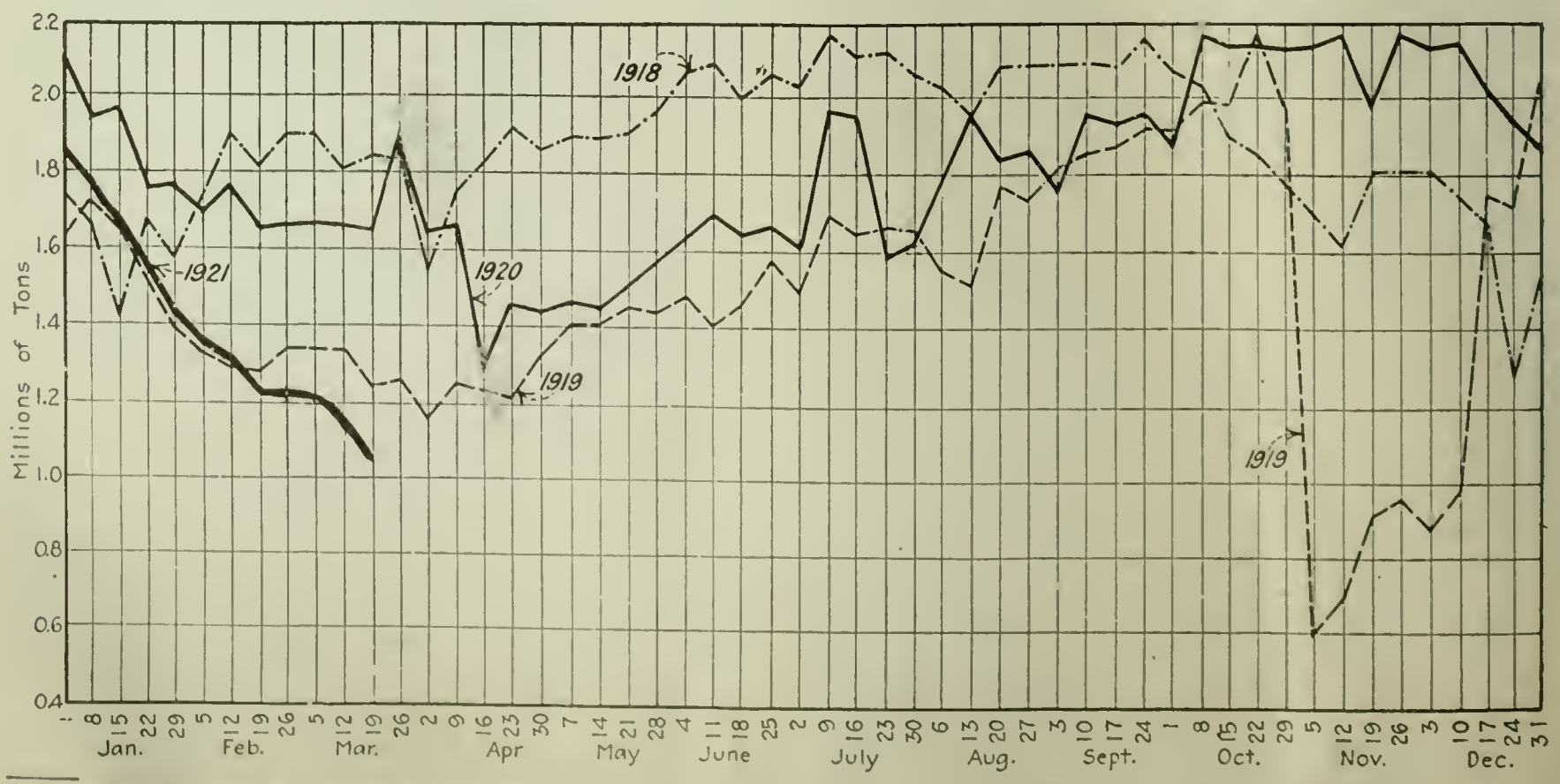
Today ends the coal year of 1920-1921 and tomorrow the new begins. A large tonnage under contracts expiring today has not been renewed and the "contracting season" is just as late this year as spring is early. In the East some public utilities have closed at $3.75 as a compromise between $3.50 offered and $4 asked. The smokeless market is temporarily jammed because shippers will not take on business at the lowest figures quoted the navy—that is around $3 per net ton at the mines.

Spot prices are expected to gain gradually from now on, even with no increase in output, because with contracts expired more business will be on a current basis and because contract prices are from 90c. to $1 above spot prices. Until the spot market overtakes the expected contract level business will be on a hand-to-mouth basis. *Coal Age* index of spot prices for March 27 is 101, a gain over the previous week of two points.

Railroads May Be Critical Factor

It is admittedly difficult to correctly appraise the danger in the situation. The only element in the problem that is definitely known is production. It is not known whether the rate of consumption at this time is above or below the rate of production—that is, whether stocks are decreasing or increasing—and furthermore the actual size of stocks is a matter of doubt. These two factors, it is announced this week, the Geological Survey will investigate by a special study of stocks

Daily Average Production of Bituminous Coal*

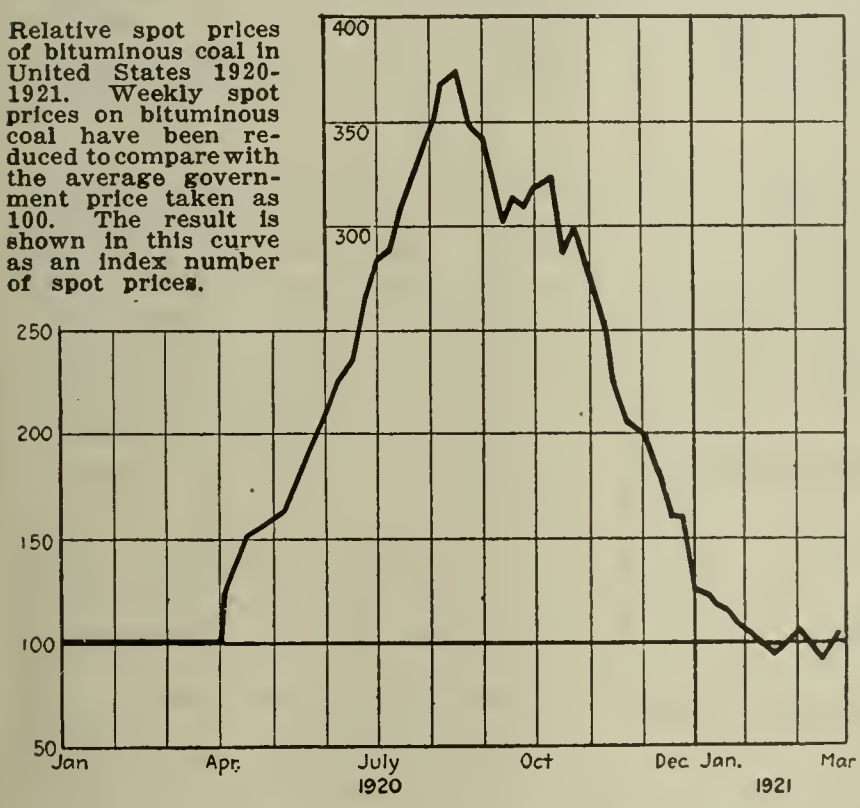


*From weekly report of Geological Survey.

and consumption in the first quarter of 1921. Another element in the situation with regard to which experience alone will give the answer is whether the railroads in the past four or five months have drifted so far behind in upkeep and maintenance as well as morale as to prevent their responding quickly to sudden stimulus in demand. The item of greatest uncertainty, however, is the country's requirement for coal for the next twelve months—that is, to what extent business will pick up. It can safely be said that the consumer with any certainty of coal requirements in the next twelve months who does not both make provision through purchase, whether spot or contract, for his coal and who does not at once begin accumulating it in his own storage yard is playing with fire

BITUMINOUS

Soft-coal production took another drop during the week ended March 19, when the total output reached 6,468,000 net tons. This is a decrease of 433,000 tons, or 6 per cent,



Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.

when compared with the week ended March 12. The daily average production of 1,078,000 tons is the lowest figure touched at any time during the past four years except during the 1919 strike. A still further decline is indicated in the total loadings for the first two days of the week March 21-26.

With the advent of the new coal year but few contracts have been signed, indicating an intention on the part of buyers to rely on the spot market for current requirements. This apparently is to the entire satisfaction of a number of the trade, who feel that reserve stocks will be fairly well depleted early in June, when buyers must again enter the spot market.

There are many who feel that when resumption of buying occurs the strain on our weakened transportation system will bring about another car shortage at the mines. Repairs to equipment, because of inability of the roads to finance the work, have not kept pace with ordinary wear and tear of the light traffic during the past few months

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date *a*
Mar. 5*b*	7,278,000	497,883 000	10,304,000	407,900,000
Daily average	1,213,000	1,745,000	1,717,000	1,564,000
Mar. 12*b*	6,901,000	504,784,000	10,277,000	458,178,000
Daily average	1,150,000	1,733,000	1,713,000	1,567,000
Mar. 19*c*	6,468,000	511,252,000	10,348,000	468,527,000
Daily average	1,078,000	1,719,000	1,725,000	1,570,000

(*a*) Less 2 days' production during first week in April to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date *a*
Mar. 5	1,902,000	83,857,000*b*	1,604,000	85,657,000
Mar. 12	1,926,000	85,783,000*b*	1,648,000	87,305,000
Mar. 19	1,688,000	87,471,000*c*	1,601,000	88,906,000

(*a*) Less 2 days' production during first week in April to equalize number of days covered for the two years. (*b*) Cumulative production revised on basis of more detailed information. (*c*) Subject to revision.

BEEHIVE COKE

Week Ended Mar. 19 1921*a*	Week Ended Mar. 12 1921*b*	Week Ended Mar. 20 1920	1921 to Date	1920 *c* to Date
118,000	162,000	467,000	2,375,000	4,994,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

	Market Quoted	Gov't Price	Mar.1 1921	Mar.22 1921	Mar. 29 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$3.50	$3.25	$3.25
Pocahontas lump	Columbus	2.60	5.75	5.50	5.50
Pocahontas mine run	Chicago	2.35	3.75	4.15	4.15
Pocahontas lump	Chicago	2.60	5.25	5.00	**4.75@ 5.50**
*Smokeless mine run	Boston	....	5.80	5.85	5.75@ 6.00
Clearfield mine run	Boston	2.95	2.55	2.50	2.00@ 3.00
Somerset mine run	Boston	2.95	3.10	3.00	2.40@ 3.60
Pool 1	New York	2.95	3.55	3.30	3.10@ 3.50
Pool 1	Philadelphia	2.95	3.55	3.50	3.50
Pool 1	Baltimore	2.95	3.15	3.05	**3.00@ 3.25**
Pool 9	New York	2.95	3.05	2.75	2.50@ 3.00
Pool 9	Philadelphia	2.95	3.00	3.05	**3.00@ 3.25**
Pool 9	Baltimore	2.95	2.75	2.90	2.75@ 3.00
Pool 10	New York	2.95	2.65	2.65	2.35@ 3.00
Pool 10	Philadelphia	2.95	2.75	2.50	**2.75**
Pool 10	Baltimore	2.95	2.50	2.35	**2.25@ 2.75**
Pool 11	New York	2.95	2.30	2.20	2.15@ 2.25
Pool 11	Philadelphia	2.95	2.25	2.30	*2.00*
Pool 11	Baltimore	2.95	2.25	2.30	2.25@ 2.35
Pool 71	New York	2.95	3.05	2.75	**2.75@ 3.25**
Pool 71	Philadelphia	2.95	3.00	2.75	.....
Pool 71	Baltimore	2.95	3.00	....	2.75@ 3.25
High-Volatile, Eastern					
Pool 34	New York	2.50	2.30	2.00	1.75@ 2.25
Pool 34	Philadelphia	2.50	2.15	2.15	2.00@ 2.25
Pool 34	Baltimore	2.50	2.15	2.00	**2.00@ 2.15**
Pittsburgh mine run	Pittsburgh	2.35	2.35	2.25	2.00@ 2.50
Pittsburgh sc'd gas	Pittsburgh	2.35	2.85	2.85	2.75@ 3.00
Kanawha mine run	Columbus	2.70	2.50	2.25	**2.35**
Kanawha lump	Columbus	$2.95	$3.75	$3.25	$3.25
Hocking mine run	Columbus	2.50	2.25	2.15	**2.00@ 2.50**
Hocking lump	Columbus	2.75	3.50	3.25	**3.25@ 3.50**
Pitts. No. 8 mine run	Cleveland	2.35	2.35	2.15	**2.20@ 2.35**
Pitts. No. 8 lump	Cleveland	2.60	3.75	3.50	3.25@ 3.75
Midwest					
Frankl n, Ill., mine run	Chicago	2.35	2.75	3.35	3.25@ 3.50
Franklin, Ill., lump	Chicago	2.55	3.80	3.55	3.45@ 3.65
Central Ill., mine run	Chicago	2.35	1.85	2.00	**2.00@ 2.50**
Central Ill., lump	Chicago	2.55	2.60	2.50	**2.75@ 3.00**
Ind. 4th Vein mine run	Chicago	2.35	2.60	2.65	2.25@ 3.00
Ind. 4th Vein lump	Chicago	2.55	3.30	3.15	2.75@ 3.50
Ind. 5th Vein mine run	Chicago	2.35	2.40	2.50	2.25@ 2.75
Ind. 5th Vein lump	Chicago	2.55	3.05	2.75	2.25@ 3.25
Standard mine run	St. Louis	2.35	1.95	1.85	1.75@ 2.00
Standard lump	St. Louis	2.55	2.60	2.60	*2.40@ 2.50*
West Ky. mine run	Louisville	2.35	2.25	2.50	2.50
West Ky. lump	Louisville	2.60	3.15	3.15	*2.75@ 3.25*
South and Southwest					
Big Seam mine run	Birmingham	2.45	3.05	2.95	*2.70@ 3.00*
Big Seam lump	Birmingham	2.75	3.75	3.75	*3.00@ 3.25*
S.E. Ky. mine run	Louisville	3.00	2.75	2.75	*2.50@ 2.85*
S.E. Ky. lump	Louisville	3.25	4.00	3.60	*3.40@ 3.65*
Kansas mine run	Kansas City	3.50	4.50	4.50	4.50
Kansas lump	Kansas City	4.00	5.50	5.50	5.50

* Gross tons, f.o.b. vessel, Hampton Roads. Quotations on Pocahontas mine run, Boston market, heretofore quoted included both Pocahontas and New River and will henceforth be quoted as West Virginia "Smokeless."

† Advance over previous week shown in **heavy type**, declines in *italics*.

and rolling stock is not now in as good condition as last summer. The average operator feels, therefore, that his present inability to contract for his tonnage may work out to his benefit at a later date, when free coal will again command a respectable figure.

Coal Age index of spot prices rallied two points during the week ended March 29, closing at 101. Midwest markets are slightly firmer and steam sizes and a stricter adherence to spring price schedules aided in bringing the index figure up from the week ended March 22.

Lakes business is dragging and it is becoming apparent that because of this inactivity the volume of shipments to the Northwest this season is likely to fall far short of that for any previous year. Rail shipments to New England declined during the week ended March 19. According to the Geological Survey 3,006 cars were forwarded through the five rail gateways, as compared with 3,208 cars the week before. Only routine business is being conducted at Tidewater piers. Shipments coastwise and overseas are confined to contract orders. For the first twenty-three days of March less than 600,000 tons were dumped at Hampton Roads.

The Bureau of Mines has rejected bituminous coal bids recently received which are higher than $3.75 per gross ton or $3.3482 net ton f.o.b. mines on New River coal; those higher than $3.92 gross ton or $3.50 net ton on Maryland, Pennsylvania and northern West Virginia coal and all bids on gas coal except the one at $2.52 gross or $2.25 net ton. Bids not eliminated by this action are still under consideration.

ANTHRACITE

For the first time in several weeks hard-coal production slumped sharply. During the third week of March the total output was 1,688,000 net tons, a decline of more than 230,000 tons from the week preceding. With only ten working days remaining the cumulative output for the coal year stands at 87,471,000 net tons, some 1,400,000 tons short of the output for the 1921 coal year to date.

The Bureau of Mines received but three bids on March 26 for anthracite coal for the Government Fuel Yard at Washington for the year beginning April 1. The Philadelphia & Reading Coal & Iron Co., the Weston Dodson Co. of Bethlehem and the Coal Mont Moshannon Coal Co. of Philadelphia were the bidders on 7,800 tons of furnace, 8,800 tons of egg, 8,200 tons of stove, 1,700 tons of chestnut, 480 tons of red ash and 2,600 tons of pea. The P. & R. bid $7.75 for furnace and egg, $8.05 for stove and nut, $6.40 for pea and $8.55 for red ash. The Moshannon company bid $8.75 for furnace, egg, stove and nut; $10 for red ash, and $7.50 for pea. The Weston Dodson Co. bid $9.40 on furnace, $8.93 for egg, $9.43 for stove and chestnut, and $6.43 on pea coal.

At Philadelphia, price muddles are retarding buying. The companies, following out their intentions announced some time ago, have not made any spring reduction and retailers are unable to move their stocks. At New York price cuts on both mine and retail failed to stimulate buying. The Baltimore trade is in a quandary over the uncertainty of spring prices and but little coal is moving. Buffalo reports an accumulation at the Lake docks—already there are 150,000 tons of hard coal afloat with not much prospect of an early shipping season because of the sluggish iron ore market.

COKE

Beehive coke production fell off sharply during the week ended March 19. According to the Geological Survey 118,000 net tons were produced. This probably is the lowest level reached at any time in recent years. The Connellsville market reflects the condition in pig iron, that of absolute stagnation. Spot furnace is $4@$4.50, foundry $5.25 @$6; contract furnace is nominal, $4.75@$5; foundry, $6.

Reports From the Market Centers

New England

BOSTON

April Market Will Be Closely Watched — No Increase in Demand — Hampton Roads Contract Price Foreshadowed— Anthracite Easy—Boston Retailers Reduce Prices.

Bituminous—With receipts declining rapidly because of expiring contracts and large reserves on hand at most industrial plants, the situation here the next few weeks will bear careful study. Some time there will be a point where consumption exceeds receipts sufficiently to warn buyers they must again watch the market but whether that will come in May or in June remains to be seen. A large number of consumers are taking the position they will buy on the spot market this season waiting for bargains.

This may be a policy all right to outline in March, but there are dangers involved from the buyer's standpoint. The operator cannot but welcome such a program for if held consistently it will absorb spring and summer output, if only to a limited extent, and if the market continues as it is headed now there will be sufficient request for steam grades in the fall and winter to take all the good coal that can be mined.

There is no perceptible increase in spot demand, nor is there more than scattering inquiry for contracts. Only certain special lines are having any business worth mentioning and there continue widespread complaints over the utter lack of buying power among small merchants who deal direct with the public.

Among the producing interests there is much anxiety over the outlook for May and June. So many open orders have now been shut off that operators are hard put to it to keep mines running. The volume for Tidewater is very light, especially from central Pennsylvania. Export and bunker trades absorb only minimum requirements, and coastwise there is only a small tonnage moving. Shippers who have made desperate attempts to sell spot or for delivery during the next three months have accomplished very little and no response whatever is now looked for until the last of April or the first of May. New England has large stocks and relatively only a few buyers will be interested in the market before summer.

As in other years the bids on the Navy requirements at Hampton Roads seem to have set the pace for contracts on the smokeless coals. The $3.50 basis is not taking at all, and the only recent contract business closed was on the basis of the low Navy bids, namely, $3 per net ton at the mines for Pocahontas and New River. It has always been difficult in any such situation as we are going through now to lift prices after large organizations have submitted bids, and until once more there is a slight excess of demand over supply there will not be much advance from the $3 base price.

Several market cargoes have been hawked about the past week but practically all have been absorbed. It is interesting to note that the same shippers who sent this coal forward on a venture in order to relieve congestion at the Hampton Roads piers are asking more than $3 more for futures than they themselves disposed of coal here to public institutions. It simply goes to show how futile it is to force fuel upon a dead market.

Pocahontas and New River on cars Boston and Providence are held at $8.25 @$9.50. Other spot prices are shown in the Weekly Review.

Anthracite—Domestic sizes are in easy supply, and demand is extremely quiet. Two of the companies have not yet reduced prices, but there is an intimation that the larger of the two will do so. There is next to no call now for steam sizes; even contracts have

been canceled or shipment suspended. The public is bound to be very slow taking supplies this spring and for that reason wholesale business will doubtless slow up when retailers and others who store coal have reached the maximum both for money and storage.

Boston retail dealers announced a reduction of $1 on stove and chestnut, and of $1.25 on broken, egg, and pea, making the new prices $15 for stove and chestnut, $14.75 for broken and egg, and $13 for pea.

Tidewater—East

PHILADELPHIA

Anthracite Price Uncertainty Holds Back Trade — Highest Prices Still Effective — Retail Demand Listless — Bituminous Market Still Off — Slight Activity in Contracts.

Anthracite—Business both wholesale and retail has almost completely subsided due to the price muddle. So far as the dealers are concerned they are absolutely in the dark as to wholesale prices and hardly know how to shape their course for the spring business which should now be well under way. Even though certain of the independents have announced spring reductions of 50c. below company circular for markets other than this, no such reduction has been announced here, with one exception. This exception is one of the companies whose coal comes in here with a freight differential against it and for that reason its tonnage is not of the largest, but does cut considerable figure. The prices of this company were announced as $7.10 for egg, $7.50 stove and nut, and $5.75 pea, effective March 15. Every one has looked for the other companies to meet these prices, but as both of them have been on record for several weeks as not going to make any reduction, it looks as if this market were going to pay a higher price for its coal than the other districts.

From the retail standpoint those dealers who endeavored to create trade by cutting prices have about subsided; at least, they no longer advertise their cut prices. The public simply refused to buy at any price.

The companies continue to make contracts on buckwheat at $3.50, rice $2.50 and barley $1.50.

Company mine prices per gross ton for line shipment and f.o.b. Port Richmond for Tide are as follows:

	Line.	Tide.
Broken	$7.75	$10.45
Egg	7.75	10.45
Stove	8.05	10.70
Nut	8.05	10.70
Pea	6.40	8.80
Buckwheat	3.50	6.00
Rice	2.50	5.00
Boiler	2.00	4.40
Barley	1.50	3.90

Bituminous—There is no appreciable change in the demand for fuel; the trade is experiencing one of the dullest periods on record. The one bright spot in the situation here is that the textile trade is in good shape, with some of the big concerns reporting the future outlook good for several months. Even though the iron trade has not improved much it is some satisfaction to know that there are some slight signs of improvement in occasional instances. From the producing end of the trade there seems to be a growing sentiment that a decided improvement can be expected by July 1, as so many concerns having cut deeply into their reserves must replenish by that time. Even this will not save the situation next fall should there be any sign of real active resumption.

In the contract market we have recently noted a tendency of some producers to cut 25c. from their contract prices of $4 to $3.75 for ordinary grades of coal, yet even this has not influenced much business. We have heard of some public utility plants taking on a little tonnage $3.65@$3.75 for good steam coals after having held out for $3.50 for some months.

NEW YORK

Additional Price Reductions — No Improvement in Demand — Independents Find Movement Difficult — Bituminous Demand Slow—Contract-Making Tardy.

Anthracite—Demand shows no appreciable improvement. Consumers have not shown any disposition to place their orders, notwithstanding the reductions ranging from 65c. to 75c. made in the retail prices.

With two exceptions, the Lehigh Coal & Navigation and the Philadelphia & Reading companies, all of the large producers have announced mine reductions of 50c. in the prices of domestic sizes.

Line trade is slow. Retailers are not buying up to expectations. Many of the local houses have sent their sales forces out among the trade for the express purpose of impressing upon them the urgency of the situation if they want to avoid trouble in the fall and winter.

There is an abundance of independent product, some of which has been offered at slightly less than the new company price-lists.

Steam demand has not improved and there is much storing going on. Some shippers of independent coals are quoting low figures, but the average range for buckwheat No. 1 was $2.50@$3.25; rice $2@$2.50, and barley from 90c. up. One small operator quoted a price of $1.40 for barley on contract.

Retail dealers in Hoboken and Jersey City have announced a cut of 50c. effective until May 1, when the prices will increase 10c. per ton a month for five months.

Current quotations for company coals per gross ton at mine and f.o.b. Tidewater, at the lower ports, are as follows:

	Mine.	Tidewater.
Broken	$7.10@$7.75	$9.71@$10.36
Egg	7.10@ 7.75	9.71@ 10.36
Stove	7.35@ 8.10	9.96@ 10.71
Chestnut	7.40@ 8.10	10.01@ 10.71
Pea	5.65@ 6.40	8.12@ 8 87
Buckwheat No. 1	3.50@ 4.25	5.97@ 6 72
Rice	2.50@ 3.50	4.97@ 5.97
Barley	1.50@ 2.25	3.97@ 4.72

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—The short-lived strike of the tug-boat men—coastwise and local harbor—had no apparent effect on the situation.

Demand is slow but there is a better atmosphere. Inquiry is slightly improved, although the improvement in buying is not noticeable. Line demand is said to be stronger and prices a trifle stiffer than on the Tidewater basis.

With the stocks of most manufacturers pretty well cleaned up and their contracts expiring on April 1 some shippers predict a jump in demand, especially in spot coals. There is little demand for bunker coals. Many vessels being tied up in the harbor.

There is no increased activity in the closing of contracts. As heretofore producers held close to their figures ranging $3.75@$4.25 according to grade, while buyers looked for lower prices.

Quotations f.o.b. piers ranged about as follows: Pool 1, $6.25@$6.50; Pool 9, $5.90@$6; Pool 10, $5.75@$5.85; Pool 71, $6@$6.15; Pool 11, $5.30@$5.50; Pool 18, $4.50@$5 and Pool 34, $4.50 @$5. The general trend of mine quotations shows little change and are reported in the Weekly Review.

BALTIMORE

Soft Coal Slump Continues—Some Contract Offers Are Cut—Hard Coal Men Discuss Uncertain Situation.

Bituminous—The slump in the soft coal business is holding with a vengeance. Consumers are not only holding off on contract closing, but seem little interested, judging from the line of inquiries on possible future business. In addition they are buying very slowly in the spot market.

Very low spot prices do not seem to attract business and the purchaser is going ahead apparently with the idea that the low era will continue for some time. While some producers are standing by the quotations on contract for better steam coals of $4@$4.25 f.o.b. mines, and for best gas coals at $3.75@ $4, others are now under-cutting. This was shown in the bids on a Government contract for about 30,000 tons, opened in Washington last week, on which nearly forty bidders submitted offers, the majority ranging $3.60@$4 a gross ton, the highest bidder being $4.80.

Daily mine loadings are about one-third of normal, and the reserve at Tide is more than ample in the face of continued light export movement. Total loading on foreign account for the first nineteen days of March was 68,254 tons cargo and 6,003 tons bunker.

Anthracite—A meeting of the Baltimore Coal Exchange was held March 21 and the spring outlook discussed. Much information is still lacking to set the trade straight on the basis of operations after April 1. The fact that one large producer had cut the price of buckwheat and barley 75c. and rice 50c. was not of great interest, as little of

those sizes are absorbed here. The uncertainty at the time of the meeting as to company and independent prices for spring prevented any definite announcment of retail price changes, if any.

It was strongly felt that the company price might come up to about the rate of selling now in force by M. A. Hanna & Co., and this would be about the standard for wholesale selling this spring. Such a basis might allow a retail reduction of around 50c. Yard stocks are not heavy, probably between 10,000 and 15,000 tons, and most dealers will be fairly clear to begin spring business on a new basis.

HAMPTON ROADS

Prices Firm — Business Is Quiet — No Contracting.

There is practically no business except routine being conducted. The price of coal in Pools 1 and 2 remains at $6, while other pools are priced $5@ $5.25, with no demand for these grades, and very few inquiries.

Dealers here are of the opinion that the number of new contracts will be much smaller than in the past. Many of them have already received advices from consumers that they will not renew contracts April 1 but will depend upon the spot market for their needs.

The situation at the three coal exchanges as of March 24 was as follows:

C. & O. piers, Newport News—	
Cars on hand	2,817
Tons on hand	140,350
Cars dumped March 1 to 23, inc.	3,342
Tons dumped same period	175,003
Tonnage waiting	955
Virginian Ry. piers, Sewalls Point—	
Cars on hand	1,175
Tons on hand	58,750
Cars dumped March 1 to 23, inc.	3,677
Tons dumped same period	183,866
Tonnage waiting	5,400
Cars on hand outside of pool	206
N. & W. piers, Lamberts Point—	
Cars on hand	2,875
Tons on hand	131,901
Cars dumped March 1 to 23, inc.	4 225
Tons dumped same period	240,123
Tonnage waiting	5,135

BUFFALO

Only Anthracite Moves Freely—Bituminous Shippers See No Immediate Improvement—Late Start Seen for Lakes.

Bituminous—Demand is still too light to make good profits possible. The consumer is not coming into the market at all freely, often for the reason that he is still getting cheap demurrage coal. Jobbers complain that their old customers often drop off for a matter of 5c. a ton, after they had taken great pains to carry them along when coal was scarce.

Mines are running at the same low rate. Often they are active merely to give the men something to do. This still produces more coal than is needed and keeps the market weak. Factories do not show any disposition to run at a faster rate and there are plenty of predictions that the worst is not over.

Bituminous prices are as weak as ever, with top quotations at $3.50 for Youghiogheny gas lump, $3 for Pittsburgh and No. 8 steam lump, $2.60 for all mine run and $2 for slack.

Anthracite—The supply exceeds the demand. The consumer is not buying liberally. March has turned out to be quite mild so that there will not be any refilling of cellar bins after the regular supply is gone, as was the case last winter. The shippers feel the changed conditions and are loading Lake steamers as fast as they can.

It looks now as if the first coal fleet to the Upper Lakes would be larger than for several seasons past, more shippers being active in that branch of the trade than usual at the outset. Upper Lake docks are bare of anthracite, so it will be easy to take care of the surplus. Already there is a matter of 150,000 tons afloat and it may be a month before the season opens.

Coke—The situation does not improve. Iron ore movement, which is a good key to the condition of the iron trade and coke demand, may not begin by Lake for a month, for there is no real need of a further supply. Vessel owners report entire stagnation, neither sales nor charters having been made.

Northwest

MINNEAPOLIS

Trade Drags—Buyers Indifferent—Contract Market Is Quiet—Lakes Movement to Be Delayed.

The coal trade of the Northwest is dragging along from week to week with little change to be noted. This is not materially different from the normal situation about this time, except that there is much less interest now in the future market. Buyers are not interested, and could not be aroused to an interest on any suggestion that has been possible for a long time. For a time, buyers were fearful of a return of the scarcity conditions of last winter, but as time rolled on, and there was no sign of any reaction toward a tight condition they seem to be convinced that things are coming their way and that the buyers' market will continue indefinitely.

This view is not held by many coal concerns. Instead, some of them predict as serious a situation as existed a year ago, with less chance of escaping it. But the scare idea does not appeal to many in the buying end as at all likely. They are holding off from buying and so far none of the arguments have had any effect.

Contracting for the new coal year is frequently well under way by this time, but so far there has been no business closed. Buyers are unwilling to stock up or to obligate themselves for the future, probably because they feel sure of lower prices.

The Great Lakes may open for navigation very soon — possibly early in April. But there does not seem to be any available coal tonnage, because no one is ready to place orders to justify early shipping.

There are many in the coal trade who see no merit in the claim that the Northwest must rush with all possible speed to avert a famine, this winter or any winter. Others fear that the railroad situation will prove to be inadequate whenever the tonnage reaches anywhere near normal proportions.

MILWAUKEE

Spring Weather Breeds Stagnation—Dealers Insist That Prices Have Reached Bottom.

There is very little doing in coal at Milwaukee now-a-days. The trade is absolutely stagnant. Warm, spring weather holds down the demand for domestic, and the industries require only a small share of their former needs. In consequence, stock piles at the dock yards show little signs of reduction.

Prices are held unchanged. There is still some talk of a slight reduction of soft coal and coke in April, but dealers cannot see it that way, and insist that coal prices have reached bottom for the present, at least. Coal stocks are increasing rather than diminishing, despite the recent cuts in price.

Inland West

CHICAGO

Anthracite Cut Encourages Stocking—Bituminous Market Listless—Shortage Warnings Unheeded.

Bituminous producers and shippers are encountering very poor business in Chicago. Practically every dealer in the city has some customers who require anthracite. There are a number of dealers who handle nothing but hard coal and there are some who handle anthracite and bituminous but there are practically no dealers who sell soft coal exclusively. Anthracite prices effective April 1 will be reduced approximately 50c. per ton. The wise dealer who has had experience with the anthracite operators, knows that they stick to their price schedule and consequently he is taking advantage of the situation to buy his coal just as cheaply as he can. This coal will have to be stocked until the middle of the summer or perhaps fall. Consequently, the salesman who is offering soft coal to the trade is no longer listened to, as all retail efforts are now centered on the problem of stocking anthracite and financing the investment.

The steam market lags and it is said by sales agents who are very closely in touch with the steam situation that less interest has been shown by buyers of steam coal this week than at any other time during the year.

Although a number of operators and selling agencies have circularized the trade to the effect that there will be a coal shortage some time this season, the public looks askance upon these predictions.

CLEVELAND

Signs of Improving — Slack Demand Slightly Better — Contract Interest Is Now Active.

Bituminous—Improvement is discernible in the coal trade, although the markets are far from being active. The

most encouraging development is the indication that a better demand for slack will appear before long. In addition, as the beginning of the new coal year draws nearer, an increase in contract inquiries and negotiations has come from railroads, public utilities and manufacturing plants. Stock piles have begun to disappear, while evidences that the worst of the depression is over are coming to light. This is bringing industrial plants to the point of thinking of covering their fuel needs for the year.

For some time the output of coal has been in prepared sizes and considerable slack was accumulated. Many buyers have taken advantage of the opportunity and have obtained their slack requirements, and in some cases there has been buying in anticipation of the future. One operator in Cleveland forecasts that slack quotations will overtake those of mine run both in contract and spot sales. Within the last few days buyers from Pittsburgh have appeared in the Cleveland market for slack. Spot prices are shown in the Weekly Review.

Ohio coal operators have submitted bids on contract to the following railroads which have invited proposals: New York Central, Michigan Central, Lehigh Valley, Pittsburgh & Lake Erie and the Ann Arbor. These bids are for coal for the new coal year, although one road asks for bids covering five years. The Baltimore & Ohio has covered its 1921 requirements.

Pocahontas and Anthracite—Pocahontas sales are tapering off, with the demand almost wholly confined to small lots. Anthracite prices will be revised downward slightly April 1 as a result of the drop of 50c. at the mines.

Lakes—Ships are being offered freely at Lower Lakes docks. According to reports there will not be a great volume of coal carried over at the Lake Michigan ports but a considerable amount at the Lake Superior ports. Much coal is now being loaded.

Retail prices delivered in Cleveland follow:

Anthracite—All grades, $14.90.
Pocahontas—Shoveled lump, $11.40; mine run, $10.30.
Domestic Bituminous—West Virginia splint, $10; No. 8 Pittsburgh, $8.45; Cannel lump, $12.15.
Steam Coal—No. 6 and No. 8 slack, $6.60; No. 6 and No. 8 mine run, $7.50; No. 8 3-in. lump, $7.75.

COLUMBUS

Production at Low Point — Indifferent Contract Market—Prices Are Firm.

Low prices evidently do not attract customers as it is almost impossible to give tonnage away. Consumers are all playing a waiting game and are not disposed to take any chances for the future. Consequently there is no zip at all to the market and little is expected until after the Lake season starts. Large consumers who are operating are still using their reserve stocks. Buying on the part of public utilities is the best feature of the market. Railroads are not taking any large tonnage and while they are asking for proposals, producers and shippers are loath to bid. It is figured that if a contract were made at a rather low rate now, railroads would not require much coal and when things are better and the railroads are larger consumers, free coal can be disposed of at a higher price.

Contracting from the standpoint of industrial plants is at a standstill. Speculation as to prices for contract fuel is rife. It is believed that mine run will range $2.85@$3.10 although some radical changes may take place. Purchasers are inclined to take their chances in buying on the open market.

Domestic trade is quiet in the extreme. Retailers are doing practically no business and are only placing orders for an occasional car. It is believed, however, that some householders will start stocking earlier than usual in order to take advantage of the very low prices.

Prices are about stationary at former levels, and are shown in the Weekly Review. It is believed with conditions continuing the price of mine run and nut, pea and slack will range about the same. Production is small in all fields, excepting where Lake vessels are being loaded.

CINCINNATI

Trading at Standstill—Contracting Is Sluggish—Steam Prices Weaker.

Trading still remains at a standstill save for what small contract orders are being filled. The slight improvement in the retail business noted last week still continues in a measure.

Though the beginning of the new coal year is almost at hand very few new contracts are reported. Operations at Cincinnati and vicinity plants are but a small percentage of normal. Those plants are now buying in very limited quantities on the spot market.

Steam quotations show some slight decline from the prices of last week. Pocahontas lump is quoted at $5; mine run, $3.50; bituminous nut and slack, $3; lump, $4 and egg coal from $2.75 up. Retail prices remain stationary, and are as follows: Bituminous lump $8.50@$8.75; mine run, $8.25@$8.50; smokeless lump and egg, $10.50; mine run, $9@$9.50; anthracite egg, $15@$16.25; domestic egg coke, $14.50@$16.

DETROIT

Receipts Are Lighter—Demand Unimproved—No Contract Activity.

Apparently there is no improvement in demand either from steam coal users or from the domestic division of the local trade.

Recovery from the business depression apparently is proceeding even more slowly than had been anticipated. While manufacturing plants are resuming operations the consumption of steam coal continues far below the normal volume. Many steam plants are able to provide for their requirements from storage piles.

Incoming shipments are small. This circumstance is regarded as a favorable feature of the present conditions and jobbers observe that it is in sharp contrast with previous periods of depression when the local market was crowded with shipments of speculative coal. This is attributable in part to the loading of a number of Lake freighters at Ohio ports. Some 50 cargoes have been loaded or are scheduled for loading, though the vessels probably will not hasten delivery, owing to the unsatisfactory outlook in the Lakes freight trade.

Smokeless lump and egg is quoted at $6, mine run, $3.75 and slack $2.25. Ohio lump is $3.50@$3.75, mine run $2.60 and slack $2.25. West Virginia and Kentucky lump is $3.75@$4, mine run $2.75 and slack $2.25.

Very little interest has so far developed in the making of contracts. A number of consumers of steam coal are reported to have expressed a belief they will be able to buy in the open market at lower prices than under contracts.

ST. LOUIS

Production Curtailment Continues — Good Demand for Screenings — Domestic Market Listless.

There is practically no domestic coal moving on account of the weather. The steam situation in the city, as far as the industrial situation is concerned, is the same as it has been for some time past, with the exception that here and there is a little increased activity. The new rolling mill of the Scullin Steel Co., which started up recently, is the most noticeable instance.

A steam shortage has been caused by many mines shutting down on account of inability to move the screened sizes. In the Standard field screenings advanced to $1.85@$2. Screenings in the Mt. Olive field have been selling at about $2.40@$2.50, but few are available. The Carterville situation continues to show a decrease in tonnage locally. A few dealers contemplate carrying a little in storage, but this has not begun to move as yet.

Something like 300 cars of anthracite have been ordered for shipment during the month of April and May for the larger St. Louis dealers. This will range about 60 per cent egg, 15 per cent grate, and 25 per cent chestnut. No smokeless orders have been placed as yet, and nothing to indicate anything will move in from Arkansas.

Effective the first of April the new retail prices are expected to be: Carterville, $7.25; Mt. Olive, $6; Standard, $5.50.

South

BIRMINGHAM

Market Conditions Fail to Improve—Steam Quotations Show Little Change —Domestic Prices for April Announced.

With the demand for coal at the lowest ebb in many years the market is devoid of interest. Sales are confined to spot orders for a few cars and

there is no interest on the part of consumers in regard to contracts for steam fuel, the only requests for bids received so far being from the L. & N. and the Frisco, whose fuel agreements expire April 1. The Frisco is now taking only about 50 per cent of the minimum tonnage called for by its current contracts and the Southern has cut down temporarily to 60 per cent, having about 60 days supply ahead.

Producers are not slashing prices, feeling that they are now on a fair and reasonable cost basis and that such action will not stimulate trade, the dullness being due to general inert business conditions. Quotations are shown in the Weekly Review.

There is a slightly better tone to the domestic trade and some contracts have been made on the basis of April 1 prices. The retail trade is being urged to take early action in providing for the coming year, as a continuation of idleness at the steam producing operations will cut off a large portion of the domestic supply normally available, and will necessarily cause a shortage in domestic coal, as mines supplying the domestic market exclusively furnish probably not over 50 per cent of the coal required. Quotations for April 1 for Big Seam lump are $3.25; Carbon Hill $3.75; Black Creek and Cahaba $4.50@$5; Montevallo $6.50.

Mines as a whole are probably averaging two days per week and lack of more steady employment is beginning to work a great hardship on labor, which has begun to drift to other channels seeking improved conditions.

LOUISVILLE

Much Interest Shown in Contract Prices —Western Kentucky Holding Wage Conferences—Steam Demands Stronger.

Contract quotations are around 33 per cent higher than present spot figures but are not resulting in business being placed. The consumer does not feel like taking chances on lower markets later, while the operator figures that spot prices are too close to rock-bottom for a contract basis.

An eastern Kentucky operator states that mine run, which is selling at $2.50 is being quoted $3@$3.50 for contract. Another states that he had figured some contract quotations at $3.12. On screenings which are quoted around $1.95@$2 spot, some operators are asking $2.90@$3.10 on contracts.

Conferences have been on for several days between the Coal Operators' Association, operating in two western Kentucky counties, and union officials, relative to a wage scale which expires April 1. So far nothing definite has been decided upon. It is believed that an agreement will be reached, but even if a strike develops it will only affect about one-third of the organized production of that district.

Railroads are the principal buyers asking for contract quotations. There has been but little Lakes inquiry as yet, buyers apparently planning to wait thirty or sixty days. Public utilities are playing the spot market.

Demand for lump coal is very dull, but screenings are scarcer as a result, and mine run is moving better. Prices are fairly steady. Principal quotations are shown in the Weekly Review.

West

DENVER

April Schedules Being Forced—Keen Retail Competition—Production Is Hard Hit.

Buying is so inactive that many operators are already quoting the April schedule of $5.65 for bituminous. Some grades are even being offered at $5.50. Retailers are buying cautiously, with much stress on quality, as competition is unusually keen in their business and cut-prices are becoming more common each day.

The action of one bituminous operator in lowering his mine price has a tendency to bring down April quotations although other producers are expected to maintain their stand on the $5.65 schedule. The output for the week ended March 12 amounted to 130,000 tons of a possible 266,700 tons. "No markets" were responsible for 49.5 per cent of the loss.

Bituminous lump is quoted $12.50 retail. Lignite is $9.25 although undercutting on an inferior grade is bringing some sales around $6.95@$7.25. This has resulted in a cut on second-grade lignite from $8.15 to $7.25. A new size, lignite nut, is being offered at $6.40 retail in Denver.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Production Stationary at About 40 Per Cent—Speculation on Wages—No Contracting.

Production continues quite steadily at a rate of about 40 per cent. While the rate of consumption continues to decrease somewhat, with lower operations in the steel industry and very little domestic use, this decrease is largely if not wholly offset by exhaustion of stocks. The public service companies are taking coal much the same as at any time.

Prospects are very poor for any considerable movement of Lakes coal in the next few weeks, and it may be toward the close of June before shipments are normal. Even if there were demand in the Northwest there would be difficulty in securing vessels, as there will be little ore movement in the fore part of the season.

Nothing tangible is developing in the matter of wages, though there has been an undercurrent of thought for a couple of months that in one way or another wages will decline before April 1, 1922, the date to which the existing scale was signed. In some quarters it is thought that the prospective general reduction in the Connellsville region will furnish a basis for a readjustment of the union scale.

There is as little interest as formerly in contracts, and with the expiration of old agreements there will probably be various temporary adjustments, by way of agreeing upon prices weekly or monthly.

Spot prices continue to show a wide range, with many sales made at what appears clearly to be far below the cost of production. There is no market at all on byproduct.

CONNELLSVILLE

Absolute Stagnation — No Interest in Contracts—Few Wage Reductions.

The coke market reflects the condition in pig iron, that of absolute stagnation, except that there is a moderate amount of business done from week to week in foundry coke. Indeed, furnace coke is even more stagnant than pig iron, for the reason that the sales of basic iron being made, few in number and small in tonnage, are chiefly from stock in hand, so that to an extent the iron being sold does not have to be made and thus does not need coke.

There is only a very occasional sale of spot furnace coke, while there is a limited movement in coke for heating purposes, etc. In spot foundry coke there seems to be a fair movement, this being largely due to the fact that many consumers are without contracts and must get in the open market what little coke they are consuming.

There have been a few additional wage reductions by small interests. In general the independent operators are disposed to await action by the H. C. Frick Coke Co., which evidently will only reduce wages when the Steel Corporation makes a general reduction at its holdings.

There is absolutely no interest in contract coke. We quote: Spot furnace, $4@$4.50; spot foundry, $5.25@$6; contract furnace, nominal, $4.75@$5; contract foundry, nominal, $6. The *Courier* reports production in the week ended March 19 at 42,780 tons by the furnace ovens, and 25,720 tons by the merchant ovens, making a total of 68,500 tons, a decrease of 40,300 tons.

UNIONTOWN

Spot Market Inactive—Indifferent Buying Presages Another Shortage.

Selling agencies continue to "keep office" and operators have production at

its low point. Sales made in steam are entirely spot and in odd lots taking various figures below $2. These sales are not sufficiently numerous to establish a market and therefore quotations are not significant. Byproduct coal reflects the same situation. Quotations for that grade however, range $2.25 @$2.75.

Information received by a local jobber direct from a railroad purchasing agent may in a sense provide an answer for the unwillingness of the railroads to enter into contracts for the new coal year. When the jobber sought to convince the purchasing agent that he should cover the needs of his road for the coming year he received the nonchalant reply that the roads could have all the tonnage they needed by canceling the freight against it.

Quite a few operators would not be surprised to see a return of last year's shortage when business once more is restored to normal. A strong demand would bring a recurrence of last summer's situation—plenty of coal at the mines but the transportation lines unable to get it to market. Some operators are seeking to convince large consumers that they would do well to cover some future needs now when they can secure prompt delivery, but apparently they are not seeing the force of that argument.

EASTERN OHIO

Lakes Program Lagging—Better Tone to Quotations—Contract Interest Becomes Active.

The status of the whole situation continues to be reflected in the volume of production, which amounted to 277,000 tons for the week ended March 19. This is 5,000 tons less than the preceding week, and is 42.3 per cent of the potential capacity. Production for railroad fuel account was sharply reduced although carriers continue to absorb in excess of 50 per cent of all coal mined. Association mines reporting worked 38 per cent of possible work-time and production ran 45 per cent of potential capacity.

Four steamers are taking cargoes at Huron and five at Cleveland. The aggregate tonnage already dumped and lined up for boats at lower ports will not exceed 500,000 tons. Many feel that in view of the late opening, because of the inactivity in the Lake trade, the volume this season will fall far short of that for any previous year.

With many mines closed down and contracts expiring, there is some stiffening in spot prices. Slack ranges $1.85 @$2, mine run $2.20@$2.35, ¾-in. lump $2.75@$2.90, 1¼-in. lump $3@$3.25 and domestic lump $3.25@$3.75. The following prices are being used as a basis for new contracts: Slack $2.70@$3, mine run $2.75@$3.25, and lump $3.25 up.

Operators have received requests from the Ann Arbor R.R. for contract bids on 200,000 tons per year for five years. The City of Cleveland Municipal Light Co. and the Cleveland Ry. Co. have also requested bids on 50,000 tons each. Requests for bids have been received from Big Four, New York Central, Michigan Central and Lehigh Valley Railroads, covering requirements for the ensuing year. Some new life is also being manifested in contract inquiries from manufacturing plants.

CENTRAL PENNSYLVANIA

Contracting Is Deferred—Production at Bottom—Spot Market Inactive

There is absolutely no change in the mining situation and indications are that the March output will fall below that of February, when the low record since the outbreak of the war was reached.

What sales are being made are for spot coal and contracts are not being closed. It is apparent that all contracts will be deferred and consumers will buy just as they need fuel on the spot market. Approximately one-third of the mines in the entire district are being operated. Pools 1, 9 and 71 are the only coals being sold in any quantity and they are reported slow.

UPPER POTOMAC

No Spot Demand—Contracting Is Slow —Production at Low Level.

There were only about four companies in the entire region able to keep their mines going during the week ended March 19. Such mines operated about four days, so that only a very small proportion of the entire output was being produced. Such a condition grew out of the fact that mines had no spot market for their coal nor were the smaller companies making any effort to secure contracts for the new coal year, owing to the fact that contracts last year had been canceled at such a wholesale rate. About the only contracts closed were by the larger companies with old customers.

FAIRMONT AND PANHANDLE

Slightly Heavier Production—Contract Market Dull, but Few Closings—Lakes Trade Inactive.

Fairmont

Although loadings were somewhat heavier in northern West Virginia during the early part of the week ended March 19 yet there was no permanent improvement in market conditions. The spurt was only temporary and the total number of mines idle throughout the week was not far short of 260. A small volume of coal was being moved to Canadian markets.

No activity in new contracts was noted although price inquiries were numerous. Tidewater shipments increased slightly. Railroad fuel loadings were far under normal and Western business was practically negligible.

Northern Panhandle

The output was not in excess of one-third of normal during the week. Very little coal except contract fuel was being produced as there was a total lack of spot demand. Some contracts were made for the new coal year at prices around $3.50. This covered delivery to Northern markets only, the Lakes situation being as yet unproductive of any seasonal agreements.

Middle West

MIDWEST REVIEW

Production Still Dropping — Continuance of Sluggish Market May Bring Another Rush Period.

The domestic trade is not buying on account of the mild weather, nor are the factories buying as they do not need anywhere near the normal amount of coal they usually require for heating purposes let alone for running their factories.

If a careful census were possible it is our belief it would be discovered that more factories are closed today than were closed early in January. The only improvement noted has been along the line of industries connected with building materials. These are in a fairly active state, although they are not operating up to normal capacity.

Dealers who have a little money which they are able to invest in coal are taking advantage of the situation to buy their anthracite and they will continue to concentrate on this during the months of April and May. We understand that the domestic trade has placed heavy orders with the Franklin County operators, orders placed strictly on the basis of prices current at the time of shipment, and calling for certain specific shipments every month.

A great many coal men are very sincerely convinced of the fact that there will be a serious car shortage before Sept. 1. Production is dropping so swiftly and so consistently that once the demand becomes anywhere near normal, it will be found that the mines of the country will not be able to supply the requirements even if they will be able to operate full time. Add to this the fact that the railroads are all poor and have been unable to buy new equipment or repair old and worn out cars. Last year it was conclusively shown that the railroads were unable to handle the coal required by the public, and last year the railroads from an operating standpoint, were in far better shape than they are today. Another angle that will probably result in bringing about a car shortage is the fact that a great number of our States are starting extensive operations toward building state highways. In the construction of these roads huge quantities of cement, sand, gravel, etc., will be used and practically all of this material will have to be transported in coal cars.

Any one of these factors is able to bring about a serious car shortage, but if all should come at once it would result pretty nearly in a calamity. Practically all coal men are urging the public to stock as much coal as possible, because they honestly feel that we are headed for trouble and they are taking steps to see that their own particular customers are protected. The last thing

in the world a far sighted coal operator wishes is a repetition of last summer's conditions.

SOUTHERN ILLINOIS

Screenings in Good Demand—Supply Curtailed—Much Unbilled Domestic—Production Goes Lower.

Domestic sizes continued to decline in the Carterville district during the week ended March 19. This resulted in a further stiffening of the steam market. At this writing every mine that is running has domestic sizes unbilled and is behind on orders for screenings and smaller sizes. Mine run is not in demand.

Mine idleness is growing, some operations running only one day a week. A few of the independents are selling below production costs, figuring they must do this to keep their organizations together, but it is a question how long this can continue. Association mines are adhering to the spring price schedule. Conditions in the Duquoin field are considerably worse as regards working time, prices and general outlook. Mt. Olive domestic tonnage has fallen off heavily and it looks like a one-day-a-week schedule from now on. Screenings are selling high at $2.40 with very little available. Domestic sizes are firm at $3 and railroad tonnage is down to the minimum.

A continued depression has a firm hold on the Standard field. Many additional mines are shutting down. Domestic sizes and mine run are hard to move. This has created a screenings shortage which is holding the price firm, $1.65@$1.75. Mines are down to one day's operations and then it is hard to market the output.

With spring weather prevailing there will be no great demand for domestic sizes and every promise is held out for a rising steam market because of the inability to move lump and the fact that some of the largest mines in the Standard field are shutting down.

WESTERN KENTUCKY

Steam Demand Improves—Few New Contracts Are Placed — Controversies Over New Wage Agreement.

Scarcity of screenings continues as a result of lowered production of domestic sizes. This has raised screenings prices and firmed up mine run. Many inquiries are being received for contract quotations but operators appear to be uncertain as to what constitutes an acceptable figure for the new year's business. May delivery is quoted at 25c. over the spot market and annual contracts about one-third higher. Some contract quotations have been made on mine run $2.75@$2.90 and screenings $2.50@$2.75. But few new agreements have been closed as yet.

Wage agreements at a small group of mines in the Coal Operators' Association expire in a few days. There have been some conferences as to a readjustment of wages. In Union County a walkout occurred when the men were told to clean up the mines pending an outcome of the wage agreement. There is but little demand for coal and producers are not worrying much about running. However, contracts with the Western Kentucky Coal Operators' Association run to April 1922 and conditions are quiet in that section.

Middle Appalachian

HIGH-VOLATILE FIELDS

Low Production Continues—New Contract Market Inactive—Spot Prices too Low for Acceptance.

KANAWHA

There was little or no spot market for coal mined in the period ended March 19 and production if anything was on a lower scale, with more mines shut down. Slack and mine run were on about an equal price footing, the nominal figure hovering around the $2-mark which was regarded as a distress price not generally accepted by producers. Buyers still refrained from entering the contract market and but few new agreements were closed.

LOGAN AND THACKER

Storage piles were growing at Logan mines and automobile plants were taking better contract shipments. This accounts for a slight increase in production during the week although buyers showed absolutely no interest in the spot market. Practically no new contract business was closed.

Thacker production was maintained at about 30 per cent of normal. There was little interest in either the spot or contract market other than inquiries for quotations covering the new year's business. Practically all the coal mined was for contract delivery as producers were not in favor of shipping on the present spot market with the low prices which are prevailing.

VIRGINIA

Production climbed from 40 per cent to 51 per cent of potential capacity during the week, enabling the mines to produce 91,000 tons. The week was featured by the usual dullness in the spot market but on the other hand, contract customers increased their requirements in a way which encouraged producers.

LOW-VOLATILE FIELDS

Contracting Is Sluggish — Tidewater Conditions Improving—Production Curtailment Continues.

NEW RIVER AND THE GULF

Winding Gulf production remained at about 30 per cent of normal during the week ended March 19. It was next to impossible to sell coal on a spot basis except at unprofitable figures. Less coal was going to Tidewater as market conditions were such that only contracted coal was being sent forward. There was no improvement in the contract market for the new coal year.

Commenting on the labor situation E. E. White, president of the Winding Gulf Operators Association, said in his annual address to the association at Philadelphia:

"During the year 1920 we have advanced wages to our employees twice. April 1 we increased our miners 33⅓ per cent, daymen 30 per cent, and yardage and dead work 20 per cent over the November, 1917, Washington agreement, and in September we gave a further increase of 10 per cent to the miners and $1.50 per day to the daymen, making in all an advance of 43⅓ per cent for miners, 62 per cent for daymen, and 20 per cent for yardage and dead work over the November, 1917, Washington wage agreement. It might be of interest to state that since the organization of our association we have to date increased our men as follows: Miners, 124 per cent; daymen, 173 per cent; yardage and dead work, 40 per cent."

Southern markets presented a better outlet for New River coal than for some time past, as manufacturing plants in Virginia and the Carolinas were increasing their operating time. Western markets were almost inactive with but little interest in new contracts from any source.

POCAHONTAS AND TUG RIVER

Pocahontas mines worked about two days during the week, the output being estimated at 190,000 tons or 35 per cent of potential capacity. Virtually no coal was being sold in the open market, regardless of numerous price concessions made. The large accumulation at Tidewater was being materially reduced and before long it was thought it might be possible to resume shipments to the piers. Old contracts furnished the only outlet for production. General market conditions stood in the way of much new contract activity and negotiations have not yet passed the preliminary stage.

The output in the Tug River region hovered between 50,000 and 60,000 tons. Spot sales were almost negligible and consequently prices were about as soft as ever, mine run not far from $3.50 and prepared sizes $4. Mines on an average were running about two days a week. Little coal aside from that intended for contract customers was moving. New business in the shape of contracts was as yet an unknown quantity in the region.

West

UTAH

Buying Is Sluggish—No Early Industrial Demand.

The coal situation remains unchanged. Stocks are getting very low, but the weather is so warm that dealers are reluctant to order supplies, especially as every one is expecting a drop in prices before long. There are some indications of a renewal of industrial activity, but conditions are still very quiet, and no early increase in demand for coal is expected.

MINE And COMPANY NEWS

ALABAMA

An explosion of unknown origin completely wrecked two supply magazines of the **Woodward Iron Co.**, located at its Dolomite coal mines and also badly damaged a mine supply house near by, causing a loss of several thousand dollars.

The County Coal Co., with an authorized paid in capital stock of $100,000, has been incorporated, with the intention of developing coal land in the Cahaba field, near Grant's Mill, Jefferson County. The new venture is backed by the Sossong interests, formerly operating in the Pennsylvania coal field. The officers of the company are William F. Sossong, president; William S. Pritchard, vice-president; W. J. Sossong, secretary, and Leo. F. Sossong, treasurer, and the home office is to be located at Carnegie, Pa. Henry F. Neny, a local engineer, is in charge of the company's field interests. The new developments will be near a spur now being built by the Central of Georgia to a proposed new opening of the Alabama Fuel & Iron Co.

ALASKA

Bert W. Dyer, Department of Interior Mine Inspector for Alaska, has been appointed Government representative in connection with the administration of coal-land leases granted by the Secretary of the Interior for the United States in Alaska, subsequent to advices received from Washington to that effect. Mr. Dyer's headquarters are in Fairbanks, where he has been stationed since late last fall.

COLORADO

The Oakdale Coal Co., with mines in southern Colorado, is using its entire working force from two to three days a week getting out what orders come along, according to Harry F. Nash, general sales agent. Some improvements are contemplated, but they will be made later. March is one of the worst months for Colorado operators in twenty-five years, according to Mr. Nash.

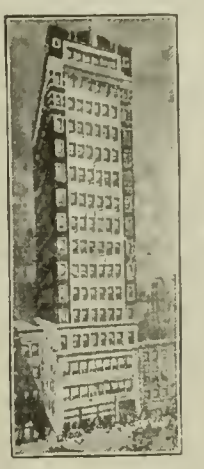
The Colorado Fuel & Iron Co. reports for 1920 a surplus of $1,286,806, after depreciation and taxes, as compared with a deficit of $577,645 in 1919. Gross business transacted in 1920 was $51,612,813, as against $34,405,217 in 1919. Net operating income was $5,466,492, as against $2,299,-002. Interest, depreciation and Federal taxes aggregated $4,692,437, leaving a balance of $1,286,806, which, after deduction of $160,000 for preferred dividends, was equivalent to $3.29 a share on the $34,235,-500 common capital stock outstanding. The surplus after common and preferred dividends for last year was $99,812; in 1919 the deficit, after dividend payments, was $1,764,639.

ILLINOIS

The Middlefork mine of the **United States Fuel Co.**, located at Benton, where a mammoth washer is in operation, is preparing to put in a plant for reclaiming the fine coal which is washed away. The plant, which will cost around $25,000, will completely and thoroughly separate the coal from the culm. This mine is only running three days per week at present, and the new installation will probably be made during the slack running season. The management wil also take advantage of the idle days to make other improvements and additions.

The Franklin County Mining Co., at Benton is preparing to install new equipment to properly care for the growing demand for Franklin County coal. Among the contemplated improvements is a rescreening plant, which will prepare several sizes of coal. This plant will probably be in operation in a few months. This company is also preparing to erect a modern wash house for its men. The Franklin County company also plans to take advantage of the present dull period to make other improvements.

The McCraney Coal Co., has reopened its mine, three miles east of Coal Valley, after being shut down for a few weeks. Only half of the former force of men has been put to work.



The general offices of the **Union Fuel Co.** were moved on April 1 from the Lytton Building to the new Union Fuel Building, West Madison St., Chicago, shown herewith. A. E. Lee, formerly general freight agent of the C. & A. RR., and vice-president of the Reliable Coal & Mining Co., has been appointed general sales manager. George W. Hatch, heretofore sales manager at Springfield has been given the title of general sales manager at Springfield.

Work of laying more than a mile of additional track will be started by the Chicago & Alton as a part of the plan of the road to make Auburn an interchange coal center. The extension probably will be laid within a month. The improvements include the connection of the Chicago & Alton tracks with those of the Chicago & Illinois Midland. Through the recent activities of the Chicago & Alton officials toward increasing the coal business of the company this line is taking over practically all of the shipments taken by the Illinois Central up to two weeks ago. The change in the policy of the mining interests on the Chicago & Illinois Midland has increased the Chicago & Alton business at Auburn more than 100 per cent in the last two weeks and has necessitated the extension of tracks to relieve the congested condition at that point. A new track is also to be constructed to the Panther Creek mine at Auburn.

INDIANA

The Big Four Railroad is surveying a route that will tap the big coal fields in Gibson County, east of Petersburg. The line is to extend from Petersburg through Oatsville, Pike County, thence to the coal fields of Francisco and on to Buckskin, near the Warrick County line. The route will also pass through a region of oil wells and when built will be forty miles in length.

KENTUCKY

The Yeltow Creek Coal Co. and the **Mingo Coal and Coke Co.**, both principally owned by Major E. S. Helburn and Joe F. Bosworth, will have a three-story house built for offices and apartments in Middlesboro, at a cost of about $40,000.

The Whitesburg Coal Co., Whitco. J. Henry Hall, manager, has closed a deal for the purchase of the new mining plant of the Klenecoal Co. near Elvah, on the main line of the L. & N. in the southern end of Letcher County.

Castleman Brothers, Inc., have filed amended articles changing the name of the organization to the **Bell Harlan Coal Co.**, which will have its office at Louisville. S. T., J. B. and William P. Castleman are the signers of the amendment.

The Pralse-Elkhorn Coal Co., Pikeville, has filed amended articles increasing its capital stock from $30,000 to $60,000.

On motion of attorneys for the plaintiffs a $398,000 damage suit filed in the U. S. District Court at Louisville, by the Steel Tube Co., of America; and Milwaukee Coal & Gas Co., both of Milwaukee, against the **Harlan Coal Co.**, Louisville, was withdrawn, before the defendant company could file counter claims for an almost equal amount. The suit involved construction of a contract, both parties holding that the other had breached. In fact the Harlan company was planning court action when the suit was filed against it, but could not secure action in Kentucky, as the Milwaukee companies had no interests there.

MARYLAND

The Consolidation Coal Co., reports for the year ended Dec. 31, 1920, earnings from operations of $33,965,280, against $23,-507,556 in 1919, and a surplus after dividends of $7,148,565, compared with $795,-567 in the previous year. The coal mined by lessees in 1920 amounted to 1,08[illegible],844 net tons, against 714,562 net tons in 1919. Coal mined by the Consolidation Company in 1920 aggregated 8,100,437 net tons, against 7,200,333 net tons in 1919.

MISSOURI

The West Virginia Coal Co. has filed suit against the City of St. Louis for $43,499, for failure to comply with its contract, which called for 15,000 tons of screenings to be shipped last fall at a price of $6.50 per ton. The contract was in effect eleven days when the Water Commissioner refused to approve payments, declaring that the price at that time was $4 a ton, caused by a falling market. The Supply Commissioner contended that he used his best judgment in placing the contract but did not receive the support of the other city officials.

OHIO

The Progress Coal Co., recently chartered at Columbus with an authorized capital of $100,000, has completed the negotiations for taking over the Imperial mine at Nelsonville from the Ohio Consolidated Coal Co. The mine is a going concern with a capacity of about 8,000 tons monthly. B. A. Weardock of Lima is president and general manager. The product will be sold through the Ohio Consolidated Coal Co.

A bill has been dumped into the hopper of the Ohio Legislature for the controlling of all coal jobbers and distributors under the Ohio Utilities Commission. The bill is fathered by Representative Freeman of Hardin County.

An appeal of the **Sloat-Darragh Coal Co.**, Hamilton, from the decree of United States District Judge John Weld Peck, Cincinnati, awarding the **General Coal Co.**, Huntington, W. Va., judgment for $11,242.34 as the amount due for coal purchased, has been filed in the United States Court of Appeals at Cincinnati.

The Atlantic Ice & Coal Company, Knoxville, Tenn., has filed in the United States Court of Appeals at Cincinnati an appeal from the judgment of United States District Judge Edward T. Sanford at Knoxville, awarding $1,000 to Sam Van of Knoxville a former employee for injuries sustained by him on May 30, 1917.

New Incorporators listed with Secretary of State are:

The Warnock Coal Co., Steubenville, $100,-000; S. B. Warnock and C. M. Warnock **The Cleveland Akron Coal & Material Retail Co.**, Cleveland, $20,000,000, offices 1730 St. Clair Ave., Cleveland. **The Thouron Coal Co.**, Cleveland, $50,000; W. H. Marlatt and F. H. Pelton.

The National Coal Co., headquarters, Cleveland, will open a new mine near Lamira, Ohio, on the B. & O., where at the present time a side track is being constructed for the purpose of handling material and supplies into the property. It is understood opening of the mine will be delayed pending completion of the railroad branch because of the bad condition of the roads leading to the mine.

The Youghiogheny & Ohio Coal Co., Leader-News Bldg., Cleveland, is removing its general offices to the twelfth floor of the new Hanna Bldg., 14th St. & Euclid Ave., where its office space will be greatly enlarged to more adequately meet requirements due to expansion during the past year. The M. A. Hanna Co. will take over the space vacated by the Youghiogheny & Ohio Coal Co. enlarging their present offices.

PENNSYLVANIA

Three hundred mine workers were thrown out of work for an indefinite period beginning March 15 as the result of an order at No. 6 shaft of No. 6 colliery operated by the **Pennsylvania Coal Co.** at Inkerman. The shaft will remain idle for at least three months, although work will be resumed as soon as possible. The company plans to make improvements to the property and will install new machinery and additional concrete supports. When completed, the improvements will permit an increased production.

Dr. John N. Sagerson, a Johnstown physician, was awarded a compromise verdict in the Cambria County courts on March 16, amounting to $5,000 against the **Solomon Coal Co.**, as a result of injuries sustained when a truck of the coal company struck the physician's automobile.

The Pittsburgh Steel Co. has purchased 269 acres of coal land in Monongahela Township, Greene County, the price paid being understood to have been $88,983. The company has acquired the land for a town site in connection with developing a large coal acreage.

Mine Inspector Joseph Williams, of the **Tenth Bituminous District** has completed his report for 1920. There are 68 mines in the district of which 67 were in operation. One mine was opened and one abandoned. The district produced 3,212,765 tons of which 171,589 tons were converted into 109,680 tons of coke. Of the 382 coke ovens, 320 were in operation. Men employed in the mines numbered 3,948 and outside 679. Seven men were killed and 45 injured. Of the men employed, 1,942 were Americans, 629 Polish, 534 Slavish, 315 Hungarian, 277 Italian, 162 Austrian, 151 Lithuanian, 139 Russion, 75 German, 48 English, 39 Irish, 28 Scotch, 22 French, 20 Belgian, 9 Swedish, 9 Greek, 5 Welsh, 2 Finnish, 2 Horwat and 1 Canadian.

The Beachley Coal Co., operating in Somerset County, has just closed a deal for the George Muller farm in Somerset township. The consideration was $23,075.

A cave-in occurred recently in the mine of the **Maryland Coal Mining Co.** at St. Michael, Cambria County, and two miners, who had just gone to work were caught. One was crushed to death and the other badly injured.

The mine of the **Clearfield Bituminous Coal Corporation** at Rossiter, Clearfield County, was idle because of a controversy between the union and the operators over the company's requirement that the day men should punch a time-clock provided by the company. The matter was referred to two commissioners but they informed the miners that no decision would be announced until the men return to work. The men returned to work following a vote on the proposition.

T. P. Burns has started the installation of an extensive coal plant on Pergum hill, near Nanty-Glo, Cambria County, where he located a rich seam of the "C" vein. A tipple is being erected and a siding built to the mine. It is expected to be one of the best producers in that section.

The Mapletown Coal Co., its plant in Greene County, and 1,003 acres of Sewickley coal has been sold by J. Frank Dawson and Taylor N. Dawson, of Uniontown, to Senator John L. Hatfield and others of Morgantown, W. Va. The consideration was $525 000, the price paid for the plant being $200,000.

At the annual meeting of the board of directors of the **Atlantic Coal & Iron Co.**, Philadelphia, the following officers were elected for the ensuing year: William P. Bilyeu, president, William C. Yerkes, vice-president, Chas. Gesling, Jr., secretary and treasurer, Frank D. Enuey, manager.

Some few mines in the Connellsville region are utilizing the dull period to make repairs and improvements at their plants, retaining at least part of their organizations. Among plants being repaired are the Marlon mine of the **Southern Connellsville Coal & Coke Co.** at Cheat Haven and the Jennings mine of the **Jennings Coal Co.**

WEST VIRGINIA

The Beda Coal Co., Huntington, has just secured 1,600 acres of byproduct coal on Pidgeon Creek, and has organized a company with a capitalization of $200,000 to develop this coal. The coal, according to an analysis furnished by the company contain 33.82 per cent volatile matter; 58.88 per cent fixed carbon; 7.16 per cent ash; and 1.14 per cent moisture. The sulphur is reported to analyze 0.85 per cent; phosphorus .003 per cent. The coal has a heating value of slightly more than 14,000 B.t.u., with the ash fusing point 2,970 deg. F.

The Wysong-McCoy Coal & Land Co., has been organized at Princeton, with $650,000 capital, for operating in the Glade and Holly districts, West Virginia.

The Thurmond Coal Co., in the Logan field, of which Walter R. Thurmond is president, although operating its mines on a part-time basis, is nevertheless engaged in adding to its storage pile so as to be in a good position whenever demand may arise at a later date.

The Domestic Coke Corporation, of Fairmont, manufacturers of coke and byproducts, has shut down its plant owing to the poor demand, no announcement having been made as to when operations may be resumed.

Advantage is being taken by the **Fairmont & Cleveland Coal Co.** of the market lull to build more houses for its miners. The company has broken ground for the eretion of 25 new houses.

In the period of dullness the **Lima Coal Co.** just south of Clay, is making preparation for larger operations by driving four new openings. The company is using some of its best men in this work. The only trouble experienced has been in prevailing upon the power company not to shut off power as there are so many mines on Elk River in idleness that the use of power is at a minimum.

A special train of Chicago wholesale and retail dealers made a tour of the smokeless coal fields of Fayette, Raleigh and Wyoming counties during the second week of March as the guests of the Chesapeake & Ohio Ry. Two days were spent in looking over the New River and Winding Gulf regions. The trip ended with a banquet at White Sulphur Springs. In affording the dealers an opportunity to study the production of smokeless and to judge of its quality, the C. & O. hopes to convince Chicago buyers of the desirability not only of having smokeless coal but of having it shipped over that road.

Directors just elected by the stockholders of the **Diamond Coal Co.** are: Dr. L. S. Brock, Morgantown; Lawrence E. Sands, Pittsburgh, Pa.; Howard W. Showalter and E. M. Showalter. New officers are: Howard W. Showalter, president; Samuel D. Brady, vice-president; Harry E. Engle, treasurer; A. P. Brady, treasurer.

Alexander Ronay has just sold 146 acres of Pittsburgh coal near Shinnston to the **Basin Coal Co.**, who paid for the acreage obtained from Mr. Ronay the sum of $27,000.

The Turkey Gap Coal & Coke Co. has announced that the installation of the picking tables and shaker screen on their new Wenonah No. 3 tipple has been completed. Other building and construction work is under way so that actual shipments at full capacity may not be under full swing until about April 1. The new tipple is modern throughout and will afford the company an additional tonnage of about 125,000 tons annually. A contract was let during the first week of March by the company for 25 new houses. Assurances have been received from the Appalachian Power Co. that the new substation for power for the Wenonah operation will be completed by or before the first of April. Three haulage locomotives and 100 mine cars were received by the company early in March.

A deal of considerable magnitude has been consumated under the terms of which **J. A. Bell**, of Carnegie, Pa., acquires title from **David Okey**, of Marietta, Ohio, to 1,000 acres of coal land on the waters of Buffalo Creek in Brooke and Ohio counties. The sum involved in the transfer was $100,000. The coal is in the Pittsburgh vein and is between five and seven feet in thickness. The John H. Jones interests are said to be interested in the deal, the same interests being already extensively interested in operations in the Wheeling District. A railroad will be built into the coal property and will make it possible to ship both over the B. & O. and the Pennsylvania. It is estimated that the road will cost in the neighborhood of $250,000.

The Basin Coal Co. which will operate near Shinnston is planning to begin the shipment of coal by June 1. This company only recently purchased one tract of 142 acres and another tract of 20 acres near Shinnston and is building a mile or more of tramway. Provision is being made by the company for loading about 15 railroad cars of coal a day. The company has as its head Will Ghagan of Ghagan, Pa.

The transportation and sale of coal on a large scale will be undertaken by the new organized **Parkersburg Dry Docks, Transportation & Coal Co.**, with headquarters in Moundsville, this company having a capitalization of $250,000. Pittsburgh and Wilkinsburg people are largely interested in the new venture, among them being M. J. McQuaide, J. R. Dorsey, Stephen Steranchak, of Pittsburgh; James Balph and R. A. Balph of Wilkinsburg.

Advantage has been taken by the **Bethlehem Mining Corporation** of the lull in the coal business to make repairs at a number of its plants and to provide for better accommodations for its miners, building having been especially active at both the Dakota and Barracksville plants in Marion County. At the Barracksville plant a total of twenty houses have been built for miners and at Dakota the houses just put up are thirty in number. While the Dakota mines of the company have been in idleness electrical equipment has been installed, including a 15-ton Jeffrey locomotive.

Further details secured in connection with the organization of the **Fat Creek Coal Corporation** of Beckley of which E. C. Minter is president, disclose the fact that this company has purchased 300 acres of land on Fat Creek in Shady Spring District extending to the Piney branch of the C. & O. It will not be a difficult matter to develop the Fat Creek property owing to the nearness of the C. & O. Railway and also to the fact that a road will be constructed up Glade Creek for the purpose of opening up the large territory recently acquired by the New River, Raleigh & Pocahontas Co. just across the mountain from Fat Creek.

Preparations are being made by the newly organized **Coalfield Fuel Co.**, with headquarters in Charlestown, to operate in the Kanawha County field. The company is capitalized at $100,000. Principal figures in the new concern are: H. P. Tompkins, Clyde B. Johnson, P. N. Lowe, N. L. McClure, Benj. Hurvitz, all of Charleston.

Increases in capital stock have been authorized for the following companies: **Fall Branch Coal Co.**, Bluefield, of which O. C. Jenkins is president, from $150,000 to $200,000; **Harlan-Cumberland Coal Mining Co.**, W. B. Stevens, president, from $150,000 to $300,000.

The Stone & Scott Coal Co. is one of the larger coal concerns recently launched, being capitalized at $500,000, for the purpose of mining coal in both Marion and Harrison counties. Those interested in this company have long been active producers in northern West Virginia. Largely interested are E. B. Stone, of Morgantown; T. M. Scott, of Shinnston; Edwin B. Stone, Fred A. Stone and William D. Stone, of Morgantown. Headquarters of the company will be at Fairmont.

BRITISH COLUMBIA

Coal production for the month of February, exclusive of the mines of the Crow's Nest Field, was as follows:

Mine	Tons
Canadian Western Fuel Co.	46,121
Canadian Collieries (D) Ltd.	
Comox	34,847
South Wellington	6,827
Extension	13,946
Nanoose-Wellington Co.	4,954
Granby Consolidated M. & S. Co.	21,681
Old Wellington (King & Foster)	135
Middlesboro Collieries	6,728
Fleming Coal Co.	3,239
Coalmont Collieries	4,420
Princeton Coal & Land Co.	794
Total	143,692

The Chu Chua Coal Mining Syndicate has secured options on approximately 5,000 acres of coal lands about two miles south of Chu Chua near Kamloops. A compressor operated by a 50-horsepower steam plant has been installed, a road built to a siding on the Canadian National Ry. and camp buildings erected to accommodate about twenty men.

NOVA SCOTIA

Nova Scotia Collieries of the Sydney district produced 4,239,350 tons in 1920—420,444 tons, or 11 per cent more than in 1919. The total for 1920 is the largest since 1917, and in view of the many difficulties encountered, especially labor troubles, the increase in production is considered most satisfactory. The output for February, 1921, amounted to 46,490 tons.

Personals

J. W. Marsh, of the Greene Engineering Co., of Chicago, gave two addresses before the Davenport branch of the National Association of Stationary Engineers, the subects being "The Combustion of Coal" and "The Use of Chain Grate Stokers."

The appointment of **H. I. Smith**, mining engineer with the Bureau of Mines for many years, as District Engineer to supervise coal and oil shale leasing operations, has been anonunced, with headquarters at Denver.

Director Bain of the Bureau of Mines, accompanied by **D. A. Lyon**, supervisor of mining experiment stations, will make a trip of inspection of stations beginning April 11. The itinerary follws: Pittsburgh, Chicago, Houghton, Mich., Minneapolis, Kansas City, Bartlesville, Okla., Rolla, Mo., St. Louis, Birmingham, Tuscaloosa and Atlanta.

E. W. Parker, of the Anthracite Bureau of Information, was the guest of honor recently at a luncheon given in Washington by H. Foster Bain, the Director of the U. S. Bureau of Mines. Mr. Parker was a member of the board of the U. S. Geological Survey which had charge of the fuel tests at St. Louis, out of which grew the Bureau of Mines.

C. E. Miller, known as the "Coal King of the Klondyke," paid his first visit to the "outside" in twenty years a few weeks ago. He spent his vacation in Vancouver and Victoria. Mr. Miller went into the Yukon in 1897 and the greater part of his time since has been spent in coal operations.

R. Dawson Hall was the guest of the Franklin Club, Wilkes-Barre, Pa., at its annual banquet and gathering, March 21, delivering a short address on the bearing of metal-mining practice on the preparation and mining of coal.

After being arrested twice as a suspicious character due to having a Tennessee license number on his automobile, **W. H. Bradford**, formerly of Nashville, who recently came with the Dixie Fuel Co., Louisville, has decided to get a Kentucky license, so that the Louisville cops will give him a little rest after two arrests in less than a week.

W. T. Carden has been elected president of Boland Bros. Co., anthracite operators of Scranton, Pa. He was the Scranton representative of the Weaver Coal Co. of Buffalo and the vacancy has been filled by **Harold T. Carden**, also a member of the Weaver sales staff for sometime.

T. J. Foster, former owner and founder of the *Colliery Engineer* and founder of the International Correspondence Schools, has moved to Philadelphia, where he will open an Industrial Correspondence University in April.

Harrison Null Boyd, superintendent of the Edenborn and Gates mines of the H. C. Frick Coke Co., resigned March 1 to engage in a new fuel enterprise of which he is president and general manager. Mr. Boyd leaves the Frick company after 25 years of service.

James C. Stuckslager of Jefferson township has been made manager of the farms of the H. C. Frick Coke Co., in Washington County, Pa.

James E. Gibbs, a well-known coal operator of Huntington, was a visitor in the Fairmont region the latter part of February.

Gaston Caperton, president of the Slab Fork Coal Co., with headquarters at Slab Fork on the Virginian Ry., was a visitor in Charleston late in February.

Brooks Fleming, Jr., assistant to the president of the Consolidation Coal Co., and **Frank R. Lyon**, vice-president in charge of operations, were visitors in Charleston on the last day of February.

Charles A. Owen, president of the Tidewater Coal Exchange and head of the Imperial Coal Corporation, New York City, was vacationing at Pinehurst. He remained at the Carolina resort until March 27.

J. C. Collins, until a few years ago superintendent of transportation of the Illinois Southern R.R. and more recently connected with the Moffat Coal Co. of St. Louis, has resigned to accept a position as general representative of the Kerens-Donnewald Coal Co., with headquarters at St. Louis.

H. R. Oglesby, formerly chief inspector for the Fuel Administration in Missouri and more recently a retailer at Warrensburg, has accepted a position as sales manager of the retail and jobbing department of the Kaw Valley Fuel Co. of Kansas City.

Arthur King, for several years representative for the Edison Storage Battery Co., St. Louis, in the southern Illinois and Missouri territory, has resigned to accept a similar position with the Atlas Storage Battery Co. of St. Louis. Mr. King specializes in storage batteries for mine locomotives, and is well known throughout his territories.

G. W. Noble, of the Bell & Zoller Coal Co., Chicago, has accepted a position in the sales department of the Rialto Coal Co., Chicago.

John Rolla of Murphysboro, Ill., has been appointed a member of the Mine Investigation Commission by Governor Small, succeeding **P. H. Donnelly** of Springfield. Mr. Rolla retired from active work three years ago as the head of the Sunnyside Coal Co. at Herrin.

Thos. J. Casey, formerly of the Wabash R.R., is now connected in a traveling capacity with the Wallace Coal Co. at St. Louis.

E. H. Sandidge, for many years chief clerk in the fuel department of the Frisco R.R. at St. Louis, has resigned to go with the Interstate Commerce Commission. He is succeeded by **C. S. Bradford** of Harriman, Pa.

M. B. Casey, who came to the Wabash R.R. at St. Louis as superintendent of transportation from the Lackawanna System prior to the war, has severed his connection with the American Ry. Assn. to engage in the selling of coal in quantities to railroads and large industrials, with offices at 2026-7 Railway Exchange Bldg., St. Louis.

L. V. Bermingham, secretary and treasurer of the St. George Coal Co., of New York City, recently returned from an extensive tour of Canada.

Charles E. Lester, of Hartwell & Lester, New York City, has returned from a European trip.

E. E. Loomis, president of the Lehigh Valley R.R. Co. will be a member of the Board of Trustees of The New York Trust Co. which succeeds on April 1 the old New York Trust Co. by merging the Liberty National Bank.

Gardner Pattison, of Pattison & Bowns until that concern was merged with the Farrell Coal Co., was re-elected a vice-president and director of The United States Trucking Co. on March 9.

Whitney & Kemmerer announce that **Harry C. Haggerty** succeeds John W. Whiteley as general sales agent for New York, and George W. Scura has been appointed assistant general sales agent. Both have been connected with the firm for many years.

J. G. Bradley, president of the West Virginia Coal Association and a member of the executive committee of the National Coal Association, attended a meeting of the executive committee in Pittsburgh on March 7.

W. D. Ord, president of the Red Jacket Consolidated Coal & Coke Co. of Landgraf, W. Va., was a visitor in Charleston early in March.

Howard Showalter, president of the Diamond Fuel Co., with headquarters at Fairmont, was a visitor in Charleston on March 4 making the trip to attend the inauguration of Governor E. F. Morgan.

H. H. Morris, president of the West Virginia Standard Coal Co., with headquarters at Huntington, spent several days in Washington early in March in conference with officials of the Chesapeake & Ohio concerning freight rate matters.

A. J. King, of Huntington, extensively interested in mining operations in the Logan field, attended the inauguration of Governor E. F. Morgan at Charleston.

A. Brooks Fleming, assistant to the president of the Consolidation Coal Co., and Frank R. Lyon, vice president of the company, were in Charleston, W. Va., during the first week of March on their way to New York.

J. W. Colley, assistant to the secretary of the Logan Operators Association who has been located at Huntington, will hereafter divide his time between Logan and Huntington.

V. H. Palmer, who has been connected with the Ore & Coal Exchange, Cleveland, for the past three years, in charge of coal movement, has resigned to accept a position with the Milwaukee Fuel Co., C. R. Coal Co. and the Great Lakes Coal Mine Co. **F. I. Kennedy** is in charge of the Cleveland offices of these coal companies and Mr. Palmer will make his headquarters in Cleveland.

Michael Gallagher, general manager of the Wheeling & Lake Erie Coal Mining Co. and **C. E. Sullivan**, president of the Central Coal Mining Co., were guests at a dinner tendered by Ohioans to President and Mrs. Harding.

S. H. Robbins, president of the Youghiogheny & Ohio Coal Co. and **Michael Gallagher**, general manager Wheeling & Lake Erie Coal Mining Co., have been elected directors of the new Midland Bank, Cleveland.

The Morgantown Coal Co. was represented in Cleveland during the first few days of March by **Marvin L. Taylor** of Morgantown.

M. R. Ingold of the sales department of the Bertha Coal Co. of Pittsburgh spent a few days in the Marion County, W. Va. field the first of the month.

Whitney Warner, vice-president of the Warner Collieries Co., Cleveland, has returned from a vacation in Florida.

G. C. Weitzel, general manager, Great Lakes Coal Mining Co., with extensive operations in No. 8 field, office Columbus has departed for an extended trip to the West Indies and Canal Zone.

B. C. Tucker, president of the Brilliant and Jean Coal Mining companies, Cleveland, has returned from a pleasure trip to California.

C. J. Goodyear, traffic manager, Pittsburgh Coal Producers Association, was a visitor in Cleveland recently.

C. H. Tarleton, manager of the West Virginia Division of the Consolidated Coal Co. was a visitor in Baltimore about March 17.

A. Lisle White, president of the Northern West Virginia Coal Operators' Association spent a few days in Baltimore on business about the middle of March.

Max Tomb, head of the branch office of the Raleigh Smokeless Coal Co. at Bluefield was incapacitated for duty several days earlier in the month when compelled to undergo an operation.

A. W. Calloway, president of the Davis Coal & Coke Co., with headquarters at Baltimore, and **R. P. Maloney**, general manager of the same company with headquarters at Thomas were visitors in the Kanawha field about the middle of March.

E. J. McQuail of the Pocahontas region and one of the successful operators in the Norfolk & Western coal territory paid a visit to West Virginia's capital during the latter part of March.

J. C. McKinley of the Richland Coal Co., with headquarters at Wheeling was a visitor on March 21 at the capital of West Virginia.

Association Activities

Northern West Virginia Operators' Association

After adopting a resolution favoring the enactment of legislation providing for a sales tax at the coming session of the legislature, the association at a meeting held in Fairmont during the first week of March, took steps toward securing a change in existing freight rates to the Lakes and to Western markets, which it is claimed, are discriminatory because of a differential of anywhere from 40 to 56c.—a differential which makes it absolutely impossibe for mines in northern West Virginia to compete with those in Ohio and other Central Competitive territory as well as mines in Louisville & Nashville territory in shipping coal to the Lakes and to Western points. In order to get the matter properly before Lake coal carrying roads and the Interstate Commerce Commission, a strong committee was named, those appointed being; C. H. Jenkins, Fairmont, chairman; J. C. Callahan, Clarksburg; Brooks Fleming, Jr., Fairmont; H. M. Crawford, Philippi, and J. L. Hatfield, Morgantown.

There has been no change in the attitude of the association toward the assignment of cars for railroad fuel loading, there still being pronounced opposition to such a practice. It was considered a propitious time to ask that this be discontinued and a special committee was appointed to secure such action composed of the following: C. F. Robinson, Fairmont; Everett Drennen, Elkins, and J. M. Orr, Clarksburg, W. Va., this committee being given full power to act.

Southern Ohio Coal Exchange

The exchange at the regular meeting March 15 considered a number of questions including pending legislation and market conditions. The important piece of legislation is the bill pending in the house of representatives to make the mining of coal in Ohio a public utility, bringing it under the absolute control of the Public Utilities Commission. While it does not appear that this bill has any chance of being enacted in its present form, still W. D. McKinney, secretary-commissioner of the exchange, is following it through the various committees in the legislature.

The bill to tax the production of coal and all minerals in the state one per cent is also believed to be dead for the time being. This bill, it is pointed out, will lay a heavy burden on Ohio producers in competition with other states.

Pittsburgh Vein Operators Association of Ohio

The annual meeting of the Pittsburgh Vein Operators' Association of Ohio was held on Monday, March 14, in Cleveland. The following officers were elected for the ensuing year: Michael Gallagher, president; Whitney Warner, vice-president; H. R. Sullivan, treasurer; D. F. Hurd was re-elected secretary. The following members were elected to serve on the executive committee of which the president, Michael Gallagher, is chairman; C. S. Deal, A. W. Dean, William Harper, Henry Johnson, T. K. Maher, S. H. Robbins, Whitney Warner, C. P. White, R. L. Wildermuth, H. E. Willard and W. R. Woodford.

Charles J. Albasin, commissioner, Bridgeport, and Emerson Campbell, tax agent, St. Clairsville, were also elected.

The new president is general manager of the Wheeling & Lake Erie Coal Mining Co., a subsidiary of the M. A. Hanna Co., and Whitney Warner, vice-president, is vice-president and treasurer of the Warner Collieries Co. Mr. Gallagher succeeds F. K. Maher, who has served two terms as president of the association.

Upper Potomac Coal Association

T. M. Dodson, S. D. Brady and Douglas Gorman have been elected directors of the association to serve for three years. R. A. Smith, James A. Brown and W. E. Ambrose were elected for two-year terms and Carroll Pattison, R. Marsh Dean and A. Spates Brady were elected for single year terms.

The by-laws of the association, have been amended so as to admit as associate members those who are not coal operators but who are intimately interested in the production of coal. The associate members are to receive the Association's circulars, are to be privileged to attend meetings and may participate in discussions but are not allowed to vote.

Pike County Coal Mining Institute

A meeting of the Institute was held at the Cumberland Club at Pikeville, Ky., March 4. Discussions on various mine problems were led by G. E. Daugherty, T. H. Huddy, E. L. Bailey, G. A. Clutts and others.

Obituary

William Frederick Holsing, 83 years old, long identified with the coal and coke industry of Fayette, Westmoreland and Washington Counties, but for the last decade retired, died recently at Dunbar, Pa.

David C. Evans, aged 43, a mine superintendent for the Poston Mining Co., at Millfield, O., died in a Columbus hospital from injuries received in an automobile accident near Chillicothe.

George Wales of Dubois, Pa., well known among coal men in Pennsylvania and Kentucky, died recently following an operation for appendicitis. Mr. Wales had been a mine inspector in the Dubois district since 1917.

A. W. Crawford of Hillsboro, Ill., well known in Macoupin County, was instantly killed at Wood River recently in an automobile accident. Mr. Crawford was prominent in Illinois coal mining circles for many years.

Guy B. Aldrich, well-known coal salesman, died suddenly from heart disease near the entrance to his office in 143 Liberty Street, New York City, on March 12. Mr. Aldrich was connected with McCann & Camp.

Jesse Knight of Provo, president of the Spring Canyon Coal Co., the Red Creek Coal Co. and other coal companies died at his home on March 14, aged 75. Mr. Knight, who suffered a stroke of paralysis a month ago from which he never rallied, came to Utah in 1850. He was the father of Senator J. Wm. Knight of the Utah Senate.

Traffic News

The I. C. C. has vacated its order which suspended schedules providing through rates on coal and coke based on combination of locals on the Santa Fe system, the carriers having canceled the schedules, and the proceeding has been discontinued.

The Cannelton Sewer Pipe Co., of Cannelton, Ind., in a complaint to the I. C. C. attacks as unreasonable the rates on bituminous coal from mines in Indiana on the Southern Ry. to Cannelton.

The Huntingburg (Ind.) Pressed Brick Co. has attacked the rates to that city and the **U. S. Hame Co.**, of Tell City, Ind., the rates to Tell City.

The Graselli Chemical Co., of Cleveland, attacks as unreasonable the rates on soft coal from Clinton to Terre Haute, Ind.

The Bell & Zoller Coal Co., of Chicago, in a complaint to the I. C. C. attacks the distribution of coal cars under car service rule No. 31, and asks for restoration of coal car distribution rules in effect prior thereto.

The I. C. C. has assigned for oral argument at Washington on April 15 the cases of the **Little Cahaba Coal Co.**, and the **Fairchild Lumber & Coal Co.**

The Jeremy Fuel Co., of Salt Lake, complains against a rate of $1.25 per ton on bituminous coal from points in Utah to Salt Lake, and also against a subsequent rate of $1.35 and requests $7,000 refund.

The Minnesota Steel Co., of Duluth, complains against unreasonable rates between June 25 and November 5, 1918, on coal from Missabe Junction to Steelton, and asks a refund of $82,356.

The I. C. C. has decided that the proposed change in routing of coal from mines in Kentucky and Tennessee on the Louisville & Nashville to Atlanta, Ga., beyond Cartersville, Ga., is justified, and has vacated its order suspending the change and discontinued the proceeding.

The Loogootee Fire Clay Products Co., of Indiana, in a complaint to the I. C. C. attacks as unreasonable the rates on soft coal from Cannelburg and Montgomery, Ind., to Loogootee, Ind.

Fred Kixmiller, of Vincennes, Ind., in a complaint attacks as unreasonable the rate on soft coal from Wheatland to Vincennes.

Publications Received

The United States Bureau of Mines has just issued Bulletin 185, **"Pennsylvania Mining Statutes Annotated,"** by J. W. Thompson, law examiner of the bureau. The bulletin includes every statute enacted by the legislature of Pennsylvania from 1785 to 1919, relating to minerals, mines and mining operations, whether obsolete, repealed, invalid, or at present in force. The bulletin, which contains 1,221 pages, is the only publication giving the mining statutes of Pennsylvania complete, and accompanied by the court holdings. Copies of Bulletin 185 may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., at a price of one dollar.

Industrial News

The United States Bureau of Mines has issued the first approval for a storage battery locomotive for use in gaseous mines to the George D. Whitcomb Co., of Rochelle, Ill. The approval, dated March 14, covers a six-ton storage battery locomotive, which may be equipped with a battery consisting of either 80-G-14 Edison cells or 48-L-149-29 plate Gould cells. Caustic potash is specified as the electrolyte for use with the Edison battery. As approved the Bureau of Mines recommends this locomotive for service in gaseous mines and considers it much safer than the types heretofore used.

Philadelphia, Pa.—The Morrison & Risman Co., jobbers in new and relaying rails, accessories, has just established an office in 778 Drexel Bldg., with R. B. Morrison, district manager.

Huntington, W. Va.—The branch office of the Raleigh Smokeless Fuel Co. has been discontinued and Rex L. Tomb, who has been in charge of the office, will hereafter be located in Cincinnati.

Pottsville, Pa.—The New England Fuel & Supply Co., Inc., G. H. Fairbanks, district manager, has opened a new field office, 311 Thompson Bldg.

Jeffersonville, Ind.—The Coal Supply Co., Jeffersonville, has moved its offices to 1745 High Street, Louisville, Ky., directly across the river from the old location.

New York, N. Y.—The Metropolitan Life Insurance Co. has just issued a bulletin, "Why the Group Insurance Plan is Worth While," giving the opinions of various industrial executives on the group plan.

Montreal, Que.—Dwight P. Robinson & Co., Inc., engineers and constructors of New York, has recently opened branch offices in the Dominion Express building.

Recent Patents

Mine Trolley. Robert G. Wilson, Davis, West Va., 1,366,142. Jan. 18, 1921. Filed Jan. 21, 1920. Serial No. 352,957.

Miners' Lamp. Edward M. Erickson, Ray, Ariz., 1,366,371. Jan. 25, 1921. Filed May 12, 1919. Serial No. 296,522.

Coming Meetings

Nova Scotia Mining Society will hold its annual meeting April 5 and 6 in Halifax, N. S. Some interesting coal papers are to be presented.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7 and 8. Secretary, G. H. Cushing, Woodward Bldg., Washington, D. C.

Canadian Retail Coal Association will hold its annual convention April 6 and 7 at the King Edward Hotel, Toronto, Ont., Canada. Secretary, B. A. Caspell, Brantford, Ont., Canada.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill., May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The National Coal Association will hold its next annual convention at the Waldorf Astoria Hotel, New York City, May 19 and 20. White Sulphur Springs hotel reservations have been cancelled. W. B. Reed, secretary, Commercial National Bank Bldg., Washington, D. C.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary Calvin W. Rice, 29 West 39th St., New York City.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

National Retail Coal Merchants Association Sixth Conference of Secretaries and Executives to be held at the Baltimore Hotel, Kansas City, Mo., May 15 and 16. For reservations address H. S. Mitchell, New York Life Bldg., Kansas City, Mo.

National Retail Coal Merchants Association will hold its annual meeting May 12, 13 and 14 at the Jefferson Hotel, Richmond, Va. Secretary, E. G. Gordon, Philadelphia, Pa.

The National Foreign Trade Council will hold its eighth annual conventon May 4, 5, 6 and 7 at Cleveland, Ohio. Secretary, J. G. Hammond, 409 Park Bldg., Cleveland, Ohio.

Illinois Mining Institute will hold its spring outing the latter part of May on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on May 26 and returning on May 28. Secretary, Martin Bolt, Springfield, Ill.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 19 NEW YORK, THURSDAY, APRIL 7, 1921 Number 14

"Nor Shall Private Property Be Taken for Public Use, Without Just Compensation"

HOLDING that the highest market price at the time of commandeering is the only proper measure of just compensation, Federal Judge Bodine, sitting in Trenton, N. J., last week directed the jury in the suit of the New River Collieries vs. the U. S. Government to award the coal company a judgment in accordance with this principle. The navy had commandeered some 60,000 tons of coal shipped to Tidewater by the coal company and had offered a price around $3.60 per ton or the alternative guaranteed by the Lever Act of suing the government in the Federal courts if this price was not satisfactory. The coal company asked an average price of about $8.30 and was awarded a trifle under seven dollars.

The actual figures are of small moment compared with the principle laid down by the judge. Argument was not entertained or heard on the question of what constitutes "just compensation" guaranteed by the constitution to a citizen or citizen corporation for property commandeered by the government; the judge ruled out the testimony of witnesses for the government who sought to show what it cost to produce the coal that had been taken and stated that the only question involved was one of fact—the market price of the coal on the particular day the navy commandeered it. In the opinion of this judge the highest market price that might have been obtained for the coal represented just compensation.

This decision, which of course is subject to appeal for review before the highest court of the land, is of far-reaching import to the coal industry, not only affecting other coal taken by the navy but possibly influencing action on settlements for coal diverted or confiscated by the railroads and others in the future.

Labor's Opposition to Deflation

LIKE the strike in October of last year, the stoppage of work in the coal mines of Great Britain on the first of this month was discounted in advance and preparations appear to have been made in the way of accumulating reserves of coal. The British miners were out three weeks last year at a time of greater demand for coal than now obtains, without any serious shortages developing and without material effect on prices here or abroad. The call for coal in all parts of the world has been so low for the past few months that nothing but a protracted shutdown of the mines in Great Britain can have the effect of giving more than a slight impetus to the market here.

France, one country that six months ago was buying coal at high prices and leaning heavily on the British mines, has large stocks and little demand. According to recent advices the supply in that country is not less than three times what it was a year ago and coal from Germany is now coming into France at the rate of more than 2,000,000 tons per month, while the French mines are producing at an increasing rate. Imports of English coal into France in February were but 369,000 tons, compared with 1,232,000 tons during the corresponding month a year ago and about 1,000,000 tons in February, 1913. The falling off this year was due not to inability to get the coal but to absence of need for it, and the mines in Great Britain were idle as a result of this lack of demand. From 2,601,046 tons in February of last year total exports fell to 1,729,148 tons in February, 1921. In the same month of 1913 exports were 5,569,917 tons.

The tremendous drop in world demand for coal is really what precipitated the trouble in Great Britain. In the year 1920 nearly 20 per cent of the total commercial coal produced in that country was sold for export or used as bunkers for ships engaged in foreign trade, and the profits derived from this business were sufficient to maintain the high wages guaranteed the miners by the British government. With the decline in the export market, the operators of the mines were faced with the alternative of closing down or reducing costs in order to meet competition, as from this country. To reduce costs, labor must come down, and it is that reduction in wages that is now being resisted.

Ignoring an Opportunity

TO THOSE who are complacently watching the coal-consuming public fritter away the precious days of car surplus and cheap coal, secure in their belief that if not now, then later, coal must be bought, and if not now at reasonable figures then later at high prices, expectant if not hopeful that the latter part of the year will bring a condition of famine prices, it may not be amiss to point out that a repetition of 1920 in coal prices is certain to bring with it a recurrence of public protest and certain Federal legislation regulating the industry and fixing prices. There is no mistaking the fact that coal has few friends at court and fewer in Congress who will dare to come out in the open in its defense. There is no public sentiment favoring the coal man; the big question is whether between now and when the next storm breaks the public can be won back to an attitude that will be at least sympathetic.

It is idle to think that another crisis can be weathered after the fashion of the last one. And it is but too true that a quickening of demand for coal next summer or autumn will produce a car shortage and the kind of a market that by common consent, so it seems, has come to mean panic prices. It was good fortune and a combination of propitious circumstances that forestalled a Fuel Administrator last summer and it was the count of the referee that put the Calder bill down and out with the expiring administration on March 4. No change of heart with the constituents of the men in Congress stopped legislation on coal. Nothing has been done to give the man on the street cause to pause in

his condemnation of the coal man. To hold the support of the organizations of business men who registered opposition to the Calder bill the coal industry must do more than simply hold before them the "bogey man" of general restrictive legislation on essential industries.

It is understood that the program—the administration program, if you will—in the next session of Congress will not have for its foundation the theory that coal is "charged with public use." And if that is left out, other business will have cause to abandon its fear and withdraw its opposition to coal legislation. Senator Frelinghuysen has indicated his intention of reintroducing his bills with some modifications. These bills are not predicated on the theory that coal is a public utility. It is a fair assumption that Senator Calder's proposals will receive scant attention when the Frelinghuysen bills are pushed.

Coal legislation may not be actively considered this spring or during the early months of the forthcoming special session. Much will depend on the attitude of the coal industry—progress in the press of other legislation will be hindered by its opposition. But look out for the consequences if the market goes up precipitately. In that event no power in Congress could or would stop Federal fixing of prices.

Pulverizing Stations

OPERATORS continue, and have continued for more than a century, to offer the same class of products to the general public—just coal. Some have mixed it with a little service in the way of information and advice. But it is still coal, just coal, that they are selling.

Your manufacturer always is offering something new, something better suited to the needs of the mine or the mill. Every year he has something that does the same work in a better way. But the coal man knows nothing but coal and beehive coke. Sometimes he cleans the coal and sometimes he sizes it, and sometimes again he doesn't.

"A cycle of Cathay" and he will still be selling his product in the old way—not as byproduct coke, not as carbocoal or coalite, not as powdered coal, nor as electricity or gas but just as ever—as coal. What it is as it leaves the mine so it is as it reaches the consumer; a little rock or bone may be removed, the large sizes may be segregated and, with anthracite, the excessively coarse material may be reduced to medium sizes, but still the product is not materially changed. The sole exception is when the coal is briquetted, and there are limits to the availability of briquetting.

Perhaps then it is impossible to induce him to believe that he ought to produce at least one new variation—pulverized coal. It takes heat to drive off the moisture before the coal is crushed. Why not apply this heat by burning coal that has not been transported to market and with a refuse fuel that is not salable anywhere? The moisture driven off makes the coal lighter, saving transportation charges. Why not save freight by driving off the moisture at the mine instead of hauling it to the market and then driving it off?

The manufacture of pulverized coal involves the use of enough equipment to make any but the largest of buyers hesitate, for the purchase of the pulverizing plant is not the only cost. When purchased it has to be operated, and a small plant is costly per unit of product.

It is for these reasons that it seems natural to put the drying and crushing plant at the mines instead of at the consuming plant. It is true that the mill might be built near the market, and distribution might be made by specially constructed motor trucks, but the coal might just as well be handled without that intermediate station.

Besides, there are objections to the manufacture of an explodable product close to a densely populated region. Furthemore, where the purchasers buy in carload lots the wages of superintendence may be saved by dispensing with the intermediate station. Where coal is delivered to consumers who take less than carload lots some sort of depot will be needed at which the coal in the railroad car can be transferred to the motor truck. Should the coal be handled by a retailer the coal operator would avoid this superintendence cost, which then would become merely a part of the regular retailing expense and a little less than that involved in the handling of sized coal.

With the finances of the railroads as they are it will be necessary for the coal company to purchase the special cars that must be used for the transportation of the powdered coal. It may be necessary also in some cases to advance some of the cost of installation to those who throw out their grates and overhead storage bins and equip themselves with tanks and powdered-coal burning equipment. But there are big economies in the use of powdered fuel, and the coal man should try to obtain some of the profit to be derived from it by creating for this product a market demand.

The man who has coal to sell must do his part to convert a potential into an actual market. He must be prepared to fill the need, or the pulverization of coal will come slowly and bring profits to everyone but the coal operator, who should be the man most interested and advantaged. Already the pulverized-coal business appears to be in the hands of alien interests in all but one case and in not a single instance is the pulverizing done at the mine, which is the logical place for such a plant.

Short Way to Professional Prominence

MANY a young man—or older man, for that matter—is seeking an opportunity to do research work, but the need to seek a living and the cost of apparatus prevent him from realizing his dream. If only a chance were given such a man which would enable him to live he would willingly give a year or two of his life to establish himself as the leading authority on some subject. Incidentally his work would not only help industry but should net him in the end considerable gains.

With the aim of helping industry the co-operative department of mining engineering of the Carnegie Institute of Technology offers two fellowships in mining research and two in teaching and research in co-operation with the Bureau of Mines. The fellowships do not supply any more than the meagerest of living—$750 a year—but compared with a college course, where all is outgo and there is no income, the offer is quite inviting.

Moreover it establishes the individuality of the worker and in future it may be said not that he was graduated from such and such a university but that he has added luster to the institute where he was honored by a fellowship. Two years more of instruction might not better his standing a jot but two years of investigation might place him in the honored roll of the industry's experts. It is certainly time not wasted. Opportunities like these have been open, and still may be open, in the University of Illinois.

Nanty Glo Has First Coal-Mine Substation Equipped to Run Without Attendant

Automatic Station Saves Skilled Operative and Does Work More Efficiently—If Overload Becomes Too Severe Plant Shuts Down —If Bearing Gets Hot, Load Is Shifted to Another Machine

By Graham Bright*
East Pittsburgh, Pa.

PROMINENT among recent electrical developments at mines must be placed the installation, by the Lincoln Coal Co. of Nanty Glo, Pa., of an automatic substation. This substation enjoys the distinction of being the first to be installed in American mines.

It is true that many mine substations heretofore installed would operate for a few hours without any attention whatever, but in most cases it was necessary whenever the station was working to keep a man in attendance in order to take care of the many emergencies that might arise.

In most mines the workings are extending, and additional substation units must be installed. Furthermore for economical operation it is necessary to have a steady voltage. Hence substation work is demanding more and better men, and the automatic station seems to be the most promising way in which to avoid this expense.

The Lincoln Coal Co.'s drift mine at Nanty Glo is located in the mountain section of Pennsylvania near Johnstown. The maximum main haul is somewhat more than two miles long. Power is produced by 250-volt direct-current generators belted to steam engines, these units being located near the drift mouth. Throughout the entire length of the main haul the grade is against the loaded trip, so that even with feeder wire of fair capacity the voltage at the working places is low whenever a trip is being hauled out.

The Penn Central Power Co. has a transmission line crossing the property, and it was decided accordingly to install a substation in the mine near the working places. Charles Stuart, of Stuart, James & Cook, acting as consulting engineer for the coal company, decided to install a Westinghouse automatic substation, his purpose being to provide the needed relief on the line at a minimum operating cost.

The substation is located two miles from the drift mouth in a dry, well-ventilated and well-lighted underground chamber measuring about 10 x 30 ft. The walls are built of heavy masonry, the ceiling being formed of concrete reinforced and supported by steel beams. The inside walls are plastered with cement. The high potential 2,200-volt cable by which the substation is fed comes down from the surface through a borehole just outside this chamber. The entire substation is built and the equipment mounted in a thoroughly substantial manner to insure long life and low maintenance.

Fig. 2 illustrates the automatic-control equipment. The main oil switch, resistance grids and some of the relays are located behind the switchboard panel. The entire equipment is highly compact but is so installed that every piece of apparatus is readily accessible for inspection or repair.

*General engineer, Westinghouse Electric & Mfg. Co.

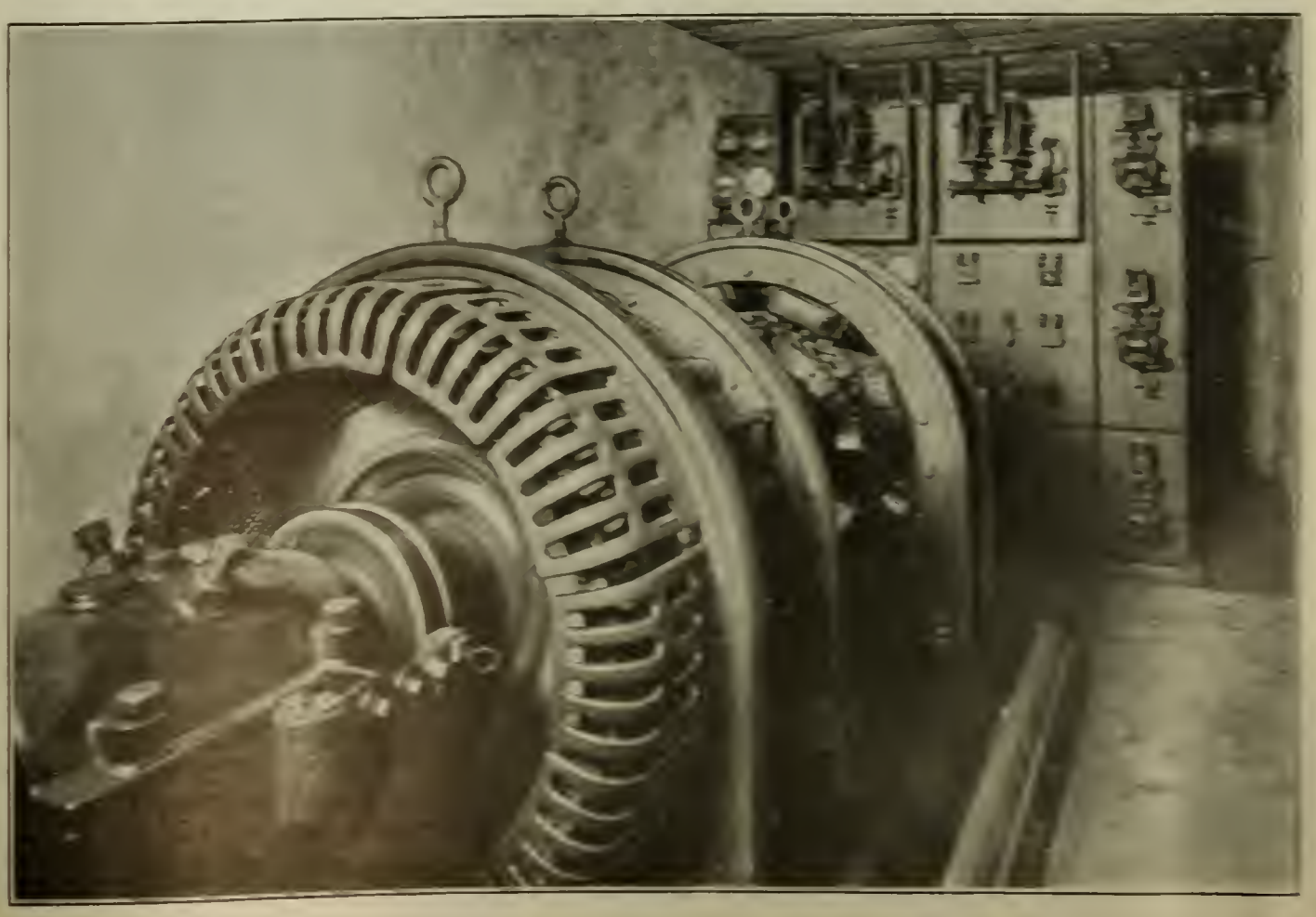


FIG. 1.

Nanty Glo's Automatic Substation

In the foreground is the 200-kw. synchronous motor-generator set and in the rear the four-panel switchboard. The substation is started and stopped by a small control switch operated by the first man to enter the mine in the morning and the last to leave in the afternoon.

The three large switches to the right are the contactors that cut in resistance when the load becomes too great. The contactor at the bottom in the center is the main direct-current switch and is controlled by an alternating-current magnet. The large high-voltage contactors at the top are for controlling the motor-generator set, the one on the right being the starting and the other the running switch.

The main oil circuit breaker, auto transformer and resistance are locatel in the rear of the panel. In the center are placed the various relays and meters. To the left is located an incoming alternating-current panel with graphic, indicating and integrating meters as well as overload relays. Fig. 1 is a view within the substation room showing the motor-generator set with the automatic equipment in the rear.

Automatic substation equipment is designed to operate with either rotary converters or motor-generator sets. About the only difference between the two is that the rotary, if of the commutating-pole type, requires a brush-lifting device, a polarized relay being needed to bring the rotary into step when the direct-current voltage is reversed.

Has Improved Voltage at Points in Mine

The converting unit at the Lincoln Coal Co. installation is a 200-kw. synchronous motor-generator set. The entire substation equipment has operated with perfect success ever since it was installed. Before this substation was placed in service the operating conditions were markedly unsatisfactory. It required forty-five minutes to bring out a loaded trip of thirty cars. During this time the voltage was low for gathering locomotives and cutting machines. Since the substation was placed in operation a round trip consisting of the same number of cars is made in eighteen minutes. The voltage desired is obtained at all times in the various parts of the mine, and as a result all operations have been speeded up. The output has been increased 200 tons per day, which represents a fairly large percentage for a mine whose yearly production is 150,000 tons.

The substation at present is started and stopped by a small control switch operated by the first man to enter the mine in the morning and the last one to come out in the afternoon. The substation can easily be made entirely automatic by moving the double-throw control switch to the other position from that normally occupied or it can be started and stopped from a push-button station in the power plant.

Under automatic operation the substation will begin functioning when the trolley voltage goes below a predetermined value for a period exceeding five seconds. The set is started up and placed on the line in about twenty-five seconds. It stays on the line until the direct current has been reduced below a certain predetermined value for a period of time ranging from three to thirty minutes. Heavy overloads are taken care of by automatically inserting resistance in the direct-current feeder circuit. This lowers the substation voltage and shifts some of the load to the steam plant. As soon as the overload is reduced the resistance grids are cut out. If, however, the overload persists long enough to heat up the grids to a dangerous temperature, a thermostat will shut down the substation.

As soon as the grids have cooled down the station will start up again if voltage conditions require it. If necessary, this scheme can be changed and an automatic reclosing breaker substituted. This may prove more satisfactory in mines where short circuits frequently occur. A continued overload on the generator or rotary will cause the substation to shut down until the set can cool off, after which it will automatically start again if required.

The bearings of the motor-generator set or rotary are equipped with thermostat relays which will cause the machine to be shut down if a hot bearing develops. It will not start up again until the thermostat is reset by hand, thus insuring attention being given the bearing before the unit is again placed in operation. The automatic control features can be elaborated or extended to any degree desired, but only simple and necessary features are recommended for mine service.

The following considerations have made the new substation equipment popular and a practical success: (1) The equipment duplicates in every way the manually-operated substation apparatus. (2) Each switching operation is a direct function of the electrical condition of the converting apparatus at that particular moment. (3) Each succeeding switching operation is dependent upon the proper functioning of the preceding operation. (4) At no time is any switching operation dependent upon any mechanical time element or any sequence of mechanical operations. (5) None of the time elements used with various relays is of the oil dash-pot type; each is especially designed to be unaffected by wide variations in temperature. Ordinarily a substation without an operator would not be heated, and at low temperature oil dash-pots may become inoperative. (6) The entire equipment embraces an assembly of proven apparatus. The majority of the magnet switches and relays here installed have demonstrated their utility in steel-mill control work. In consequence the ruggedness and sufficiency of the switching equipment is unquestionable.

Manner of Operation is Quite Simple

Substations without attendants may be made to start automatically in a number of ways, depending upon the conditions to be met. For the most part, however, they function through the agency of some form of remote control or automatically by means of a voltage relay which closes its contacts at some predetermined value of reduced trolley potential. In starting a synchronous converter the circuits set up cause other control relays to function in such a way as to close the oil circuit breaker, the normal field switch and the alternating-current starting switch.

Synchronism and polarity are indicated by a polarized motor relay, which, when necessary, causes the polarity of the machine to be corrected by field reversal accomplished by normal and reverse field switches which open and close automatically. Control for the field switches consists of a small magnet switch energized from the direct-current end of the converter through contacts made on a small drum switch driven in a counter-clockwise direction by the polarized motor.

It should be explained here that the field of the polarized motor relay is fixed by means of a permanent magnet, while the polarity of the relay armature becomes that of the machine, for the reason that during starting it is directly connected across the direct-current terminals of the converter. It is thus obvious that the relay armature will not rotate until the machine has pulled into step, for prior to synchronism it is receiving alternating current of a diminishing frequency, the value of which becomes zero at the instant

the converter armature reaches synchronous speed. Supply to the relay armature thus becomes direct current, causing it to rotate in a direction dependent upon the polarity of the machine.

It must also be understood that when the field of a synchronous converter is reversed, the voltage at its commutator falls to zero. Thus it is, as may now be understood, that the reverse field switch remains closed only for the instant required for the voltage to fall to zero and release the control relay. Immediately, normal field is re-established by the closing of the normal field-switch; the machine has slipped a pole, thus correcting the polarity.

The polarized relay now runs in a clock-wise direction, setting up circuits on the drum switch in such a way as to cause the alternating-current starting contactor to open and the corresponding running contactor to close. Then through interlocks, which are closed in proper sequence, the brushes are lowered to the commutator by a motor-driven device and the direct-current switches close. This connects the machine to the load through current-limiting resistance, which is then shunted in steps by switches which close through the functioning of accelerating relays. The machine remains in operation until cut out of service by the light-load control.

Protection is provided by induction type single and polyphase relays, which prevent the station from starting under any abnormal conditions on the alternating-current line, such as low voltage, open or reverse phase. This same type of relay causes the station to shut down under unbalanced-phase conditions. If the trouble is inside of the station, a lockout relay prevents re-starting, whereas if it is outside the substation, the automatic equipment will function to bring the apparatus into service as soon as the line is restored to normal.

Thermal Relay Protects Machine on Overload

Bearings are equipped with thermostats which in the case of a hot box, lock the machine out of service until the device has been reset by hand. A thermal relay protects the machine from overheating on overload. A direct-current reverse-current relay, an overspeed device, induction-type alternating-current overload relays, a thermostat to prevent overheating of the direct-current limiting resistance, and a lockout relay which secures the equipment out of service in case of failure of any part of the apparatus are other protective features.

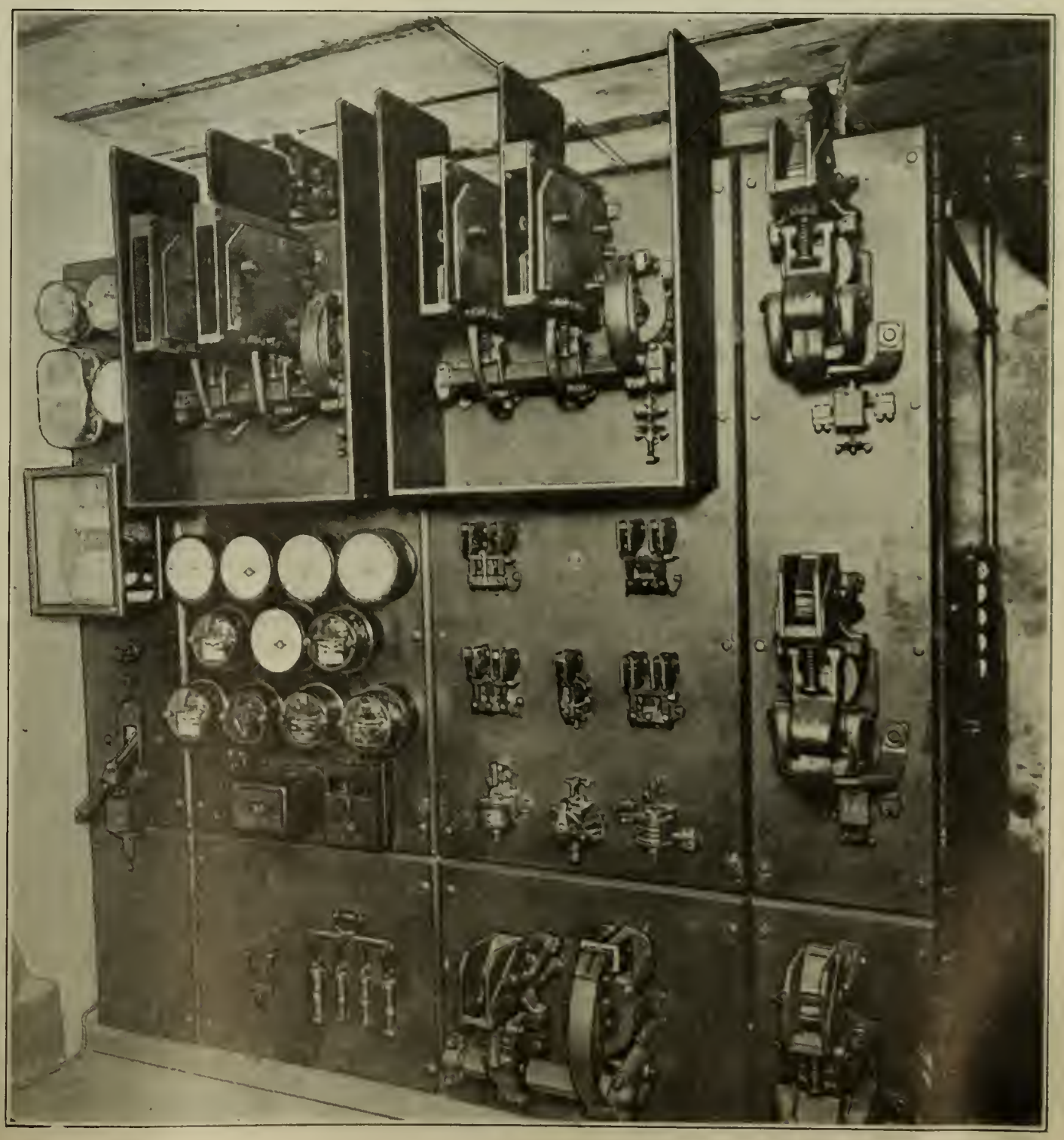
The protection of the equipment is complete. The various devices respond immediately in case of trouble, thus eliminating losses which often occur in manually-operated substations because of the inability of an operator to handle an emergency.

Control for stations equipped with two or more units

FIG. 2.

Self-Operating Switchboard

The panel on the right has three large switches that cut in resistance when the load is too great. In the right-hand middle panel near the base is the main direct-current switch. controlled by an alternating-current magnet. On the top of the two large panels are the high-voltage contactors; the one on the right is the starting and that on the left the running switch. To the left is located an incoming alternating-current panel with graphic, indicating and integrating meters as well as overload relays. The main oil circuit breaker, autotransformer and resistance are located in the rear of the panel.



is so designed that after a load exceeding a given value has been maintained for a predetermined period of time by one machine, another is automatically connected. In case of failure of one machine, another starts and picks up its share of the load. If in starting, the first unit fails to take load within two minutes after the control receives the starting impulse, the second machine starts and the first is locked out of service. A signal connected with the lockout relay gives notice of the failure. This signal may be by pilot wires extending to some distant point or it may be a signal visible to the motormen on trips passing the station.

To obtain a clear conception of the operation of an automatic substation let us assume a fairly large mine whose workings have developed to such an extent that satisfactory voltage regulation cannot be obtained by a reasonable installation of feeders. It is decided to install an automatic substation inside of the mine containing two rotary converters. After the substation machinery has been put in place and started—well, you can't just throw the key in the river but you can forget the equipment with the exception of an inspection about once every two weeks.

Substation Idle Till Heavy Load Comes On

The substation lies idle during Sundays, holidays and in fact all the time when there is no demand for power. Figuratively speaking both rotaries are apparently asleep but No. 1 has one ear open listening through the feed wires to all parts of the mine and waiting for the signal to get busy. At about 7 a.m. the men begin coming into the mine, and in a short time a main haulage locomotive will hitch onto a loaded trip and start for the drift mouth.

Ordinarily night load or that resulting from the operation of cutting machines, pumps and one or two gathering locomotives does not cause a sufficient drop in voltage to interest the substation. The main haulage locomotive will, however, cause a decided drop in potential. This fact is immediately telegraphed to the substation, where a low-voltage direct-current relay receives the message.

This relay in turn without any hesitation gently prods the No. 1 rotary, which immediately gets busy. If the call for power is only momentary, lasting but two or three seconds, the rotary can settle back for another nap. If, however, the trip is started in earnest and the heavy call for power persists for five seconds or more, then the relay sends a message to the No. 1 rotary saying "All right; let's go."

In Thirty Seconds Rotary Boosts Voltage

Things start to happen. The rotary begins to revolve, correction for wrong building up of voltage is made if necessary, the brushes let down on the commutator at the proper time, and in less than thirty seconds the machine has jumped into harness and is helping to its full capacity. If the load is of short duration, the low-current relay will pass the word along to the rotary that the work is done and it will immediately shut down and rest again until called upon by the relay.

The same thing is repeated when a second trip starts for the drift mouth. As soon as rotary No. 1 begins to operate it sends a message to the No. 2 machine to be ready at a moment's notice to jump in and help. In the meantime, the gathering locomotives are getting busy and two or three loaded trips may be moving up grade simultaneously. This may cause a load too heavy for No. 1 rotary, in which case a load relay passes the word to the No. 2 machine to get ready, and if the heavy load persists No. 2 rotary starts up and jumps in to help No. 1 as long as the heavy demand lasts.

Sometimes a combination of circumstances arises such as to make the load too great for both rotaries. This may be caused by a motorman trying the destructive scheme of starting an exceedingly heavy trip with sand on the track and his brakes set up. The rotaries, not at all daunted, figuratively grit their teeth and hold on. No. 1 remarks to No. 2: "Say, Bill, what is that crazy motorman trying to do anyhow; pull the inside of the mine out by the roots?" No. 2 responds: "Don't know, Jim, but don't give up; let's give him a run for his money and make him sweat blood."

Thermal Relay Shuts Down Substation

If the heavy load persists a load relay gets into the game, saying: "If I don't take a hand those fool rotaries will burn themselves out rather than give in to that crazy motorman." Accordingly he gently slips a few frames of resistance into the circuit, which reduces the voltage and shifts some of the load to the power plant or to some other substation. This is done in one, two or three steps, depending upon the severity of the overload. If it does not produce desired results, the resistance will stay in the circuit until it becomes as hot as is safe, and then a thermal relay steps in and calls a halt by opening the circuit and shutting down the substation. As soon as the grids have cooled down to a predetermined temperature the substation will resume operation with either one or both rotaries, as the existing load conditions may require.

One or both rotaries thus operate until the lunch hour, when both will shut down and rest until the afternoon work begins. Some of the feeders may be equipped with automatic reclosing circuit breakers. Where frequent short circuits occur this is a better scheme than the resistance relays, as explained above. With the automatic reclosing breaker an extremely heavy load or a short circuit on a feeder will cause the breaker to open. It will then remain open until the short or overload is removed.

Can Signal to Maintenance Crew for Help

Along in the afternoon, when only No. 1 rotary is operating, we will suppose that it develops a hot bearing, this arising possibly from any one of many unexplainable and unforeseen causes. The bearing thermostat—one is placed on each bearing—does not wait until any real damage is done, but promptly shuts down the machine, at the same time signalling over to No. 2 rotary to get on the job. No. 2 machine doesn't waste any time asking what's the matter but immediately jumps in and is on the line taking up the load before No. 1 has ceased to revolve.

In the meantime the thermal relay on the bearing has sent out an emergency call for the maintenance crew by means of any one of many schemes, such as lamps or bell signals at some point from which help can be summoned by phone. In a short time the bearing is fixed up and the substation is once more in normal condition.

At quitting time the station shuts down and thus remains dormant until called into action the following day by the load condition inside the mine. If the alternating-current voltage drops below a certain value at any time or one phase of the power system is opened,

the substation will shut down until normal conditions are re-established. The substation equipment is always awake when power is available and always does the right thing at the right time.

The saving in operating expense and the much improved service afforded well warrant the nominal increase in first cost of the automatic over the ordinary manually operated substation.

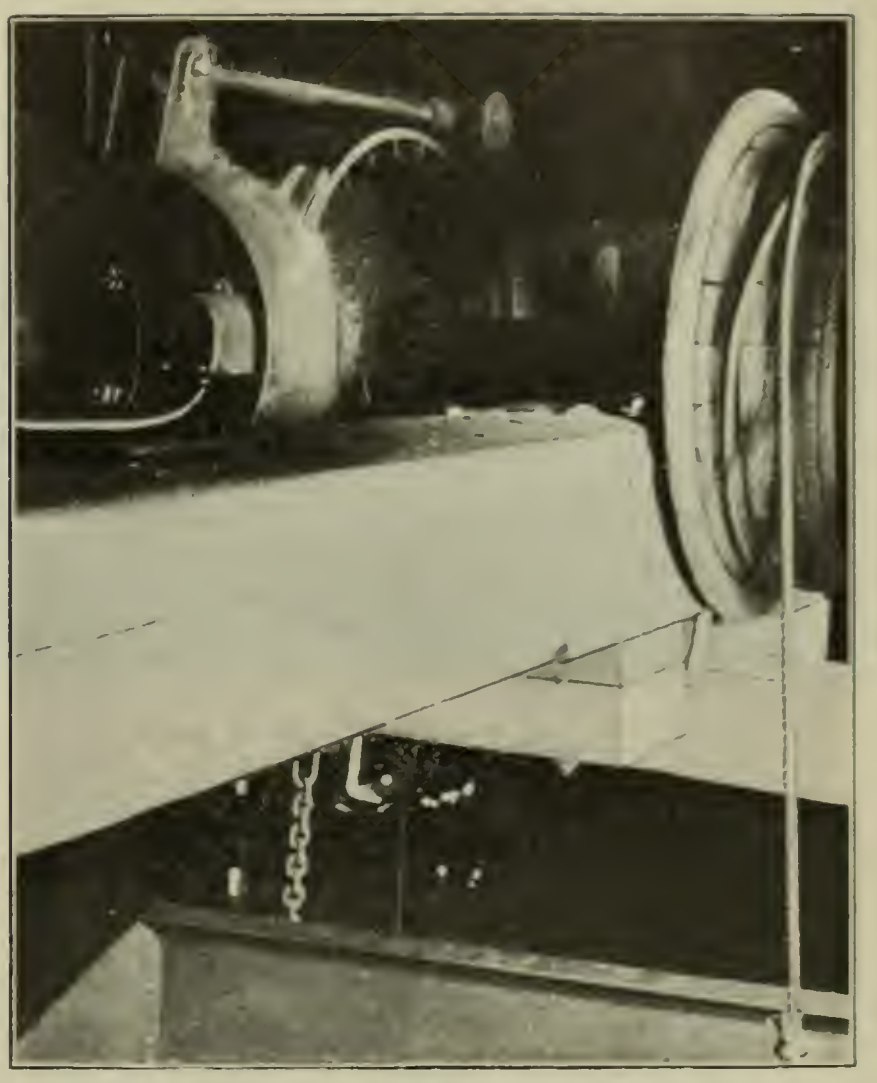
San Juan County Field, New Mexico

MUCH coal of good quality is found in the San Juan Basin of northwestern New Mexico and the adjacent part of Colorado. At several places where shipping facilities are available, such as Durango, Col., and Gallup, N. M., this coal has been mined for many years, and the number and thickness of the beds are well known. In much of the basin, however, the coal is virtually untouched, and as only rapid examinations of the beds have heretofore been made, little has been known regarding their exact distribution and value. This want of information has recently been supplied for the part of the basin that lies in middle and eastern San Juan County, N. M., by a survey made by C. M. Bauer and J. B. Reeside. The report of this survey has been published as U. S. Geological Survey Bulletin 716-G, a copy of which may be obtained by applying to the Director, U. S. Geological Survey, Washington, D. C.

Eliminating One Man at a Coal Tipple

SOME months ago the Sterling Coal Co., of Salineville, Ohio, introduced an electric brake at its coal tipple with the purpose of eliminating the services of one man. Formerly, after the coal was dumped from the coal car into the weigh pan, the workman would have to wait until he received a bell signal from the weighboss permitting him to release the rope-operated band brake. The company conceived the idea of making it possible for the weighboss to do this work himself, thus leaving the dumper a chance to perform his other duties, and for that purpose it installed a Cutler-Hammer electric brake.

The pan weighs about 1,000 lb. and holds approximately 2,500 lb. of coal. It is counterweighted by about 2,000 lb. Yet this heavy load is discharged by a push-button operated by the foot of the weighman. Without signaling to anyone, he can release the brake. One of the accompanying illustrations shows the coal tipple with coal cars entering and the other is a close-up view of the mechanism.



MECHANISM BY WHICH WEIGH PAN IS DUMPED

Though pan and coal weigh together 3,500 lb. and are counterweighted by only about 2,000 lb., the brake, which keeps the pan in place, is actuated by an electro-magnet controlled by a push button.

This brake is operated on a direct-current electric circuit, and the magnetic coils are not only thoroughly inclosed in a cast-iron housing but have a waterproof winding also. This type of brake requires little more headroom than the brake wheel. For places where only alternating current is available, a similar brake is made but with the magnet replaced by a small pilot motor.

Sterling Tipple

Small tipples are labor-wasters, but at this one the weighboss by pushing a button can release the weigh pan and so let the coal slide into the railroad car. The dumper consequently does not have to wait till the contents of the car have been weighed but can go about his duties unhindered.

PANORAMA OF BREAKER AND VILLAGE, PENNSYLVANIA

Preparation Methods Into Reconstructed

Jigs Are Placed Stepped Down Chute for Feed and Another for Screened and Hand-Picked for Undersize Going to Condemned-

By Dever C. Ashmead
Wilkes-Barre, Pa.

A FEW years ago the breaker at the Pennsylvania colliery of the Susquehanna Collieries Co., near Mt. Carmel, Pa., threatened to fail. So pronounced did this weakness become that it was at first believed that the ground upon which the building stood must be settling. It was felt, however, that serious surface subsidence was impossible, as no coal had been removed from underneath the structure. Nevertheless, it was certain that the foundation of the building was giving way and that the ends of the main columns were failing.

After canvassing the proposal to build a new breaker, it was finally decided to repair the old breaker and take advantage of that repair as an opportunity to change some of the methods of preparation. In consequence, the whole installation was completely remodeled and modernized. Not only have the best practices, as followed in other modern breakers, been adopted but some new and original ideas have been developed.

All water tanks have been removed from the reconstructed breaker, thus relieving the structure of their weight. The column pipe from the mine is extended to the top of the building, where it discharges into a trough that feeds the many appliances that the structure houses.

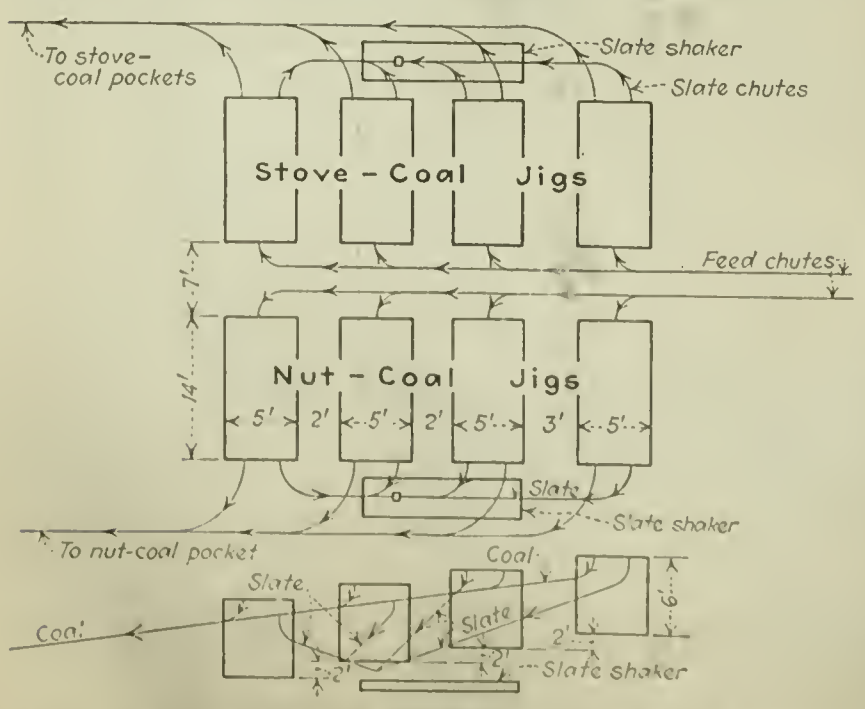


FIG. 1. ARRANGEMENT OF WILMOT JIGS IN ÉCHELON

Lack of room made it necessary to set the Wilmot jigs in steps, but this was not a disadvantage, as it made easier the distribution of the coal to the various machines.

In the reconstruction of the breaker Wilmot jigs were substituted for Reading jigs. The installation of the Wilmot jigs presented a difficult problem, as there was insufficient room for them if they were placed in the ordinary manner. To overcome this, the jigs are set in steps or in vertical *échelon*, as shown in the elevation at the bottom of Fig. 1. This setting necessitated an entirely new arrangement of both feed and discharge chutes. It, however, possesses a positive and distinct advantage over the arrangement previously employed, only one feed chute being required where five formerly were needed.

Arrangement Assists Feed and Discharge

As is well known, a jig does its best work when fed evenly and uniformly with the proper amount of material. Such a machine will not give good results when fed with alternately large and small quantities of coal. By the new arrangement the opening in the feed chute leading to the lowest jig is so proportioned that it will pass the amount of coal for which the jig is proportioned. Coal coming down the feed chute passes to the lowest jig first. When the opening to this machine is feeding to its capacity the material builds up in the chute until the second jig begins to take coal. After the capacity of this machine has been reached, the coal again builds up and begins to discharge to the next jig and so on until all are in operation. Power is not turned onto any machine until coal begins to feed to it. As a result at no time does more than one jig operate below capacity, and no energy is consumed by jigs running idle. Furthermore, no machine ever is overloaded.

COLLIERY, SUSQUEHANNA COLLIERIES CO., MT. CARMEL, PA.

Susquehanna Has Built Pennsylvania Breaker

Like a Stairway, Using a Single Discharge—"Rock" from Jigs Is Clean Coal of Size Just Washed, Coal Conveyor for Retreatment

Not only does the arrangement of jigs above described assure better feeding but it assists also in obtaining a better discharge. Just as the feed for the jigs is conveyed by a single chute so the discharges of coal from them are aggregated in a chute that leads direct to the pocket. Its contents are visible throughout its entire length and a single examination reveals at any time the results being obtained from the entire battery of machines, whereas ordinarily it is necessary to inspect the contents of as many chutes as there are jigs. The slate discharge goes to a slate shaker placed below the jigs. This also is visible to the jig tender, and thus he may readily observe whether coal is coming over with the slate.

But there are other advantages in this arrangement. Not only is the coal better prepared but the jigs, as installed, occupy less than half the room necessary with the old arrangement. This results in large measure from the fact that the chutes, both feed and discharge, are reduced to a minimum length. Furthermore, both chutes and jigs can be more readily watched and regulated.

Several Conveyors Installed in Building

As has been previously stated, this breaker is now an old structure. It is not sufficiently high for the entire work of preparation to be done by means of gravity. Throughout the following description the mention of numerous conveyors evidences that fact. Aside from this, however, the equipment and preparation are both strictly modern.

Loaded mine cars are run into the top of the build-

FIG. 2

End of Battery of Jigs

The long discharge chute which receives the coal from all the jigs is shown in the foreground as is also the vertical box chute. Beneath the former may be seen the slate shaker.

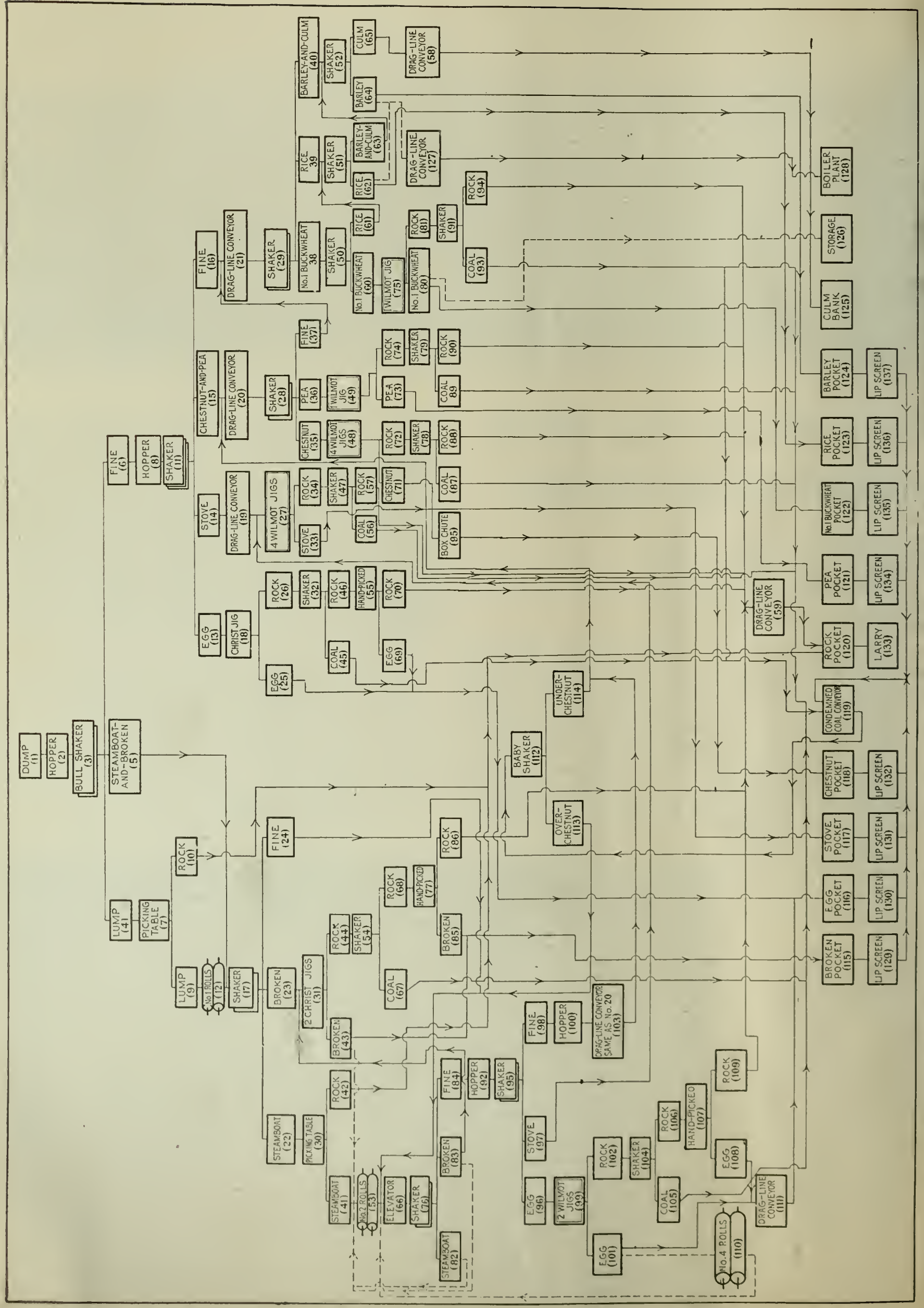


FIG. 3. FLOW SHEET, PENNSYLVANIA BREAKER, SHOWING CONVERSION OF MINE RUN TO BROKEN, EGG, STOVE, CHESTNUT, PEA, NO. 1 BUCKWHEAT, RICE, BARLEY AND CULM

ing, where they are discharged by means of a steam dump (1)—see accompanying flow sheet, Fig. 3—into a hopper (2). Thence the coal passes onto the bull shaker (3), which separates the lump (4) and steamboat-and-broken (5) from the fine (6). The lump goes to a picking table (7), where the rock (10) is separated from it, being sent directly to the rock pocket (120). Sometimes it is necessary on this picking table to "cob" or break the rock with hammers in order to permit it to pass down the rock chute. After being picked the lump coal (9) passes to the No. 1 rolls (12) and thence to a shaker (17), onto which is also passed the steamboat-and-broken coal from the bull shaker (3). Here a separation into steamboat (22), broken (23) and fine coal (24) is made.

The steamboat coal (22) passes to a picking table (30), where the rock (42) is separated from it, being sent to the rock chute, and the coal goes to the No. 2 rolls (53). After crushing, the coal is elevated by the elevator (66) to the top of the breaker, where it is delivered to the shaker (76). Here steamboat (82), if there is any, broken (83) and fine coal (84) are separated from each other. The steamboat isolated at the point is sent by means of a chute to the No. 2 rolls (53) for recrushing. Broken coal (83) from this shaker joins with the broken from shaker (17) and passes to two Christ jigs (31).

Clean broken coal from these machines goes to the broken-coal pocket (115). The rock passes over a shaker (54). The product passing through this screen goes to the condemned-coal elevator (119) on its way back through the breaker for retreatment. Material passing over the shaker (54) is hand-picked for coal removal, the coal recovered (85) being sent directly to the broken-coal pocket (115), and the rock (86) is delivered to a horizontal dragline (59), which takes it to the rock bin (120).

Fine coal (84) from shaker (76) is delivered to a hopper (92), from which it is fed to a shaker (95), where it is separated into egg (96), stove (97) and finer (98). The egg coal (96) is treated in the Wilmot jigs (99), the cleaned product (101) being taken by a dragline (111) to the egg pocket (116). Rock from these jigs (102) receives the same treatment as that accorded the refuse from the Christ jigs (31). In case insufficient orders for egg coal are on hand this size can be sent to the No. 4 rolls (110), crushed and taken back by the elevator (66) for re-treatment. Arrangements also are made for sending the broken coal (83) to the No. 2 rolls (53) for crushing in case there are no orders for this size. We will now leave this side of the flow sheet, as the sequence of operations is self-evident and needs no further explanation.

Fine coal (6) from the bull shaker (3) goes to a hopper (8), from which it is sent to a shaker (11), on which egg (13), stove (14), chestnut-and-pea (15), and finer (16) are made. The egg coal is sent to a Christ jig (18), where it receives the same treatment as that already described as being accorded to broken coal. The clean coal from this jig is sent to its proper pocket.

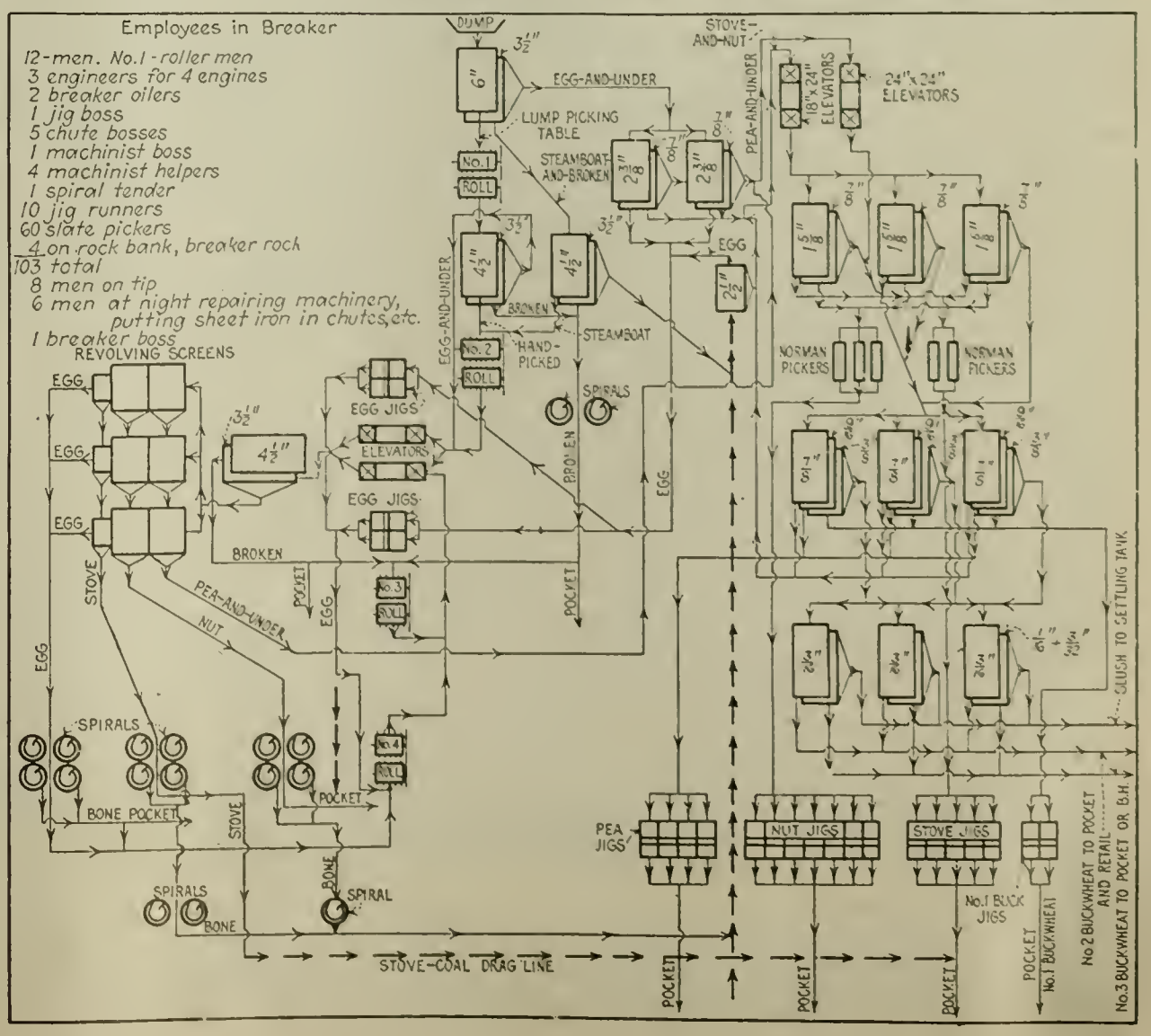
Fines from Stove-Coal Jigs Are Re-treated

From shaker (11) the stove coal (14) is conveyed by a dragline (19) to four Wilmot jigs (27). Coal of the same size from shaker (95) on the large-coal size of the flow sheet also is treated in these same machines. The cleaned product (33) goes to the stove pocket (117). Fine coal (56) from the discharge of these machines after passing the slate shaker (47) goes to the condemned-coal conveyor (119) to be taken back for retreatment. Rock (57) passes to the dragline conveyor (59) by which it is delivered to the rock pocket (120). Chestnut-and-pea coal (15) is taken from a shaker (11)

FIG. 4

Old Flow Sheet of Breaker

Under the old arrangement there were thirty-three shakers, seventeen spirals, four pairs of rolls, twenty-two jigs, three revolving screens, four elevators, five Norman slate pickers, two engines and one pump. Note how completely the plant has been reconstructed. The old breaker required 103 men to operate it, whereas as rearranged and modified it now only demands the labor and attention of about seventy of these employees, leaving the rest free for other work.



by a dragline conveyor (20) to the top of the breaker and delivered to a shaker (28). Into this same conveyor is delivered the fine coal (98) from shaker (95).

The condemned-coal conveyor (119) discharges its burden into what is called the "baby shaker" (112). This separates the material into two sizes—that above chestnut and chestnut-and-under. The oversize passes to elevator (66) and the chestnut-and-under to the dragline conveyor (103), which takes it to shaker (28), where chestnut (35) and pea (36) are separated from the smaller sizes. The chestnut coal is treated in four Wilmot jigs (48), after which it receives the same treatment as that given the stove coal. Instead of traversing an ordinary chute this coal passes through a box chute in going to its pocket.

Pea coal from shaker (28) goes to one Wilmot jig (49) for cleaning. Fine coal from shakers (11) and (28) is taken by a dragline conveyor (21) to shaker (29). Here No. 1 buckwheat (38), rice (39), and barley-and-culm (40) are made. The buckwheat and what smaller size may be carried over with it goes to a re-shaker (50), where the rice (61) separated from it is joined by the rice (39) from shaker (29). The buckwheat then goes to a Wilmot jig (75), from which the cleaned product (80) passes to the coal pocket (122). The rice coal (61) and (39) goes to a re-shaker (51), where it is separated from the barley-and-culm (63), after which it passes to its pocket (123). The barley-and-culm from shaker (51) goes to shaker (52), as do the similar sizes from shaker (29).

On shaker (52) the barley (64) is separated from the culm (65) and goes to the barley pocket (124). A dragline conveyor (58) takes the culm to the culm bank (125). In case it is desired to use rice and barley for fuel in the power plant, they are mixed and taken by a dragline conveyor (127) to this building. Also should there be on hand insufficient orders for No. 1 buckwheat, this coal may be sent to a storage pile instead of to the pocket. Coal passing the lip screens is taken by the condemned-coal conveyor (119) back into the breaker for re-treatment.

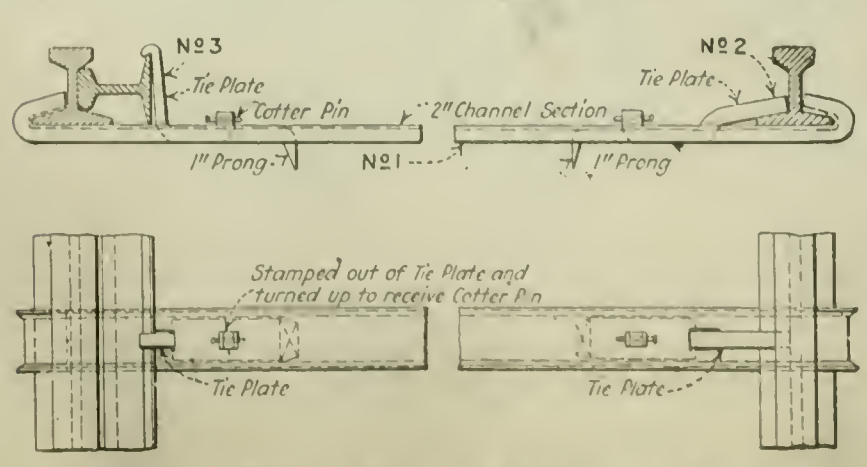
A comparison between the present flow sheet and one in use only four years ago may be of interest. This will show not only the advance made in the science of preparation but to a marked degree the changes in equipment that have been made. In the older flow sheet will be noticed the old revolving screens, the Norman pickers, the spirals and the old type of jigs. Formerly 103 men were required in this breaker. At present about thirty less produce an equal output.

Steel Mine Tie That Will Not Slip Under Stress of Traffic

Prong on Tie Plate Engages the Mine Floor, Keeping Tie in Place — Device Provides for Holding Rail on Side for Track Extension

A NEW type of steel mine tie designed to prevent either longitudinal or transverse displacement of the track has been invented and patented by C. T. Grimm, of Adrian, Upshur County, West Virginia. Up to the present it is not being manufactured, but arrangements have already been made to that end.

Simplicity has been one of the main objects sought in the development of this tie. Wooden wedges, bolts, nuts, rivets and similar devices which have a tendency to work loose, permitting the track to spread or shift its position under the action of the mules' toe calks, have been studiously avoided. As will be further described later, a firm hold of the mine floor is secured by means of a prong on either tieplate. Provision has been made so that a tie or portion of track may be readily dismantled and moved from place to place. Another detail worthy of consideration is the means provided for holding a rail on its side when extending a track to the face.



PRONGS ON UNDER SIDE OF TIE KEEP TRACK IN PLACE

Provision is made for holding an extension rail as well as the regular track. No. 1 is the tie proper and Nos. 2 and 3 are two forms of tie plate either of which may be used with it.

This gives the loader more clearance between top of rail and roof than can otherwise be secured.

The tie and rail fasteners consist of five pieces all told —the tie proper, two tieplates and two cotter pins. As may be seen in the accompanying illustration, the tie itself is made from a channel iron of shallow depth, the ends of which have been turned up and reflexed so as to grip the flange of the rail for which the tie is designed. Four rectangular openings are punched near either end of the tie for the purpose of receiving the tieplates. These latter may be of two shapes, one designed to hold the rail in its normal position and the other to grip a rail lying upon its side.

In laying track the ties are put down, the rails laid upon them and driven to place in the end grips, after which the track is raised, the ends of the tieplates inserted in their proper holes, pushed through to place so that a lowering of the track forces the upward extension of the tieplate through its hole in the tie and the end of the plate against the rail flange. The tieplate extension is provided with a hole through which a cotter-pin, preferably of the split type, may be inserted. Insertion of the cotter pins completes the placing of the rail. The tieplates, as may be seen in the accompanying drawing, are provided with a prong extending downward about 1 in. from the lower extremity of the tie. Driving the prong into the floor of the mine holds the tie and track securely in place and prevents either lateral or transverse movement.

The simplicity and convenience of this arrangement are at once apparent. By the use of this tie not only is shifting of the track avoided but the shape of the tie prevents spreading of the rails. The only part which is small enough to be lost is the inexpensive split cotter pin. Such a pin may be readily purchased and easily inserted or withdrawn. When put in proper place and its ends spread it will neither work loose nor fall out. The other parts, although much larger and more expensive, may be readily manufactured, punching and bending operations alone being necessary. The tie is thus inexpensive to manufacture and efficient in use.

Single Roll Crusher Is Well Safeguarded Against Breakage by Tramp Iron

Four Rods Opposing Helical Springs Hold Frame Together — For Fine Crushing Reversible Wearing Strip Is Provided in Lower Portion of Breaker —Shear Pin Made Small Enough To Be Safely Constructed of Mild Steel

EXTENSIVE introduction of automatic stokers in power plants has resulted in a demand for stoker coal that not infrequently exceeds the supply of slack produced at the mine or procurable in the open market. This has led to the installation of crushing equipment at many mines to enable the operator when occasion demands it to produce this fuel from run-of-mine or from nut, egg or cobble.

Crushing devices of various kinds have been developed to perform this work, but those now most commonly used are of the roll type. Of these, two varieties exist, namely, the single- and double-roll machines. Though each of these varieties possesses its own distinct advantages the single-roll machine appears to be the better adapted to reducing large lumps to stoker size in one operation.

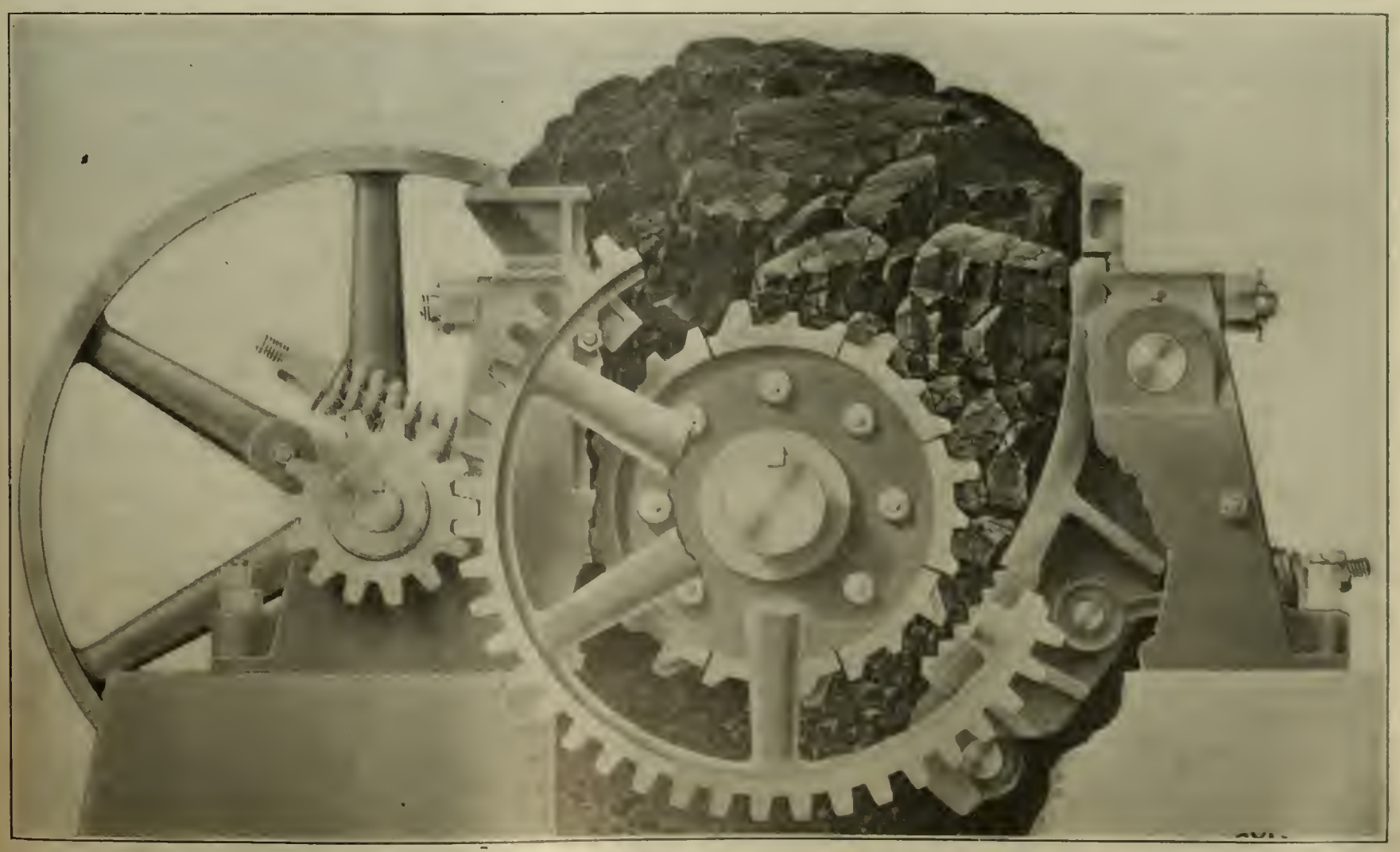
Tie Rods Reinforce Upper Part of Frame

As manufactured by the Pennsylvania Crusher Co., this machine embodies many refinements over earlier types of the same device. As may be seen in the accompanying illustration, the upper portion of the frame is held together—or rather reinforced—with heavy through tie rods. These adequately reinforce the frame to withstand the heavy stresses imposed when large pieces of tramp iron are unintentionally introduced.

The concave breaker plate is hung by and swings upon a heavy transverse rod near the top of the frame. This plate, which is of charcoal iron deeply chilled, is held between and adjusted by four rods arranged in pairs, both pairs being attached to the breaker plate near its lower extremity. One pair of rods extends forward from the plate through the frame, and then through heavy helical springs.

The nuts on these rods are screwed down until the springs are under such tension that any lump of coal that can enter the machine will be crushed without starting the plate from its position. The other pair of rods are in reality eyebolts and extend rearward from the plate to a cross member of the frame, holding the plate in the location desired against the springs above mentioned. When a hard foreign substance finds its way into the machine, however, the plate may move as much as 3 in., which is enough to pass any ordinary piece of tramp iron.

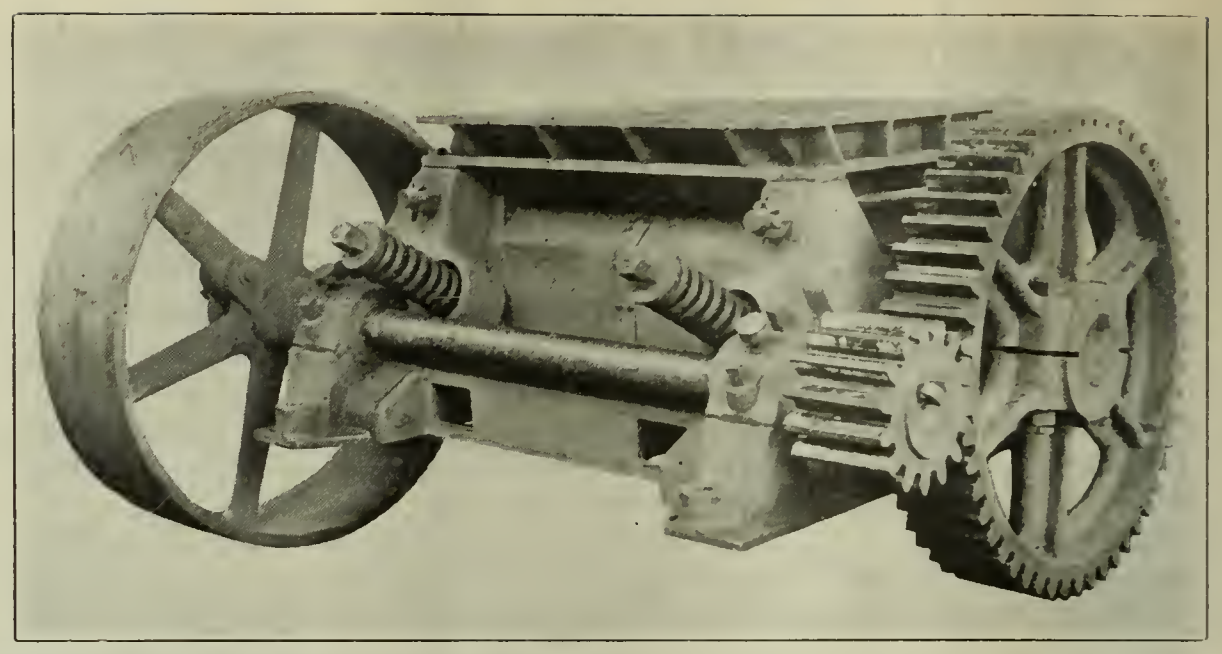
For ordinary crushing the tip or lower portion of the breaker plate is provided with a renewable wearing

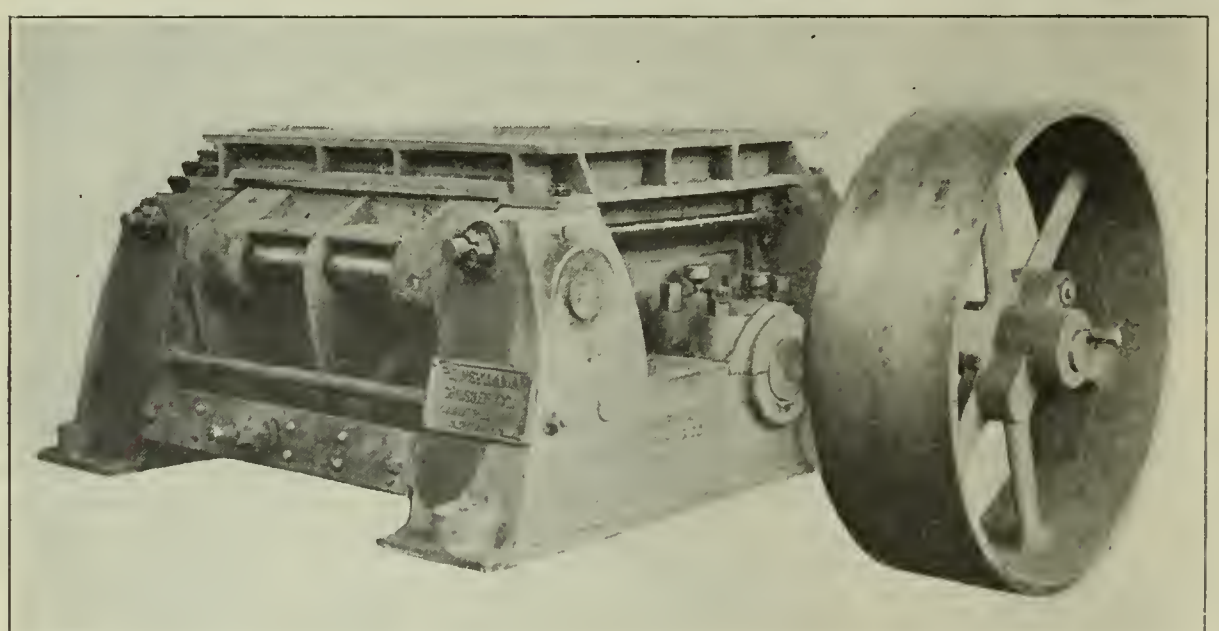


BROKEN VIEW OF CRUSHER, SHOWING MANNER IN WHIC H COAL IS PROGRESSIVELY CRACKED INTO SMALL SIZES
Note the helical springs, which have "give" enough to permit tramp iron to pass through the crusher without injury, the small machine bolt of mild steel that saves the machine from being fractured if helical springs fail to give enough leeway and the reversible corrugated plate for fine crushing situated close to the point of discharge.

Front View

This shows clearly the method of holding frame together by bolts, and also the machine bolt, the shearing of which stops the machinery if the "nut" which the machine has to crack is too large and hard.





Rear View

The crusher is designed for great strength, as it is a piece of machinery that normally has hard work and may by inadvertence be subjected to usage that would wreck any other machine except perhaps a stamp mill or sledge hammer.

piece extending the full width of the machine. If fine crushing is desired this wearing strip is made corrugated. Being reversible it can be turned end for end, exposing the opposite side of the corrugations when one side has become worn. The face of the breaker plate itself is grooved diagonally in both directions, giving it a better "nip" than would otherwise be provided.

The roll is built up of the two end pieces, or heads, and segments extending between them. Tapered hollow pins attach the segment rings to the heads. These are held in place by through rods extending from head to head. When it is desired to remove a segment the rod holding it is withdrawn, the hollow taper pin in either end is knocked out and the segment is free. This arrangement greatly facilitates removal or renewal of the segments.

Shear Pin an Ordinary Mild-Steel Bolt

Ordinarily this machine is driven by belt through one reduction gear. In order to forestall serious damage to the machine in case some foreign substance, such as a heavy piece of tramp iron, larger than the tension springs would permit to pass, finds its way into the crusher, a shear pin is provided in the belt wheel. The shearing of this pin permits the wheel to continue rotation while the roll remains stationary. Experience has shown that when a wooden pin is used in a place of this kind, and shears off a strong temptation exists to replace it with the first bolt or other suitable piece of iron that comes handy.

To obviate resort to this expedient the shear pin in this case is made of metal, it being an ordinary mild-steel machine bolt. This not only renders replacement easy but effectively guards against subjecting the machine to excessive stresses through the substitution of a material possessing greater shearing strength than was intended. Throughout, this machine is heavily proportioned, carefully designed and ruggedly constructed. It is the outcome of many years of experience in the building of crushers.

Even Lightest of Cars Opens Mine Door Without Shock

Motion of a Rail Which Cars Mount Revolves Bevel Gear Whereby Door Is Opened and a Weight Raised—Weight Shuts Door After Cars Pass

EVERY mining man is familiar with the doubt and the danger connected with doors which depend for their closing on the thoughtfulness of the last man passing through them. If from ignorance, carelessness or preoccupation he leaves a door open there is, at least in some mines, a certainty that certain sections will be rendered so unsafe that a disaster, a severe accident to some individual or at least a suspension of work will be inevitable.

He knows also that the length of time that the door is open tends to be a period of suspended ventilation and he desires that this time be made as short as possible in order that the men may get good air, that gas may be eliminated and that the fan be saved the burden of starting inert air. Moreover, there often is the risk that a runaway trip will enter an unopened door, and the use of a truly automatic door meets that difficulty.

The door illustrated in this article is designed to meet these needs. As may be seen, it is double and always opens gradually and without shock away from the approaching trip by which it is actuated.

The operation is extremely simple. An angle iron or false rail is placed just outside the track rail and extends for a suitable distance, usually about 23 ft., upon either side of the door. This angle iron is supported upon rocking arms pivotally attached to malleable iron brackets securely fastened to the flange of the rail. The false rail is thus normally about 2 in. higher than the track rail but is free to move endwise upon its supporting rocker arms.

How Graduated Movement Is Obtained

The rocker arms supporting the false rail are of two types. Those nearest the door are joined to the angle by pivot joints allowing no play, which gives all these arms a uniform range of motion. Those that support the extremities of the angle iron or what are known as the "lead rails" are pivoted to the angle by means of rollers working in slots of graduated length, thus giving a gradually varied range of action to the rocker arms. A bar, rod or bridle ties the four outer rockers together, compelling them to act in unison and in conjunction with the "trip" or trigger to which the bridle is connected by means of a shorter bar.

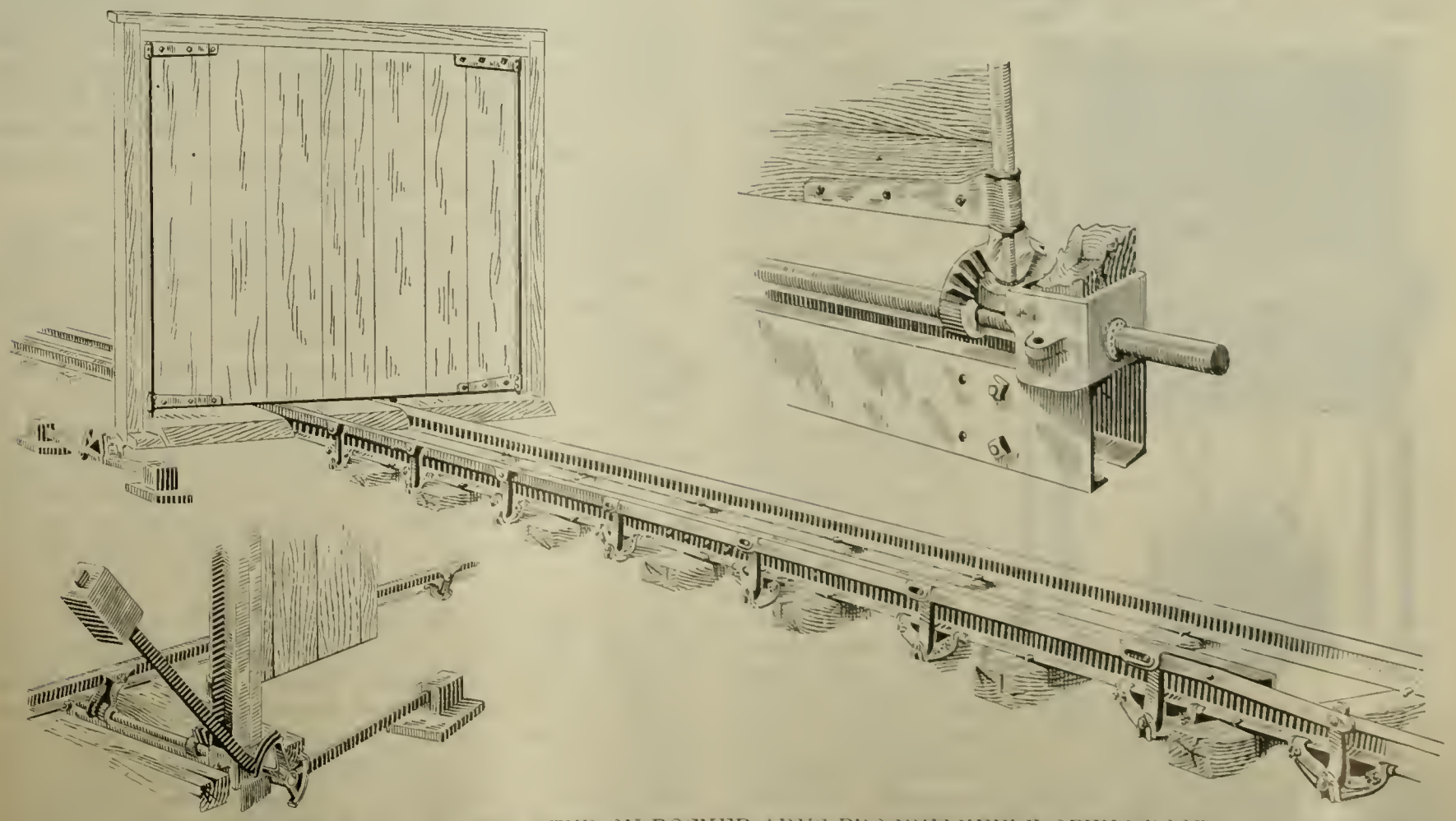
When the doors are closed the trigger stands vertical and extends about 1½ in. above the rail. When a car approaches the door, however, the wheel tread strikes the projecting end of this trigger and pushes it down to a level with the top of the rail, simultaneously forcing the four rockers connected to it to the extremities of their respective slots. As these slots are graduated in length the rockers are thrown beyond center to varying angles and the end of the false rail is inclined slightly downward, its extremity being about 1 in. above the top of the track rail.

As the face of the wheel tread mounts the false rail and forces it down to the height of the track rail the angle iron is given a gradually increasing longitudinal movement parallel with the track. At the door the false rail is connected by means of a rocker arm to a shaft extending transversely across the track. Near each post of the door frame this shaft carries a bevel gear or quadrant that meshes with a pinion on the vertical shaft to which each half of the door is fastened, the shaft in reality forming the hinge upon which its half of the door turns. Movement of the false rail is thus communicated to the transverse shaft and from it to the door sections, with the result that the door opens gradually and without shock upon the approach of a car or locomotive regardless of its speed of travel. The door stands fully open by the time the load has reached the fifth rocker arm.

The transverse shaft above referred to extends out to one side of the track and is there fitted with double arms, each working within a quadrant and each bearing an adjustable counterweight. The horizontal shaft is hung in roller bearings and the two vertical shafts are supported on ball bearings, so that the entire mechanism operates with great ease. The counterweights are thus sufficiently powerful to return the door to its closed position when the car or trip has passed the farther end of the false rail. Closure is, of course, made in exactly the reverse order from the opening movement, both operations being gradual.

For Mule Haulage False Rail Is Lengthened

The weight of one man upon the center of the false rail is sufficient to hold the door in its open position, so that almost any car that could possibly be used in a mine has sufficient weight to operate the door. Where mule haulage is employed it is of course necessary to extend the false rail farther from the door for a distance equal to the length of the animal and his hitching.



AN ANGLE IRON SUPPORTED ON ROCKER ARMS PROGRESSIVELY OPENS DOOR

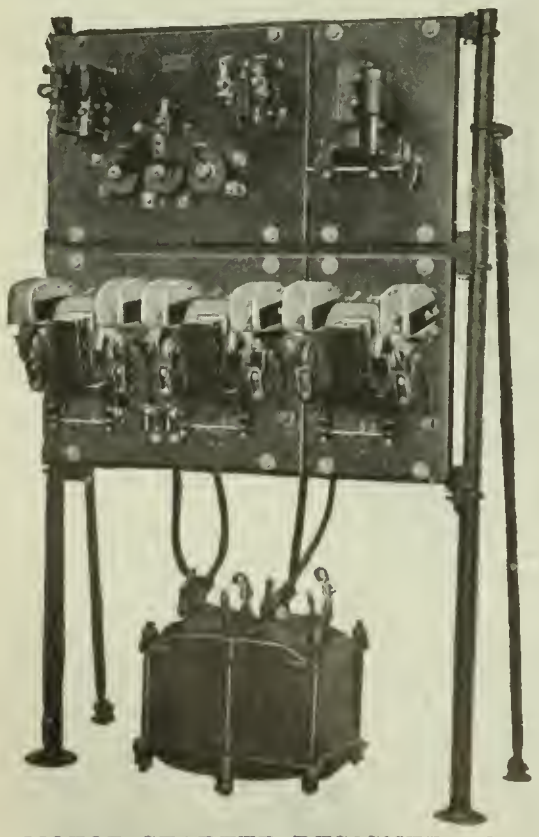
An approaching car or trip first strikes the trigger, which is thereby depressed. This movement compels the rocker arms by which the angle iron is supported to lean over in the proper direction. When the car or trip comes in contact with and mounts the auxiliary angle iron rail the door is gradually and progressively opened away from the oncoming car. This movement raises one of the two counterweights acting through a double quadrant on the end of the transverse shaft.

With the above arrangement it makes no difference from which direction or at what speed the locomotive, car or trip approaches. In any case the door opens gradually away from the oncoming trip and attains full opening before the trip reaches it. It remains in this position until the trip has passed completely through and beyond the door, when it closes gently and without shock. The advantage of this arrangement is obvious. Doors of this kind have been in operation for many months and are giving excellent results. They are manufactured by the Dinwiddie Steel & Mfg. Co., of St. Louis, Mo.

Panel for the Control of Motor-Generator Sets from a Remote Point

IN MINES and other places where the supply of direct current is obtained from a motor-generator set it is frequently advantageous to control this equipment from some remote point, thus eliminating the necessity of an attendant at the switchboard. Several mines are using with their motor-generator sets the automatic control panel shown in the accompanying illustrations. This has all the protective features embodied in the small modern switchboard and may be controlled from any remote point by means of an ordinary snap switch.

This automatic equipment, manufactured by the Cutler-Hammer Mfg. Co., of Milwaukee, Wis., consists of the necessary circuit breakers, switches, relays, fuses and recording instruments mounted on slate panels carried on a floor type of frame. The primary equipment of the control panel shown in the illustration consists of a hand-operated oil circuit breaker provided with inverse time overload attachments, a phase-failure and phase-reversal relay, and an automatic starter of the auto-transformer type. This is to be used with induction motors, but the same general equipment with a few slight changes can be employed with machines of synchronous type. On the direct-current side a knife switch, voltmeter and ammeter with the necessary fuses, and an automatic reclosing circuit breaker are provided.



MOTOR STARTER DESIGNED FOR REMOTE CONTROL

It consists, as may be seen, of the necessary circuit breakers, switches, relays, fuses, instruments, etc., mounted on slate panels carried on a frame. Various capacities up to 300 kw. may be obtained, and, if desired, this equipment can be built for controlling two motor-generator sets in parallel.

With the remote control switch "on" the controller may be operated by merely closing the main-line oil circuit breaker, or the breaker may be left closed and the equipment operated by means of the remote-control switch. The closing of the phase-failure and reversal relay, unless one or more of the phases are open or reversed, in which case the abnormal condition must be removed from the line before the relay will close. This instrument also has the characteristics of a voltage relay—the equipment will not operate if the line voltage is low.

After the relay closes, the automatic starter connects the motor through an oil switch to the low-voltage taps of an auto-transformer. When the equipment has come up to speed, this oil switch opens and a second oil switch connects the motor directly to the supply line, at the same time completing a circuit to the closing coil of the automatic reclosing circuit breaker, which immediately closes, establishing the generator voltage on the direct-current feeders.

In case of an overload on the direct-current side, the circuit breaker opens, and recloses when the overload is removed. The oil switches used on this equipment consist of an operating magnet of the clapper type which is mounted on the supporting frame of the switch and actuates the switch mechanism by means of a connecting rod extending through the top of the case. Both the stationary and moving contacts of the switch are carried on square insulated shafts and are easily accessible. These control panels can be furnished in different capacities up to 300 kw. and, if desired, can be built for operating two motor-generator sets in parallel.

Alcohol Made from Coal at Skinningrove

A PAPER by Cecil F. Tidman at a joint meeting of the Newcastle-on-Tyne section of the Society of Chemical Industry described the work being done at Skinningrove Iron Works, Yorkshire, England, to obtain industrial alcohol from the gas distilled from coal by a reaction of sulphuric acid on ethylene. Mr. Tidman recognized the difficulty arising from the slowness of the reaction and said that he believed it could be overcome, not as Fritsche suggested, by pressure, but by a raise in temperature and by turbulence.

The alcohol obtained is not pure. Repeated distillations from 80 per cent alcohol left a residue which on cooling deposited a white crystalline solid which could be filtered off. On examination this solid proved to be diethylene disulphide. A yellow oil also was formed, but it was evident that it carried in solution no little of the solid just mentioned. Combustion of the oil showed about 15 per cent sulphur.

On trial it was found that a 700-lb. 4-hp. Triumph motorcycle made, with an 87 per cent alcohol, 58 miles per gallon. With No. 1 shell petrol it made 64.6 miles per gallon and with a half-and-half mixture of benzol and alcohol it traveled 78.5 miles per gallon. The sulphureted hydrogen in the coal gases not only forms diethylene disulphide, thus using up the ethylene that should be converted into alcohol, but it also causes a decomposition of the sulphuric acid. Furthermore an impure alcohol is produced. Obviously it is necessary to remove this sulphur. Bog iron ore is now being used, but in practice its price is, of course, prohibitory.

BLANKS SHOULD BE MEASURED; NOT LINES.—In describing the Mono instrument which registers the amount of combustible gases and the quantity of carbon dioxide in the gases from boiler furnaces, *Coal Age* stated on page 496 of the issue of March 17 that the lines ruled by the Mono represented the quantities of these gases, whereas they represent the amount by which those quantities are below 20 per cent. Hence it is the white section of the diagram that represents the quantity of combustible gas and carbon dioxide.

Problems of Operating Men

Edited by James T. Beard

Has the Certification Law Lost Its Value?

Numerous Letters Recently Received Bearing on the Certification of Mine Officials, Personnel of Examining Boards and Character of Examinations Makes This Question an Important One

WITHOUT doubt, mining men everywhere have been deeply interested in reading the letters that have appeared recently in *Coal Age*, bearing on different aspects of the certification law. Some of these letters seem to suggest a decline in the value of the examination and certification of mine officials.

Speaking from observation and experience in Pennsylvania, particularly in the anthracite field, it would seem that there is not the same practical value in the certification law now as formerly. Many things observed in respect to examining boards and the character and conduct of the examinations lend support to this belief.

Personally, I am inclined to think that it would be as well if the entire system of examination of candidates for official positions in mining was either changed, or the law wiped from the statute books. Certainly, something must be done to restore the value of the certificate in the minds of a large proportion of ambitious and competent miners, whose eyes are not closed to what is happening every day in this and in other states.

Certificate Discredited by Employers When Hiring Men

To such an extent does this opinion prevail in the rank and file of our mine workers that the certificate has come to be regarded by them as a mere farce. It is not far from the truth to state that mine operators, managers and superintendents place little value on the fact that an applicant for position as mine foreman, assistant foreman or fireboss, has a certificate. It is asked and accepted by them largely as a form required by law.

Few superintendents of mines will take a man on the strength of his certificate. They make their own investigation of his character, worth and ability, and form their own judgment regarding his experience and competency, before giving him charge of a mine. It has been said that many regard the successful candidate in an examination more as an influential politician than a student of mining and having the necessary practical experience underground.

Reference was made in *Coal Age*, Jan. 27, p. 188, to the makeup of examining boards; and the saying was then quoted, "A man shall be tried by a jury of his own peers," which is a just and sound principle. Exception was taken by the same writer, that mine foremen and assistant foremen have not been appointed, or considered eligible for appointment, on examining boards for these positions.

Personnel of Engineering Boards

It must be admitted that the examining boards for miners are the only boards that comply with the principle stated. The anthracite law makes that board to consist of nine miners, who are to be appointed by the judges, in each county. The boards to examine candidates for the position of mine inspector, are made to include, besides two mining engineers, three coal miners in actual practice. Likewise, the examining boards for mine foremen and assistant foremen, includes beside the mine inspector of the district and one operator or superintendent, two practical miners; but no mention is made of foremen or assistant foremen on this board.

When we consider the growing technical requirements in the operation of coal mines it seems almost absurd, if not laughable, to observe the extent to which *miners* are represented on these boards. One is lead to ask: How many of these miners are capable of judging of the qualifications of candidates for the office of mine inspector; and yet three-fifths of the Mine Inspectors Examining Board is made up of miners.

Mining Laws Not Specific

Coming down to brass tacks, as we say, our laws are not specific enough. For example, the requirement that a candidate for the office of mine inspector must have had "five years practical experience" in the mines should go further and explain the kind of work involved in that experience. The words "practical experience" are very broad and might refer to timbering, tracklaying, or bossing; but might not include digging coal and examining mines for gas and other dangers.

In my opinion, no man is qualified for the position of state mine inspector, unless he has played the whole game from digging coal to having full charge of a mine. He must have climbed every round of the ladder before he can make a fit mine inspector. Instead of this explicit defining of the terms of the law's requirements, we observe a gradual letting down of the bars, in allowing the employment of "equally competent" men to fill the positions of mine foremen, assistant formen and firebosses.

Effect on Ambitious Miners

It is no wonder that hundreds of ambitious miners who are desirous of promotion will not take the examination under the prevailing conditions, which they regard as degrading. In April, 1920, some 22 candidates sat for three days, in the Courthouse at Wilkes-Barre, taking the examination for state mine inspectorship. There was much juggling and the examination was finally declared a farce. The candidates were, almost without exception, well versed in theoretical and practical mining, having served their time mining coal, firebossing and filling the positions of mine foremen and superintendents of mines.

Allow me to add, in closing, that the present Chief of the Department of Mines, Seward E. Button, is helpless; though recognizing these deficiencies he has no power to improve the conditiins. The appointment of examining boards by county judges is open to the criticism of possible local favoritism. Why should not these appointments be made by the governor? ENGINEER.

Wilkes-Barre, Pa.

Discouragement to Mining Students

Holding a responsible position, in mining or any industry, demands both technical and practical knowledge. Many ambitious students of mining discouraged by the present Pennsylvania law.

SO MUCH has already been said on the subject of the certification of mine foremen that it would seem to be worn threadbare. There are, however, many important phases of the matter that can yet be discussed with profit as the letters thus far submitted by writers plainly show.

Close observation leads one to believe that there are many practical mine foremen holding their positions under service certificates. It is recognized

that they are unable to pass the technical portion of the examination required by an examining board; and yet they are known to be well qualified to handle men and produce coal though not, perhaps, on the same economical basis as a student of mining.

As yet, there are no available statistics to show that mine accidents are more frequent where uncertified men are in charge than where certified men are employed. At the same time, one naturally has some very definite ideas in regard to that matter. The safety-first principle should be our guide in respect to the employment of an uncertified man in a responsible official position. If we preach safety-first we must practice the same, or our preaching will be without effect.

Certified Men Have Acquired the Habit of Study

Experience has lead me to believe that the man who has no certificate has not the same striving for knowledge that is manifest in the man who has studied to prepare himself for the examination and gotten his papers. If nothing more were gained than the acquiring of a study habit, the time spent in preparing for examination would not be lost.

In the mind of most operators, the production of coal is the first and uppermost thought. The question of the ability of the uncertified man to produce coal in the most economic way is often overlooked. A moment's thought, however, would reveal the fact that it is impossible for a man to get all this experience first-hand. Much of it must come by reading the experiences of others. The study habit acquired by a certified man makes him a constant reader, which enlarges his experience and renders him alive to the great problems that confront him in the mine.

One must admit that an uncertified man has not commonly the habit of reading what will be of practical benefit to him in the mine. He is not ordinarily a seeker after knowledge and a reader of such magazines as *Coal Age* and the publications of the Bureau of Mines, and other like sources of information on mining matters.

Reading and Study Develops Efficient Workers

The cry of industry is for more efficient men, and it goes without saying that the man who studies and reads and applies the knowledge thus gained to the working out of his problems will prove the most efficient and valuable man to employ. Such men have a broader experience and are capable of doing more and better work; they profit by the experience of others. To say that a man has been engaged in the mining industry ten, twenty or thirty years does not mean that he is efficient by any means. There are plenty of men who have mined coal all their lives and are yet incapable of filling the position of mine foreman.

Let it not be understood that I am claiming that the simple passing of an examination and securing a certificate will make a man efficient. That is but a feeble beginning and must be followed by continued reading and study. No amount of technical knowledge alone can make an efficient foreman; his makeup must be a combination of the technical and practical in mining. In other words, a foreman's technical knowledge must be so applied as to make his practical experience of increased value in dealing with the problems of mining.

The Standard Lowered

Believing, as I do, that there is an increasing need for technical knowledge in the operation of a mine, the later changes that have been made in the certification law, in Pennsylvania, has had the effect to lower the standard of qualification required of mine foremen and discouraged many students.

Under the old law, the certified man felt a greater responsibility resting on him. He felt bound to do only those things that, in his judgment, were safe; but this did not prevent him from giving his employer the best that was in him, while at the same time safeguarding the lives and property in his charge.

No one who is fair-mined and unprejudiced will deny that the present tendency, in all industries, is to raise the educational requirements of men who are to hold responsible positions, rather than to lower them.

Daniel H. Purdue.

Elkhorn, W. Va.

ANOTHER LETTER

FROM the letters that have appeared in *Coal Age* recently, I gather that there are other practical miners who feel about the same as I do in regard to studying and preparing oneself for taking the examination for mine foreman's papers.

Speaking candidly, there is little encouragement for any man to sit down in his spare hours and study mining books and problems, with a view to taking the examination for a certificate of competency. That used to be the only way in which a man could hope to secure a position as foreman or assistant foreman of a mine.

It is not so now. Under the new law, any miner can try for these positions whether he has the papers or not. All a man needs is to get a little backing and the position is his. It is a wonder to me that miners are still urged to buy books and study, in order to better their condition by qualifying themselves for higher positions.

Here in this district there are four or five mines running under the supervision of foremen and assistant foremen who have no papers. Some of these officials are not even citizens of the country. It is quite a common thing to see a fireboss made assistant foreman when the fact is well known that he has no papers for that position. These mines are putting out from 2,000 to 3,000 tons of coal a day. They are by no means small country banks, but shipping mines in full swing, which should require able and competent foremen to be placed in charge.

In contrast with these condtions, there are men who have papers certifying to their competency to fill any of these positions and stand well recommended, and yet are turned down when they apply for the position, which is given to another of far less ability but having a stronger pull with the management of the mine.

Men have little inclination to study and fit themselves for these higher positions when they know that they have little chance of securing an appointment, except by wire pulling, to which many of them are strongly averse. Men who know their own ability to perform the work required generally prefer to rest their chances on the knowledge and experience they have gained, rather than on the efforts of friends exerted in their behalf.

It is no wonder to me that we read of instances where honest ambitious miners have refused the offer of a position as foreman or assistant foreman, knowing that they have no papers. In the minds of such men, to accept of the position under the circumstances, would degrade them in the eyes of others who would regard them in the light of being favored by the superintendent. I hope to see this question thrashed out so that all of us can get a square deal.

Discouraged Student.

Pittston, Pa.

Employment of Uncertified Men in Colorado

Mining laws should make suitable provision for the temporary employment of mine foremen, assistant foremen and firebosses, at times when it may be necessary to employ uncertified men, in these positions, subject to the same penalties as certified men.

THE discussion relating to the employment of uncertified men as mine foremen, assistant foreman or firebosses, in Pennsylvania, and whether or not they are liable to the same penalties as the law of that state imposes on certified men who fail in their duties is timely.

While I am not familiar with the Bituminous Mine Law of Pennsylvania, I can see nothing in those sections of the law that are quoted in *Coal Age*, Feb. 3, p. 234, that would cause an uncertified man any fear of punishment should he fail to perform his proper duty in the mine.

It seems to me that there must be some other references in the law imposing penalties for violation of its requirements. Without having the law before me, it would be hard to say whether a section, imposing a penalty for violations of the statute, would apply equally to certified and uncertified men who fail in their duties in the mines in which they are employed.

After the many years that have been spent in efforts to enact laws for the health and safety of men employed in mines, it would surprise me to know that a person who violates any provi-

sion of the law could not be punished in a suitable manner. If that is the case in Pennsylvania, I would say it is high time that the state law be amended and penalties imposed for violations on any underground worker.

In practically all of the important coal-mining states examining boards are appointed to ascertain the qualifications and fitness of candidates for positions of trust and responsibility in mines. Such qualifications and fitness, no doubt, could be determined as well by the company who employs the men; and if the work was well done they would be equally competent with men who have been certified to by a state examining board.

The fact that a man is certified by a state board and has his papers does not prove that he is competent or efficient. There are many instances that demonstrate the truth of this statement. On the other hand, there are miners who have no learning, and perhaps, can neither read nor write but who have made successful and efficient officials in charge of mines.

Nevertheless, the employment of a certified man gives greater assurance of safety. A man who has secured his certificate is generally careful not to do anything by which it might be taken from him. He values the possession of his papers, believing that they will be of some assistance to him in seeking employment in other mines where he may not be known. The chances are, however, that the superintendent or foreman to whom he applies for work will expect him to get on the job and prove what he is worth.

The laws of some states provide for the employment of uncertified men under certain conditions that are specified in the law. For example, the Colorado Coal Mining Law (Sec. 171) reads as follows:

> From and after Jan. 1, 1914, it shall be unlawful for any owner of any mine to employ any coal-mine examiner, shotfirer, mine foreman, assistant mine foreman or fireboss, who does not possess a certificate of competency from the board of examiners, except as herein provided.

The last words, "except as herein provided," refer to Sec. 46, which reads as follows:

> In case of the necessary temporary absence of the mine foreman, he may deputize any certificated person, if one be available, who shall for the time being perform all his duties. In case of the death or resignation of a mine foreman, the owner shall appoint a certified man if a suitable man be available and, if not, he may temporarily appoint any other competent man, but shall immediately notify the chief inspector, who shall assist him in securing a suitable man who has a certificate. If no suitable man can be found the temporary man may serve, with the approval of the chief or deputy inspector of the district, until the next examination.

In case an uncertified person is employed, however, he is liable to the same penalties as a certified person acting in the same capacity, if found guilty of failure to fulfill the duties required by the law. This is evident from the reading of Sec. 172, which is as follows:

> Any violation of any provision of this act shall be deemed a misdemeanor and shall be punished by a fine of not more than one thousand dollars, or by imprisonment for not more than one year in the county jail, or by both such fine and imprisonment. Each and every day's violation of any provision of this act shall be deemed a separate offense, and it shall be the duty of the chief inspector to institute proceedings in the proper courts in case of all such violations.

Many of our coal-mining laws are written in a way that is not clearly understood by the men, and they often think that certain acts are violations of the law when the same is provided for in another section. For example, Sec. 62 of the Colorado law authorizes the mine foreman to fix the hours for blasting, but in a way not to conflict with the provisions of the act. One such provision (Sec. 159) is that "where shotfirers are employed blasting shall commence one hour after the regular quitting time and after all employees, except shotfirers, are out of the mine."

Mining laws should be clearly written and should not leave to mine officials the work of safeguarding operations in their charge, beyond what is specified in the law. Where this has been done, it has generally proven a failure. The law should give the uncertified man every chance to gain experience, but should demand his certification within a proper time when employed in an official capacity.

It is not my meaning that uncertified men can be employed as mine foremen, in mines generating gas. I believe that every fireboss should be a certified official. But, assistant foreman, coal inspectors, timbermen, bratticemen and others doing work on which the safety of the men depends, should be given time to gain their experience before getting their papers.

In a word, all matters pertaining to mine ventilation, gases, coal dust, shotfiring, installation of electrical equipment and other work requiring experience and technical training should demand certified men. I congratulate the correspondent who has drawn attention to this question.

ROBERT A. MARSHALL.

Farr, Col.

Inquiries Of General Interest

Selecting Frogs in Laying Mine Switches

Selecting the Right Number of Frogs, in Laying a Mine Switch, Is a Matter That Calls for the Good Judgment and Experience of the Trackman

ONE thing that has caused much trouble and annoyance in our mines is the derailment of cars on switches, and I want to ask for a good rule that will enable us to use the right kind of a frog in laying a mine switch. What should be the width of the frog, and what should be the length of the switch to give good results?

MINE FOREMAN.

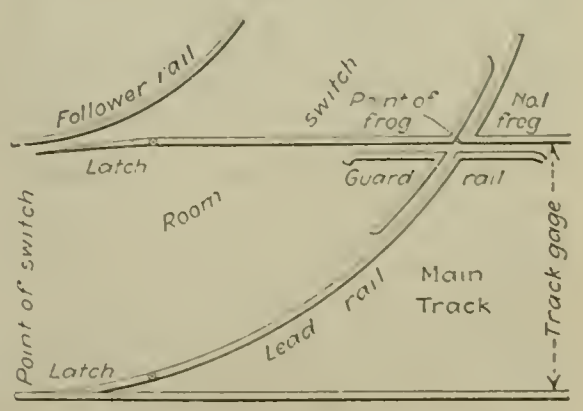
Wake Forest, W. Va.

The size of a mine frog is designated by its number. A No.-1 frog is one that has a spread of one foot at a distance of a foot from its point. In other words, the ratio of the spread to the leg of the frog is 1:1. Similarly a No.-2 frog has a ratio of 1:2. That is to say, the spread of the rails is one-half their length. A No.-3 frog has a spread of one-third of its length.

The number of frogs to be selected will depend on the kind of switch employed, whether at a turnout where there is more room to lay the switch; or at the mouth of a room where the rails curve more sharply. Also, much will depend on the kind of haulage in use, whether mule or motor haulage, the size and weight of cars and speed of hauling.

While a No.-3 or No.-2 frog can be used on a turnout to best advantage, it will often be necessary to use a No.-1 frog when laying a room switch on a narrow entry. The judgment and experience of the trackman must be such that he will be able to select the right frog for the right place.

Where gathering motors are used, a No.-2 frog should be laid on all room



A COMMON ROOM SWITCH

switches, in order to enable the locomotive to pass over the switch with ease. In mule haulage or where the cars are handled by hand, it will be possible to use a No.-1 frog in laying a room switch, as illustrated in the accompanying figure.

Having decided on the number of frog to use, the length of the lead-rail (which is the curved rail measured

from the point of switch to the point of frog) is found by multiplying the gage of the track, in feet, by twice the frog number. For example, using a No.-2 frog, in a track having a gage of 3 ft., the length of lead-rail, measured form the point of switch to the point of frog is $2 \times 2 \times 3 = 12$ ft.

The radius of the curve of the lead-rail is then found by multiplying the length of the rail by the frog number. Thus, in this case, the radius of curvature of the lead-rail is $2 \times 12 = 24$ ft.

Aside from selecting the right frog and laying the switch to the proper dimensions, much will depend on the ballasting of the track and the alignment of the rails on each side of the frog, both on the main track and on the switch. The lead-rail should have a slight elevation above the follower-rail, the latter being the inner rail of the curve. To avoid possible derailment, guard rails should be spiked to the ties opposite to the frog and the switch point.

Examination Questions Answered

Examination, Foremen and Assistant Foremen, Nineteenth Anthracite District

(Selected Questions)

QUESTION—*What mines should be divided into districts? How shall each district be ventilated? What is the limit of persons in each split? How must intake and return airways be separated?*

ANSWER—A mine employing more than 75 persons must be divided into two or more districts. Each district shall be ventilated by separate air splits. Not more than 75 persons can be employed, in the same current, at the same time. The intake and return airways must be separated by a pillar of coal or stone, except where crosscuts are needed.

QUESTION—*What area of airways is required? What is the velocity limit required by law? Are there any exceptions to this limitation of velocity.*

ANSWER—All the airways must have a sectional area sufficient to pass 200 cu.ft. of air per minute for each person employed therein. The velocity of the air current shall not exceed 450 ft. per min., in mines generating explosive gas and where locked safety lamps are in use. The only exception to this requirement of the law relates to main intake or outlet airways.

QUESTION—*What part of abandoned mines shall be examined? By whom and how often? What is required if danger is found therein?*

ANSWER—All accessible parts of a mine that have been abandoned must be examined, at least once a week, by the mine foreman or his assistant, and all danger found therein must be at once removed.

QUESTION—*What stations must be established in a mine? What are their purposes?*

ANSWER—A danger station must be established at the entrance to a mine or any section thereof, for the purpose of preventing anyone from entering that mine or section, until it has been examined and reported to be safe. The fireboss or some person authorized by him must remain at such stations to see that no one is allowed to pass without permission of the fireboss.

QUESTION—*When is the use of locked safety lamps compulsory? By whom are they furnished? Who cares for the lamps? Who may open locked safety lamps?*

ANSWER—The anthracite law specifies that locked safety lamps shall be used exclusively when approaching a place liable to contain an accumulation of explosive gases, or where danger is imminent from gas. The lamps are furnished by and the property of the owner of the mine. A competent person is appointed to take care of the lamps, cleaning and filling them and delivering them to the men as they enter the mine. Each lamp is securely locked and none but a duly authorized person shall have in his possession a key or other contrivance for opening the lamp.

QUESTION—*When may blasts be made where locked safety lamps are used? What examination must first be made and by whom?*

ANSWER — Permission must first be given by the mine foreman or one of his assistants, before a blast can be fired where locked safety lamps are in use. The person in charge must first examine the place where a blast is to be fired, also the adjoining places; and satisfy himself that it is safe to fire the shot, before giving permisson for it it be done.

QUESTION—*Who must keep a working place safe and how? When may he not do or permit any work to be done?*

ANSWER—The law provides that the person having charge of a working place in a mine shall keep the roof and sides of his place properly secured by timber or otherwise, so as to prevent slate or coal from falling. When the roof or sides of a place are loose or dangerous he shall not do any work in the place, except for the purpose of securing the same.

QUESTION—*How do you measure air in a mine? What instruments are necessary? Assuming a velocity of 30,000 ft. per hr. in an airway 8 x 5 ft., what is the volume of air passing per minute?*

ANSWER—First measure the average height and width of the airway with a tape. Multiplying these dimensions together gives the sectional area of the airway in square feet. Second, find the average velocity of the air current at that point, by exposing an anemometer for one minute to the current, at the same time moving the instrument about so as to obtain a fair avarage reading, which will be the velocity of the air, in feet per minute. Now, multiply the sectional area of the airway in square feet by the velocity of the air in feet per minute; the product will be the volume of air passing in cubic feet per minute.

A velocity of 30,000 ft. per hour is $30,000 \div 60 = 500$ ft. per min. The sectional area of this airway is $8 \times 5 = 40$ sq.ft.; and the volume of air passing is, therefore, $500 \times 40 = 20,000$ cu.ft. per min.

QUESTION — *What is the area of an air-course 7 x 8 ft.? What is its perimiter? If the air-course is 5,000 ft. long, what is the rubbing surface?*

ANSWER—The sectional area of this airway is $7 \times 8 = 56$ sq.ft.; the perimeter is $2(7 + 8) = 30$ ft.; and the rubbing surface $30 \times 5,000 = 150,000$ sq.ft.

QUESTION—*If there is 28,000 cu.ft. of air per minute passing in an air-course 7 x 8 ft., in section, and 5,000 ft. long, what is the velocity of the air, and what pressure is producing the circulation?*

ANSWER—The sectional area of this airway being 56 sq.ft., the velocity of the current when 28,000 cu.ft. of air is passing per minute is $28,000 \div 56 = 500$ ft. per min.

The pressure producing this circulation is $pa = ksv^2 = 0.00000002 \times 150,000 \times 500^2 = 750$ lb. This corresponds to a unit pressure of $750 \div 56 = 13.4$ lb. per sq.ft., or a water gage of 2.6 in., nearly.

QUESTION—*If a fan making 50 r.p.m. gives a pressure of 4.5 lb. per sq.ft., what will be the pressure in the same airway if the speed of the fan is increased to 75 r.p.m.?*

ANSWER—Roughly the volume of air in circulation increases with the speed of the fan and the pressure as the square of that speed. In this case, the speed ratio is $75/50 = 3/2 = 1.5$. That is to say, the volume of air will be approximately 1.5 times the original volume; and the unit pressure will then be $1.5^2 = 2.25$ times the original pressure; or $2.25 \times 4.5 = 10.1$ lb. per sq.ft.

In practice, however, this pressure is not realized under mining conditions. It is safer to estimate on the fourth power of the speed ratio being equal to the fifth power of the quantity ratio. This shows the volume ratio is 1.38 and the pressure ratio is then $1.38^2 = 1.92$, which makes the water gage resulting from the given increase in the speed of the fan $4.5 \times 1.92 = 8.6$ lb. per sq.ft.

Six Months' Strike in Alabama Practically Over When Contention Was Submitted to Governor Kilby

Union Expected Nothing from Decision but Used the Arbitration as a Means of Beclouding the Situation and Avoiding Responsibility—Unemployed Strikers Will Not Receive Union's Support Despite Recommendation of the Governor's Commission

By Special Correspondent
Birmingham, Ala.

ONCE again the United Mine Workers of America have failed in their efforts to dominate the coal industry of Alabama. After a desperate struggle extending over a period of six months, marked by open and flagrant attempts to defy the laws of Alabama, and an unusual amount of bloodshed, the general strike in the Alabama coal fields called Sept. 1, 1920, by John L. Lewis, national president of the United Mine Workers, has ended in utter failure of the strikers to secure recognition of the union.

Under the terms of the award made by the Governor of Alabama, Thomas E. Kilby, under an agreement entered into Feb. 22, 1921, the union not only lost its fight for recognition, the only point involved at the beginning, but all other points raised in the brief which the strikers submitted to the Governor. The strike was officially called off Feb. 22, and the award of the Governor was announced March 19.

The result of the strike was a sad blow to the members of the miners' union, who were assured by International Representative Van Bittner, when the strike was called, that it would never end until the operators had recognized the union, and that not only was the full force of the United Mine Workers of America behind the Alabama strikers but that the "war chest" that was asserted to aggregate $20,000,000 was at the disposal of those in charge of the Alabama fight.

Governor Invested with Power of Settlement

The agreement to clothe the Governor with full power to settle the strike as he saw fit was negotiated by local citizens and it provided that the union officials would officially call off the strike and that the Governor would withdraw the state troops.

The agreement was not made until many weeks after the mines had received an excess of skilled labor and had been forced to decline daily to refuse work to hundreds of men who sought positions in the mines. For weeks the coal production of Alabama had exceeded the average of several years past, and the operators had reached the point where they were able to run only three or four days each week because the daily output was too large to permit of steady operation.

The operators had just won all the detainer suits they had instituted for the possession of their houses. In many cases the strikers had managed for months to continue their tenancies by appeals to higher courts and by the giving of bonds for twice the amount of the rent, court costs and penalties, but by the time the case was submitted to the Governor the courts had restored to the operators their rights to the use of their houses.

Beaten, They Sought to Save Their Faces

The strike leaders had bitterly arraigned the Governor because of his firm stand for law and order, and their willingness to leave the settlement in his hands is thought to have been due to a recognition that they were completely and hopelessly defeated and to the further fact that the national organization had given notice that the "war chest" would soon cease to pour out its prodigal flow of gold in a fight long since lost.

The findings of Governor Kilby were based upon an exhaustive report made by three personal representatives appointed by him to ascertian the true facts regarding the situation in the Alabama coal fields. The personnel of this committee was praised throughout the state for its ability and fairness. All the members were from Montgomery, in central Alabama, far removed from the feeling and animosity of the strike zone. William T. Sheehan, editor of the *Montgomery Advertiser;* Richard M. Hobbie, wholesale merchant and Food Administrator for Alabama during the war, and John W. Durr, wholesale druggist, comprised this committee, which made a thorough investigation of all phases of the situation and submitted an exhaustive report containing the briefs filed by both sides, a transcript of all oral testimony and countless exhibits of various kinds.

Every Claim Mine Workers Urged Is Denied

The summary of the Governor's findings follows: "It is found and I so declare: (1) Recognition of the United Mine Workers of America is not to be compelled. (2) The day-wage scale and sub-contract system are to remain unchanged. (3) The existing methods of adjusting grievances are found to be fair and equitable. (4) The operators are under no obligation to re-employ the striking miners. (5) The freedom of contracts shall be inviolate and therefore any of the above-mentioned things may be done by mutual agreement of the parties.

"And I recommend: (a) That the operators to promote peace and harmony re-employ the men who struck and are still unemployed. This should be done as fast as places can be found for them, without, however, displacing men who are now at work. (b) That until they can find employment the organization of the United Mine Workers of American support these men.

"Compliance with these recommendations would be a gracious act on the part of the operators, tending to refute the charge of selfishness so often made against them, the truth of which has been indicated by the way in which some of them profiteered during the strike. It would be an act of simple justice for the United Mine Workers of America to support these unemployed men and it would tend to disprove the assertion and belief of many people that the organization exists mainly to serve the selfish purposes of its officers, organizers and representatives."

Feigning Surprise, Got What They Expected

Although the officials of the miners' union, before they allowed the Governor to settle the matter, realized that the strikers had been decisively defeated, and though they knew that there was nothing left to arbitrate, they expressed great surprise and anger at the award of the chief executive. As men were so plentiful that it was hard for the operators to provide enough work to keep them busy even part of the time, the union could not do otherwise than agree to comply with its written promise to abide by the award. Nevertheless, a formal statement was issued that the union would accept the result. It was announced, however, on March 26, that the strikers would not be fed and no more money would be paid them after the week ending April 9. However, the national officers did kindly agree to allow the strikers to remain in the tents they occupied until they could make other arrangements.

Except for the presence of the state troops, made necessary by murders and ambushes of non-union men, and dyna-

miting of non-union men's homes, there was nothing to remind the public or the operators that a strike was in progress. The troops were called out two weeks after the strike started, when the general manager and chief deputy of one mine were murdered, and a number of non-union miners ambushed. Due to incendiary meetings and official orders from union officials for the strikers to picket and intimidate men at work, which are direct violations of the laws of Alabama, it was found necessary to maintain the troops on duty until the strike was officially called off.

Despite the bitter denunciations by strike leaders because of his firm stand for law and order, the Governor informed union officials that the troops would be maintained in the field until the strike was officially declared off.

Strike Cost State $100,000 Per Month

Even though the cost was more than $100,000 per month and was wiping out the surplus which Governor Kilby had created through his wise and efficient management of the state's affairs, and although the union leaders boasted that they would bankrupt the state before they would end the strike, the Governor could not be deterred from his stand.

Efforts of strike leaders to arouse the taxpayers and force withdrawal of the troops acted as a boomerang and tended to make the taxpayers better satisfied with the tax-adjustment system inaugurated by the Governor, even though it increased the assessments of many property owners.

In discussing the causes of the strike and the record of the United Mine Workers of America Governor Kilby said in his report: "This strike, being called neither with just cause nor for the purpose of remedying any grievance and in deliberate violation of an agreement, was illegal and immoral. It proves beyond cavil that the written contract or obligation of the United Mine Workers of America cannot be relied on and that recognition would give no assurance of industrial peace. It is rather difficult to understand how such a large number of men could be induced so deliberately to disregard such an obligation of honor. The only explanation, perhaps, lies in the fact that from 70 per cent to 80 per cent of the miners are negroes.

"The Southern negro is easily misled, especially when given a prominent and official place in an organization in which both races are members. Negroes from other sections were imported into the state for the purpose of influencing and directing the negro miners. The negro miners were undoubtedly deceived and led into this violation of their agreement by leaders from other sections. Mr. Bittner well says in his brief, 'The essence of success in collective bargaining lies in the fidelity of both sides to the agreement,' thereby announcing a truth which seems to have been entirely forgotten or ignored by the organization of which he is chief representative."

The Governor declared that in making his decision he constantly kept the welfare of the public in mind, as the people are the innocent sufferers in all industrial disputes.

Commission's Report Basis of Decision

In reaching his decision the Governor gave careful attention not only to the report of his second committee of three personal representatives but also to that of the first coal commission which he appointed early in the struggle to ascertain on his behalf the true facts of the case. This earlier commission consisted of Dr. George H. Denny, president of the University of Alabama, chairman; former Governor Charles Henderson and Judge James J. Mayfield of the Supreme Court. The report of both bodies coincided in all major points at issue.

Those in the confidence of the strike leaders declare that while they demanded many things in the arbitration, they had little hope of gaining their contention. The following were the demands as submitted by Van A. Bittner, chief representative of the United Mine Workers of America; none of them was allowed by the award: (1) Recognition of the union; (2) abolition of the sub-contract system; (3) re-employment of the striking miners; (4) readjustment of the day-wage rate; (5) setting up of machinery to adjust industrial disputes and avoid future strikes.

The attitude of perfect frankness toward the public which the operators maintained throughout the long struggle caused public sentiment to favor the operators from the start. The operators in their advertising and publicity faced each issue squarely as it arose. Even when the mine workers tried to inject the high price of coal as an issue the charge reacted in favor of the operators, for the leading producers of coal opened their books and gave all facts regarding cost and selling price to the public. The operators relied upon frankness and fairness in their publicity rather than on any attempt to withheld facts from the public.

On the other hand, the union officials were exceptionally adroit and relied upon half facts or misstatements in an effort to prejudice the public against the operators. Their appeals to class prejudice failed of their object and their half truths and deliberate misstatements were promptly refuted by the straightforward statements of the operators.

Judge McGee Urges Northwest to Place Winter Coal Orders Early

JUDGE McGEE, former Fuel Administrator for Minnesota, has given out an interview in the Twin Cities stating that the Northwest is in danger of a serious coal shortage this coming year unless orders for coal are sent in immediately for stocking the docks with as much coal as possible. He refers to a letter from Daniel Willard, of the Baltimore & Ohio, stating that the people of the Northwest are simply drifting into the same situation as a year ago. Mr. Willard says they cannot count upon a mild winter to help them out such as we have had this year. Mr. Willard asserts that the railroads simply cannot deliver within a few months all the coal needed for the winter, and if they are not given aid by distributing the coal deliveries through the season there will be a serious shortage.

Says Placing Contracts at Present Spot Prices Would Mean Receivers for Operators

A WARNING that the public is facing a coal situation similar to that of 1920 was sounded by P. H. Penna, secretary-treasurer of the Indiana Bituminous Coal Operators' Association, in an interview recently.

Mr. Penna was asked why the operators do not contract their coal at the spot prices now prevailing.

His reply is very much to the point. "To do so would put them in the hands of a receiver," he said. "While they find it necessary to take big losses on spot coal, they necessarily have to look forward to the time when they can take a profit, and that profit has to be sufficient to absorb the losses of the dull seasons. Coal mining, unfortunately, is a seasonable business. Periods of unusual demand and high prices are followed by periods of little or no demand and at ruinously low prices. This is true because the ordinary consumer will not buy coal except when he absolutely has to have it."

Receipts of Coal in New England

[As reported by the Fuel Administration for New England; E. F. O'Dowd, Statistician]

ANTHRACITE AND BITUMINOUS

Calendar Year	Tide and Rail, Tons	Tide, Tons	Rail, Tons	Percentage By Tide	Percentage By Rail
1916	34,837,000	19,421,000	15,416,000	56	44
1917	35,184,000	17,114,000	18,070,000	49	51
1918	40,792,000	20,174,000	20,618,000	49	51
1919	28,760,000	11,837,000	16,923,000	41	59
1920	33,689,000	13,732,000	19,957,000	41	59
		ANTHRACITE			
1916	10,715,000	5,228,000	5,487,000	49	51
1917	11,680,000	4,421,000	7,259,000	38	62
1918	13,621,000	4,117,000	9,504,000	30	70
1919	10,578,000	3,310,000	7,268,000	31	69
1920	11,255,000	3,521,000	7,734,000	31	69
		BITUMINOUS			
1916	24,122,000	14,193,000	9,929,000	59	41
1917	23,504,000	12,693,000	10,811,000	54	46
1918	27,171,000	16,057,000	11,114,000	59	41
1919	18,182,000	8,527,000	9,655,000	47	53
1920	22,434,000	10,211,000	12,223,000	46	54

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

GENERALLY speaking, business sentiment shows an improvement over the earlier months of the year, according to a review of business conditions as of April 1 by the Mechanics & Metals National Bank of New York City, and in a number of directions tangible improvement in operations is shown, in spite of difficulties. "Difficulties confront the United States at this time," the review continues, "but, serious as they are, they shrink in importance when compared with the difficulties of other countries of the world. Relatively, we are an exceedingly favored people, who have gone through a period of such severity that, had we not been granted inherent financial strength, capable business leadership, and a banking and credit mechanism that functioned with remarkable precision, we would have suffered severe consequences.

"Deflation has of course been painful; but it has been orderly, and up to the present has carried us a very long way from the exaggerated and fictitious prosperity of last year toward real stability. How much further it is to proceed in the immediate future is still to be determined. The current movement of prices is not a criterion on which we can safely count; having suffered an extreme decline in certain commodities, prices are being arbitrarily maintained in certain other commodities—notably steel—and the broad indication of price movements is, therefore, partly concealed.

"It is properly said that the world cannot sit helpless because the machinery of its own civilization has ceased properly to function. If the world's commerce is to go on and expand, distribution must be restored. People anxious to work must be freed from obstructions imposed by their temporary inability to pay for raw materials, and nations surfeited with raw materials must likewise be freed from the obstructions that prevent them from selling those materials to countries which need them."

Durant Buys L. I. Assembly Plant

W. C. Durant has acquired an eight-story and basement building in Long Island City at a cost of $2,000,000. The building will be used by the Durant Motor Co. of New York, the first of a chain of independently organized assembly plants to be located at strategic distributing points. Durant Motors will supervise and direct production.

Automobile Factories Speed Up

Automobile manufacturers in the Detroit district report a steadily increasing demand for private cars, trucks and other types of motor driven vehicles. According to the statistics of the manufacturers, the greater number of the cars are being sold either in the East or the extreme West, with the business boom at its height on the Pacific coast. The export trade is also advancing. Both the Dodge and the Ford plants are working 60 per cent. normal as against 10 per cent. last fall, while a number of the plants where more expensive cars are made are doing practically as well.

Between 6,000 and 7,000 men will be re-employed by the Willys-Overland Co.'s Toledo plant during April, according to an announcement made March 29 by Vice President Charles B. Wilson.

Henry Ford Now to Make Plate Glass

Henry Ford's new factory at Rockford, Mich., will begin the manufacture of plate glass within a few weeks. Equipment is on its way from the Highland Park plant, where it was made, and engineers are preparing to set it up quickly. Chemists recently made a survey of the silica deposits in the vicinity and reported them particularly suitable for making glass for Ford cars. Mr. Ford's engineers say they have a new method of making plate glass which is cheaper than ever before known.

Tire Business Gains Steadily

Improvement in the automobile industry, reported in Detroit, is reflected in the tire industry in the Akron manufacturing district. Increase in sales to manufacturers of about 70 per cent for April over March and a decided jump in dealers' business have resulted in the Goodyear Tire & Rubber Co. announcing an increase in production amounting to 33 per cent. This company will turn out 16,000 casings and 16,000 tubes a day in April as against 12,000 casings and 13,000 tubes in March. The new production is one-half of the peak reached a year ago. Twelve hundred former Goodyear employees who are living in Akron returned to work this week. The American Rubber & Tire Co., a small Akron concern, has resumed three eight-hour shifts to fill tire orders. Other tire factories also are increasing production.

Eight Mills Start Operations

Eight sheet mills at the plant of the Whitaker Glossner Company, Portsmouth, Ohio, resumed April 3. The mills have been idle for several months. The resumption gave employment to approximately 750 men.

Will Enlarge Portland Terminal

The Grand Trunk Railway steamship terminus at Portland, Me., will be enlarged and improved at a cost of approximately $500,000, officials of the railway said March 29. Construction will begin May 1.

Youngstown Plants Resume

For the first time in many weeks increased operations for independent steel plants of the Youngstown (Ohio) district were announced last week. Ten sheet mills resumed operations in various plants.

Tinplate Works Start Up

The Standard Tinplate Works, at Canonsburg, Pa., will resume operations April 11, according to notices posted by the company last week. The plant closed March 5.

Copper Plants Cease Production

Stagnation in the copper business and inability of the big producers to finance foreign sales of the metal are responsible for the shutdown of practically all of the leading companies. The Anaconda Copper Mining Co., the Utah Copper Co., Ray Consolidated Copper, the Chino Copper Co. and the Nevada Consolidated Copper Co. announced complete closing of their properties March 29.

Sheet Mills to Reopen

The Martin's Ferry (Ohio) Sheet Mills of the Wheeling Steel Corporation will resume operations April 14, company officials announced recently.

Committee Warns New Yorkers to Purchase Winter Coal in Spring and Summer

THE importance of making provision during the spring and summer months for coal requirements for the winter in order to avoid the unpleasant experiences of recent years because of coal shortage is emphasized in a statement made on behalf of the joint committee composed of representatives of real estate interests, which includes the Real Estate Board of New York, New York Building Managers and Owners Association; and the Advisory Council of Real Estate Interests, and also the Board of Health.

The statement, which is issued by Edward P. Doyle, the Real Estate Board's representative and chairman of the committee, contains definite proposals for avoiding the mistakes and inconvenience of the winter of 1919-1920, escaped this winter only because of the extreme mildness of the weather. Mr. Doyle says:

"The only way to prevent the annual recurring coal shortage in Greater New York, with its famine prices, is by the purchase and storage of the winter supply of coal during the spring and summer months. This is the conclusion of our committee after six months of investigation. On Nov. 1, 1920, only 2,100,000 tons of Greater New York's yearly allotment of 11,000,000 tons of anthracite had been delivered, and the majority of this tonnage was of commercial size anthracite; not domestic size. The only thing that saved the people of this city from untold suffering, and its commercial interests from a partial shutdown was the unprecedentedly mild winter. It was not until Dec. 15 that the crisis had passed and the city was assured of a supply sufficient to take care of temporary needs.

"This result was due to a great extent to extraordinary efforts on the part of the Joint Committee on Coal for New York and Senator Calder's committee. The greatest indifference as to New York City's necessities was shown by the anthracite producers and distributors, although they were told the consequences of a great population suffering from cold. Such a condition should never occur again and the joint committee is resolved to prevent, by an appeal to public opinion, its recurrence.

Urged to Adapt Grates to Commercial Size Coal

"The owners of buildings have been asked to change their grate bars so that their furnaces can use commercial size coal instead of domestic size. Dealers have been asked to increase their storage capacity and to make contracts for certain delivery in April, May, June and July. The Interstate Commerce Commission has been asked to urge a lowering of transportation rates during a period when transportation is least difficult and the railroads least employed, and the anthracite producers have been asked to make lower prices for the four months named to encourage coal purchasing.

"Favorable responses have been received from all interests affected except the most important interest of all—the anthracite producers' association. This association asserts that it will not be practicable to reduce prices because of the increasing demand and lowered production. Unless there is strong pressure from the public and from Congress no inducement will be offered for spring purchasing. As the present retail price of anthracite is uneconomic and really beyond the ability of the ordinary customer to pay, there will be no spring buying, and there will be another shortage when necessity forces buying at a sacrifice.

"No sane business man wants government regulation, but the attitude of the anthracite producers may force some form of regulation of this monopoly. Senator Calder very truly says that coal is an absolute public necessity and is the basis of all industry. It is essential also to living in modern communities. New York City without light or heat would be impossible. Last winter the great gas and transportation companies were frequently within a few days of cessation of activities. No government could exist that would tolerate a continuation of last winter's situation.

"The committee records with great pleasure an entirely favorable communication from the bituminous producers. Their association offers to co-operate in every way, and their prices are sufficiently low to stimulate spring and summer buying. This will help wonderfully the gas and transportation companies, but soft coal is not used for domestic purposes and cannot legally be used for manufacturing purposes in Greater New York on account of the smoke nuisance. It is hoped that sufficient pressure will be brought to bear on the anthracite producers to force a change in their attitude."

With Land Purchases Steel Corporation Increases Output of Coal and Coke

DURING 1920 the coal mines of the United States Steel Corporation produced 30,828,334 tons of coal, as compared with 28,893,123 tons in 1919, an increase of 1,935,211 tons, or 6.7 per cent, says the annual report of the corporation. There was manufactured 16,208,111 tons of coke, as against 15,463,649 tons in 1919, an increase of 744,462 tons, or 4.8 per cent. Of the coal mined 24,384,925 tons was used in the manufacture of coke, and the remainder was used for steam, gas and all other purposes.

There were expended on the coal and coke properties of the corporation and the subsidiary companies for the acquistion of additional properties, extension and construction, and net stripping and development expenses at mines $18,905,383. Of this, $11,517,149 was for the purchase of additional acreage of steam coal and surface property, the greater part of which is located in Greene County, Pennsylvania. These purchases of coal land added to the coal property acquired during the past four years by the subsidary companies place them in a position where, as soon as the properties can be opened, they will be self-contained and on basis of a low cost price in obtaining their requirements of steam coal, the major portion of which they have always been obliged to purchase from outside coal operators, says the report.

The employees of the coal and coke properties during 1920 numbered 25,889, an increase of 1.294 over 1919, while the employees in all the companies of the corporation numbered 267,345, as against 252,106 in 1919. The average salary or wage per employee per day of the corporation was $7, as compared with $6.17 in 1919, an increase of 83c. or 13.45 per cent, but, says Chairman E. H. Gary in his report, because of advances in wage rates at different times during the year and affecting different groups of employees, the $7 average does not fully indicate the average pay at the close of the year. For the month of October the average rate was $7.23 per day and for the month of December $7.19 per day.

There was expended for safety work $1,420,456, as compared with $1,143,534 in 1919. The number of serious and fatal accidents in 1920 per 100 employees was 13.29 per cent less than in 1919 and 53.89 per cent less than in 1906.

Disbursements made by subsidiary companies during the year for work accidents, including accruals not yet actually payable under state compensation laws, was $5,634,263, of which 87.6 per cent was paid or is payable directly to injured employees or their families. To provide prompt and adequate treatment for employees in case of accidents the subsidiary companies have built and are maintaining 298 emergency stations and 25 base hospitals, with a staff of 263 surgeons and physicians whose entire time is given to company work, also 91 outside surgeons retained on salaries, and all without any charges to employees. There also are being conducted sixty-two stations for training employees in first-aid and rescue work.

The Northern coal and coke property of the corporation consists of 251,055 acres of coking coal and 154,423 acres of steam and gas coal. It owns 66 coke plants, 20,427 beehive ovens, 2,558 byproduct ovens and 32 coal plants not connected with coke plants.

The Southern coal and coke property consists of 196,678 acres of mineral interests and surface, 149,382 acres of mineral interests only and 16,265 acres of surface only. On the developed sections of this property there are 9 coal-mining plants comprising 15 operating mines, and in connection with these operations there are 7 coal washing plants and 7 coking plants, the latter comprising a total of 2,974 beehive coke ovens. At Fairfield, Ala., there is located a byproduct coke works consisting of 434 ovens.

Seek Reconsignment Changes to Utilize Fully Transportation Facilities

NO REPORT has been made as yet to the Traffic Executive Committee of the American Railroad Association as to the proposed changes in diversion and reconsignment rules. The matter now is being considered jointly by the Trunk Line Coal and Coke Committee, Central Territory Coal and Coke Committee, Indiana Coal Committee and the Illinois Coal Committee. If these committees recommend changes in the rules as asked by the coal operators and the wholesalers, the changes will have to be approved by the Traffic Executive Committee. If approved by that body, they then will go to the Interstate Commerce Commission for review.

In presenting the case for the operators to the committees, John Callahan, traffic manager for the National Coal Association, stated that he is interested in having continued every beneficial transportation practice which grew out of war experience. He made it clear that he is not asking a reduction in reconsignment charges or authority for additional reconsignments. The operators, he said, are interested in the maximum utilization of all transportation facilities, and for that reason they ask only that the existing rules be changed so that in lieu of the two local rates which now are applied on a reconsignment the through rate shall apply from the point of origin to the reconsigned destination when a through rate exists.

The wholesalers made a number of suggestions which in effect would result in much more liberal arrangements as to reconsignments. It is said that their proposal would allow some free reconsignments. The wholesalers' suggestions went further than those of the operators in that they would affect reconsignment within switching limits before placement. Their suggestions also involve reconsignment before the car reaches the original billing point.

Bellaire Mine Workers Want Less Work

AT THE twenty-third annual convention of subdistrict No. 5 of the United Mine Workers of America, which was held at Bellaire during the second week of March, action was taken on a number of important matters, the convention being in session nearly the entire week. The subdistrict is known more generally as eastern Ohio.

One resolution introduced late in the week condemned local strikes. It is hoped that, as the resolution was duly approved, spasmodic strikes for every cause and no cause will trouble the eastern Ohio region less than in the past. The committee on "officers' reports," in its statement to the convention, recommended that in future subdistrict officers should not assist in the settlement of disputes unless they have been previously notified that the mine workers of the local meditated striking, nor shall they attempt mediation when the strike is for some concession for which the contract between mine workers and operators does not provide.

A resolution for a six-hour day was introduced, but this being regarded as a question of wage scale it was not considered but left for introduction at the next annual convention, when the scale will be the main matter for determination. Resolutions seeking to restrict the number of tons a miner might produce and demanding pay for all stone removed shared the same fate as the one providing for a six-hour day.

As a means of meeting the present shortage of houses a resolution was introduced requesting that the state erect homes for miners and permit the miners to pay for them on the installment plan. This resolution had the endorsement of President Roy. When a resolution was presented signed by locals in the northern end of the Panhandle of West Virginia asking for representation on the executive board of subdistrict 5, the discussion led up to a declaration in favor of a movement to unionize all the mines in the Panhandle region.

The convention by a vote of 68 to 29 abolished its permanent legal department, which was said to be costing the organization about $16,000 yearly without affording the mine workers the protection to which they believe themselves entitled. The delegates declared that the mine workers were called upon to pay fees in addition to the assessments which were levied for the support of the legal department. A special committee had recommended that the legal department be retained, but its advice did not appear good to the delegates and they voted to economize by abolishing the department.

C. B. Wynkoop Sees Indications of a Return of Runaway Coal Market

DISCUSSING the trade in general, C. B. Wynkoop, of the Cosgrove-Wynkoop Coal Co., said:

"The coal trade seems to be going through a weeding-out process which will undoubtedly continue for some little time, when it is to be hoped that the trade will find itself on a much firmer basis. The past four years have been filled with many difficulties in the way of mining and shipping, causing high prices, low quality and general dissatisfaction.

"The trade has also been unfortunate in having a great many 'snowbirds' in the business—men who are not in the regular trade but persons who get into the business at times when profits are very high and quality is not demanded. One type of 'snowbird' who was responsible to a very great degree for the high prices during the past year was the broken-down lawyer, preacher, bookkeeper, or what not, who called on the consumer, offering him anything in the line of coal that was required, without actually having any coal to sell, and then made his purchases at fancy prices from one of the 'snowbird' operators or wagon loaders.

C. B. WYNKOOP

"These chaps for the most part were mining coal that in normal times cannot be taken out on account of its poor quality and the excessive cost of production. Since Dec. 1 these men have been dropping out very fast, and will continue to stay out if the consumer will remember his lesson in regard to keeping his storage pile well stocked, instead of waiting until the last minute, as has been his custom in the past.

"There are many indications that 1921 will be a repetition of 1919. The railroads and consumers have all stopped buying, consequently they can all be expected to come to the end of their respective coal piles at about the same time, which probably will cause another runaway market, with the reappearance of the 'snowbirds' and the consequent high prices resulting from consumers bidding against each other in the producing fields.

"The legitimate coal trade is for the most part under contract at low prices with regular customers, but it comes in for the blame for car shortage, high prices and poor quality of coal. As a matter of fact this blame rests almost entirely with the consumer. If the consumer would be consistent in keeping his stock pile at a certain point throughout the year, regardless of the amount he is consuming, he would never be called upon to pay exorbitant prices in order to keep his plant running, and the 'snowbirds' would disappear entirely, with the result that the legitimate oper-

ators would enjoy a much better car supply and better and more efficient labor, and prices would remain stable.

"Production of manufactured goods of all kinds must return to something near normal during the year 1921. It is also to be hoped that the many problems affecting our export trade, such as the tariff and exchange, will be adjusted early in the year, as it would seem from reports that legislation covering these items should be enacted shortly after the new Congress convenes.

"If the manufacturer and consumer will take the various questions under consideration as related to their own business, and make their purchases of coal accordingly, it will not only benefit them but the coal trade. Runaway markets, high prices and inferior quality, which invariably go together, are poor return for any business, and can be avoided with the proper kind of buying."

Dominion Coal Co. Collieries in Cape Breton Close; 10,000 Men Idle

ALL of the twenty-five collieries of the Dominion Coal Co. in Cape Breton were closed down on March 19 following a statement from President Wolvin that the local coal market was much depressed. Traffic on the Sydney & Louisburg Ry., a subsidiary of the Dominion Coal Co., has been almost discontinued for lack of freight.

It was believed that some of the mines would be reopened the following week but most of them are likely to remain closed for an indefinite time. In the meantime about 10,000 men, including miners, railroad employees and others dependent upon the coal mining industry, are out of employment.

On March 22 seven collieries of the Dominion company resumed operations. The remainder of the company's mines were still idle, but it was hoped that they would be operating the following day so as to make an equal division of available work among the miners of the district. The output March 22 was 6,100 tons, about half the normal quantity.

Production Declines in Germany as a Result of Eight-Hour Day

THOUGH affected to some degree by conditions peculiar to continental Europe as an effect of the war, a test of the eight-hour day in Germany has in the main proved pretty much the same as in other parts of the world. Not only has gross production fallen but the actual hourly production has suffered a decline. Neither of these results is in accord with the claims usually presented by proponents of shorter working hours.

The facts are presented by the National Industrial Conference Board, whose correspondent in Germany has forwarded a report on the workings of the eight-hour day established by law in November, 1918. He admits that it is impossible to speak with exactness, and calls attention to the fact that this problem of working hours is affected by political considerations. His main conclusions may be stated thus:

Since the introduction of the eight-hour day production in industrial occupations has declined. In no instance has the daily production been so great as under the nine-hour day. Hourly production has decreased, but this is partly due to the lack of desire to work, common in all countries affected by the war.

Total production in 1920 was greater than in 1919, and output will probably inrease when it becomes more certain that a final peace is concluded. Even under the best conditions it does not seem likely that production will equal that under the nine-hour system.

Demands on Germaan industries are not as great as before the war, and this has brought a demand for the shorter workday (and perhaps accentuated the slowing down of the individual workman), so that such employment as exists may be divided among all workmen. For many reasons, including political, no change in the direction of longer hours is likely in the near future.

Advocates Government Control of Coal as Reprisal for Prohibition

REPRESENTATIVE SCHALL, of Minnesota, says the new Congress must take up the question of coal regulation. His idea is that production, distribution and prices should be governed, allowing a fair profit for the operator. He cites the way they do it in England as a superior method, blithely ignoring the fact that there is no government control in that country, such control having been relinquished.

Mr. Schall makes the point that employers of large masses of labor, like coal producers and steel manufacturers, cannot logically object to government regulation of their business, as these men were instrumental in enacting the prohibition laws for the regulation of their employees' personal habits.

His views on coal exports are interesting. He said that there have been tremendous profits made on export coal, and that the dealers have hidden the effects of export shipments on the domestic situation. Profiteering on export business was comparatively safe, he said, so foreign orders got the preference and the domestic market was neglected.

It seems that Mr. Schall's views on coal exports do not exactly agree with those of Secretary Hoover, of the Department of Commerce. Mr. Hoover recently said that coal exports were included in his plans for building up a general foreign trade for this country. He is scheduled to have conferences with chambers of commerce with a view to forming committees whose efforts to increase exports will be co-ordinated, and as a larger part of the world's carrying trade is desired, exports of coal will be a special care of these committees.

Mine Bureaus of United States and Canada To Co-operate in Lignite Research

AN EXCHANGE of information as to lignite research between the national agencies of Canada and the United States is the outcome of a conference between officials of the Canadian Department of Mines and Director Bain, of the U. S. Bureau of Mines. Dr. Bain states that the Canadian officials welcome this effort to prevent useless duplication of work. They acquainted Dr. Bain with the results which they have attained. Dr. Bain found that their work has progressed considerably further than has any lignite work done in this country. W. W. Odell, of the Bureau of Mines staff, has been sent to Canada to make a more detailed study of Canadian results.

The Canadians have made retort studies on a large scale. As a result of the data on the performance of those studies, a large plant has been built in Saskatchewan in which operation will begin in May and Dr. Bain has made arrangements so that the Bureau of Mines may station an engineer observer at the new plant. The Bureau of Mines expects to begin experiments early in July at the lignite plant owned by the State of North Dakota, where the Canadians in turn will send one of their engineers to make observations.

The studies made thus far, both in Canada and in this country, indicate that it is better to concentrate first on the development of a high-grade fuel rather than go into the highly ramified effort of saving the byproducts.

WHO PROFITS BY INSTALLING NEW MACHINES?—There has been no agreement so far between the operators and miners of northern West Virginia as to the rate to be paid to those mining and loading coal where arc-wall cutting machines are used. The miners insist that a part of the increased pay should be given the loaders. This question has been allowed to rest for a while, but it is now understood that an agreement of some kind be reached in the near future.

A RECENT ISSUE OF *Coal Age* gave the output of Alberta mines as 6,650,000 tons in 1920, whereas the actual output was 6,908,923 tons, which is nearly 2,000,000 tons greater than the output for 1919 and constitutes a record production for the province.

Daugherty Enjoined in Conspiracy Case; National Coal Association Denies Collusion in Priority Orders

By Paul Wooton
Washington Correspondent

IN obtaining a temporary restraining order against Attorney General Daugherty and his subordinates, in the Supreme Court of the District of Columbia, a point of great significance has been scored by the National Coal Association in connection with the indictments drawn in the U. S. District Court at Indianapolis against ninety-nine coal-producing corporations and 127 individuals. This step, it is believed, will force the prosecution to show its hand and explain, among other things, why it is attacking as illegal agreements made with the expressed approval of government officials.

The bill filed in this case goes exhaustively into the activities of the National Coal Association and denies in most vigorous fashion that this association has in any way violated the anti-trust statutes. Referring to the activities of L. Ert Slack, special Assistant Attorney General, and Frederick Van Nuys, U. S. District Attorney at Indianapolis, in bringing the Indiana indictments the bill charges that they "have deliberately and in pursuance of a general plan on their part, undertaken to destroy the whole structure of the bituminous coal industry as conducted for a long period in the United States."

The bill attacks the legal right of the government to remove the National Coal Association, its president, Colonel D. B. Wentz, and its vice-president, J. D. A. Morrow, to the District Court of Indiana for trial. The underlying principle in the indictment, it is held, is based upon the theory that all wage-scale agreements are illegal and that such agreements constitute a conspiracy. The bill sets forth that the National Coal Association had no part in these agreements any more than did Colonel Wentz or Mr. Morrow, neither of whom was in attendance when the agreements were made.

L. Ert Slack's Actions Contradictory

The bill calls attention to the circumstances surrounding the injunction granted at the request of the government against the United Mine Workers in 1919. It is alleged that Mr. Slack, then the U. S. Attorney at Indianapolis, set up that the government had given its expressed approval to the Washington wage agreement. In that bill he held it to be a valid agreement and that the government had the right to ask for an injunction against the miners for violating that agreement. On that occasion it was used as the basis of his case. Now, in his capacity as an assistant attorney general, he points to this agreement as having been illegal and a conspiracy.

The National Coal Association is referred to in the indictments as the parent organization of the coal operators. It is set forth that the National Coal Association was organized and created long after many of the local organizations had been functioning. It was created for the purpose of co-ordinating the coal situation during the war. To the charge that it was organized with the idea of increasing prices, restricting production and creating zones of sale by handling a market report system, a vigorous denial is entered. It is asserted, on the contrary, that the National Coal Association has tried earnestly to increase production and that its statistical reports covered closed transactions only. These statistics showed the number of cars sold in different territories, prices at which the coal was sold, the class of customers and consolidated figures made up from returns made to the local association. The National Coal Association asserts that this is exactly the same type of information made available to dealers in grain through exchanges and to those interested in stocks. All of this information, it is pointed out, was available to the public, was published by coal trade papers and at all times was obtainable by the daily press.

Another high point in the bill is the reply to the charge that the National Coal Association, Colonel Wentz and Mr. Morrow were parties to a conspiracy to put coal on a spot-price basis and that they succeeded in obtaining priority orders from the Interstate Commerce Commission. The orders referred to are Nos. 10 and 11, covering shipments to the Northwest and to New England. The attorneys for the National Coal Association aver that the activities of the association in that connection not only were perfectly legal and proper but were commendable, unselfish and patriotic and were undertaken at the request of representatives of the public in those sections. It is pointed out that every action in connection with those orders was in conjunction with the activities of representatives of the government.

It also is pointed out that the National Coal Association had nothing to do with the first six service orders. The bill showed such possibility of irreparable loss and damage to the plaintiffs that upon preliminary hearing the court entered the temporary restraining order. The government appeared simply to advise that it was not prepared to argue the case. The order is to remain in force until April 12. The verbiage of a portion of the court's order is as follows:

Order Forbids Legal Interference

"It is ordered and decreed that the defendants herein and each of them, their assistants, agents, employees and representatives and their respective successors in office be, and they hereby are, restrained from serving or attempting to serve upon the individual plaintiff or any other officer, director, representative or agent of said National Coal Association any summons or other process issued or hereafter to be issued out of or by said U. S. District Court for the District of Indiana in the proceeding aforesaid under said indictment; also from instituting any proceedings, or attempting to institute, or causing to be instituted, or pressed to a hearing, any proceeding for the removal or attempted removal of the individual plaintiff Morrow, or said President Wentz or said Couffer, from the districts respectively where said plaintiff Morrow, said Wentz and said Couffer respectively reside as aforesaid, to said District of Indiana; and from serving or attempting to serve or causing to be served upon said plaintiff Morrow, or said Wentz, or said Couffer, any warrant or other process issued in connection with said proceedings; or otherwise depriving said individual plaintiff Morrow, or said Wentz or said Couffer or either of them of their liberty; and from interfering with or arresting or harassing or threatening to arrest or harass said plaintiff Morrow or said Wentz or said Couffer or either of them under any process whatsoever purporting to be based upon said indictment or issued in any such removal or other proceedings already or hereafter to be instituted at any time or place; and from in any manner interfering with the conduct of the business of the plaintiffs or either of them."

In the bill of complaint, which was filed for the National Coal Association by Rush C. Butler, its general counsel, and Stephen A. Foster, Fletcher Lewis and H. Prescott Gatley, of counsel, it is recited that the indictment in the first count charges the National Coal Association "with having continuously during the period of three years prior to the finding, presentation and filing of said indictment, knowingly, etc., engaged in a corrupt and unlawful conspiracy among themselves and with divers other persons to the grand jurors unknown, in undue, unreasonable, unlawful, direct and oppressive restraint of trade among the several states of the United States and with foreign nations, in violation of the aforesaid Sherman Anti-Trust law, which unlawful, corrupt conspiracy, said indictment charges, was intended to involve, and did involve, and was in truth and in fact, a conspiracy to restrain said trade concerning the mining, production, sale, purchase, distribution, and transportation of bituminous coal among said states and with foreign nations."

The association is charged also "with having been similarly engaged in a corrupt and unlawful conspiracy in re-

straint of commerce among said several states, etc. And said two hundred and twenty-six defendants are charged in the third count of said indictment with having been similarly engaged in an unlawful conspiracy in restraint of such trade and commerce. And said two hundred and twenty-six defendants are charged in the fourth count of said indictment with having during the same period combined and conspired together and among themselves and with divers other persons unknown to the grand jurors to monopolize trade and commerce among the several states, etc., in violation of said Sherman Anti-Trust law. And said two hundred and twenty-six defendants are charged in and by the fifth count in said indictment with having during the same period actually monopolized trade and commerce among the several states, etc., in violation of said Sherman Anti-Trust law."

Referring to the charge in the indictment that the priority orders issued by the interstate Commerce Commission in 1920 were influenced by the association and that they "caused a shortage of coal" when there was no shortage of available coal, the bill of complaint states that the government "sought to make appear as criminal, and as part of a criminal conspiracy, acts of the plaintiffs, National Coal Association and Morrow and the said Wentz, which not only were perfectly legal and proper, but were also thoroughly commendable, unselfish and patriotic, and free from any taint whatsoever of improper or illegal purpose, and were undertaken and performed pursuant to the suggestion and with the approval and sanction of representatives of the U. S. Government, and upon representations made to said plaintiffs, and said Wentz, by citizens and organizations in the Northwest and New England states, that unless some action was immediately taken to relieve the then existing and rapidly increasing coal shortage in such sections of the country, conditions there prevailing were such that a serious calamity to those sections would result, involving the shutting down of industries, the curtailment of railroad service, the cessation of other public utilities, the suffering of individual domestic consumers, and the actual freezing and starvation of men, women and children."

The bill further sets forth as reasons for not wishing to be tried in Indianapolis "that if said corporation plaintiff National Coal Association is forced in said District of Indiana under said indictment, said plaintiff would be compelled to stand trial with over two hundred and twenty other defendants; that said indictment covers the period of three years prior to its return and also contains allegations covering the entire period of ten years prior to such return, and embraces within its scope practically every act or thing which has been done or performed by each and every of said two hundred and twenty-six defendants in connection with the coal industry during said period of ten years; and at the trial of said case the government will presumably attempt to introduce testimony in support of each and every one of the defendants who is brought within the jurisdiction of said U. S. District Court and placed on trial there, will presumably attempt to introduce evidence disproving each and every such charge; that such trial will require the introduction of records and other evidence, both documentary and oral, pertinent to each and every of the issues contained in said indictment and tending to establish either the guilt or innocence of each of said two hundred and twenty-six defendants, or so many of them as may be brought within the jurisdiction of the court and placed on trial; that the trial of so many defendants upon an indictment covering so long a period of time and embracing such a large number and variety of different charges will, as these plaintiffs are informed and believe, consume a long period of time, to wit, six months or more, and will, if the plaintiff National Coal Association is brought within that jurisdiction and there placed on trial, necessitate the production in the District of Indiana of the records, books, files and correspondence of said plaintiff, and the attendance of many of its employees for the purpose of giving testimony, and this will result in complete demoralization of the business and affairs of the plaintiff the National Coal Association for a long period of time, and will put it to great and unconscionable expense in defending itself against the unwarranted charges contained in said indictment, under none of which is it guilty and with most of which it has no possible connection whatsoever, such as the wage scale conferences and agreements in the Central Competitive Field, forming, as they do, a prominent and fundamental part of the charge of conspiracy which is the basis of said indictment; said loss and injury to the said corporation plaintiff would in the aggregate be many times the aforesaid sum of $3,000, exclusive of interest and cost; and said corporation plaintiff would be obliged to pay all of such expense and incur all of such loss before it could obtain a review either by the Circuit Court of Appeals or by the U. S. Supreme Court of the action of the trial court, should it hold that it had jurisdiction over said plaintiff, and said plaintiff has no adequate remedy at law, and its rights can be protected only in this court of equity and by the granting of the relief hereinafter prayed."

Eastern Coal Shippers to Northwest Seek Adjustment Of Freight Rates from Mines to Lower Lake Ports

AT A MEETING of about two hundred coal operators from Ohio, Pennsylvania, Kentucky and West Virginia, and dock operators from the Northwest, held at the Hollenden Hotel, Cleveland, March 31, resolutions were adopted whereby a direct appeal will be made to the presidents of the lake coal-carrying roads for a readjustment of freight rates to the lower Lake ports, for the purpose of stimulating the movement of bituminous coal from Eastern fields to the Northwest. Under the present rates the Eastern fields are at a disadvantage of 58c. per ton in competition with the Illinois fields, and this maladjustment is asserted to be the dominant reason why practically no contracts for Lake coal for the Northwest have been placed in the East this season as compared with previous years.

Eastern roads, therefore, will be asked to readjust their rates so as to absorb at least a part of the excess burden placed upon Eastern coal because of war-time rate advances, prior to which these competing fields were on somewhat of a parity. In presenting their case directly to the heads of the railroads involved the interests represented are acting on the suggestion recently made by the Interstate Commerce Commission that it is a matter which ought to be settled amicably between the carriers and the shippers. It is not expected that a formal complaint will be filed for an adjustment of rates on this season's coal movement, although immediate action would aid in getting coal moving to the Lakes and starting mines operating.

Previous conferences have been held with traffic executives of the roads, but the road officials have declined to make the necessary adjustment in the rates; hence the action to place the entire matter directly before the railroad presidents.

The conference was called by D. F. Hurd, secretary of the Pittsburgh Vein Operators Association of Ohio. Thomas K. Maher, president of the Maher Collieries Co., large lake coal shippers, presided as chairman of the meeting. It is expected that another conference will be held on April 12, to receive reports from the committee appointed and to give further consideration to the subject.

The railroads involved are the Pennsylvania, New York Central, Erie, Baltimore & Ohio, Norfolk & Western, Chesapeake & Ohio, Hocking Valley, Wheeling & Lake Erie, Bessemer & Lake Erie, Kanawha & Michigan and Pittsburgh & Lake Erie.

Federal Court Upsets Arbitrary Price Fixing by Navy On Commandeered Coal; $198,000 Involved

JUDGE BODINE, in the Federal Court at Trenton, N. J., last week set a new and startling precedent for the coal trade. The New River Collieries Co. had sued the U. S. Government for the difference between the market price and an arbitrary figure fixed by the navy on 60,000 tons of coal commandeered by the navy under the Lever Act. When the coal was taken by the navy in the period between late in 1919 and February of this year payment was offered at about $3.60, this representing the navy's idea of just compensation. The New River Collieries Co. refused settlement on this basis, and elected to sue the government in the Federal courts, a privilege guaranteed by the Lever Act.

The coal company contended that the 60,000 tons of coal was worth $499,000, or about $281,000 more than the government offered to pay. The government succeeded in having a jury trial but was unsuccessful in an effort to introduce evidence as to the cost of production of this coal. The judge held that the only question at issue was one of fact, involving the market value of the coal at the time it was commandeered. He further held that as the coal had been shipped to Tidewater for export, the only question before the jury was the market price at which the coal might have been sold on the open market for that purpose.

The trial lasted three days, during which time the coal company introduced a mass of evidence on the subject of a spot market for export coal. Trade journal quotations, the testimony of jobbers engaged in the buying and selling of coal at Tidewater, and the record of sales made by the New River Collieries Co. were introduced by E. L. Carpenter, of the plaintiff coal company. After five hours' deliberation the jury returned a verdict in favor of the coal company, awarding it $198,000 above the arbitrary price fixed by the navy, or a total of $416,000 for the 60,000 tons.

Decision May Cost Navy Heavy Damages

It is understood that of the fifty-two companies from which the navy commandeered coal forty-two companies accepted the navy's offer, five companies accepted the navy's offer under protest, and five companies elected to sue the government. It is understood that other companies will now file suit and that the total damages to which the government is liable as a result of this decision will run into hundreds of thousands of dollars. There is a possibility that the government will appeal the case to the Supreme Court because of the far-reaching effect of the principle laid down by Judge Bodine in all cases where the government has commandeered or may in the future commandeer private property.

In his charge to the jury Judge Bodine said: "the government had a legal right to take this coal, but under our Constitution and laws it was the duty of the government to pay the plaintiff just compensation therefor.

"The issue between the parties is simply what is just compensation. It is not disputed that the coal was taken. The time it was taken, and the quantities taken are admitted facts.

"The plaintiffs' proofs show that at Hampton Roads at the time in question there was a market for the kind and quality of coal mined by it. . . . And that this coal . . . at a market price which fluctuated as the supply and demand varied.

"The plaintiffs' proofs further show that they should have sold this coal for export, and that they not only could have sold coal which the Navy Department took for this purpose, but that they had sold and did sell during all this period a quantity of their coal for export trade.

"They have also called witnesses to show there was a market price at Hampton Roads during all the time of the taking of this coal for coal of this kind and quality. . . . From all of the evidence on the subject as to what the market price was, the fair market price of coal at the time of the taking you will find your verdict.

". . . So from the proofs in the case, they being uncontroverted, you would find that there was a market for coal at Hampton Roads at the time of the taking of this coal, and then it would be a question for you to determine what was a fair market price of that coal.

"I have excluded a great deal of the defendant's offer to prove what it claimed was just compensation. It has offered to prove that it fixes the price of coal on the basis of the cost of production and a reasonable profit thereon. I have excluded all that and limited your determination to finding what was the fair market price from the evidence adduced here of the coal taken by the Navy Department on the date on which it was taken.

"You of course know that it is necessary for the preservation of the Government that it should have power to take coal and other necessities as it needed. But, as counsel for the plaintiff has called to your attention, our Constitution provides that coal cannot be taken without giving just compensation. And just what is just compensation is not what a bureau head or another department of the government may say is a fair price, nor what Congress may say is a fair price, but courts and juries alone can say what is fair compensation between the government and a citizen with respect to property that has been taken, so long as the Constitution remains. And the courts have said that where an article was traded in in a market, its fair market price was the measure of just compensation, and this must be so because if one citizen may sell his property in the open market at a given figure, even though the figure be high, just compensation for the citizen whose property is taken must be the same price as his competitor is obtaining in the open market. Otherwise, a department of the government by taking one man's property and not taking another's might enrich one citizen and impoverish another. Just compensation for property taken by the government must necessarily be the same compensation as the property would have sold for in the market to some one other than the government. If its value in the market were so many dollars, just compensation for the property when taken by the government is the same amount of dollars as it would have brought in the market.

"Because the proofs show that this coal could have been sold in the export market, and that fact is not controverted, and the export market was higher than the domestic market, I have excluded proof to show that the domestic market was lower. A citizen whose property is taken is entitled to compensation for the most profitable use to which the property could have been put, in a general sense.

"As I think my charge shows, I excluded from consideration of the jury everything except the question of the fair market value as testified to by those who testified with respect to transactions on that Hampton Roads market. Now, if I am wrong in the trial of this case I am wrong in that. That is the whole criterion of everything that I have been trying to do. And it seems to me, and this is part of the record, that if you say to the Circuit Court of Appeals that that is what I had in mind, and for that reason everything else was excluded, if I am wrong on that, why we will have the pleasure of trying the case over again."

February Exports of Bituminous Coal from United States and Great Britain

(In Gross Tons)

Destination Countries	Feb 1920 From U. S.	Feb 1920 From Great Britain	Feb. 1921 From U. S.	Feb. 1921 From Great Britain
France	72,649	1,232,085	54,132	369,641
Italy	81,739	310,445	104,693	310,934
Netherlands	49,634	32,269	38,555	106,268
Sweden	8,886	158,153	9,521	68,566
Norway	.....	61,402	751	48,275
Denmark	5,878	91,012	28,040	167,392
South America	138,306	102,840	140,818	87,866
Other countries	811,714	612,840	882,160	570,206
Totals	1,168,806	2,601,046	1,258,670	1,729,148

Navy Department Opens Supplementary Coal Bids

SUPPLEMENTARY anthracite and bituminous coal bids were received by the Navy Department on March 29, the quantities for which bids were invited being as follows:

Anthracite—3,000 tons of egg for the Washington (D. C.) Navy Yard; 200 tons of egg for the Anacostia (D. C.) air station; 200 tons of egg and 100 tons of nut for the mine depot at Yorktown, Va.; 160 tons egg, 135 tons nut, 250 tons stove and 400 tons broken at the Norfolk Navy Yard; 125 tons egg at the Norfolk Hospital; 150 tons egg at the Charleston Hospital and 1,000 tons stove at the Charleston Navy Yard.

Bituminous—600 tons at the Cape May air station; 400 tons at the Fort Mifflin (Pa.) ammunition depot; 200 tons at the Anacostia air station; 700 tons at the Greenbury Point (Md.) radio station; 1,500 tons at the Annapolis engineering station; 34,000 tons at the Annapolis Naval Academy; 5,300 tons at the Portsmouth (Va.) hospital; 600 tons at the Portsmouth ammunition depot; 900 tons at the Yorktown mine depot; 1,200 tons at the Hampton Roads training station; 40,000 tons at the ordnance plant, South Charleston, W. Va.; 25,000 tons at the Port of Philadelphia; 1,550 tons at the Alexandria (Va.) torpedo station and 2,500 tons at the Annapolis Naval Academy.

The bids were:

Anthracite—Consumers Coal Co., Charleston, S. C., delivery Charleston, 150 tons egg, $17.50 per ton; 1,000 tons stove, $16.

Weston Dodson Co., Bethlehem, Pa., 3,000 tons egg, delivery Washington Navy Yard, $10.64 April to September; $12.57, balance year. Two hundred tons egg, District of Columbia air stations, $13.83. Two hundred tons, egg, Yorktown, Va., $14.63; 100 tons, nut, $15.13. Norfolk, Va., delivery 160 tons, egg, $12.71; 135 tons, nut, $13.21; 250 tons, stove, $13.21; 400 tons, broken, $13.18; 125 tons, egg, $12.71. Charleston, S. C., delivery, 1,000 tons, stove, $18.37.

William Johnson & Co., Charleston, S. C., 150 tons, egg, $17.52; 1,000 tons stove, $16.22.

Philadelphia & Reading Coal & Iron Co.—Yorktown, Va., delivery, egg, $7.75; nut, $8.05. Norfolk delivery, egg, $7.75; nut, $8.05; stove, $8.05; broken, $7.75. Norfolk delivery, egg, $7.75. Charleston delivery, egg, $7.75; stove $8.05. Washington, D. C., egg, $7.75; mine prices.

Thomas F. Slattery, Philadelphia—Washington delivery, $7.50, April to September, $8 balance year; same prices on egg for Yorktown, Norfolk delivery; mine prices.

Coal Mont Moshannon Coal Co., Philadelphia—Washington delivery egg, $7.75, April to September; $8.75 balance of the year. Yorktown delivery, egg, $7.75 and $8. Norfolk delivery, egg and broken $7.75; stove and nut, $8. Norfolk delivery, egg, $7.75 and $8.75. Charleston delivery, stove, $8 and $9; mine prices.

Bituminous—H. P. Drydon & Bro., Piedmont, W. Va., $25,000 tons, $4.48; same price for 1,550 tons; $7.50 for 2,500 tons; Baltimore delivery; $8.25 same quantity, Annapolis delivery; 600 tons, Cape May delivery, $7.33 and $7.63; mine price, $3.36 and $3.92; 400 tons, Fort Mifflin, Pa., $6.89 and $7.20; mine price, $3.36 and $3.92; 1,500 tons Annapolis, $8.67 and $8.98; 34,000 tons Annapolis, $7.61 and $7.95.

W. H. Blight, Elmira, N. Y., 600 tons Cape May, $3.10; $3.40 and $3.65; 400 tons, Fort Mifflin, same prices.

Dexter & Carpenter, New York, 2,500 tons, Baltimore, $6.50 and $6.10, $6.94 and $6.38, $7.22 and $6.66; 1,500 tons at Annapolis, $8.39 and $7.83, $8.67 and $8.13, $8.35 and $8.95; 34,000 tons, Annapolis, $7.39 and $6.83, $6.67 and $7.11, $7.35 and $7.39.

Lake & Export Coal Corporation, Huntington, W. Va., 5,300 tons, Norfolk, $3.92, $4.20 and $4.424; 600 tons, Portsmouth, Va., same prices; 900 tons, Yorktown, Va., same prices; 40,000 tons, Charleston, W. Va., $3.528, $3.92 and $4.20; 1,550 tons, Alexandria delivery, $3.92, $4.20 and $4.424.

W. A. Marshall & Co., New York, 25,000 tons, Philadelphia, $7.50, and $7.75; at mines, $4.48.

Crozer-Pocahontas Co., Philadelphia, 5,300 tons, Norfolk and 600 tons Portsmouth, $3.92 at mines.

Fayette Smokeless Fuel Co., Mount Hope, W. Va., 5,300 tons, Norfolk, $3.85, $3.90 and $3.95; 40,000 tons, Charleston, $3.85, $3.90 and $3.92.

Flat Top Fuel Co., Bluefield, W. Va., 1,550 tons, Alexandria; 1,500 tons Norfolk and 40,000 tons Charleston, W. Va., $3.90 per ton at mines.

L. A. Snead Co., Washington, D. C., 200 tons, D. C., $10.50, delivered; 5,300 tons, Norfolk, $3.85; 600 tons Portsmouth, $3.85; 900 tons Yorktown, $3.85; 1,500 tons, Alexandria, $3.85; mine prices.

Consolidation Coal Co., Washington, D. C.: 34,000 tons Annapolis, $8.20; 2,500 tons Baltimore, $7.50, at Annapolis, $8.20.

Imperial Coal Corporation, Philadelphia: 600 tons Cape May, $7.52 and $7.70; at mines, $3.82 and $4; 400 tons Fort Mifflin, $7.10 and $7.30; at mines, $3.82 and $4. Twenty-five thousand tons, Philadelphia, $6.62 and $6.92; alongside vessel, $6.85 and $7.15; aboard cars, $6.78 and $7.08; trimmed in bunkers, $7.40 and $7.07; at mines, $3.60 and $3.90. The company also submitted the following prices: $6.37 and $6.67; $6.60 and $6.90; $6.53 and $6.83, $7.15 and $7.45; $3.35 and $3.65. Fifteen hundred and fifty tons, Alexandria, $7.10 and $7.30; mine price, $3.82 and $4.

Quemahoning Coal Co., Somerset, Pa., 700 tons, Maryland Radio Station, $7 and $7.35.; 1,500 tons Annapolis, $8 and $8.37; 34,000 tons, Annapolis, $7 and $7.37.

Indict Chicago Coal Retailers, Charged with Boycotting and Blacklisting

INDICTMENTS charging conspiracy, boycotting and blacklisting were returned Saturday, April 2, against officers of the Retail Coal Bureau, the Retail Coal Merchants' Association of Chicago and several private detectives of Chicago. The presentment charged conspiracy to commit acts injurious to public trade and to regulate and fix prices so as to eliminate competition by independent coal dealers.

Those named in this charge, held under bonds of $1,500 each, included Tracy G. Wright and Robert H. May, officers of the Retail Coal Bureau; Robert H. Clark and Nathaniel H. Kendall, officers of the Chicago Retail Coal Merchants' Association.

The same men also are charged with conspiracy to form a boycott and blacklist against six independent coal dealers.

New England Receipts of Coal in January

RECEIPTS of anthracite in New England in January, 1921, were 958,981 net tons—315,483 tons received by tidewater and 643,498 tons by rail—according to statistics compiled by Edward F. O'Dowd, statistician to the Fuel Administrator for Massachusetts. This compares with 865,000 tons of anthracite received in January, 1920.

Bituminous coal receipts in January, 1921, were 1,687,784 net tons, divided between 707,004 tons by tidewater and 980,780 by rail. The corresponding figures for January, 1920, were 1,477,194 tons, of which 700,856 came by tidewater and 776,338 tons were shipped in by rail.

New York City Saves $212,761 on Coal

UNDER contracts awarded March 31 by the Commissioner of Plants and Structures of New York City for coal for municipal ferries the city will save $212,761 as compared with last year. The contracts run for the new coal year and are as follows, delivered New York harbor per net ton:

Staten Island Ferry	80,640 tons buckwheat No. 1 at	$7.98
39th Street Ferry.....	26,880 tons buckwheat at	7.45
Astoria Ferry.....	6,048 tons bituminous at	8.42

The bidders in each case agreed to incorporate a clause giving the city a reduction in the event of lowered freight rates during the life of the contracts.

International Mine Rescue Meet at St. Louis

ARRANGEMENTS have been made by the Bureau of Mines to hold this year's International Mine Rescue and First Aid meet at St. Louis, Sept. 1, 2 and 3. Teams representing Canada, England, France and Belgium will attend. A conference on the standardization of mine-rescue methods will be held during the meet. Commercial exhibits of mine-rescue apparatus will be displayed in conjunction with the meet, the Joseph A. Holmes Memorial Association will hold its annual meeting and awards will be made of its heroism medals.

British Miners Strike for Subsidy, So That Coal May Be Sold to Foreigners and Citizens at a Loss

DECLARING that they will not permit of the reduction in wages which Government control of the coal industry makes absolutely necessary, the mine workers of Great Britain on April 1 went on strike, calling out everyone, including those without whose services the mines cannot be kept from flooding and filling with gas. These men, who are termed "safety workers" in Great Britain and who include the pumpmen, fanmen and hoisting engineers ("engine winders"), usually have been excluded in strike calls, for if they are withdrawn it will be weeks and even months in some cases before work can be resumed. In 1919 engine men and pumpmen for the first time were called out on a large scale. This was in the local Yorkshire strike. At that time the navy men were pressed into the service and the mines were saved, though one or two are said to be still flooded.

The present strike was ordered by the Miners' Federation, which organization is not likely to receive any great support from other unions owing to the general slackness of funds and shortage of work. Sir Robert Horne, president of the Board of Trade, on March 30 called on the miners' leaders to reconsider their decision, especially as to the flooding of the mines. Strange to say, the miners are more enraged with the government than with the mine owners. They want the taxpayer to come to the aid of the industry and pay it a subsidy, so that the unprofitable mines may be made workable without any reduction in wages.

But the government has no disposition to be so benign to the coal industry in view of the fact that other industries which must be taxed for that benignity are themselves in difficulties and working irregularly. In fact, their misfortunes are greater than those of the coal industry. The government feels that the taxpayer has been gouged long enough. Since Jan. 1 the government has been committed to the payment of £7,000,000 a month, having subsidized mining to this amount. The miners want the time extended to Aug. 31, increasing the subsidy from £21,000,000 to about £60,000,000.

Wages Offered More Than Double Those of 1914

The wages the Derbyshire and Nottingham mine owners are offering, while 3s. 6d., or 84c., below that paid under the recent scale, are 110 per cent above those paid in 1914. The mine workers in these two countries are willing to accept a reduction of 2s. 6d., or 54c.

On March 31, somewhat to the surprise of everyone, the British Government, without waiting for the strike to commence, declared a "state of emergency" under a law that has not been put into operation since its enactment last October. The Emergency Powers Bill thus brought into action declares that "if any action has been taken or is immediately threatened by any persons or body of persons of such nature and on so extensive a scale as to be calculated by interference with the supply and distribution of food, water, fuel, light or with the means of locomotion, to deprive the community or any substantial portion of the community of the essentials of life," a state of emergency would be created and any government department would be empowered to make such regulations as might be deemed necessary for the preservation of peace and for the securing of the necessaries of life and transit essential for the safety of the community.

Nothing in the act is to be construed as authorizing any form of military or industrial conscription. Nor can any regulation be promulgated that will make it an offense for any person to take part in a strike or peacefully to persuade any other person to take such action. All the regulations issued have to be laid before Parliament, and they will have the force of law, but they may be revoked, altered or added to by resolution of both houses. They remain in force for seven days unless a resolution of both houses provides for their continuance. Under the law it was necessary to call Parliament together within five days, so a proclamation was made April 1 calling together both houses April 4.

The suspension is almost complete. Two mines in Yorkshire, one in Northumberland, one in Scotland and one in North Wales are working, the men having promised to continue work provided the wage scale arrangements elsewhere are duplicated at these plants.

Unfortunately while these few mines worked the rest were idle, that idleness extending to the pumpmen and enginemen despite the fact that they have a separate union and were disposed to go on working. As a result of their strike the flooding of the mines has reached a critical stage. The sections where the pumpers are to be found at work are Scotland, Northumberland, Yorkshire and Monmouthshire, but even there defections are daily experienced. In six collieries in Staffordshire and one in the Forest of Dean the water has gained the upper hand, and in the former county the loss from flooding is already placed at $5,000,000. In the Scottish districts, despite the fact that the pumpers in general did not strike, some mines are in serious condition from failure to remove the incoming water. Attempts are being made everywhere to run the pumps by volunteers from among the clerical forces of the mines.

At Rhymney the miners held a mass meeting and decided that they would not permit pumping to continue at Pontlottyn. They proceeded in consequence to that colliery and threatened the officials. As a result the pit ponies were brought to the surface. At Neath demonstrations were made against non-unionists.

On April 3 at a meeting of the Liverpool branch of the National Union of Railwaymen a vote was taken as to the desirability of a sympathy strike, the membership recording its preference for such a suspension. Leaders of the railway and transport workers met on the same day to discuss what should be the action of the "triple alliance"—miners, railway and transport workers—at conferences to be held on Tuesday and Wednesday of this week. Should these men decide to strike, the number of the strikers would be raised to 5,000,000. The mine workers aggregate 1,200,000. As 1,500,000 men in other trades are idle, the situation is quite tense. Arthur Henderson, a powerful labor leader, and a Cabinet officer during the war, is endeavoring to overthrow the Lloyd George administration and replace it by a Labor, perhaps a Socialist, government, the refusal to continue the payment of subsidies being regarded as basally an attempt to overthrow unionism and the principle of the living wage.

Coal-Mine Fatalities Decline

FEWER lives were lost in coal mines in 1920 in proportion to the output of coal than in any previous year, according to a report of the Bureau of Mines. During that year only 2,260 men were killed by accidents at coal mines, a decrease of 57 from 1919, although there was an increase of more than 18 per cent in the coal output. The bureau estimates that for every million tons of coal mined 3.50 lives were lost, as compared with 4.24 in 1919. It estimates that 775,000 men were employed in coal mines in 1920, an increase of 10,000 over 1919.

There were decreases of 64 per cent in fatalities due to mine fires; 38 per cent in fatal accidents caused by explosives; 14 per cent in deaths resulting from explosions from gas and coal dust; 16 per cent in haulage accidents above ground; while there were increases of 10 per cent in underground accidents due to electricity; 6 per cent in fatalities caused by underground haulage and 2.5 per cent in deaths caused by falls of roof and coal. There were eight disasters in 1920, causing a minimum of five deaths each, resulting in a total of 61 fatalities, as compared with nine similar accidents in 1919, in which 201 lives were lost.

Bids on Coal for Panama Railroad Show Wide Variation; Some Offers Disregard Changes in Miners' Wages

BIDS for furnishing the Panama Railroad Co. with any part of the company's coal requirements, estimated at 700,000 tons, during the twelve months ending April 30, 1922, were opened in New York City on March 31. There were twenty-eight bidders. Several of the bidders specified that the quoted prices are to continue during the entire year regardless as to any increase or decrease in miners' wage scale.

The bidders and prices quoted follow:

W. C. Atwater & Co., Inc., 20,000 gross tons monthly, Pocahontas run-of-mine, $3.60 per ton for May and June delivery; $3.90 per ton thereafter until April 30, 1922.

Ajax Coal Mining Co., 750,000 tons New River and Pocahontas, pools 1 and 2, navy standard; $3.70 per net ton.

C. G. Blake Co., Inc., 220,000 gross tons; 10,000 tons in May and June each, balance of 200,000 in monthly installments; New River; $3.36 per gross ton.

Bluefield Coal & Coke Co., 100,000 tons, Pocahontas, $4.10 per gross ton.

Castner, Curran & Bullit, Inc., 120,000 tons; pools 1 and 2, $3.92.

Crozier Pocahontas Co., 180,000 tons, navy standard, $3.92.

Hartwell & Lester, Inc., 60,000 gross tons, navy standard, New River, pool 1, $4.02.

Houston Coal Co., 120,000 net tons, 10,000 tons monthly beginning May 1, pools 1 and 2, $4.03.

Lake & Export Coal Corporation, 15,000 tons per month, New River and Pocahontas run-of-mine, $3.85.

J. W. Lowe Co., 10,000 tons Pocahontas run-of-mine, pool 1, $4, subject to acceptance in fifteen days.

Maryland Coal & Coke Co., 150,000 tons New River, pool 2, $4.40 per gross ton.

New River Collieries Co., 120,000 gross tons, 10 per cent more or less, pool 1, $4.20 gross ton; subject to acceptance by noon on April 11.

Northern Coal Co., 4,000 gross tons monthly, pools 1 and 2, $3.60 for first six months, and $3.90 for last six months.

Pocahontas Fuel Co., Inc., 360,000 gross tons, navy standard; price to be named by seller on the 25th of each month for the preceding month but not to exceed $4.08 at any time.

Pocahontas Coal Sales Co., 40,000 tons, Pocahontas run-of-mine, pool 1, $3.86.

H. W. Payne & Co., Inc., for the Reid Coal Mining Co., 700,000 gross tons, pools 1 and 2, $3.65.

Raleigh Smokeless Fuel Co., 10,000 net tons per month, pools 1 and 2, $3.50 per net ton; subject to acceptance in ten days.

Smokeless Fuel Co., 5,000 tons per month, $3.95.

L. A. Snead Co., 50,000 tons (4,000 tons per month), pools 1 and 2, half each; $3.60 first six months; $3.90 last six months.

United Collieries Corporation, on behalf of the Becarra Coal & Coke Co., of Philadelphia, 100,000 tons, pools 1 and 2, $4.30.

White Oak Coal Co., 120,000 tons New River, pool 1, $3.92.

Weston Dodson Co., 36,000 tons pool 1, $3.90; 36,000 tons pools 1 and 2, $4.15, and 36,000 tons pool 1 or 2, $4.40.

Fayette Smokeless Fuel Co., 200,000 tons, run-of-mine, pools 1 and 2, $3.75 per ton to Oct. 1, $3.90 thereafter.

N. B. Whitman & Co., 120,000 gross tons, $4.57 per ton; suject to acceptance before April 15.

Central Pocahontas Coal Co., 120,000 tons, pools 1 and 2, $3.90.

Chesapeake & Ohio Coal Agency, pools 1 and 2, 8,000 tons monthly; pool 1, $4.20 per ton; 25,000 tons monthly pools 1 and 2, $3.90 per ton.

Dexter & Carpenter, Inc., 12,000 tons monthly, Pocahontas, pool 1, $4.10.

Fort Dearborn Coal & Export Co., 100,000 tons, Pocahontas, pool 2, $3.92.

Flat Top Fuel Co., 300,000 gross tons, Pocahontas & New River, run-of-mine, pools 1 and 2, $3.92.

Coke Operators Cut Wages of Their Men

FOLLOWING the example of W. J. Rainey, of the Connellsville region, who, on March 8, reduced wages 18 per cent, the independent coke operators of the Connellsville region on April 1 restored the Nov. 10, 1917, wage scale, which means a reduction of from 22 to 30 per cent on all grades of mine and oven labor. W. J. Rainey's cut on March 8 being less drastic than that decided on by the independent operators, he made a further cut on April 1, bringing his wage schedules to the level of the others. Pickmining, which is the basis of the scale, is reduced from $3.25 to $2.29 per 100 bushels. No intimation has as yet been made of any reduction by the H. C. Frick Coke Co.

West Kentucky Will Not Cut Wage Scale

WEST Kentucky mines are divided into two classes—those owned by members of the West Kentucky Coal Operators' Association which have a contract running to April 1, 1922, and those operated by members of the Coal Operators' Association which have a contract which expires as early as April 1 of the present year. The first group is the larger. It comprises two-thirds of the mining production of west Kentucky, whereas the other association produces only one-third of the output. The smaller association is active in Webster, Hopkins and Christian Counties and in parts of Union County. As stated, its contract with the union would have closed April 1 last, but it reached an understanding on March 24 with the United Mine Workers by which the wage rate would not be reduced, the sessions in which this decision was made having started Monday, March 21. The St. Bernard Mining Co.'s mines and the two mines of the Hart Coal Corporation are not affected by this agreement, as their contracts do not expire till next year. All the other mines in the district are parties to this renewal of contract.

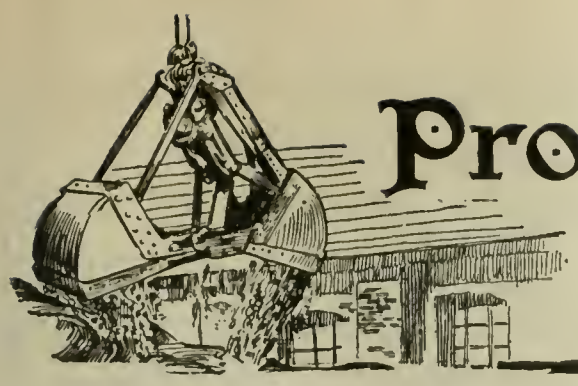
In the southeastern end of the state, in the County of Letcher, which comprises the Elkhorn field, the Amburgy Coal Co., of Dalna, has fifty miners on strike, and the company proposes to evict them at once if they will not accept reduced wages.

Propose Twenty-Cent Tax on Anthracite

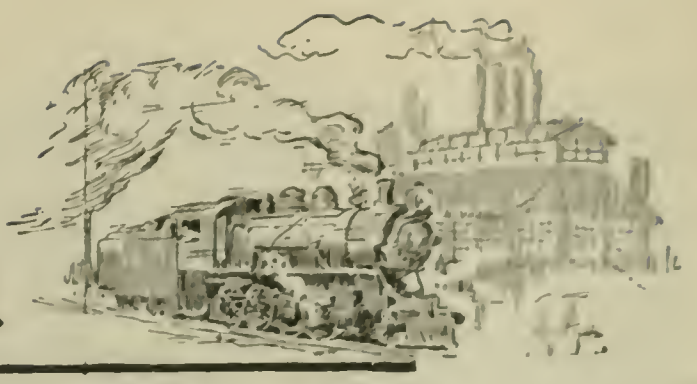
A BILL having the support of the state administration was introduced into the Pennsylvania State Legislature on March 30 providing for a tax of 2½ per cent on all anthracite mined and prepared for market. This tax is expected to raise between $11,000,000 and $12,000,000 a year, the estimate being based on 75,000,000 tons of prepared coal annually sold. As the cost of domestic sizes is about $8 per ton at the mines, the tax will be about 20c. on coal of that character. The original proposition was to place the tax on all coal, bituminous and anthracite alike, selling at over $5 per ton, but for some reason this plan was dropped.

THE BUREAU OF MINES has rejected bituminous coal bids recently received which are higher than $3.75 per gross ton or $3.3482 net ton f.o.b. mines on New River coal; those higher than $3.92 gross ton or $3.50 net ton on Maryland, Pennsylvania and Northern West Virginia coal and all bids on gas coal except the one at $2.52 gross or $2.25 net ton. Bids not eliminated by this action are still under consideration.

ROCKWOOD COAL CO. BID $4; NOT $2. — In *Coal Age* of March 24 the Rockwood Coal Co., of Rockwood, Pa., was stated to have bid $2 per gross ton on the Government Fuel Yard contract. This was a typographical error, the bid being $4.



Production and the Market



Weekly Review

HARDLY a flurry in coal prices was caused by the first few days of the British strike. With the possible exception that ships will now bunker on this side for the round trip, no increase in demand is forecast unless the strike should be very greatly prolonged. The world is so full of coal already mined as compared with what is being consumed day by day that the loss of 60,000 to 70,000 tons a day—the extent of British exports—will not be felt for some time.

It is reported that some English firms had asked for options on tonnage in the event of a strike but that none has been tendered by American firms. So flat is the market at Tidewater that the few foreign inquiries received the first of this week were at less than $6, Hampton Roads, that is, at the market as it has been for weeks past.

Buyers Hope for Reduction of Miners' Wages

Just as out of thin air a rumor and then the idea has grown that freight rates should be, and therefore would be, reduced, so the thought is gaining ground that coal-mine labor must next take a reduction after labor on the railroads and in the iron and steel industry has been liquidated, and while business is in this questioning attitude it is not investing in next winter's coal.

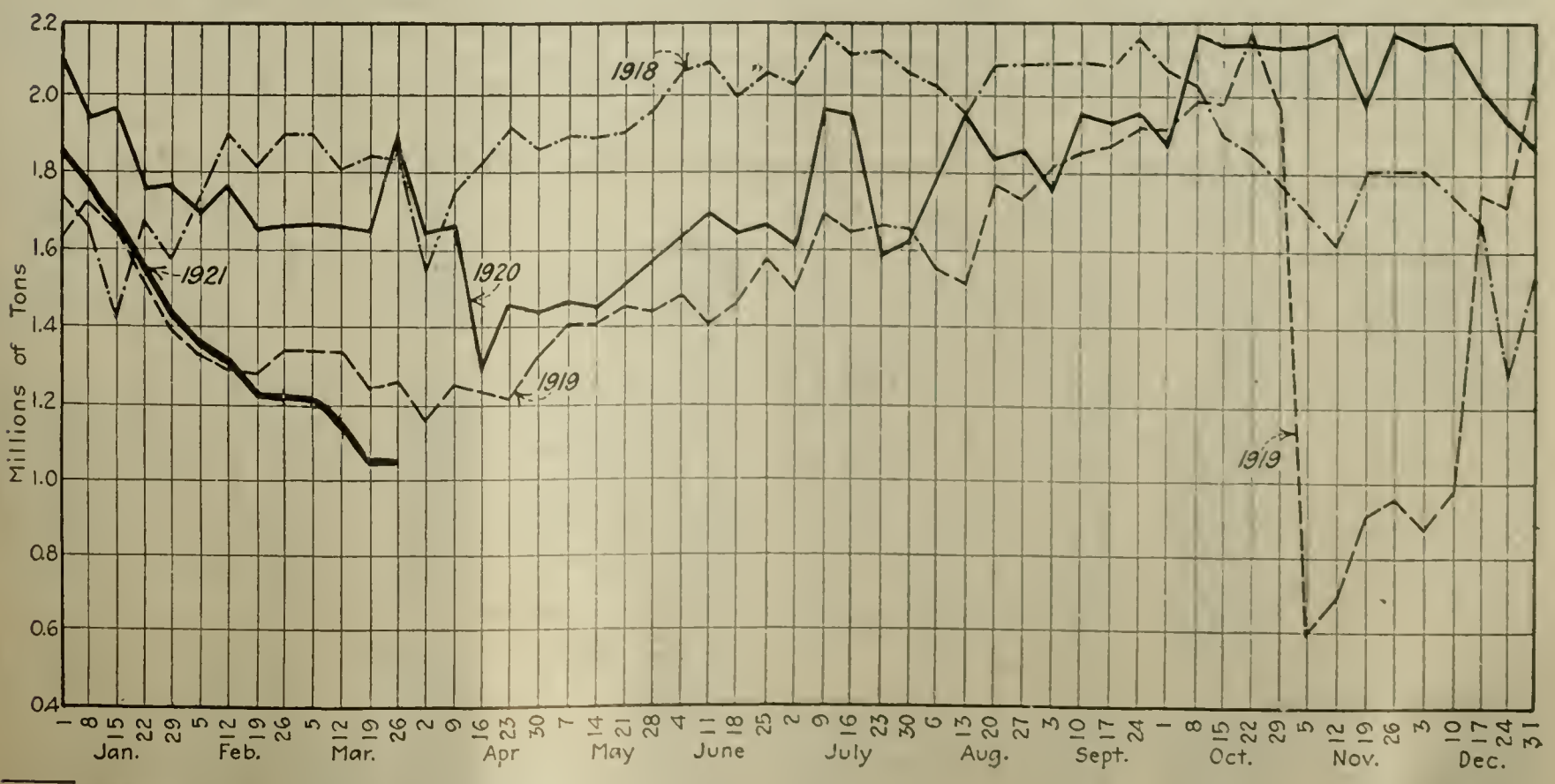
Just to illustrate their confidence in the future some large suppliers of coal in the Middle West, it is reported, are offering to ship coal to their regular customers for next winter's use, giving thirty days' time and carrying the invoices until October at 7 per cent. Few takers have been found so far. The uncertainty surrounding the future price of coal and freight rates is so discouraging to any storage movement that bituminous production is dropping week by week until it is now but little if any above 6,000,000 tons a week, or at the rate of but 300,000,000 tons a year, compared with last year's output of 556,000,000 tons.

Coal Age index stands at 101—that is, without change from last week. It is significant that prices on Lakes business closed so far this year at $3.50 represent the starting point at which contracts were made in 1920, although there has been one increase in wages since that time.

BITUMINOUS

Production continues to decline; during the week ended March 26 the total output was 6,412,000 net tons, nearly 100,000 tons, or 1.4 per cent, under the figure for the last

Daily Average Production of Bituminous Coal*

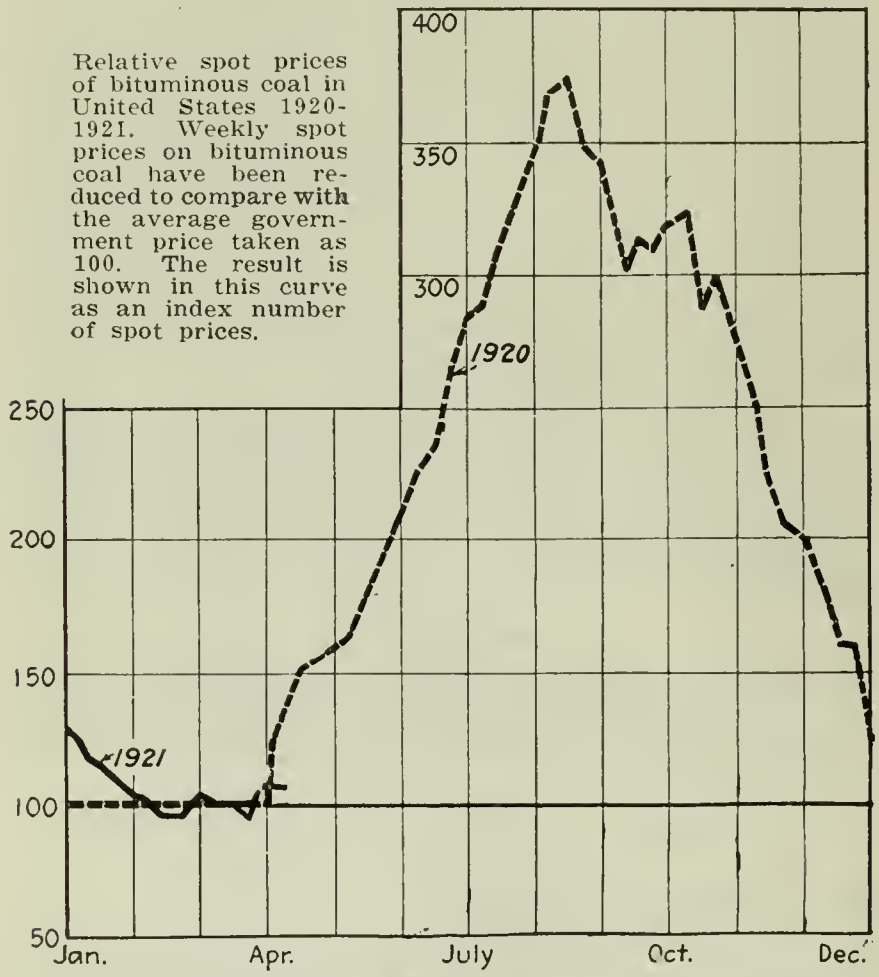


*From weekly report of Geological Survey.

preceding week and but 58 per cent of that for the corresponding week in 1920. Some slight loss may be attributed to the observance of Good Friday in the beginning of the next period (March 28 to April 2). Easter Monday also held down the tonnage. Coupled with this, the fact that many contracts expired on April 1 will tend to reduce production to the 6,000,000-ton mark for the week ended April 2.

Taking the country as a whole, "no market" is now causing a loss of 60 per cent in working time. Northeastern Kentucky was the hardest hit late in March, with losses from this cause of more than 80 per cent. Production in the Northern and Middle Appalachians declined to 3,863,000 net tons the week ended March 19, as compared with 4,029,000 tons the week preceding.

Coal Age index of spot prices remains at 101. While actual orders are as scarce as ever, some inquiry is developing in both the contract and spot markets. Producers are finding the same unreceptive attitude among buyers because of the existing difference in the two markets. In some instances prices for the year's business are being quietly shaded, but the tendency is still to hold off. The contract range may be quoted as 90c.@$1 above the spot market for twelve months' business and 25c. higher for thirty and sixty days delivery.



Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date *a*
March 12*b*.....	6,900,000	504,783,000	10,277,000	458,178,000
Daily average...	1,150,000	1,733,000	1,713,000	1,567,000
March 19*b*.....	6,506,000	511,289,000	10,348,000	468,527,000
Daily average...	1,084,000	1,719,000	1,725,000	1,570,000
March 26*c*.....	6,412,000	517,701,000	11,015,000	479,542,000
Daily average...	1,069,000	1,707,000	1,836,000	1,575,000

(*a*) Less 2 day's production during first week in April to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date *a*
March 12.....	1,926,000	85,783,000*b*	1,648,000	87,305,000
March 19.....	1,687,000	87,470,000	1,601,000	88,906,000
March 26.....	1,564,000	89,034,000	1,921,000	90,827,000

(*a*) Less 2 days' production during first week in April to equalize number of days covered for the two years. (*b*) Cumulative production revised as in Weekly Report 193.

BEEHIVE COKE

Week Ended Mar. 26*a* 1921	Mar. 19*b* 1921	Mar. 27 1920	1921 to Date	1920*c* to Date
99,000	118,000	482,000	2,473,000	5,475,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

	Market Quoted	Gov't Price	Mar. 8 1921	Mar. 29 1921	April 5 1921†
Low-Volatile, Eastern					
Pocahontas mine run....	Columbus.....	$2.35	$3.50	$3.25	**$3.50**
Pocahontas lump.....	Columbus.....	2.60	5.50	5.50	*5.00*
Pocahontas mine run....	Chicago.....	2.35	3.65	4.15	4.15
Pocahontas lump.....	Chicago.....	2.60	5.00	5.15	4.75@ 5.50
*Smokeless mine run....	Boston.....	....	5.65	5.85	5.75@ 6.00
Clearfield mine run.	Boston.....	2.95	2.50	2.50	*2.00@ 2.85*
Somerset mine run.....	Boston.....	2.95	3.00	3.00	**2.35@ 3.75**
Pool 1.....	New York....	2.95	3.25	3.30	**3.25@ 3.50**
Pool 1.....	Philadelphia..	2.95	....	3.50	3.50
Pool 1.....	Baltimore.....	2.95	3.00	3.15	3.00@ 3.25
Pool 9.....	New York....	2.95	2.80	2.75	**2.50@ 3.10**
Pool 9.....	Philadelphia..	2.95	3.00	3.15	*3.00@ 3.15*
Pool 9.....	Baltimore.....	2.95	2.95	2.90	2.75@ 3.00
Pool 10.....	New York....	2.95	2.65	2.65	*2.30@ 2.60*
Pool 10.....	Philadelphia..	2.95	2.75	2.75	*2.50@ 2.75*
Pool 10.....	Baltimore.....	2.95	2.60	2.50	.....
Pool 11.....	New York....	2.95	2.15	2.20	*2.00@ 2.25*
Pool 11.....	Philadelphia..	2.95	2.25	2.00	2.00
Pool 11.....	Baltimore.....	2.95	2.25	2.30	.....
Pool 71.....	New York....	2.95	2.85	3.00	**3.00@ 3.25**
Pool 71.....	Philadelphia..	2.95	....	3.00	3.00
Pool 71.....	Baltimore.....	2.95	2.80	3.00	.....
High-Volatile, Eastern					
Pool 34.....	New York....	2.50	2.35	2.00	1.75@ 2.25
Pool 34.....	Philadelphia..	2.50	2.20	2.15	2.00@ 2.25
Pool 34.....	Baltimore	2.50	2.15	2.05	.....
Pittsburgh mine run.....	Pittsburgh....	2.35	2.25	2.25	2.00@ 2.50
Pittsburgh sc'd gas.....	Pittsburgh....	2.35	2.85	2.85	2.75@ 3.00
Kanawha mine run.....	Columbus.....	2.70	2.25	2.35	2.35
Kanawha lump.....	Columbus.....	$2.95	$3.75	$3.25	**$3.35**
Hocking mine run.....	Columbus.....	2.50	2.15	2.25	2.25
Hocking lump.....	Columbus.....	2.75	3.65	3.40	*3.25*
Pitts. No. 8 mine run....	Cleveland.....	2.35	2.35	2.25	*2.00@ 2.35*
Pitts. No. 8 lump.....	Cleveland.....	2.60	3.65	3.50	*3.25@ 3.50*
Midwest					
Frankl'n, Ill., mine run..	Chicago.....	2.35	2.65	3.40	3.25@ 3.50
Franklin, Ill., lump.....	Chicago.....	2.55	3.75	3.55	3.45@ 3.65
Central Ill., mine run....	Chicago.....	2.35	1.85	2.25	2.00@ 2.50
Central Ill., lump.....	Chicago.....	2.55	2.60	2.85	2.75@ 3.00
Ind. 4th Vein mine run...	Chicago.....	2.35	2.60	2.65	2.25@ 3.00
Ind. 4th Vein lump.....	Chicago.....	2.55	3.30	3.15	2.75@ 3.50
Ind. 5th Vein mine run...	Chicago.....	2.35	2.40	2.50	2.25@ 2.75
Ind. 5th Vein lump.....	Chicago.....	2.55	3.05	2.75	2.25@ 3.25
Standard mine run.....	St. Louis.....	2.35	1.95	1.85	**1.90@ 2.00**
Standard lump.....	St. Louis.....	2.55	2.60	2.45	*2.25@ 2.50*
West Ky. mine run.....	Louisville.....	2.35	2.40	2.50	*2.00@ 2.75*
West Ky. lump.....	Louisville.....	2.60	3.15	3.00	**3.05**
South and Southwest					
Big Seam mine run.....	Birmingham...	2.45	2.95	2.85	2.70@ 3.00
Big Seam lump.....	Birmingham...	2.75	3.75	3.15	3.00@ 3.25
S.E. Ky. mine run.....	Louisville.....	3.00	2.75	2.65	**2.65@ 2.75**
S.E. Ky. lump.....	Louisville.....	3.25	3.85	3.55	3.40@ 3.65
Kansas mine run.....	Kansas City...	3.50	4.50	4.50	*4.25@ 4.50*
Kansas lump.....	Kansas City...	4.00	5.50	5.50	5.50

* Gross tons, f.o.b. vessel, Hampton Roads. Quotations on Pocahontas mine run, Boston market, heretofore quoted included both Pocahontas and New River and will henceforth be quoted as West Virginia "Smokeless."

† Advance over previous week shown in **heavy type**, declines in *italics*.

PRODUCERS ISSUE WARNING OF IMPENDING SHORTAGE

The wise operator or shipper is warning his connections of the autumn shortage that is inevitable with a continuation of the buyers' strike. In the Middle West the main trouble in the stocking program appears to be lack of finances for purchasing, as consumers agree that now is the time to buy. Some operators are making prompt shipments, carrying the account, after thirty days, at 7 per cent interest until late summer or autumn. In booking orders for summer delivery they are taking the business only on a basis of market price, time of shipment.

Because of the scarcity of down cargoes resulting from an inactive ore and grain market not much Lake movement is expected to develop until late in May. There is a fair tonnage left over at the Head-of-the-Lakes. Under present conditions the docks see no inducement to stock early. However, some closings for Hocking and No. 8 have been done at $3.50, perhaps the largest being for the Canadian Northern Ry.—400,000 tons of ¾-in. lump.

Foreign Shipments Are Small in Volume

Foreign loadings continue light. March figures at Baltimore were 87,879 tons cargo coal. Total dumpings at Hampton Roads in thirty days of March were 792,883 tons. Coastwise shipments to New England were light and stocks are adequate for some weeks to come at present rate of consumption. All-rail New England movement declined sharply in the week ended March 26. According to the Geological Survey, 2,640 cars were forwarded, compared with 3,006 the week ended March 19.

ANTHRACITE

Production took a further drop in the week ended March 26, when, according to the Geological Survey, 1,564,000 net tons were mined. The observance of Good Friday is thought to have been the principal cause of the decrease of 7 per cent, or 123,000 tons, from the figure for the preceding week. With the announcement of spring price schedules a good movement has started to the Midwest markets, although Boston and other Eastern centers are taking but very little coal. Stocks are heavy, retail price reductions fail to move coal from dealer's yards and no spurt of buying from the producer is expected until late summer.

Lack of orders has closed a large number of independent collieries. Practically all the larger companies are storing steam sizes and both companies and independents are contracting at $3.50 for buckwheat, $2.50 for rice and $1.50 for barley.

COKE

Beehive production for the week ended March 26 was 99,000 net tons—19,000 tons, or 16 per cent, less than the week before. Present rate of output is the lowest in recent years, barely one-fifth of that during the corresponding period in 1920. With but one exception operating at nearly full time, independent operations in the Connellsville region are almost entirely suspended and the Frick plants are down to 20 per cent running time.

Wage reductions of from 22 to 30 per cent on April 1, made by the independents in the Connellsville region, restored the November, 1917, wage scale. Some business is expected to develop with this cut—within the past few days some sales were made at $3.75 for furnace, which is expected to be the minimum contract figure, while foundry contracts are quoted at $6.

L. & N. Rates May Be Increased

A hearing will be given jointly by the Southern Freight Rate Committee and the Coal, Coke and Iron Ore Committee to parties interested on Monday, April 11, at the Hotel Sinton, Cincinnati, Ohio, on proposals to revise upward rates on bituminous coal from mines on the L. & N. in eastern and southeastern Kentucky, eastern Tennessee, and Virginia to various points in Ohio, Kentucky and Indiana, and from L. & N. mines in western Kentucky to points in the Cincinnati switching limits, Covington, Latonia, and other Kentucky points. The hearing will also include proposals of revisions of rates from mines on the L. & N., L. H. & St. L., I. C. and branch connections, in western Kentucky, to Louisville. All of the above are in the Central Freight Association territory.

Reports From the Market Centers

New England

BOSTON

Trade Despairs of Favorable Developments in April—Buyers Still Indifferent—Almost No Contracts Being Closed—Anthracite Program Outlined—Retail Demand Extremely Light.

Bituminous — Constant canvass of consumers discloses no signs of encouragement to the trade for April. There are relatively only a few plants that are working anything like full time, and even in such cases there are visible supplies of fuel that will last for several months at the present rate of consumption. It will take an industrial revival or a genuine scare to induce any coal purchasing during the present month for anything more than scattering lots. The City of Boston has closed for some tonnage, but this is water coal from Hampton Roads where special inducement was made in order to move spot cargoes.

Receipts are likely to fall off sharply during the present month. In addition to large numbers of contracts that expired with the old coal year it is understood that New England railroads have practically suspended shipments for 30 days on all purchases. Reserves are ample for the season and the carriers are so hard up for ready money that the rumor occasions no surprise. The number of mine shut-downs will probably increase, although certain shippers who have coals classified as high as Pool 9 are making strenuous efforts to sell at a basis around $2.50.

Shippers who counted upon reciprocity from buyers who were well looked after during stress times are not getting their anticipated reward. There is such a spread between contract figures and those made to move spot coal that purchasers cannot justify making seasonal arrangements.

While the Panama bids showed a higher average net return on Hampton Roads coals there was so much of the appearance of concerted action that the quotations are not impressive as a possible background for other contracts. One bid on standard smokeless coal was on the $3 per net ton basis, but the tonnage offered was not large and it is not impossible new invitations will be issued. In any case, commercial business is still being sought in this market where the return cannot possibly be figured at more than $3, and the agencies seeking such business are among those who submitted Panama quotations well up to $4 per gross ton.

Current quotations on bituminous at wholesale are shown in the Weekly Review. Pocahontas and New River are quoted $8.25 per gross ton on cars Boston or Providence.

Anthracite — The Philadelphia & Reading Coal & Iron Co., announced a reduction on March 29 of 50c. on egg, stove, and chestnut, white ash, effective April 1. All the prominent producing companies have now issued new prices, with a single exception, and that company has revised downward the rates on its own transportation. Stocks here are so heavy that no spurt is expected until late summer.

Current retail demand is almost nil; the reductions in cities in this territory of only $1@$1.50 does not meet the public expectation, no matter how ill-founded, and the first part of the season is going to be very hard moving certain of the domestic sizes.

Tidewater—East

HAMPTON ROADS

Dumpings Decline—British Strike May Bolster Demands—Strike of Tug Men Hampers Movement.

The coal market showed little change during the last week in March, with dropping off in dumpings and little prospect for immediate revival. Pools 1 and 2 were selling for $6, with few buyers.

What effect the proposed strike of English miners will have was a source

of speculation during the latter part of the week. South America is expected to increase its business here in case the strike proves serious.

The strike of tugboat captains and engineers, which tied up all sea-going tugs along the Atlantic coast March 23, has continued this week. The trade coastwise has been seriously tied up as a result. Some settlement of the differences of the strikers, growing out of a summary reduction of their wages, is expected soon.

Figures at the Hampton Roads coal piers on March 31 were as follows:

C. & O. piers, Newport News—	
Cars on hand	2,874
Tons on hand	143,200
Cars dumped, March 1 to 30, incl.	4,650
Tons dumped same period	244,399
Tonnage waiting	3,700
Virginian Ry. piers, Sewalls Point—	
Cars on hand	1,314
Tons on hand	65,200
Cars dumped, March 1 to 30, incl.	4,426
Tons dumper same period	221,317
Tonnage waiting	3,350
Cars on hand outside of pool	261
N. & W. piers, Lamberts Point—	
Cars on hand	2,650
Tons on hand	122,980
Cars dumped, March 1 to 30, incl.	5,132
Tons dumped same period	291,895
Tonnage waiting	12,500
Tons dumped N. & W. piers outside pools	204,187

NEW YORK

Domestic Demand Shows Slight Increase—Steam Coal Situation Stronger—Bituminous Condition Brighter—Contract-Making Slow.

Anthracite—Buying of the domestic sizes has picked up a trifle but it is far from what it should be. Another of the principal companies—Philadelphia & Reading—has announced the usual reduction of 50c. in domestic sizes. With the exception of the Lehigh Coal & Navigation Co. all the big companies have put into effect new price schedules. The large companies are having no trouble moving their stocks.

Independent coals are not moving freely unless concessions are made and most producers are refusing to do this in view of the fact that they expect a much stronger market in the near future.

The closing down of many independent operations has created a healthier condition among the steam coals. The larger companies are taking advantage of the present situation to stock these sizes while the small individual operator is as a rule compelled to find a market for the most of his production. Curtailed production has prevented a further slump in prices. Quotations for buckwheat range $2.50@$3.25; rice, $2 @$2.50, and barley $1@$1.50.

Current quotations for company coals per gross ton at mine and f.o.b. Tidewater at the lower ports, are as follows:

	Mine	Tidewater
Broken	$7.10@$7.75	$9.71@$10.36
Egg	7.10@ 7.75	9.71@ 10.36
Stove	7.35@ 8.10	9.96@ 10.71
Chestnut	7.40@ 8.10	10.01@ 10.71
Pea	5.65@ 6.00	8.12@ 8.47
Buckwheat No. 1	3.50	5.97
Rice	2.50	4.97
Barley	1.50	3.97

Quotations for domestic coals at the upper ports are generally 5c. higher.

Bituminous—There is a tendency to a stronger market. Because of the strike in England some local houses report having received a slightly increased number of inquiries.

The beginning of the new coal year was expected to result in a much stronger demand for spot coals. In fact, it was stated on the first day that quotations had already become stronger.

Operators were not exerting themselves in making new contracts. They cling to the average quotations of several weeks duration ranging from $2.75@$3 for Pool 34, to $4@$4.25 for Pool 1. The fear of railroad difficulties due to the present intention of the companies to cut wages will, it is believed soon result in increased demand.

The large number of idle vessels lying in the harbor is unusual and the bunkering demand is slow. The effect of the order to workers on the coast wise tugs and barges to refuse to accept the wage cut proposed by their employers was not noticeable the end of the week.

The trade was much interested in the bids for furnishing the coal requirements of the Panama R.R. Co., which are printed in another column of this issue.

The general trend of quotations f.o.b. Tidewater for the various grades follows: Pool 9, $6@$6.10; 1 and 71, $6.10 @$6.50; Pool 10, $5.85@$6; Pool 11, $5.25@$5.50. Spot quotations f.o.b. mines show slight variation as reported in the Weekly Review.

PHILADELPHIA

Anthracite Prices Reduced—Consumers Expecting Still Lower Prices—Bituminous Unchanged — Trade Extremely Quiet—Interest in British Strike.

Anthracite—New mine prices have deeply stirred the trade this week. Despite frequent statements that they did not anticipate a reduction, the biggest producing company announced a cut on all domestic sizes of 50c. Steam prices remain unchanged. No announcement has been made as to what prices may be after this month, but the intimation is that a 10c. a month advance will become effective on May 1. Up to this time the only other big company still adheres to its policy of not making any spring reduction.

Yards are now filled with high-priced coal. In the face of the reduction the retailers felt it incumbent upon themselves to reduce their prices and in addition to the 50c. taken off by the producers they have cut their gross margin another 75c., making the general run of retail prices as follows: Egg $13.50, stove and nut $13.75 and pea $11. Based on present company prices, dealers are now working on a gross margin of $3.47 on stove and nut and $2.65 on pea, but as nearly all their coal was bought at higher prices some of them are due to suffer considerable loss.

Independents quickly followed with reductions, although most of them are still 10@15c. higher than company coal on all sizes except pea, which can actually be bought for less. In some instances pea has been sold for $5. Dealers who have been actively soliciting business have discovered that the public is not anxious to buy, as they take the stand that further reductions are bound to come.

Both company and independents are closing contracts at $3.50 for buckwheat, $2.50 for rice and $1.50 for barley. Based on company circular, the mine prices per gross ton for line and f.o.b. Port Richmond for Tide are as follows:

	Line.	Tide.
Broken	$7.25	$9.95
Egg	7.25	9.95
Stove	7.55	10.20
Nut	7.55	10.20
Pea	5.90	8.30
Buckwheat	3.50	6.00
Rice	2.50	5.00
Boiler	2.00	4.40
Barley	1.50	3.90

Bituminous—The trade continues absolutely colorless. The consumer is staying strictly out of the market until compelled to come after sufficient coal to keep going. It is the exception for any one to buy fuel for stock. The price range continues from $3.50 for the best down to $2 for ordinary coals. Quotations for pools as noted last week are still effective.

In the export trade there is just the least flicker of renewed interest due to the strike in England. As yet we know of no inquiries on this account, although it is full of possibilities for the entire soft coal trade.

Coke—Recent quotations have been been $5.65 for 72-hr. and $4.50 for 48-hr.

BALTIMORE

British Strike May Boost Export Inquiry — Spot and Contract Offers Are Low — Hard Coal Retail Prices Drop.

Bituminous—Effect of the British coal strike on the domestic market is awaited with interest. Before the actual walk-out a line of inquiry had developed here, especially from some European points that have recently relied almost entirely on British coal, which was apparently largely due to the prospect of strike.

The consumers who usually come in at this season for contracts over a half or the whole year are still out. Even in the spot market they buy lightly. About the only contracting of extent has to do with short-term deliveries, the price being a little in excess of the spot market and considerably less than the prices quoted over the year.

While some of those controlling best steam coals are still demanding $2.85 @$3, much is offering $2.50@$2.75. On short contracts the prices are $2.75@ $2.85 in many cases, while for over the year the larger producers are sticking on the surface to prices around $3.75 @$4. but are undoubtedly offering in some cases as low as $3.50@$3.60. Export movement continues light, although March slightly exceeded February. The total foreign loading here in March was 87,879 tons cargo and 8,975 tons bunker in same ships, as against 84,249 tons

cargo and 9,420 tons bunker in February.

Anthracite—Following receipt here of information concerning the wholesale price of coal produced by "company" sources in April, and approximate schedules from several independent sources, the Baltimore Coal Exchange held a meeting and the following new retail schedule was announced, per gross ton: Hard White Ash—broken and egg, $14.50; stove and chestnut, $14.75; pea, $12 and buckwheat, $9. Sunbury—egg, $14.75; stove and chestnut, $15. Lykens Valley—egg, $15.50; stove and chestnut, $15.75. The prices were worked out with the wholesale prices as a basis to allow a gross profit margin to dealers of $3.

Purchasers will fill out "coal orders" which state that the coal is to be delivered at the earliest convenience of the dealer, the price to be that at time of delivery. A discount of 25c. will be allowed for payment within ten days.

BUFFALO

No Prospect of Early Revival of Bituminous Demand—Few Contracts Made—Anthracite Competition Growing—Lakes Start Will Be Late.

Bituminous—The situation does not change much but if anything the market is a trifle weaker since our last report. It is apparently too early to look for a business revival. The tendency is still to mine more coal than is taken by consumers although actual consumption is now greater than production. This points to a more liberal buying market when heavy stocks have been used up.

The Canadian demand is still weaker as manufacturing seems to have dropped to a new low level. Bituminous prices do not change much. Youghiogheny gas lump is quoted $3.50, Pittsburgh and No. 8 steam lump, $3, all mine run $2.60 and slack $2, to which add $2.36 for freight from the Allegheny Valley and $2.51 from all other districts.

Anthracite.—If anything, the situtation is too easy, from the standpoint of the city retailer. There is an unusual amount of competition between the distributors and retailers who get their supplies from the standard companies and those who buy independent anthracite.

Loading of Lake cargoes goes on briskly. Three companies are in the list and more than 25 cargoes are now afloat. Tonnage is scarce. This port did not get the usual winter grain fleet to draw from and this has reduced the number of vessels available. However, so far nobody wants to move as other freights are not offering.

Coke—The market is duller than ever. Jobbers are getting no business except from the smaller factories. The smelting season is far from outlined as yet and future conditions are still in doubt. Coke is offered to jobbers, most of it byproduct, on the basis of $5.25@$6 for 72-hr. Connellsville foundry, $4.25@$4.75 for 48-hr. furnace, $3.75 for stock and $5.50 for domestic sizes, to which add $3.64 to cover freight to Buffalo.

Northwest

MILWAUKEE

Coal Market Reaches Summer Status—Prices Unchanged—Spring Lake Movement to Be Late.

Demand has reached a summer basis, and the greater part of the coal now on hand must perforce become a part of the stock accumulation for the new coal year. The Lake movement is not expected to start until late in April, and then only at a slow pace.

A few anthracite cargoes may be delivered as soon as navigation begins as there are several good-sized loads now afloat in Buffalo. Until iron ore begins to move freely, vessel men will not be inclined to put their boats in commission.

Prices continue unchanged. It is generally assumed, however, that April will bring a drop of at least 50c. in hard coal. Coke is also held steadily, regardless of accumulating stocks.

MINNEAPOLIS

No Interest in Opening Market—Low Prices Fail to Move Dock Accumulation—Slow Start for Lakes Movement.

As the season draws to its weary close, little life or activity is seen. For the current year, no one wants to buy any coal that can possibly be done without. There was a fair tonnage left on the docks on April 1, though the amount on May 1 would be a better time to base a comparison by seasons. The first of March saw 100,000 tons of hard coal as against 137,000 tons a year ago, while of soft coal, there was around 1,190,000 tons of commercial coal against 1,070,000 tons a year ago.

The shipments during March and April will reduce these figures to some extent, for consumption will continue in domestic plants for some time yet, while the industrial situation is using some coal right along. Whatever be the tonnage on hand on May 1, it is very unlikely that it will include any new coal, unless possibly some boats laid up at the lower Lake ports which have been loaded move forward.

There is no sign of interest in the opening market for Eastern coal. It is taken for granted that hard coal will take the customary 50c. decrease effective April 1, and will advance ten cents per month until September. On soft coal, dock men say that figures at which coal is being sold right now are less than the usual outcome of freight and vessel charges, unloading charge and screening. The total would be about $8.50 at the dock, while dock coal is being sold as low as $8.

The principal matter is not the price, but when the real demand will set in. The prospect is that the buyers' market will continue. Under such conditions, jobbers do not see any inducement to stock their docks early. They are inclined to hold back on their own orders until they can see some early chance of moving the coal themselves.

One factor which neither railroad nor coal men ought to ignore is that both are under serious suspicion from the general public. There is a considerable number of the public which hug the delusion of government ownership or at least government operation of the railroads. And if there is an early return of the difficulties of last fall, it does not take much of a prophet to see where congress will be subjected to great pressure to take over the operation of both mines and railroads. The Calder bill is not as dead as it might be, and can readily be revived, if mining and transportation interests do not show reasonable signs of "normalcy."

DULUTH

Accumulated Screenings Hard to Move—Early Harbor Opening—New Dock Wages Under Discussion.

Dock operations continue at the rate of three or four days per week. Recent warm weather has softened the bay ice and it will soon be sufficiently honeycombed to allow the passage of boats in the harbor.

Anthracite stocks are very low. There is a large accumulation of bituminous screenings which are hard to move even at low prices. The present contract between dock operators and electrical workers expires April 30 and a new scale will soon be determined. The operators seem to favor the eight, nine or ten-hour day, whereby the docks would have the option of working ten hours before overtime rates would apply, and during slack times could operate eight or nine hours.

There are many men out of employment at present but not much actual suffering. An early revival of business at the Head of the Lakes is indicated when the active season of navigation arrives.

Inland West

CHICAGO

R.R. Buying Hampered by Lack of Funds—Some Pocahontas Contracts Made—Heavy Anthracite Buying.

With a large number of factories down and the present amount of unemployment it is easily understood why there is so little demand for coal. A few railroads have already placed their contracts but in some cases other roads are planning to purchase on the open market until about the middle of July. This of course will mean that at the slightest sign of a shortage they will rush into the market and another unfortunate scramble for coal will result.

Railroads are hard pressed for money. Operators supplying some roads have had to borrow in order to meet their own payrolls, at the same carrying the

roads for coal shipped as far back as last October. A quick solution of the railroad problem will be of help to the whole country let alone to the coal operators.

Some Pocahontas mine run contracts have been made recently, prices ranging $3.50@$4. Southern Illinois operators have not submitted to the domestic trade any contract propositions, but instead are offering orders for 25 or more cars, to be shipped during the season, strictly on a basis of market price at time of shipment. Those who are financially able to do so are now concentrating on anthracite as April prices are lower than at any other time during the year.

DETROIT

Sales Are Still Far Short of Normal, Though Jobbers Report a Slight Increase—Anthracite Stocks Heavy.

Bituminous—Little improvement is apparent in the buying demand for either steam or domestic sizes. In view of the restricted demand, the trade is adhering to a policy of waiting for the development of better conditions. Signs of improvement in the industrial situation are not lacking, but the process is proceeding more slowly than many had expected. While factories are resuming operation, their production is greatly curtailed and their consumption of coal is correspondingly reduced. Some jobbers believe that the depletion of reserves is not being offset by the quantity of bituminous being brought into the city. They look for a substantial increase in buying in the near future and feel that the stability of existing prices is likely to be maintained. Smokeless lump and egg is quoted at $6, mine run is $3.75 and nut and slack $2.25. Kentucky or West Virginia 4-in. lump is $4, 2-in. lump $3.75, egg $3.50, mine run $2.75 and nut and slack $2.25. Ohio lump is $3.50@$3.75, mine run $2.50@$2.60 and slack, $2.25.

Anthracite—Many dealers now find their yards are holding considerable stocks, while demand is lacking and mine price reductions handicap their efforts to dispose of stock purchased at winter prices.

CINCINNATI

Contract and Spot Markets Inactive—Prices Are Firm—Distress Coal at Minimum.

Contract business is at the lowest ebb that it has been in years and current demand is practically nil. Prices, however, have not shown any inclination to seek a lower level. There is a smaller amount of coal on wheels than for some time with a minimum of fuel in distress in the yards.

April circulars will obtain on Pocahontas and New River. Lump is scheduled to sell $4.75@$5. Run of mine is $3.50 and the same is being asked for slack. On the latter, however, there is some disposition to cut, and deliveries are promised by several of the companies as low as $3. Kentucky and West Virginia bituminous prices about on a par with lump at $3.25, mine run $2@$2.25 and slack $1.75@$2. Some special lines of byproduct and gas coals are bringing a little in excess of this.

Retailers are not disposed to make much change in their schedules. With the opening of April $10.50 is asked for Pocahontas lump and $8 for mine run. One firm has cut this latter price 25c. Bituminous lump is held at $8, mine run $7 and slack $6.50@$6.75.

CLEVELAND

Retail Prices Weakening — Slack Firm and Demand Stronger—Operators Seek Rates Adjustment.

Bituminous—Methods of equalizing the freight cost from mines to the lower Lakes docks and to win re-adjustment of rates in order to give the Ohio, Pennsylvania, West Virginia and other Eastern producers better chances in competing with Illinois operators were discussed in a meeting in Cleveland a few days ago, as outlined elsewhere in this issue.

In consequence of the 1920 freight increases present rates from mines to docks range from $1.83 to $2.11. On top of this charge, shippers by water are paying the highest vessel rates on record. Operators are under a severe handicap because of the enormous freight charges in competition with the Illinois producers all-rail coal.

Production is running 44 per cent of capacity, showing a slight gain over the preceding week. Some seasonal resumption of industrial activity is expected to bring out better demand. The call for slack continues fairly active with prices firm.

Anthracite and Pocahontas—A mine reduction of 50c. a ton by anthracite operators has just been reflected by a similar drop in retail prices. A new development in the hard coal market is the spread which has returned between egg and grate, and stove and chestnut sizes, the latter two being sold for 25c. a ton higher than the first two. Pocahontas mine run has dropped about 25c. with some dealers delivering for as low as $9.25. There has been no change in the shoveled lump quotations, but substantial reductions in all retail prices are forecast by some dealers by the middle of the month. This will be forced by the existence of large stocks, and the waiting attitude of consumers.

Receipts of bituminous coal at Cleveland for the week ended March 26 amounted to 928 cars; industrial 724, retail 204; as compared with 917 cars the previous week.

COLUMBUS

More Optimistic Feeling Prevails—Late Lakes Opening—Railroads Ask for Contract Bids.

There is a better feeling shown in most quarters, probably the result of expectations for better business with the opening of the Lakes. As far as immediate business is concerned there is scarcely any increase from any source.

The screenings situation is now attracting attention. At present they are fairly weak, although with a reduced production of lump there has been very little oversupply. But with a large proportion of Lakes vessels loaded, little lump is expected to be made during April and this will stiffen the market for slack. But with the opening of the Lakes season, fixed at May 15, screenings are expected to be a drag on the market.

Domestic trade is slow and there is little hope of improvement in the immediate future. Retail prices are steady at former levels. Hocking lump is $7.25@$7.75, mine run $5; West Virginia splints sell $8@$8.25, and Pocahontas lump $10.

While some steam plants are working fuller time others are reducing their operations and the net result is unchanged. Railroads are asking for bids for fuel during April but so far there are few contracts made. Hocking bids for railroad fuel run $2.75@$3, while those in the West Virginia fields were slightly higher. Little contracting for steam tonnage is reported.

ST. LOUIS

Storage Prices May Stimulate Buying—Shortage of Steam Sizes Increases Price—Eastern Coals in Poor Call.

Colder weather last week, while only temporary, cleaned up the yards and was the occasion of a little ordering of domestic sizes. April prices are expected to move more coal and this will be stimulated by an advertising campaign in the daily newspapers.

Anthracite and smokeless prices, as well as Arkansas will make these grades practically prohibitive in the Middle West this season. Indications are that coke will be one of the big factors and will even crowd Carterville coals. St. Louis retail price for gashouse is $9.25 and byproduct $10.

Steam business is unusually good but only on account of the fact that more mines are closing daily and it is the scarcity rather than demand that has caused the increased price. Mine run is not affected. Neither Standard nor Mt. Olive is expected to be much of a factor in the early storage of coal. April prices for Mt. Olive are $2.75 on domestic sizes for St. Louis and $3@$3.25 for outside territory. Other prices are shown in the Weekly Review. The Carterville situation looks promising for early storage.

South

LOUISVILLE

Active Discussion of Contract Prices, but Few Closings—Lakes Trade May Furnish Needed Screenings.

Screenings are stronger in price and in small supply. However, it is believed that Lakes demand will result in more coal being screened, and better supplies will be available. In the meantime this condition is forcing better prices for mine run.

Operators are figuring on annual contracts from a basis of $3.50 for eastern Kentucky coal. Consumers on the other hand believe mine run will go as low as $2 this summer, and are holding off. It is reported that some contract business has been done under an average of $3.50 a ton.

It is said that many operators are driving new entries and getting ready for big production later on, selling entry coal at approximately cost, figuring that they will have to get much better prices later on, especially on contracts, as the present dull demand for fuel must be nearing an end. Spot prices are shown in the Weekly Review.

In view of the general reduction of existing stocks during the period of dull demand it is the belief of the trade that things are bound to show an improvement shortly. Retail business is very dull.

BIRMINGHAM

Domestic Market Shows Some Activity —Steam Coal Is Still a Drag—Production at Low Level.

Aside from a slight improvement in the domestic inquiry following the quotations for the beginning of the new coal year, there is nothing new in the market situation. Dealers are beginning to get a line on their needs and some contracts have been booked for deliveries through the spring and summer, and some sales have been made with a year's spread.

Big Seam lump is being quoted for April at $3.25; Carbon Hill $3.75; Cahaba and Black Creek $4.50@$5.00; Montevallo $6.50. There is strong probability of a shortage of domestic coal for the year, as there is very little prepared coal available from the steam producers, from which source probably 50 per cent of the coal for domestic use has to be drawn, as there is practical stagnation in the steam market and commercial mines are operating one and two days per week.

Steam users are still disinclined to enter the market and sales are confined to small spot lots. The only class of industries which have yet resumed operation are pipe plants, which have not been under way long enough to stimulate the raw material market as yet. Following resumption of production at the Mulga and Dolomite coal mines of the Woodward Iron Co , that corporation has blown in a furnace and will consume considerable coal and coke and bring about steadier operations at its mines. Quotations are without any material change.

Southwest

KANSAS CITY

Buyers' Strike Piling Mine Costs — Shortage Inevitable.

A trip to the North and Northwest discloses very unsatisfactory conditions. It seems almost hopeless to induce coal users to begin putting in a supply before it is too late and a real shortage next winter is almost inevitable. Users of dock coal are holding off expecting reduction in freight rates. When these rumors have been run down in no case have they emanated from any reliable source but instead seem to be only the general outgrowth of a desire for reduction in rates.

The buyers' strike is piling up costs at the mines for which the public ultimately will have to pay. Colder weather last week resulted in a temporary increase in retail deliveries. Arkansas lump is $6, mine run $4.50, slack $3.50; Kansas lump is $5.50, nut $5, mine run $4.25@$4.50, mill $4, slack $3.75; north Missouri lump is $4.50, mine run $4, washed slack $4.05, raw slack $2@$3.15.

West

DENVER

Price Cuts Cause Uncertainty Over Storage Situation—Competition Growing.

Considerable uncertainty exists among both operators and retailers concerning the outlook for the storage season dating from April 1. Retailers were expecting to get $11 for April bituminous lump and the action of the retail department of the Colorado Fuel & Iron Co. in delivering this during April and May for $10.50 has upset their plans. The company's price was based on $5.50 f.o.b. mine, after some of the other operators had decided on $5.65 for April and $5.75 for May.

Their price of $11, on the other hand, meets the figure of a Routt County coal that is sold by a newspaper as a side line and which had something to do with disarranging the unanimity of storage prices by underselling in March.

In buying coal on a smaller gross margin retailers are further disturbed over the reported reductions in freight rates, thus far unfounded when run down to their supposed source.

TORONTO

Business Remains Quiet—Retail Prices Lower—Office of Provincial Fuel Controller Abolished.

Business continues decidedly quiet at present, with retail prices lower. Yards are well stocked for the season. The office of Provincial Fuel Controller has been abolished from April 9. H. A. Harrington, who has held the position for the last three years, states that he does not know whether it is intended to completely abandon the principle of supervision of the provincial fuel supply. In his opinion it will be necessary to retain it in some form for the next ten years and should next winter prove a severe one, Ontario will face a serious situation.

Quotations for short tons are as follows:

Retail	
Anthracite egg, stove, nut and grate	$15.50
Pea	14.00
Bituminous Steam	11.00@11.75
Domestic lump	12.50
Cannel	16.00
Wholesale f.o.b. cars at destination	
3-in. lump	8.00@9.00
Slack	6.50@7.00

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Many Independents Closed—Steam Going to Storage — Production at Low Point.

Operators are optimistic that the next sixty days will see an adjustment of present unsatisfactory conditions and that production will return to normal. Lack of orders has caused fully 90 per cent of the independent collieries to shut down, with many "no bills" on track. Practically all the larger companies are storing steam sizes but are shipping all their domestic on a ready market to the Lakes and Western points.

The strike situation at the Pennsylvania Coal Co. collieries has eased up considerably and the men at the Butler Colliery have returned to work. For the present it seems as if production has reached its lowest point, touching 1,564,000 net tons the week ended March 26, affected by Easter Week.

PITTSBURGH

Production Not Materially Changed—Expiration of Contract Year Makes Little Difference in Market — Wage Matter May Be Opened.

There is only a slight sagging tendency in the rate of coal production. The ending of the coal year, with expiration of many contracts, has made less change in the market than was expected, as the volume of spot buying has not materially increased, and the inference is that special arrangements have been made between producers and consumers for shipments to be continued at prices to be adjusted weekly or monthly.

There have been no definite prospects of late that the wage matter would be re-opened by the miners becoming willing to modify the scale, but something may now develop along this line since the recent wage reductions in the Connellsville region. This may transfer enough coal business to the Connellsville region to cause union miners to consider the matter of a wage revision. Along this line it is to be noted

that since the Connellsville wage reduction became an assured fact $2.75 or less for Connellsville gas coal for Lakes shipment has been quoted, a lower price than would be named in the Pittsburgh district. The spot market continues irregular, but without quotable change, and is shown in the Weekly Review.

CONNELLSVILLE

General Wage Reduction by Independents—Contract Furnace Coke Selling at $3.75.

Operators who had previously made wage reductions and others who had not, seem to have gotten together with a view to uniformity. Notices were quite generally posted by independents at the close of March announcing a new wage scale to go into effect April 1, which is in substance the scale of Nov. 10, 1917, about 30 per cent below the scale paid since last August. Some operators whose plants are idle did not take formal action, while the "leading interest," the Frick Coke Co., has done nothing.

For the first time in many weeks there has been important business done in furnace coke. Before the latest advance was definitely scheduled a contract was made with Perry furnace at Erie, about to blow in, for 10,000 tons a month over the second quarter of the year at a price stated to be between $4.25 and $4.50. Within the past few days a sale was made at $3.75, based on the new wage scale, 500 tons a day to a furnace at Portsmouth, Ohio, about to blow in and requiring Connellsville coke for five or six weeks until it can put into operation its byproduct coking plant. Spot furnace had previously been quoted $4@$4.50, but with the wage reduction will hardly bring more than $3.75 in case demand arises. Foundry shows a shade more activity in the spot market, this being attributed to more foundries depleting their stocks. We quote: Spot furnace, $3.75 @$4; contract, $3.75@$4.25; spot foundry $5@$6; contract, nominal, $6.

The *Courier* reports production in the week ended March 26 to 29,450 tons by the furnace ovens, and 24,520 tons by the merchant ovens, a total of 54,020 tons, a decrease of 14,480 tons.

EASTERN OHIO

Lakes Loading Provides Stimulus to Production — Light Cargo Movement Seen—Increasing Contract Inquiries.

Production during the week ended March 26 amounted to 287,000 tons, a slight increase over the preceding week. The Pittsburgh Vein Operators' Association reported their mines working 38 per cent of possible work-time with production at 47 per cent of the rated mine capacity. Production was stimulated by Lakes shipments and as all available tonnage at the lower ports has now been loaded or is in the process of loading, this stimulus will presently disappear.

Because of the scarcity of down cargoes, resulting from the inactive ore and grain trade, not much movement of coal up the Lakes is expected in the near future. Railroad fuel production fell below 50 per cent of the output for the first time in some weeks. Carriers' requirements have decreased materially with lighter traffic. Industrial concerns are making contract inquiries, but few if any agreements are actually being consummated. Retailers must contemplate on immediate reduction in delivered prices if the present sluggish domestic market is to be relieved. Spot prices are firm and are quoted in the Weekly Review.

The Canadian Northern Ry. has closed contracts in the eastern Ohio and Hocking fields for 400,000 tons of ¾-in. lump, delivery via the Lakes. It is understood some additional Lakes contracting has been done on this grade around $3.50 per ton.

CENTRAL PENNSYLVANIA

More Mines Closing—Business Flat—Warning of Impending Shortage.

Production continues at a low ebb with every prospect of still more mines closing. Business is as flat as it can get and operators assert that with the present scale of wages there is nothing to do but close.

Coal operators hesitate to advise buying for future needs in view of what occurred last year when such a campaign was put on when the demand greatly exceeded the supply and prices went sky high. However, conditions are entirely different now and operators predict an enormous call by fall, at which time production is bound to fall below the demand. Coal consumers will not buy a pound of coal beyond their present needs and insist upon wiring orders for every shipment.

UNIONTOWN

Coke Operations Near a Complete Suspension—Coal Production Further Curtailed by Failure to Renew Contracts.

With independent operators, W. J. Rainey alone excepted, almost entirely suspended and the Frick company down to 20 per cent at its coke plants, the region is now more nearly in a state of complete suspension than at any time for many years.

The market situation accurately reflects the operating phase of the industry. Coal contracts expiring April 1 have not been renewed and this additional development will further curtail output although in the aggregate the contract to tonnage from this region does not run up to a very high figure. Spot steam is quoted $1.75@$2. Byproduct is $2.25@$2.75 with little activity.

The coke market is virtually non-existent. There was one inquiry this week for a 15,000-ton purchase with delivery at the rate of 500 tons per day. The inquiry was reported covered at $4.50. Other odd-lot sales were made at the stationary figure of $4@$4.50. Foundry coke is unchanged, $5@$5.75

Operators inquiring from railroad purchasing agents regarding contract renewals have been given vague answers and there is little expectation here that any large coal contracts will be placed before May 1 at the earliest.

FAIRMONT AND PANHANDLE

Market Shows Better Tone—Contract Buyers Active, but Few Closings Reported—Lakes Inquiries Appear.

Fairmont

A better tone to the market has disclosed the fact that consumers are getting ready to place orders. However, this has not passed the stage of feeling out prices. Under such conditions very little coal was sold during the week ended March 26. Railroads were seeking coal on new agreements at $2.75, but producers appeared to be holding out for a $3 price, especially as the vacating of Service Order 18 relative to the practice of assigning cars has made railroad fuel contracts less desirable than usual.

Northern Panhandle

With the exception of a better volume of railroad fuel, but little coal is being loaded. The spot market has completely disappeared and contract movement is at a minimum. Inquiries for Lakes tonnage are being received.

Middle West

MIDWEST REVIEW

Buyers Unable to Finance Stocking Program—Future Orders Being Placed —Warnings of Impending Shortage.

While there has been no actual change in the present market, one begins to see some rifts in the clouds. A tour of the Middle West discloses that the large majority of buyers agree that this is the time to secure coal, which probably can be purchased cheaper than 60 or 90 days hence. The main trouble appears to be lack of ready money. This situation is true of the domestic market as well as the steam trade, although many dealers are placing larger orders for delivery during the summer. The wise operator is taking such business only at market price at time of shipment.

Railroad men of national reputation as well as representative coal men are going out of their way to warn the public of what will happen unless more orders are placed now, but buyers appear to be in a helpless position and are either unable or unwilling to stock coal. One large utility company recently placed a substantial order under peculiar circumstances, as the operator had to agree in return for making prompt shipments, to carry the account well into September, this to draw interest at 7 per cent thirty days after shipment.

Rumors of an attempt to reduce wages are losing rather than gaining credence because the average miner is hardly being given an opportunty to make a bare living. Under these circumstance it would be folly to attempt

to reduce mine wages. A prolonged tie-up of the British mines would result in making the situation next winter far more serious and it looks today as if conditions are to be pretty bad as it is.

A number of large operators have sent out circular letters calling attention to various pertinent facts showing that we are headed for a coal shortage, usually stating in plain language that they have given the warning and if it is not heeded they will not be responsible for what happens later in the season. As a whole, the public is taking these warnings seriously but a great many others are considering it only a clever sales propaganda. Some of the latter are due to have a very rude awakening early in October if not before.

SOUTHERN ILLINOIS

Screenings Call Active as Domestic Production Drops—Slack Time Causing Discontent Among Miners—R.R. Contracting.

Stronger domestic demand from the Northern market and a growing call for steam coal increased production slightly in the Carterville field during the week ended March 26. However, this is only temporary and while it is hoped that the April movement of domestic sizes will be good much will depend on the temper of the buying public. Any stimulus to the domestic trade will relieve the heavy call for steam sizes, caused by failure to work on account of the oversupply of domestic coal.

Duquoin field conditions are unimproved and there is some discontent among the miners on account of poor working time. Mt. Olive conditions are slightly improved, with screenings in good demand and offerings light. Mine operations were limited to about two days.

Of the seventy odd mines in the Standard field, one-third are now idle and another third are running less than two days a week. Nothing indicates that conditions will improve for some time unless it be in the steam sizes. The shortage of screenings is more noticeable with stiffer prices and several mines with crushers are now breaking up mine run in order to take care of screenings contracts. Railroad tonnage is unusually light. Some big roads, including the Frisco, are expected to award their contracts early in the month.

WESTERN KENTUCKY

Steam Sizes Becoming Scarce with Low Domestic Production—Prices Well Maintained—Contract Market Active.

Demand for pea, slack, or nut and slack during the past few days has been greater than production, resulting in better movement of mine run, as screenings are getting steadily scarcer with the smaller production of lump coal.

Some contracts are now being reported, although in most cases operators are holding off and quoting prices 25 to 30 per cent over spot prices. One prominent operator reported that he knew of some contracts quoted at $2.50 for mine run; $2.25 for screenings; and $2@$2.25 for fine screenings. There have also been some fine screenings contracts made at $1.70; nut and slack at $2.

Present spot prices are fairly well in line with last week's average.

Middle Appalachian

HIGH-VOLATILE FIELDS

Increased Interest Shown by Buyers—Spot Market Not Yet Improved—Production Still Low

Kanawha

Slim production during the week ended March 26 reflected poorer market conditions than so far witnessed during the year. Mines running at all were limited to about two days. Spot sales were negligible, with mine run being quoted $2@$2.50 and prepared sizes were equally hard to move. New contract business was not developing to any extent, buyers still holding off because of prices.

Logan and Thacker

Although production in the Logan region was not over 25 per cent, the output was in excess of recent production figures. This was traced to a few large consignments to Tide, and to slightly increased shipments to Detroit automobile manufacturers. Spot sales were at the minimum, although inquiries were becoming more numerous. However, little business was resulting from such quotations made.

There was a slight gain in Williamson production but the output was not much over 30 per cent of potential capacity, with few mines working more than two days. Industrial conditions were quiet, no plants having been attacked following the Matewan trial. There was an almost complete lack of demand either for contract or spot coal.

Northeastern Kentucky

Mines were not operating more than two days, but a production of 20 per cent represented a slight gain over the preceding week, with only a few companies participating in such production. The decreasing demand for prepared coal has made mine run and steam sizes a little firmer. Contracts have not yet passed the gossip stage. The prospects are that contract figures will be about 25c. in excess of prevailing spot prices.

LOW-VOLATILE FIELDS

Demand Unimproved, Although Inquiries Are Increasing—Contract Closings Are Few—Better Tone to Future Market.

New River and the Gulf

There was no perceptible improvement in the Winding Gulf output during the week ended March 26 nor were producers sanguine of any early improvement. The market was extremely draggy. There was not quite so much coal at Tide, although this has not resulted in any resumption of shipments. There were no new developments in the contract situation, the end of the coal year finding that market inactive.

Steady gains in production reflected a wider market for New River coal, Southern mills affording an additional outlet. Demand for bunker coal was also on a larger scale. Spot sales were increased, mine run going at $3.50, which price also prevailed in the making of some new contracts.

Pocahontas and Tug River

Coal loadings in the Pocahontas region were somewhat short of 190,000 tons, with mines averaging only about two days during the week. Inquiries were becoming somewhat more frequent, although evidently only for the purpose of feeling out prices. Despite the end of the coal year, the contract market was extremely sluggish. Tidewater and Western business was also at a low ebb.

Tug River mines for the most part were marking time, the output remaining slightly under 60,000 tons. A further number of inquiries gave producers the impression that buyers had at last reached the stage of active contract interest, although but few actual closings for the new coal year were made.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Production Still Dropping — Lakes Offers Are Unattractive — Special Terms Fail to Encourage Buying.

Production is dropping more each week on account of no orders. Larger mines, which have been running five days until last week are now reduced to a three-day basis. Inquiries are beginning to come in for Lakes tonnage but prices offered are such that do not warrant any acceptance.

Spot quotations are $3.75 for block, $3 for egg and mine run and $2.25 for slack. It is next to impossible to move any domestic and all orders are hard to secure, although large producers are offering 90-day terms at present for stocking purposes.

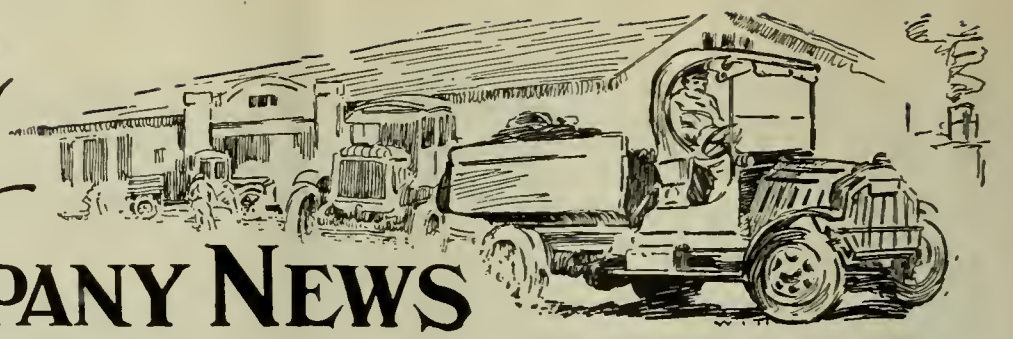
West

UTAH

No Demand in Any Market—Hope of Price Cut Affects Retail Buying.

Production is still below 50 per cent, some producers reporting as low as 35 per cent. But little demand exists in any quarter; retailers are inclined to buy from hand to mouth, owing to weather conditions and their belief in the possibility of an early price decline. Industrial plants are still doing very little. Utilities are consuming a large proportation of the present curtailed output.

MINE And COMPANY NEWS



ALABAMA

The Manchester Coal Co. has been organized in Walker County and will mine coal from the Jefferson seam near Manchester, the overburden being removed by use of steam shovels. A spur track is now being built to connect with the Alabama Central R.R. at Manchester and a number of tenement houses are also in course of construction. Dr. Blanton, of Saragossa, Ala., and Messrs. Kilgore and Philbuck, of Jasper, Ala., are the promoters of the new development.

COLORADO

The Victor-American Fuel Co. is maintaining its force at the six mines located in the Routt, Canon City and Walsenburg fields of Colorado, although a part-time basis is necessary. Replacement work, however, is keeping many men at work that otherwise would be laid off, the total betterments and improvements approximating an expenditure of about $25,000. Heavier rails are being put down in the Trinidad field, coal tipples in all the mines are being overhauled, and provisions are being made for the accommodation of 100 additional pit cars in each of the six mines.

ILLINOIS

The work of opening the **Kathleen** mine at Dowell is now progressing slowly but steadily under the direction of Robert Medill, director of Mines and Minerals of Illinois. After completing the air lock over the air shaft the cage which was under the concrete seal, was hoisted high enough so that the top of the cage cracked the concrete. Helmet men then entered the air lock and proceeded to open the shaft. It was discovered that the fire had cooled down more than was expected and the men immediately went down to the bottom. After establishing a fresh air station on the bottom, by erecting several stoppings, the work of advancing in toward where the seven bodies are located was commenced. Stoppings were necessary every 500 feet. Besides many state mining men, there are also several Federal men at the mine making tests and assisting in the work.

Hoisting a total of 3,375 tons in eight hours, the **Southern Coal, Coke & Mining Co.**, at New Baden, recently broke its hoisting record. The mine is about 365 feet deep. Actual hoisting time as recorded was 6 hours, 58 minutes and 48 seconds.

The Scott Smith Coal Co., of St. Louis, operating an extensive strip mine near Duquoin, has unexpectedly ceased operations for an indefinite period. It is not known if the suspension was made for repairs during the slack season, however the larger portion of employees were sent home until further notice. The company has the largest shovel in operation in the state.

The Colfax Citizens Coal Co. has been incorporated with capital of $50,000. The company has leases upon eighty acres of coal lands.

The Old Abe mine, owned and operated by the **Kanawha Fuel Co.**, at Duquoin, has closed down indefinitely. Like many other mines, during the slack period, the company intends to make repairs and general improvements during the shutdown. The mine was formerly operated by the Jupiter Coal Co., and was purchased during the war by the present owners.

The Kuhn Coalery Co., at Dubois, has again suspended operations for the time being. The mine was idle several weeks ago when repairs were being made. Other repairs will be made at this time.

A new rescreening plant is being installed at Mine No. 5 of the **Taylor Coal Co.**, at Freeman. This with other additions to their present equipment, is expected to almost double the capacity of the mine.

INDIANA

The Tidewater & Western Coal Co. has bought 2,000 acres of coal land east of Spurgeon, in Monroe township, seven miles from the Big Four R.R. A railroad, on which surveyors already have started work, will connect with the Big Four at a point near Somerville. Big stripping operations will first remove all the surface coal and later deep mines will be sunk. The new company is composed of B. W. Lewis, of Wheeling, W. Va.; R. D. Lloyd, of Steubenville, O.; Loris Julian, of Evansville, and H. W. Eakin, Indianapolis. An average of $125 an acre was paid for the property.

The City Coal Co.'s mine at Jasonville as been closed because the supply has exhausted in the mine. It has been in operation for several years. Tearing down of the machinery and work of cleaning up the mine are now under way.

Plans for a large mine near Newport, by the **Newport Coal & Mining Co.** at the location where coal was recently struck are rapidly progressing. The company is making extensive plans for a modern mine with homes for the miners. The homes will be owned by the miners and monthly payments deducted from their wages. Coal was struck at 107 feet. Judge B. S. Aikman, of the Vermilion circuit court, is one of the large stockholders in the new company.

KENTUCKY

The Blue Diamond Coal Co., operating on First Creek below Hazard, has closed deals for 5,000 acres of coal land on Lost Creek, adjacent to the present holdings of the company, with plans for extending developments.

The West Kentucky Coal Co., has completed its new $50,000 towboat, which is now being placed in commission. The company is doing about $80,000 worth of barge work on its own marine ways.

The McComb Supply Co., Jellico, Tenn., has filed suit against the **Sun Coal Co.**, Louisville, with a mine in southeastern Kentucky, for $279.90 alleged to be due on account.

MINNESOTA

Lignite coal in open top cars was used to smuggle cases of whisky from Minot, N. D., to Minneapolis. Several cases of liquor were taken from cars, when placed upon a siding at small towns near the city.

The State Board of Control is securing prices on a supply of coal for the coming season from Indiana and Illinois mines.

The Minnesota house has passed a bill requiring wholesale coal companies to screen coal of impurities, with a limit of not to exceed 12½ per cent of foreign matter.

MONTANA

Declared to be the largest business transaction this year, **the McClure interests**, with John W. McClure, president of the Nelson Coal Co., of Great Falls, as principal stockholders, recently purchased all the holdings in the Nelson Coal Co., according to R. K. West, director of the company. These shares include the holdings of Schuyler Colfax of New York City and make the McClure interests one of the most valuable coal properties in northern Montana.

A $5,000,000 corporation to develop 175,000 acres of coal and oil lands leased on the Flathead Reservation, and to generate electric power from the Flathead River for this project, and for the electrification of the Northern Pacific, is being formed by **United States Senators Reid Smoot of Utah, Warren Worth Bailey** of Texas, and Pennsylvania capitalists. The leases run for ten years and the water-power site lease obtained from the Government is for 99 years.

NEW JERSEY

T. B. Koons, vice-president and freight traffic manager of the Central Railroad of New Jersey, has announced that **M. & J. Tracy, Inc.**, has assumed the towing service to and from the Central Railroad Pier 18, Jersey City. The charge for the service is not to exceed 10c. per ton, which includes the absorption of the two cents per ton shifting at the pier when the towing service is performed by the towing company. Pier 18 will be operated as an "Open Port" and it will be permissible for any shipper or consignor to employ his own or outside tug-boat service and place boats under the chute. However, if boats are brought to the pier by outside tugs which do not perform the shifting to and from under the chute, a charge of two cents per ton will be made by the towing company for this in and out service.

NEW YORK

Profits of the **Island Creek Coal Co.** in 1920 were $2,482,713 after allowing for tax reserves. This, after preferred dividends, was equivalent to $18.37 a share on the 118,801 shares of common stock outstanding at the close of the year. In 1919 earnings were equivalent to $7.45 a share and in 1918 $7 a share. During 1920 the mines produced 1,795,077 tons of coal, an increase of 13,664 tons, as compared with production for 1919.

The Pond Creek Coal Co. for 1920 reported net profits of $600,916 after fixed charges and Federal taxes, equivalent to $2.82 a share on the 212,920 shares of capital stock issued. In 1919 net profits were $207,770, or the equivalent of 97c. a share.

The Elk Horn Coal Corporation reported net profits, after expenses and taxes, for the year ended Dec. 31, 1920, of $1,404,754, equal, after preferred dividends, to $4.20 a share, earned on the $12,000,000 common stock, compared to $64,587, or 49c. a share earned on the $6,600,000 preferred stock in the preceding year. Profit and loss surplus amounted to $1,686,582, as against $677,417.

The Consolidation Coal Co. reports for the year ended Dec. 31, 1920, a surplus after dividends of $7,148,565, against $795,567 in the previous year. Earnings from operations totalled $33,965,280, contrasted with $23,507,556 in 1919. Operating expenses, taxes and depreciation, exclusive of Federal income tax, totalled $26,721,095, against $18,922,011 in the previous year. Total income was $12,127,850, compared with $4,585,545 in 1919, and net income $10,797,806, compared with $3,187,372.

OHIO

Bids will be opened May 2 by the Columbus Board of Education for approximately 10,000 tons of two-inch lump coal for the various school buildings under its jurisdiction. It is believed that with the low price of coal prevailing the board can profit by buying its coal earlier than usual.

The Ohio Linwod Coal Co. has been chartered with a capital of $10,000 to mine coal in the eastern Ohio field. The incorporators are E. C. Fowler, J. F. Rhode, S. J. Thompson, R. M. Ludwig and C. L. Dorer.

The McCoy Bill pending in the Ohio Legislature designed to regulate the distribution and sale of coal, fathered by Representative McCoy of Adams County, will probably be killed in the judiciary committee of the House where it was referred. Through the efforts of B. F. Nigh, secretary of the Michigan-Ohio-Indiana Coal Association, steps have been taken to kill the bill in committee. The main

provisions are to eliminate the middleman in all coal transactions and limit retailer's profit to 30 per cent above the cost of coal plus freight and war tax. The bill also prohibits sale between retailers for profit and also requires an annual report to be filed.

Representative Freeman, of Hardin Co., is the author of a bill which places coal producing and distributing companies in the list of public utilities and seeks to regulate them as such. This would affect every agency in the coal business except the ultimate consumer. This bill is now in the hands of the taxation committee of the House of Representatives where it will likely be killed. W. D. McKinney, secretary of the Southern Ohio Coal Exchange, is aiding in the fight to kill the bill.

The Clarkson Coal Mining Co., headquarters Cleveland, operating mines at St. Clairsville and Fairpoint, will take over the Dunglen mine at Dun Glen, in Jefferson County, having purchased the property from the **Morris-Poston Coal Co.**

The Log Mountain Coal Co. has consented to slice $4,628 off the judgment recently given in its favor in the Federal District Court at Cincinnati aganst the Interstate Coal Co. and the United States Court of Appeals has affirmed the judgment so modified. This ends litigation between the companies.

OKLAHOMA

The Consumers Ice & Fuel Co. has been organized at Muskogee, and charter has been filed in the office of the secretary of state. The company will conduct a general ice and coal business in Muskogee. The company is incorporated for $50,000, and the incorporators are: H. W. Gibson, E. L. Semple and W. T. Granger.

PENNSYLVANIA

With thirty two mines in Cambria, Indiana and Clearfield counties and headquarters at Cresson, the **Pennsylvania Coal & Coke Corporation**, is operating on a 50 per cent basis. Its two largest operations at Beaverdale and Gallitzin are closed and the office force at Cresson has been reduced.

The Stineman Coal Mining Co., with the largest operations in the South Fork region, Cambria County, is operating but about ten per cent of its normal basis. The Stineman mines employ 400 men and worked but five days during February.

The Maryland Coal Co., a subsidiary of the Berwind-White Co., with operations at St. Michael, employing about 600 men is operating on a 100 per cent basis.

At Vintondale, mining is going on as usual. **The Vinton Colliery Co.** is working approximately 700 men on a normal basis, losing only four days in five months.

In the Barnesboro district, the mines of the **Watkins Coal Co.** are closed. **The Barnes-Tucker Co.**, which operates seven mines with 1,000 men, is working about full capacity. **The Maderia-Hill Co.**, two mines and 250 men, is working half time, with good prospects for four days a week. **The Greenwich mines**, employing 250 men, are temporarily closed.

At Hastings, the **Oak Ridge Coal & Coke Co.** is operating its No. 6 mine to full capacity with 110 men while all other mines of this company have been closed since the first of March.

Among the plants, otherwise idle during this dull period, the following work is being done: **The Superior Connellsville Coke Co.** is driving some entries double shift to develop some recently acquired territory. **The Union Connellsville Coal & Coke Co.**, at Simpson, is employing about one hundred men repairing the damage done by the recent fire. **The Century Coke Co.** has extended its motor haulage nearer the working places. **The Snowden Coke Co.** is repairing ovens and coke machines and completing a machine shop started before the shut-down. **The H. C. Frick Coke Co.** is still operating most of its mines, some full time and some part time, and is doing some work on an extensive belt conveyor system to transport coal underground from several mines to the Monongahela River near Fayette City. **The Mather Coal Co.** at Mather, in Greene County, is driving entries, three shifts a day, to develop the large mine opened over a year ago, taking advantage of the plentiful labor supply. **The American Coke Corp.** is stripping an eight-acre tract of coal at Linn between the Sunshine mine and Redstone Creek, where the Pittsburgh coal outcrops.

The Welling Coal Co. which has been operating at Banning has leased on a 20-year basis a tract of exceptionally good coal land along the Youghiogheny River. The tract is located across the river from Suterville and is convenient to the West Penn power line. A modern operating plant, electrically equipped, will be installed.

Changes in the tentative draft of the Governor's **proposed tax on anthracite coal** has been agreed upon. It has been agreed that the bill will provide that a tax of 2 per cent on the mine market value of coal will be levied. The ton value will be arbitrarily fixed at $5.

James H. Dunn and others of Uniontown have organized the **Union Gas Coal Co.**, a West Virginia corporation capitalized at $100,000. Headquarters of the company will be at Uniontown.

Fire recently destroyed the tipple of the **Union Coal & Coke Co.** at Dunkirk. The loss is estimated at $10,000.

In four separate verdicts taken against the **Peoples Coal Co.** damages amounting to $14,500 were recently awarded, the cases all resulting from alleged reckless mining which damaged many properties by settling of the earth.

Properties in Green County, Pa. purchased several months ago by the **Rosedale Coal Co.**, from **J. Frank Dawson** and **Taylor N. Dawson**, aggregating about 1,000 acres, have been formally transferred to the purchasing company. The consideration involved in this deal was about $525,000.

Conditions in the Continental mine, West Scranton, which is owned by the **D. L. & W. R.R. Co.**, where a fire has been raging for several years is under investigation by a special commission of six mine inspectors.

The Hillman Gas Coal Co. has commenced shipments from its Gibson mine in Washington County, near Bentleyville. Shipments at the present time are but two or three cars daily but it is planned to increase the tonnage steadily.

TEXAS

Fire caused by a defective flue destroyed the commissary of the **International Coal Co.** at Rockdale. Loss is estimated at $3,000, partly covered by insurance. The commissary is being rebuilt.

The American Fuel Corporation, a Texas company with a capital stock of $2,000,000, has been organized with headquarters at Dallas, and is now preparing to begin extensive development work in the lignite beds near Donie, in Freestone County. E. B Neiswanger, chief engineer of the Texas Power & Light Co. of Dallas, is president and will also be active manager. Other officers of the company are: Clarence E. Linz, vice president; Harry L. Seay, vice president; J. S. Pulliam, vice president; Charles L. Sanger, director; S. J. Jacobs, treasurer; E. W. Blumenthal, secretary. All officers reside in Dallas. The holdings comprise 1,859 acres adjacent to three railroads, and conservative estimates place the fuel deposit at more than 50,000,000 tons.

UTAH

The capital stock of the **Mutual Coal Co.** of Salt Lake City has been increased from $250,000 to $500,000. The number of shares is increased from 25,000 to 50,000, the shares being $10 each.

The Crescent Coal Co. has filed articles of incorporation. The president is L. F. Rains, well known in Salt Lake City coal mining circles; A. H. Jenkinson is vice-president, and secretary-treasurer. Others on the directorate are F. N. Jenkinson, V. B. DeMeyer and J. F. Rains, all of Salt Lake City. The capital stock is $500,000.

VIRGINIA

The Bundy Coal Co. has been organized at Big Stone Gap to develop 75 acres of coal land near Johnson's Mills. A. N. Gilly is president of the company.

A New York Broker is offering at par and interest $1,000,000 ten-year 8 per cent, sinking fund gold debentures of the **Clinchfield Coal Corporation**, due April 1, 1931. The corporation owns about 300,000 acres of coal lands with an annual output in excess of 2,000,000 tons. The issue is to retire the indebtedness incurred in the development of the property and to furnish additional working capital.

WEST VIRGINIA

Olcott in Kanawha County is to be the seat of operations of the newly organized **Kanawha Black Band Coal Co.** with headquarters in Charleston. Development work will be undertaken on quite an extensive scale, it is understood, following the organization of this company with a capital stock of $150,000. Active in effecting the preliminary organization were: Frank K. Weaver of Johnstown, Pa.; T. Brooke Price, Duke W. Hill, John J. D. Preston and Pauline Tanner of Charleston.

Northern West Virginia people are principally interested in the **Kanawha Standard Coal Co.**, with headquarters in Clarksburg. This company has a capitalization of $100,000. Although headquarters are to be in Clarksburg, the mines to be opened are in Clay County on the Charleston division of the B. & O.

The Lake & Export Corporation of Huntington is making preparations to expand its organization and with that in view will open branch offices at certain market centers in this country and in Paris, France, with a view to securing foreign trade if possible. Announcement to the above effect was made by President S. J. Payne of the corporation.

The visit of officials of the **Consolidation Coal Co.** at the headquarters of the **New River Co.** operating very extensively in the New River field has given rise to the suggestion that the first named company may be negotiating for the purchase of the properties of the New River Co. although there has been no intimation that there has been any deal initiated for a change in ownership.

Material revision of the **gross sales tax bill** as introduced in the West Virginia legislature is proposed to meet the objections which have so far arisen to the measure. The bill in its original form simply provided for the imposition of a sales tax of one-half of one per cent on the sales of all property of whatever nature. The proposed amendment would provide for a production sales tax, for a sales tax and for an excise tax. The production sales tax would require that a tax of one-half of one per cent be paid for the privilege of engaging in mining coal, oil, gas or any other mineral for sale. The change proposed virtually amounts to a production tax but is so worded as to bring it within constitutional limitations and to make it conform to a decision of the United States Supreme Court which does not permit a production tax on products moving in interstate commerce.

The report of the **New River Co.** shows that operations were very successful during 1920. Profits for the year reached $4,083,187.69. Deferred dividends paid during 1920 aggregated 18 per cent. The annual meeting of the company will be held at Mt. Hope on April 13 to elect directors.

The recently organized **Parkersburg Coal, Dry Docks & Transportation Co.**, with a capital of $250,000 is a subsidiary of the **Ben Franklin Coal Co.** of Moundsville. The newly organized company has acquired all the holdings of the **Winters Coal Co.** The Parkersburg company is said to have secured contracts to supply many of the larger industries of Parkersburg.

BRITISH COLUMBIA

Under the management of Messrs. Johnson and McLean the **Coalmont Collieries** has developed the areas on their property, about 2.82 miles southwest of the town of Coalmont, on the Kettle Valley Ry. A new opening has been made in the mine and different seams blocked out. A new bunkhouse and dwelling houses have been built and an aerial tram 15,000 feet long, with a capacity of 60 tons an hour, installed; also a tipple and screens at the railway and a plant to generate electric power for the mine and town.

The East Wellington Coal Co. is a new organization that has secured a lease on a royalty basis from the Canadian Collieries (Dunsmuir), Limited, of a tract of approximately 2,800 acres of land adjoining the old Jingle Pot mine and extending to the northward. This tract of land is for the most part virgin territory, presumably underlain by the Wellington coal-seam, but also includes the old East Wellington mine, which it is proposed to unwater. Up to the present time the work being done consists of clearing 10 acres for mine buildings, driving a new slope 611 feet, counter-slope 86 feet, crosscuts 155 feet, sump 6 x 12 x 30 feet, and erecting buildings for machinery.

Traffic News

The I. C. C. has assigned for hearing at Chicago, April 14, the complaint of the **Sargeant Coal Co.,** involving rates on bituminous coal from mines in the Booneville district to points in Illinois, Wisconsin, Iowa and Minnesota.

At Indianapolis April 4 the commission considered the **Indiana State rate case** involving coal rates. Testimony was taken relative to rates on coal applicable intrastate in Indiana for distances of less than 30 miles, including their relation to rates applicable intrastate in Indiana for distances of 30 miles and more, and in their relation to rates applicable on interstate traffic.

In the case involving rates to, from and between **points south of the Ohio River,** including the Mississippi Valley, the commission has assigned for hearing April 11 at Memphis the rates on coke.

Personals

E. H. Weitzel the newly appointed general manager of the Colorado Fuel & Iron Co., was promoted after 13 years' service as manager of the fuel department to succeed the late J. B. McKennan. **D. A. Stout** was promoted from the position of assistant manager to manager of the fuel department. Mr. Weitzel received his first coal mining experience in the Pittsburgh district, thence going to Ohio. He later moved to New Mexico and continued in various capacities until appointed chief engineer of the fuel department of the C. F. & I. Co. in 1907.

E. H. WEITZEL
General Manager Colorado Fuel & Iron Co.

Henry M. Schmidt, of Pittsburgh, has resigned as superintendent and engineer of the Ft. Pitt Coal Co., and accepted the position of chief engineer for the Arrow Coal Mining Co., of Pittsburgh, operating in Cambria County.

Colonel T. E. Houston, president of the Houston Coal & Coke Co. and of numerous other companies operating in Norfolk & Western territory returned to the United States from a trip abroad, Colonel Houston having sailed early in January.

C. E. Hutchinson, vice-president of the Hutchinson Coal Co. of Fairmont is back at his desk again in Fairmont after an extended trip to Cuba and Costa Rica where he is interested in a large mining concession.

The Bureau of Mines has appointed **E. W. Zimmerman** of Decatur, Ill., as consulting economist on lignite.

Isaac T. Mann, of Bramwell, president of of the Pocahontas Fuel Co., of the Pulaskie Iron Co. and many other concerns in southern West Virginia is being favorably mentioned for the post of ambassador to Spain or some other foreign post and has been given the unanimous endorsement of the West Virginia senatorial and congressional delegation. Mr. Mann is considered eminently well fitted by training and temperament to fill a diplomatic post most acceptably.

R. S. Rockwell, superintendent of the New River Division of the **C. & O.** and **J. W. Davin,** chairman of the Car Allotment Commission of the same railroad spent several days in March in the Winding Gulf region and in the Stone Coal section of the New River field.

Association Activities

Tug River Operators' Association

The newly established offices of the Tug River Operators' Association will be completely organized and ready for business by the first of April according to an announcement recently made by C. C. Morfit recently elected secretary of the Association.

Indiana Bituminous Operators' Association

At the annual meeting, March 16, of the Indiana Bituminous Operators' Association the reports for the year were heard. Officers were re-elected as follows: M. L. Gould, Indianapolis, president; E. D. Logsdon, Indianapolis, vice-president, and P. H. Penna, Terre Haute, secretary-treasurer. The board of directors will continue to serve for three months.

Northern West Virginia Coal Operators' Association

George S. Brackett, secretary of the Northern West Virginia Coal Operators' Association, has returned from New York, where on March 16 he attended a conference between traffic managers of various coal associations whose territory has been and is being affected by freight differentials, and vice-presidents in charge of traffic of the following railroad companies: Pennsylvania, Baltimore & Ohio, P. & L. E., Hocking Valley, Chesapeake & Ohio, Norfolk & Western and the New York Central. The coal people presented their case and late the same day received the information that their request for a readjustment of rates had been denied and that there would be no adjustment of rates to the Lakes. If that decision is permitted to stand, it is stated by representatives of the association that it will virtually eliminate northern West Virginia producers from Lake markets unless they are willing to sell their coal at a loss as the differential is such that they cannot hope to compete with Ohio and other Western producers. Of course, West Virginia producers are reluctant to abandon a market which they have assiduously cultivated and in which they have built up a good business.

Upper Potomac Operators' Association

The association has appointed a committee to act with a similar committee of the Northern West Virginia Operators' Association for the enactment of a gross sales tax by the West Virginia legislature or for the enactment of legislation along somewhat similar lines.

Obituary

Death has claimed **James Calhoun Crawford,** of Fairmont, aged 69, long actively identified with affairs in Fairmont and during a long period of time identified with the Consolidation Coal Co.

William F. Turner, for the past four years a member of the Illinois State Miners' Examining Board, died recently at his home in Danville, Ill.

James W. Wiley, Sr., one of the pioneer coal and coke operators of the Connellsville region, died recently at his home in Scottdale. Mr. Wiley was one of the first men to appreciate the possibilities of the West Virginia coal field.

Recent Patents

Interlock and Signal Device for Coke-Oven Door Operating and Pusher Machines. C. T. Keigley, Lorain, Ohio, 1,368,163. Feb. 8, 1921. Filed Dec. 3, 1919. Serial No. 242,300.

Coal Digger. John Newark, Coral, Pa., 1,368,189. Feb. 8, 1921. Filed June 26, 1918. Serial No. 242,035.

Coal-Handling Device. William Robertson, Chicago, Ill., 1,368,456. Feb. 15, 1921. Filed May 10, 1919. Serial No. 296,061.

Cutter-Chain Mining Machine. M. S. Smith, Glasgow, Scotland, 1,368,521. Feb. 15, 1921. Filed Jan. 20, 1920. Serial No. 352,889.

Grease Cup. P. F. Wollenweber, Toledo, Ohio, 1,368,675. Feb. 15, 1921. Filed May 10, 1920. Serial No. 380,053.

Concentrating Table. J. F. McNeil, Clifton, Ariz., 1,368.815. Feb. 15, 1921. Filed July 23, 1919. Serial No. 312,770.

Fastener for Sectional Coal Auger. Clyde C. Hartzell, Pittsburgh, Pa., 1,368,928. Feb. 15, 1921. Filed Nov. 3, 1919. Serial No. 335,442.

Mining-Machine Truck. M. P. Holmes, Clarmont, N. H., 1,369,175. Feb. 22, 1921. Filed June 21, 1916. Serial No. 105,402.

Method of and Apparatus for Utilizing Mine Waste by Means of the Heat of Dump Heaps. Walter Oswald, Grossbothen, Saxony, Germany, 1,369,350. Feb. 22, 1921. Filed July 21, 1916. Serial No. 110,619.

Plumb-Bob. R. N. Easterberg and H. J. Volkwein, Pittsburgh, Pa., 1,369,523. Feb. 22, 1921. Filed Aug. 7, 1919. Serial No. 315,840.

Coming Meetings

Indiana Retail Coal Merchants Association will hold its convention at Indianapolis, Ind., May 4, 5 and 6. Secretary, R. R. Yeagley, Indianapolis, Ind.

American Society of Civil Enginers will meet at Houston, Texas, on April 27 to 30. Acting Secretary, H. S. Crocker, 33 West 39th St., New York City.

American Institnte of Chemical Engineers will hold its spring meeting June 20 to 24 at Detroit, Mich. Secretary, Dr. J. C. Olsen, Folytechnic Institute, Brooklyn, N. Y.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7 and 8. Secretary, G. H. Cushing, Woodward Bldg., Washington, D. C.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill., May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The National Coal Association will hold its next annual convention at the Waldorf Astoria Hotel, New York City, May 19 and 20. White Sulphur Springs hotel reservations have been cancelled. W. B. Reed, secretary, Commercial National Bank Bldg., Washington, D. C.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

National Retail Coal Merchants Association Sixth Conference of Secretaries and Executives to be held at the Baltimore Hotel, Kansas City, Mo., May 15 and 16. For reservations address H. S. Mitchell, New York Life Bldg., Kansas City, Mo.

National Retail Coal Merchants Association will hold its annual meeting May 12, 13 and 14 at the Jefferson Hotel, Richmond, Va. Secretary, E. G. Gordon, Philadelphia, Pa.

The National Foreign Trade Council will hold its eighth annual convention May 4, 5, 6 and 7 at Cleveland, Ohio. Secretary, J. G. Hammond, 409 Park Bldg., Cleveland, Ohio.

Illinois Mining Institute will hold its spring outing the latter part of May on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on May 26 and returning on May 28. Secretary, Martin Bolt, Springfield, Ill.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Just One Ton of Coal

ONE of the most sensitive parts of the human anatomy, it has recently been discovered, is the "pocketbook" nerve. Doctors of merchandising also have found that this nerve is closely connected with a section of the brain that may best be described in every-day words as "Caution and Suspicion of Seller." Although it usually is thought that coal is produced to burn, it really is produced to sell, and there is therefore some point in thinking of the relation of coal to the "pocketbook" nerve.

Dealing in meaningless but necessary averages we find that the per capita consumption of coal in the United States is about six tons per year, but that of the total, five tons, or 83 per cent, is used by railroads, public utilities and industry and that but one ton per person, on the average, is burned in the households of the nation. Now this average is more expressive than the usual statistical figure, for it is very nearly true. Nearly every person in the United States, especially the common folk who cannot winter at Palm Beach or Havana, depend on and use coal to keep warm. If to the household coal is added that used by public utilities for electric power and light and for gas, we have about one and one half tons per capita, or barely 25 per cent of the total coal consumed in this country, through which the public at large has its contact with the coal industry. Anthracite and bituminous coal share almost equally in this direct relationship to the public, with the distinction that business in domestic sizes is the major concern of the anthracite producers, representing 60 per cent of the total sales, whereas but 10 per cent of bituminous coal is sold for household use.

Instead, therefore, of thinking of the anthracite and the bituminous coal industries as separate and distinct, we may well divide along the line of contact with the ultimate consumer. The average person is the ultimate consumer of one ton of coal a year, and there is no way in which he can pass on any loaded cost. To him coal is a finished product, as are clothes and food. He comes in direct contact with coal in the purchase and use of that one ton of coal. The other five tons he is supposed to use each year touch his pocketbook no more directly than does structural steel, cement, lumber, or silver ore. There has been no popular demand for government control of the iron-ore mining industry, but regulation of the street railroads came to pass because a large portion of our citizens use the trolley cars. Coal for manufacturing and the railroads is a raw material.

If, for the sake of argument, we exclude labor as a commodity, it is easily possible to make a fine distinction between the ultimate and the intermediate consumers of coal. It is not so easy to separate the problems of production and of marketing coal as it is to draw the line between these two classes of consumers, and this doubtless is the reason merchandising of coal has not been developed along this line. Because the public utility companies in their fight for higher rates have enlightened the public on the effect on their costs of high prices for coal, in other words have "passed the buck" to the coal producers, it is well to think of the coal used by the utilities as being in that portion of the whole coming in direct contact with the ultimate consumer. Without exception, then, every coal producing field in the country has this relationship to the public, and the operators in every field have a direct and selfish interest in having that relationship of proper character.

Let us consider first that one ton of coal. It would seem to be one of the fundamentals of merchandising—that much-mouthed word—that the producer and jobber should follow their product through to the consumer, setting standards for the guidance and control of the retail merchant in matters of quality, service and—within certain limits—of price. This has been and is being done with regard to large number of commodities and articles of every day and general use. It has been accomplished not by any process of holding a club over the retail merchant but through the use of a medium which as yet is as a closed book to the coal industry. One may easily call to mind any number of specific articles and commodities with regard to which the public has acquired a sensible understanding of the industry back of the product and a discriminating and exacting taste with respect to quality and service. The producers and distributors, and not the retail dealers, have brought this to pass. The message of the producer to the public has been carried direct, over the heads of the local merchant, and the public, thus educated, has forced the dealer into line.

The public knows altogether too little about that one ton of coal. What it knows is that it is too often adulterated, that it has cost more than it should have and that at times it has been almighty hard to get at any price. There is no escape from the necessity of buying that ton, and the public may therefore decide to establish, or attempt to establish, by legislation, the conditions of quality and price under which it will have its coal. Despite the fact that popular interest in five tons out of six is academic, any such legislation will affect the whole—no discrimination here is possible.

Consider that humble article of commerce, soap. There was a time when "Good morning; have you used Pears' soap?" represented the total popular knowledge of this article—now another says "It floats" and that it is "99.44 per cent pure." To popularize the phrase

"Good night; have you banked the furnace?" will not help the coal industry, but as a slogan, "It is clean and it burns" would meet with more popular approval.

The fellow who buys and burns this one ton we are discussing is well worth considering. It is he who—when his pocketbook nerve is touched by the price of coal plus slate—writes his Congressman and demands that something be done. Without a flood of such demands Congress is mightly slow to act.

Taxing Clean Coal

AN EVIL spirit must have possessed Representative Kohler when he presented a bill to the Pennsylvania Legislature providing "That laws may be enacted for the levying and collecting of a special tax on anthracite coal when prepared for market and an appropriation not exceeding the amount of the proceeds of such tax may be made by law for the relief of persons, corporations, associations and municipalities injured or damaged by surface subsidence resulting from past or future mining of anthracite coal."

It was an impression gained from the newspapers and from one's acquaintances that the country was up in arms against the amount of dirty coal sent to market. In fact during the war there were, if memory serves, campaigns for clean coal; bulletins were posted and inspectors were appointed, yet now clean coal is to be taxed and unprepared coal is to go free.

During the period referred to certain irresponsible persons put steam shovels into culm banks—the wastes from old washeries containing slate, coal rejected by reason of its impurity, and undersized coal—and shipped the material uncleaned to market. This coal under the proposed law would be free of a tax to which properly prepared fuel would be subject.

Rice and barley are quite generally shipped unwashed. Washing in the ordinary jig is impossible, in fact till quite recently there was no jig really suited to that work. But fine coal can and should be washed on either tables or special jigs, and as such cleaning involves throwing away a large percentage of impurity and a quantity of good coal too intimately associated with ash for separation, the work of cleaning coal needs encouragement and not suppression through the imposition of a tax.

What the author of the law obviously desired was that the impost be put on "prepared sizes"—that is, on those larger sizes which in the earlier days it was customary to screen and clean for the market. He has endeavored to avoid the use of this recognized market term and use one he believes is better but which is not. Had he required that all coal which passed over a screen of a certain size be taxed and all that went through such a screen be free from tax he would not have written a law which is so manifestly violative of the best interests of the public.

Anthracite Haulage Difficulties

LITTLE has been written about anthracite haulage problems, but that they are not unimportant is shown by the article by K. A. Meyer on the use of storage-battery locomotives in the Exeter colliery, appearing on page 667 in this issue. He records the work of five storage-battery locomotives which haul in the aggregate 153 mine cars per day, displacing thirty-nine mules. The work per locomotive is small in comparison with what is done in bituminous mines by the same kind of equipment. The locomotives haul on an average, as may be readily ascertained from the figures given in the article, thirty-one cars per day.

The mules they displace would haul only four cars in eight hours, or one car every two hours. Of course, the mules are working in strings of three, so it would be more correct to say that a team of three mules hauls three cars every two hours, or one car every forty minutes. The wage cost must be high per car, as only six tons is obtained per day per man employed. The difficulties in anthracite mining are not appreciated till we realize that in this mine grades are encountered running between five and nine per cent.

The Jobbers' 1921 Platform

IN THIS issue (page 683) we publish a letter from George H. Cushing setting forth the "revised views of the wholesaling group" on Federal coal legislation. The letter is addressed to Senator Frelinghuysen, who is looked upon as the administration spokesman on coal, and who is expected to speak at the session of Congress opening this week. Until the jobbers, in annual convention assembled next June, have opportunity to accept or reject the position outlined by Mr. Cushing, their official spokesman, we may consider his statement the platform on governmental relations of this important section of the coal industry.

We are told that the wholesalers will not resist proper legislation designed to protect the public, provided the efficiency of the industry is not impaired and competition is unfettered; that they will not resist efforts to collect information about coal, provided the data are for the use of Congress, the legislative branch, or for the administrative branch of government (thereby excluding the judicial branch), and that these data shall be used in public way solely in the interest of the consumer. Objection is registered to any attempt to bring the fact gathering into one organization or bureau, as "that has a tendency to tempt such bureau or commission to try to make itself the leader or the regulator of the industry." Decentralization of fact gathering, to the end that the "impulse to paternalism be smothered," is indicated as the probable policy of the jobbers.

Such indeed is the present practice of the Federal government with respect to coal and all other industries. Some have mistakenly considered this as fostering duplication, and have indicated that in the extensive reorganization of the departments planned by this administration in the interests of economy and efficiency all activities relating to coal will be centralized.

Rearrangement of the bureaus at Washington so that every activity relating to coal would be under one head would have the eventual effect of increasing the cost of this work, rather than reducing it. Whether the work would be done more efficiently would depend entirely upon who had it in charge and would not follow from the change. Such a plan of organization would, as Mr. Cushing has stated, tempt the bureau having coal in charge to "try to make itself the leader or the regulator" of the industry. Whether such a course, in view of the lack of any national leadership within the industry, would inure to the disadvantage of the industry and the public is an open question. Again the character of the results would depend entirely on the man in charge of the bureau

Reduces Losses in Output and Eliminates Fires From Overloads and "Shorts"

In Many Mines "Shorts" and Overloads Play Havoc With Production—An Installation of Automatic Circuit Breakers on Four Circuits Renders Loss of Operating Time From This Cause Negligible in Two Mines of the Ford Collieries Co.

By Donald J. Baker
Wilkinsburg, Pa.

In a previous article in *Coal Age* (issue of April 15, 1920) a few of the many reasons were set forth why the mines of the Ford Collieries Co., a subsidiary of the Michigan Alkali Co., aspired to, and finally attained, the lowest compensation rating granted to any coal operator in Pennsylvania. This concern, which is under the general managership of A. R. Pollock, mines about one and a half million tons of coal annually, and is, therefore, a sizable producer, although one that by no means can be ranked with the largest of the state. The low compensation rates granted to these plants well attest their efficient operation.

The knowledge this firm has gained concerning safe practices in the mines as well as accident prevention has been acquired in a remarkably short space of time. Tireless and conscientious effort has been expended on the fundamentals of safety, but the practices and results lie within the reach of all operators.

It is the purpose of this article to describe, without entering deeply into complex details, the electrification of the Berry No. 3 mine, where an electrical installation recently has been completed, which, while guaranteeing the men employed there increased security against fires and explosions, affords the company no reduction of its workmen's compensation insurance. A reward is obtained, however, through the better and more effective operation of the mine which the installation makes possible. Though the Berry No. 3 mine is chosen as the subject of this article, a similar installation has been made in Berry No. 1, which is somewhat smaller.

Power Off an Average of Eight Times Daily

It has been estimated that where a mine has been equipped for distributing power by means of a single circuit, power trouble will put the entire works out of commission on an average eight times daily. These intervals of shutdown are caused by a drop in voltage and consequent overloading at some given point, or by an occasional "short." The time lost may easily total a half-hour of plant operation. Unless the motormen and machine men have been instructed to the contrary—and even then rules rarely are rigidly adhered to—they will await the return of power with the controllers on their machines advanced several notches, hoping thereby to take advantage of the first influx of returning energy. The loss of time in such cases, in all probability, will average more than has been stated.

Before power can be returned it will be necessary for the power-house attendant to close the circuit breaker. This can be accomplished permanently only after the removal of the cause of overload. If the line is still overloaded when the breaker is thrown in, this switch will, of course, immediately fly out again. Under these conditions, the overload or peak is never removed from the wires for a period sufficiently long to permit the breaker to remain in a closed position and the circuit to be re-established.

Mine Halts While Trouble Men Hunt Cause

After the switchboard attendant has thrown in the breaker, only to have it again fly out, say three or four times, "trouble shooters" are notified and an attempt is made to run down what appears to be a short-circuit. Unless all the butt entries are isolated from the main haulage roads by fused sectional switches the position of this electrical trouble can be located only indefinitely, causing a most expensive loss of operating time.

At an operation where the motor- and machine-men have been instructed not to follow the pernicious practice mentioned, a loss of only a half hour daily may be experienced, but such a mine is nevertheless admittedly far from efficient. At Berry No. 3 the loss of time mentioned meant the losing of nearly 160 tons of coal in the course of the day. Unquestionably this is an appreciable leak, although one often regarded as a necessary evil.

Installation of fused sectional switches—preferably placed at the entrance to each butt entry—will practically eliminate the possibility of the works being thrown out of operation through lack of power as the result of a short-circuit. These devices cut off current only in the working sections served by the particular butt entry in which they are installed. However, if the "short" is located along one of the main haulage roads and arises from a fall of roof or the like, the entire mine will be tied up. Though these switches are in a sense a protection against overloads, they are seldom called upon to function for that purpose, for, as a rule, an overload rarely manifests itself in a panel section.

Entire Network Feeds to Point of Overload

No. 3 mine is divided into four separate sections by the installation of eight automatic reclosing circuit breakers, and it is possible to isolate completely any section independent of any other in the event of an overload or short-circuit occurring upon one of them. This is accomplished automatically, yet the entire network of copper in all four sections feeds to the point of overload.

Thus one section is not called upon to perform heavy duty while light duty is demanded somewhere else, with no opportunity for the one to assist the other. The breakers have been installed so that any one circuit may be fed from two directions, thus giving two avenues

for energy delivery from any of the lines into a second at the first sign of an overload in that particular section.

If the current that rushes to the point of overload from all four circuits is not equal to the demand, three of the circuit breakers in the system will fly open, thereby eliminating the peak before damage can be done to a motor, an armature, a mining-machine cable, or whatever lies in the path of the current.

Power Is Re-established Gradually

By means of an adjustable time-limit air valve any breaker may be set so as to reclose automatically after a predetermined interval of time. Upon installation each instrument is given a different adjustment from the others. This permits the circuit after being discontinued to be re-established gradually, and eliminates any excessive rush of power through the lines. When two or more sections of the mine are out of operation because of overloads—and this rarely occurs—the breakers at the shaft bottom, of which there are four, one for each circuit, reclose at varying time intervals and the generators in the power house can thus pick up their load gradually, giving a highly flexible return of power.

The Ford Collieries Co. generates the electrical energy for each of its three mines at separate power plants located at each operation. At present the generating equipment is being dismantled at the No. 1 mine, as in the near future power for this operation will be purchased. The power plants at the remaining two mines are quite complete, however, and it is doubtful if purchased energy will supplant that generated at these operations for some time to come. Three 200-kw., 250-volt machines are used to produce the current for the operation of No. 3 mine. The current is brought to the shaft bottom through a borehole by means of a 1,500,000 circ. mil. cable incased in conduit. The cable is then led to a brick chamber, where four 900-1,800 amp (adjustable between these limits) automatic reclosing circuit breakers have been installed. Four taps are taken off the line at this point, one lead going to each breaker.

Eliminates Need of Booster Equipment

Except four other circuit breakers installed in the outskirts of the mine, the only electrical instruments in the entire operation are located in this room. The drop in line voltage has been so small that it has not been necessary to install booster equipment to re-energize the trolley wires at the far limits of the mine, although this action was deemed a necessity before the present equipment had been put in place. The four breakers in the substation are hung side by side on an insulated pipe rack. The lines from each pass through openings between the roof and walls of the room, thence to connect with the section lines that each is to serve.

Tie breakers are installed in four sections of the mine. The difference between the feeder breaker, which is the type placed at the bottom, and the tie breaker is shown in the accompanying wiring diagrams of these two devices. It will be noticed that the tie breaker is equipped with a double resistance, whereas that of the feeder breaker is single. By this means it is possible for the current to travel in either direction through the tie instrument, whereas there is but one course through the feeder breaker.

In the accompanying map of the mine the four circuits may be traced, each originating in the breaker room at the bottom. The circuit shown by the dashed line runs northward in one of the north face entries, and has tributary to it the butt entries and panels of that section of the mine lying to the northwest of it.

The circuit shown by a dash-dot line runs northward up another of the north face entries and after traveling for a short distance along the main southeast haulage road supplies energy to the northeastern section of the mine. This circuit, which is the largest in the system, also delivers current to the dips or southeast butt entries. It is shown with a feeder line paralleling the trolley wire along the main haulway and into the most advanced east face entry. This feeder line is utilized for boosting the voltage in the active advanced panel sections, and is connected to the trolley wire at intervals of 250 ft.

The circuit shown by the dash-two-dot line runs directly into the central south face entry and feeds the butt entries on its left. This circuit is shown also with a feeder line. Development of the southeast and southwest sections of the mine is progressing at a more rapid rate than is that in the workings to the northward. Feeder lines are omitted along the north face-entry circuits, because from them less power is required. The company contemplates the sinking of another shaft to the northward some time in the future, through which will be taken much of the coal that could be removed through No. 3 shaft. This new operation will eliminate the long hauls which would be experienced if the coal lying directly to the northward were removed through Mine No. 3.

Tie Breakers Installed in End of Entries

The fourth circuit, shown by a dotted line, runs out the main northwest haulway and into one of the farthest advanced southwest face entries. This circuit supplies power to the butt entries to its left. It also is equipped with a feeder line.

It will be noticed that the tie breakers, designated by a circumscribed B, with one exception have been installed in the butt entries that are advanced farthest. It is considered advantageous to place them as near as possible to the power demand where the resistance of the wire is least. Any overload or "short" manifesting itself near the end of that circuit will have a correspondingly shorter distance to travel in registering at the breaker. Thus if a short occurs the power is immediately taken off the line, whereas if the current had some distance to traverse before reaching the breaker the resistance offered by the wire might prove to be so great that the line would grow hot and sag before the current was thrown off.

There would be danger that the mine would take fire if by chance a mine car happened to be beneath the wire when it sagged. Timbers also might easily be ignited. Each tie-breaker is mounted in a convenient cut-through on an ordinary pipe frame insulated and supported by heavy timbers reaching from roof to floor. This type of installation is both neat and substantial and requires no care of any kind.

Short Circuit Shuts Current from Line

Each circuit, although independent in itself, in the sense that trouble on one is not relayed to and reflected in another, is yet able to draw on all three for additional current. A sectionalizer is employed in connecting trolley wires of two circuits together so as to afford an even surface for movement of the trolley wheel of the locomotive. This is a small wooden plate about 1 ft. long which is fixed by bolt to each circuit dead end.

One of these is found in the butt entry near each tie breaker, as well as where each circuit joins another near the bottom.

Now let us see how the system operates. Suppose some section of the line feeding the farthermost northeast and southeast butts is "shorted," this circuit being shown by the dashed-line. Immediately the tie-breakers B_C and B_B open, as well as the breaker at the bottom from which that circuit is controlled. There is no chance for any of the breakers mentioned to reclose, re-establishing the circuit, until the cause of the difficulty has been found and remedied.

Suppose instead, an overload occurs on this circuit at some point, caused, say, by a locomotive driver attempting to haul an unusually heavy trip up a steep grade. In such a case all the excess power available in the other three circuits rushes through different channels to this point. If the demand is still greater than can be accommodated by the amperage adjustment of each tie breaker, the three breakers mentioned will open.

After 5-, 10- and 15-sec. intervals each breaker recloses automatically and the circuit is again completed. If the overload still exists after these intervals of time, the breakers will not reclose but will remain open until the excessive load has been removed. Identically the same sequence of operations takes place under similar conditions in each of the other three circuits.

In the case of the north circuit the breaker at the shaft bottom is not affected unless the cause of the trouble is located between the breaker room and tie breaker B_A. Otherwise only the breakers B_A and B_B will open. If an overload or "short" occurs on the west circuit, breaker B_D will open along with the proper section breaker at the shaft bottom. This section of the mine is isolated by only two breakers.

If there is trouble on the circuit illustrated by the dash-two-dot line, the tie breakers B_D and B_C will open; so also will the main feeder breaker for that line in the room at the bottom. During the time that any one circuit is down, the energy ordinarily flowing into its wires is directed into those of the three remaining closed circuits, if there is demand for it, making it less likely that an overload will manifest itself on any of these lines, unless, indeed, the current rating of the tie breaker is reached. This is adjustable between 600 and 1,200 amp. By following the course of the four main distributing lines, it can be seen clearly how each circuit can be fed from at least one other, thus making it possible for all of the copper in the mine to be of service in feeding current to any point.

"Short" Immediately Deadens Its Circuit

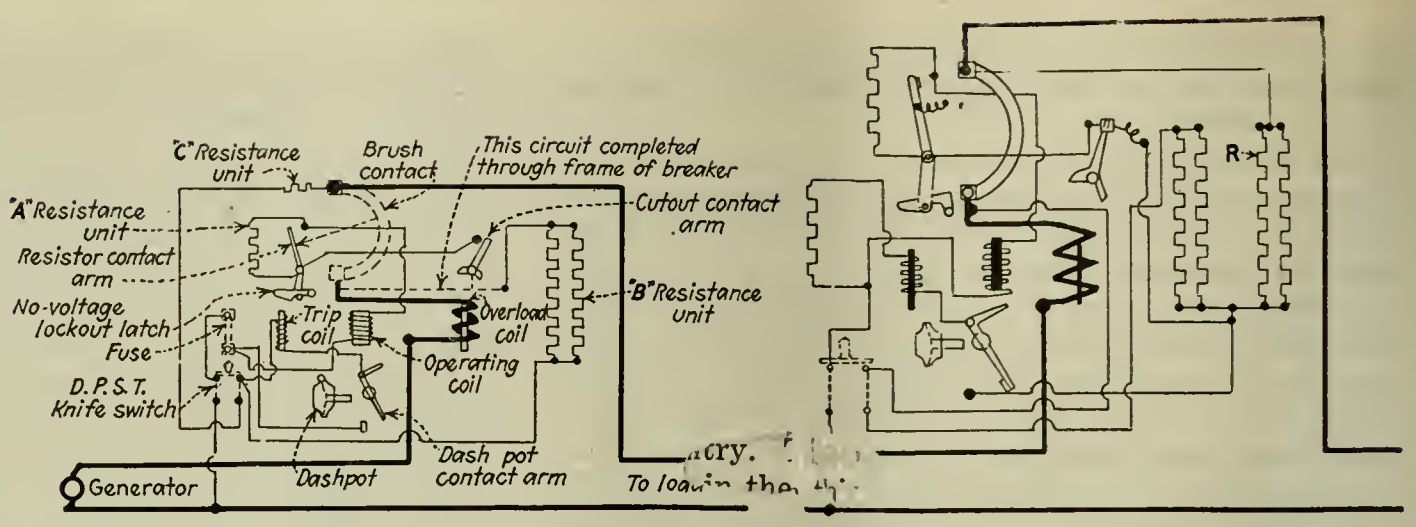
As has been mentioned, a fused sectional switch is located at the entrance to each butt entry, so that a "short" on any particular line will not be able to cause the de-energizing of the entire circuit.

Berry No. 3 Mine, Showing Separate Wiring Circuits.

A diagrammatic plan of the mine with some of the headings and crosscuts omitted so as to make the trolley wires and feeders more readily apparent. B_A, B_B, B_C and B_D are four tie breakers through which the current can pass in either direction, thus making it possible to tie the various lines together so that in case of a heavy load on any one of them they can help one another. The trolley lines and feeders appear to be placed on different roadways, but they are not. The numeral 4 marks the substation at the foot of the shaft, where four feeder breakers are installed.

Feeder Breaker and Tie Breaker.

These instruments are quite similar, as their purposes differ but little. It will be noted that "B" resistance unit on the feeder breaker on the left is duplicated on the right as shown at R.



correctly speaking, that entry would be cut off from the circuit only until the cause of the difficulty had been removed and the switch re-fused. As there is but little likelihood of an overload coming on the wires in a butt entry, only in rare instances will anything other than a short-circuit isolate one of these panel arteries. When a "short" does occur, it may either be noticed by the men working in the rooms or by the locomotive driver when entering the butt. If it is discovered by the latter, the condition is reported, and a man is dispatched to run down the cause, remove it and renew the fuse.

Occasionally, a careless machineman will, by "goosing" his machine, bring about an overload within a room that cannot be handled by the 400-amp. fuse at the entrance to the butt entry. In such a case the fuse will part in much the same fashion that it would if a "short" existed. However, in the mines of the Ford company, overloads and burned-out fuses as a result of the practice above mentioned are uncommon.

The elasticity of the entire system is perhaps its greatest advantage. The time of the power-house attendant is not consumed in throwing in the circuit breaker as a result of overloads; therefore he can turn his attention to more profitable channels. The "shorts" which occur are limited in their field of activity to a single section of the mine, along one of the main haulage roads. "Shorts" in the rooms or butt entries are taken care of separately, as already has been described. Thus there is little time lost either in the mine or in the power house.

Circuit Breakers Located on Intake Airways

Each breaker, being situated as it is in the intake airway of the farthest advanced butt entry, is well located for protecting the mine against fire or explosion. The opening of the breaker results in some arcing, but this is scant cause for an explosion. About the only possibility of this spark igniting a quantity of gas would occur should an overload on one of the circuits be set up after the mine had been down for a lack of power for several hours. The breakers in reclosing do not make a large spark. Under these conditions a short circuit would ignite the gas at the point of its occurrence and not at the breaker.

During the short period that the system above described has been in operation in the No. 3 mine, the time that has been lost because of power trouble has been reduced to a negligible quantity. Overloads are handled promptly as they arise and the circuits affected are re-established automatically. Under the old order of operation, the time of the power-house attendant was absorbed to a great extent in throwing in the section breakers. If he happened to be engaged in other duties when a breaker opened, the mine was, of course, down until such time as he might happen to notice that this switch was disconnected.

Pressure Drop Cut From 100 to 15 Volts

Before the new installation was effected, there had been a line drop between the power house and some of the innermost sections of the mine of over 100 volts. Now at no time is there a greater difference than 15 volts between these points. This fact in itself admirably illustrates the fact that all the current generated is now available for the supply of any portion of the underground workings. Two-, three-, and four-circuit systems have been installed in other operations, but these left much to be desired on account of the fact that much of the copper was limited in service to its own individual circuit. In these cases more generating equipment is needed for the operation of the mine than is actually required, and power costs soon rise to a figure that is exorbitant.

I wish to take this opportunity to thank W. G. Shallcross, general superintendent of the Ford Collieries Co., for the facts contained in this article. Without his kindly co-operation this description could not have been written. The officials of the Ford company are always willing to assist in the "passing along" of information in connection with the solution of operating problems. This characteristic trait of the firm is one of the many reasons why it has progressed further than most bituminous operators and today occupies an enviable position on the state's record. It is only through all concerns making an open book of what each has learned that the entire industry can make rapid progress.

When negro miners attempted to go to work at the Key coal mine in Warrick County, Indiana, they were stopped by white pickets and a fight ensued. The negroes found out that the white workers had attended a union meeting the day before, March 21, and called a strike. About eighty men work at the mine and the officials of the union have been asked to settle the strike. Meantime the Sheriff has gathered in those who took part in the fight.

Shipments of coal and coke through the Panama Canal during January were as follows: South Atlantic ports to Chile, 24,809 tons; South Atlantic ports to Peru, 4,773 tons; South Atlantic ports to New Zealand, 21,214 tons; South Atlantic ports to Balboa, 11,998 tons; North Atlantic ports to Ecuador, 3,300 tons; North Atlantic ports to Chile, 41,216 tons; North Atlantic ports to Far East, 1,100 tons; British Isles to Peru, 1,711 tons.

Argentine coal imports in 1920 were chiefly from the United States. Reports received show that this country furnished seven times more coal than Great Britain.

Making Side of Room a Working Face, Thus Combining Room-and-Pillar With Longwall

Heading Machines, Mechanical Loaders and Undercutters Used—Narrow Rooms in Pairs Are Driven Up Full Length, and Pillars Left Between Adjacent Pairs Are Then Extracted by Slabbing Them With a Coal Cutter—Favored as Method of Storing Coal

By Carl Scholz*
Charleston, W. Va.

OBJECTION to the room-and-pillar method for the mechanical extraction of coal, especially in relatively shallow workings, is based mainly on the fact that the working face of the room and later of the pillar is too small. Any machinery, therefore, that is installed consumes valuable time getting into action, and, in going from one small face to another, cumbers the roadways which should be kept busy transporting coal. The time of an expensive machine is about twice as valuable as is that of a man. The combined interest, depreciation and obsolescence charges of 12 per cent for a $20,000 machine amount to about $1 an hour, or $8 per day, even assuming a 300-day year.

These facts have militated greatly against the use of cutting and loading machinery, especially in view of the fact that few machines will do all the work that is needed. Some cut the coal, others drill it and still others load it. The more machines that are employed, the more there is to interfere with the delivery of the cars to the working place and yet the greater the need to make their visits frequent and unimpeded.

In consequence, it has been frankly conceded by mine managers that in order to obtain the best results a rearrangement of the working faces must be made such as will suit the capabilities of the various machines, keep them steadily on the job and aid the rapid and ready distribution of mine cars. The capabilities of machines have to be studied, and the lines of the mine and the methods of extraction suited to them.

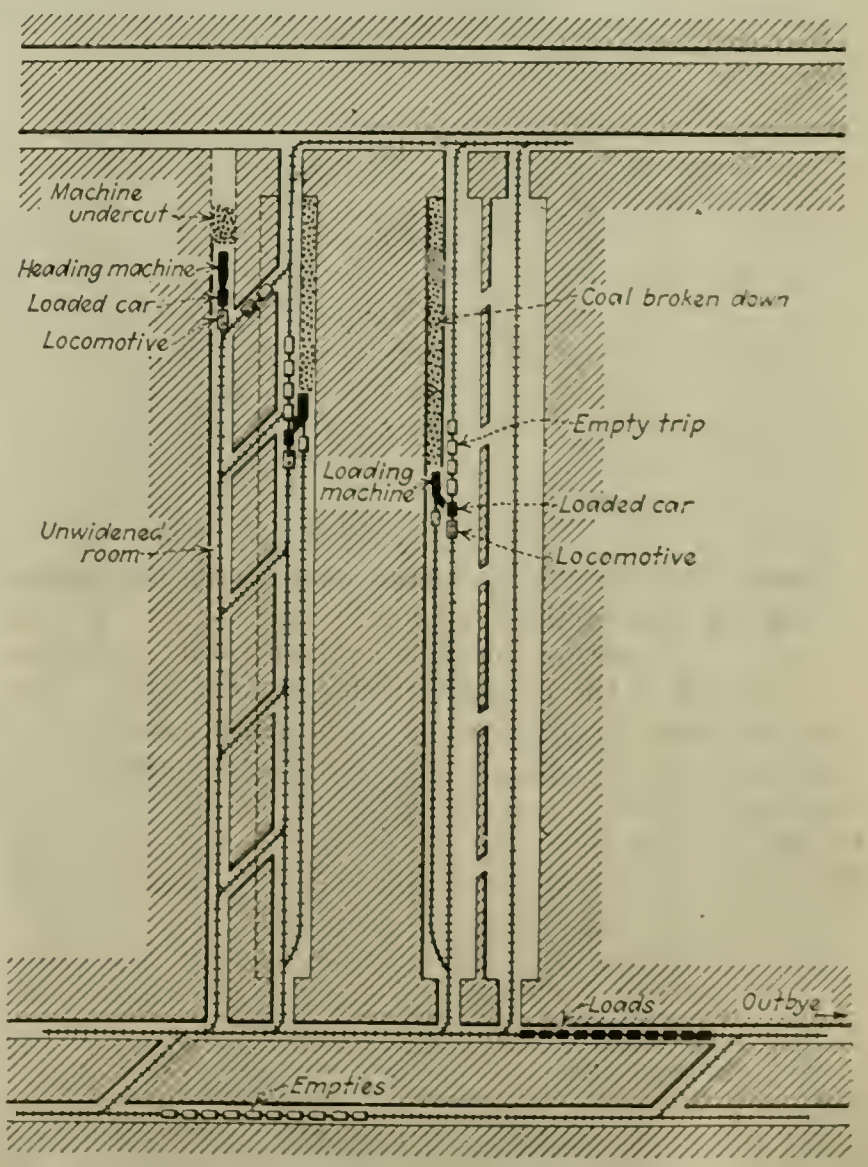
Mine Opened by Heading Machine

For the plan outlined in this article I have made application for letters patent. It involves the use, as shown in Fig. 1, of pairs of rooms with ribs between them of such a thickness that when a slab cut is taken from both sides they will be almost cut through. The pillars between the pairs will be much larger, to permit of their extraction. It is planned to make the rooms preferably 12 ft. wide and 500 ft. long. They will be rapidly driven by a heading machine which will load cars on the track in its rear. This machine, as it travels continuously forward, does not interfere with travel along the roadways, though it labors under the difficulty that only one car can be placed at a time.

As soon as either one of the rooms in any given pair is driven up, a slab will be taken off the entire length of the big pillar and this coal will be loaded out, preferably with a mechanical loader. Shoulders, however, will be left at each entry, thus providing for room necks. As soon as both rooms in the pair are up the required length slabs will be taken off on either side of the small pillar between them, thus reducing it in size.

Thereafter, if roof conditions permit, successive slabs will be taken off the big pillar on both sides of it till the whole of it or as much as possible has been extracted. However, in the present operation this slabbing will be deferred until the upper beds are worked out. The large pillars can be recovered, if necessary, by another pair of 12-ft. entries with slabs taken off both sides, as in the original operation, the thickness of the pillars being planned to suit this condition.

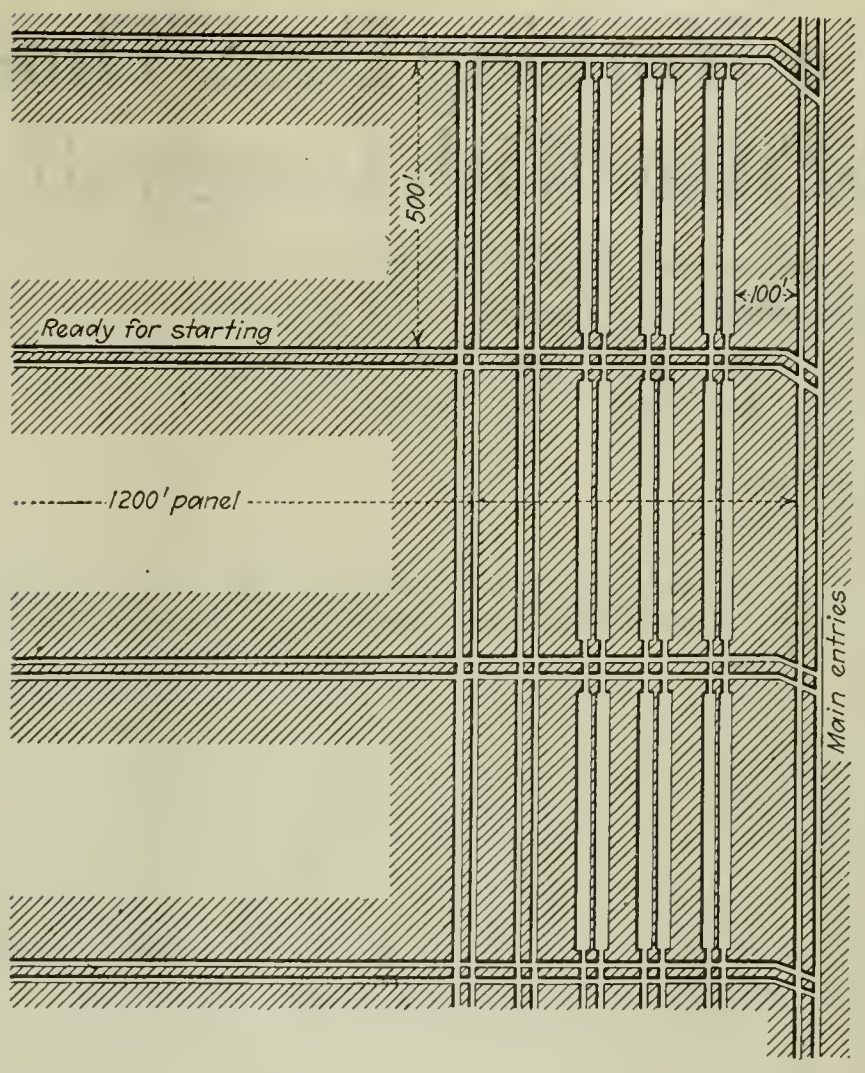
In each room two tracks will be maintained, one for the mine cars which will be arranged alongside the broken-down coal, and one close up against the un-



PLAN TO MINE COAL ON A WHOLESALE SCALE

Hitherto we have brought one car at a time to the loader, mechanical or human. This scheme is planned so that cars may be brought in trips to the working face. If need be the cars can be made to move continuously past the loading points. Some such plan which will provide facilities of this kind will have to be devised if coal is to be loaded cheaply.

*Vice-president and general manager, Raleigh-Wyoming Coal Co.



FLANKS OF NARROW ROOMS USED AS WORKING FACES

Pairs of rooms are driven up, one room serving to ventilate its neighbor. Then the pillar between the rooms is reduced by slabbing and later still slabs are taken off the large pillar left between the room pairs.

broken coal face. On this latter track will travel the coal loader and later the undercutting machine.

It will be noted that with this arrangement more than one car can be brought at a time to a loader. Indeed, a whole train of cars will be pulled up alongside it, and in fact it will be possible to have another trip come in behind the first and so keep the loading machine continuously working. Continuity in operation is the great need of the loading machine. If a machine loader can have no more than a miner's turn of cars, one might as well not install it, for it requires as much or more attention, consumes power, suffers depreciation and obsolescence, needs repairs and involves interest payments.

Car Always Presented Right End Forward

The cars for heading machines are brought into the panel through one entry of a double heading, are backswitched through a shoofly and, still traveling backward, are switched into the room and presented end-gate forward to the loading conveyor. On being brought out the car is backswitched into the other entry of the double heading, and in consequence the end-gate is again at the forward end of the car, but this is, of course, unimportant where rotary dumps and gateless cars are used, as is becoming increasingly the practice. It will be noted also that if the cars are brought in for the other machine—that which loads off the rib—they may approach the working place by either pair of entries and will in either event leave the mine with the end-gate of the car outbye and therefore ready for dumping when the surface is reached.

An important advantage of the scheme here outlined is the ability to drive a large amount of development with a minimum production of coal, a condition well suited to the present market demand. The unmined but developed coal is thus "stored" inside the mine and can be quickly loaded out. In fact, the condition is similar to that in a strip pit after the surface is removed. The coal is ready to be loaded out at any time. A shortwall machine will slab one of the 450-ft. faces in three or four hours and the coal thus dislodged can be loaded in three or four days.

Each Place Will Produce 200 Tons Per Day

With a seam about 6 ft. thick a cut along the full 450-ft. face would give about 600 tons of coal. Thus each room would give from 150 to 200 tons per day. It is easy to see how concentrated would be the operation under those circumstances. Only a small area would need to be developed at any time to afford an immense daily tonnage. The concentration would save in the use of air, would reduce superintendence cost and would make it possible to lessen the amount of rails and timber used in the roadways, at the same time giving the mining and loading machines unequalled opportunity and producing, by reason of the long faces, an unusual percentage of coal of large size.

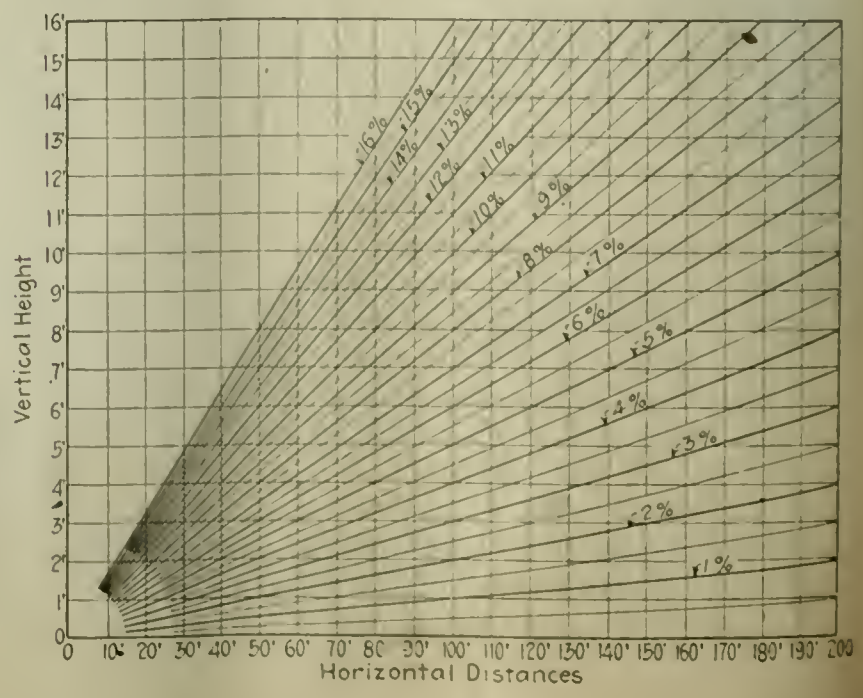
It may be found desirable in some instances to make the large pillars some 200, 300 or 400 ft. wide and to work them continuously only in one direction, thereby giving opportunity for the roof to cave behind the working roads, thus relieving the weight and reducing the loss of coal. The width of the pillars and the sizes of the roadways and undercuts are, of course, not essential elements of the plan.

Chart Speeds Interpolation of Contours

By S. G. Haverstick
Frostburg, Md.

CONTOURS may be accurately interpolated by the use of the accompanying chart. Here vertical distances are shown along the left side, horizontal distances along the bottom line and grades along the right margin and top.

Suppose the draftsman desired to find the horizontal distance from elevation 1066.4 to contour 1070 on a 6 per cent grade. The difference in elevations in this case is 3.6 ft. In solving the problem follow the 6 per cent grade line to its intersection with the horizontal line marked 3.6 ft. at the left margin, then follow the vertical line from this junction to the lower margin and read the horizontal distance, which in this case is 60 ft.



ANTHRACITE SMOKELESS BRIQUET CO.'S PLANT AT SUNBURY, PA.

Factors To Be Borne in Mind in Making Briquets of Fine Materials

Coal Briquets Need an Artificial Binder—Sulphite-Liquor Briquets After They Are Made Must Be Treated to Render Them Waterproof—Peat Briquets Should Receive Heavy Pressure—Carbonization of Lignites Before Briquetting Recommended—Breeze Should Be Mixed with Coal to Lessen Abrasion

By J. E. Stevens
New York City

THE science of briquetting and the processes therein involved are little known in this country outside of a comparatively small group of engineers and manufacturers directly connected with the industry, either as makers of equipment or operators of briquetting plants.

The word "briquet" itself often is a source of mystery to otherwise well-informed persons. While "to briquet" is defined in the dictionaries as "to compress minerals or mineral dust into bricks by pressure, heat and binding material," a more explicit definition has been given. This states that whereas a brick is made with a view to its perpetuation and continued use in that form, a briquet is "a block of compressed material molded into a certain shape, whose conformation is invariably destroyed when the briquet is used."

Briquetting is essentially connected with the utilization of waste materials. It is not specifically the reclamation of otherwise absolute waste, but rather the constitution of low-grade materials into such form that when used they will yield results equal to, or at least comparable with, those obtained from higher grades. As the problem of utilizing waste has been brought into prominence during recent years, the briquetting industry has received appreciable impetus and now finds application in many fields.

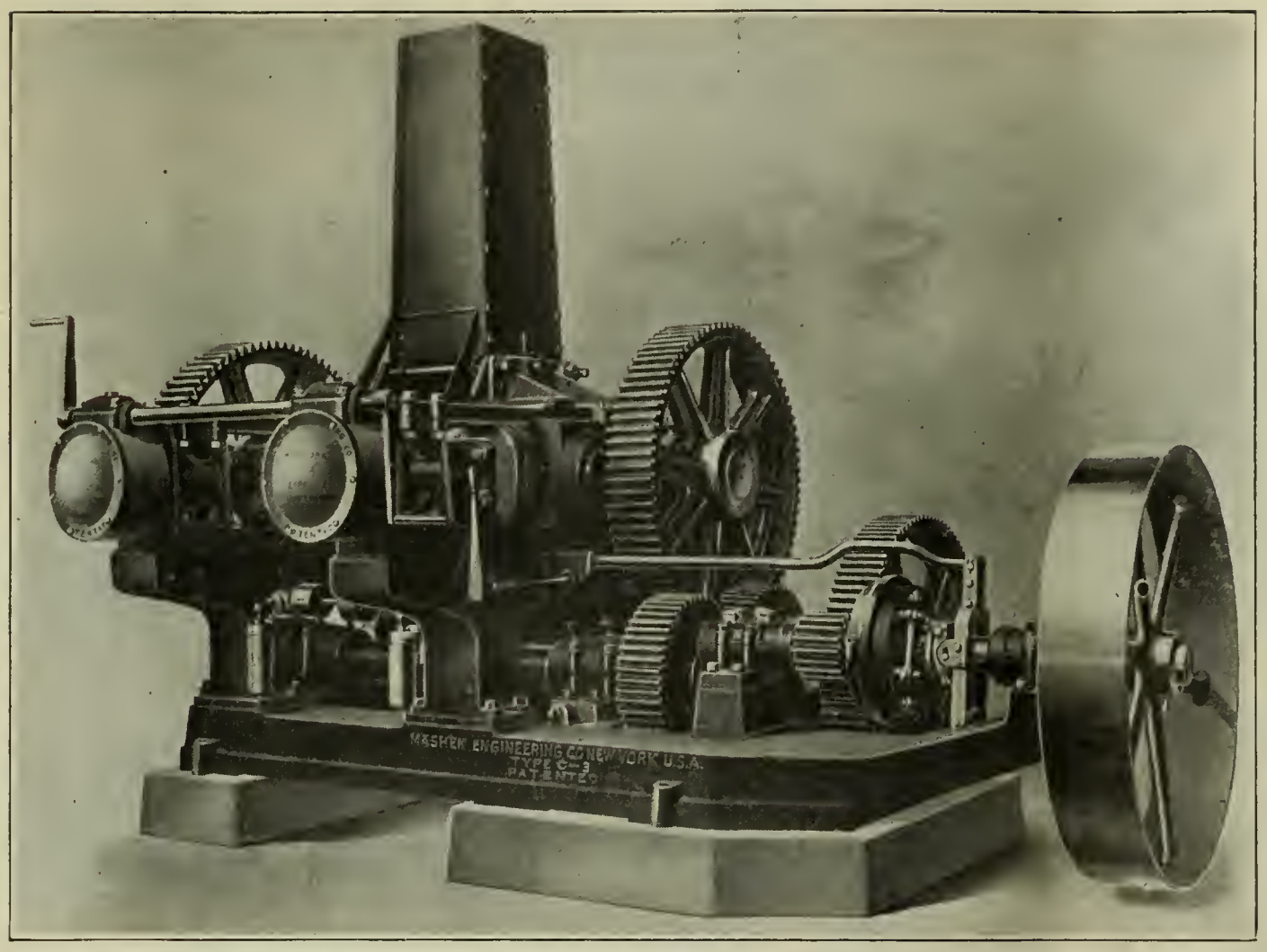
Briquets may be divided into two main divisions: First, those that are totally destroyed when used, this class being composed mainly of fuels, and second, those briquets made up for the most part of metallurgical materials that are to be smelted for the recovery of metals. This class includes various kinds of ore fines and flue dusts, as well as metal turnings, borings, filings, chips and the like.

Ten Forms of Fuel Have Been Briquetted

The fuels making up the first division include the common grades of coal—anthracite, bituminous and lignite—also less valuable fuel materials, such as coke breeze, peat and sawdust. In countries where coal is scarce and other materials are plentiful, attempts have been made also to briquet for fuel purposes such substances as rice husks, bagasse, cottonseed waste and cocoanut husks.

By far the greater proportion of fuel briquets made in this country are composed of anthracite fines—either the screenings from lump coal or culm from the washeries. Vast accumulations of this latter material are available throughout the mining regions. In the briquetting of coal some form of binding material almost invariably must be used to cement the particles together. The selection of a suitable binder is an important factor in any briquetting proposition.

Numerous substances are available that will act successfully as binding agents. By their use excellent briquets can be made in the laboratory or in comparatively small quantities. Numerous patents have been taken out for the manufacture of briquets during the last twenty years and every possible material or combination of materials has been suggested as an agglomerant to bind small particles of coal together. Binders which have proved to be suitable for the manu-



Briquet Press

As it appears with gear cases removed. This Mashek press makes twenty tons of briquets per hour, each briquet weighing 2¼ oz. It may be observed that the machine is provided with a clutch on the belt shaft and that the ratio of back gearing is high, giving a heavy pressure upon the briquet with a comparatively light belt pull.

facture of fuel briquets on a commercial scale, however, are extremely few.

Coal-tar pitch, which is a residual product from the distillation of coal tar, is used to a great extent in Europe, probably 90 per cent of the world's production of fuel briquets being made with this material. In this country, however, owing to our large oil supplies, the pitch or residuum from petroleum refineries can be obtained at a cost comparable with that of coal-tar residues and it possesses certain advantages over such materials in the production of fuel briquets. This material is, therefore, now being extensively used for this purpose.

Coal-Tar Pitch Versus Sulphite Liquor

Several attempts have been made to commercialize the use of sulphite liquor (a waste product from paper mills) as a binder. While excellent briquets can be made with this material it has the disadvantage of being soluble in water, and therefore, in order to make the briquets so produced waterproof, it is necessary to subject them to special treatment after molding. This additional operation usually takes the form of baking in order to carbonize the binder. Up to the present time the cost of waterproofing has more than offset any savings effected by low cost of binding material.

However, the question of what agglomerant is to be employed should be decided according to the location of the plant and the materials most readily available. Each briquetting proposition, therefore, must be considered entirely on its own merits. Many attempts have been made to briquet coal without binder. Some bituminous coals, of course, already contain a certain percentage of tar and can be briquetted by a combination of heat and pressure without additional binder. So far, however, such methods have not been applied on a commercial scale.

Briquetting of peat can be accomplished without binder, but in order to produce a good, hard, dense briquet, extreme measures must be employed. As the heating value of peat is 40 per cent less than that of an equal weight of coal, it is highly desirable that the briquet should be as dense as possible.

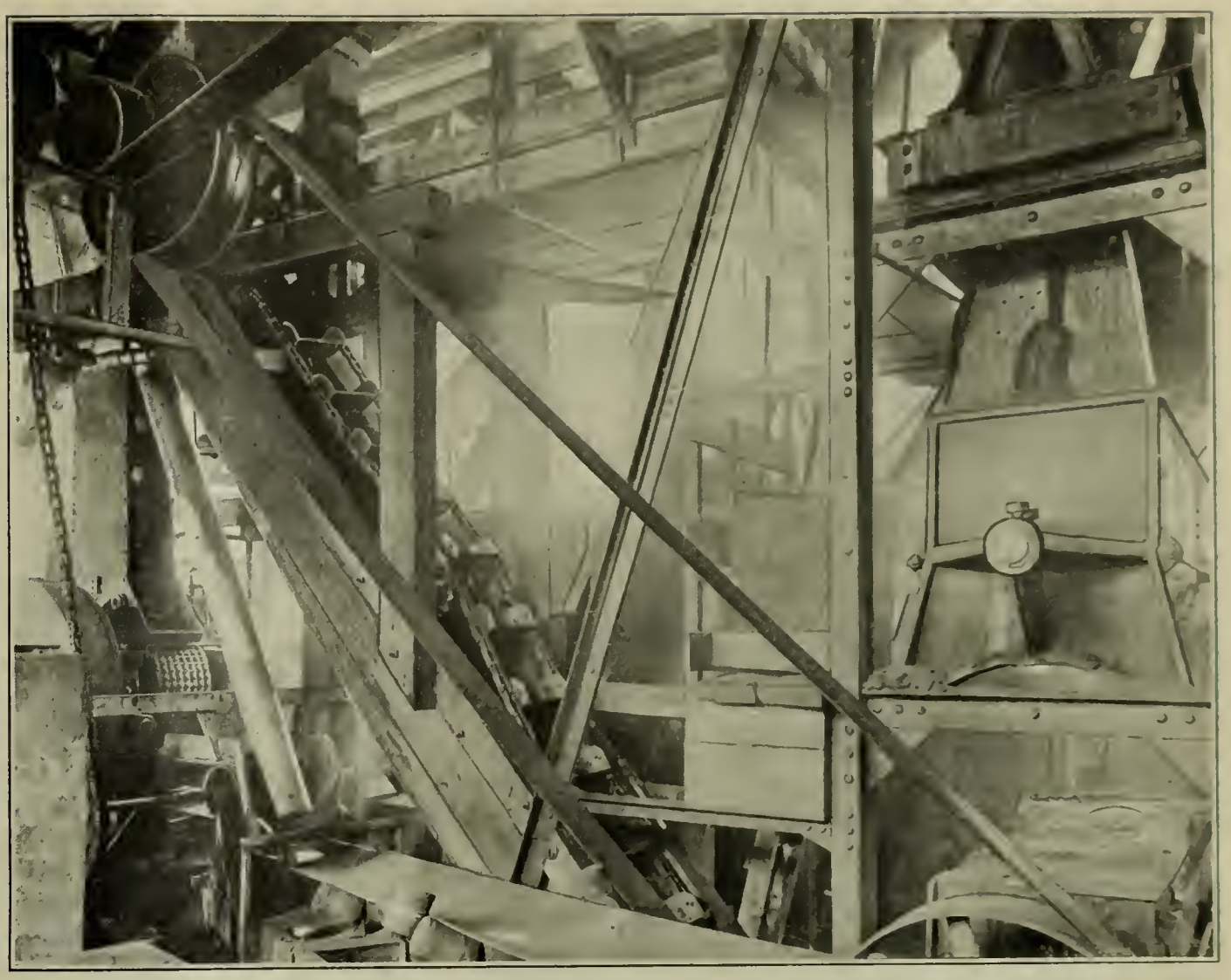
The briquetting of peat as a commercial proposition offers an entirely different and much more difficult problem than that encountered with coal. Peat as obtained from the bog usually contains from 80 to 90 per cent moisture, and the reduction of this amount to the 10 to 15 per cent maximum allowable in briquets adds greatly to the cost of production. Under the European wet carbonizing process of peat fuel manufacture the peat contains less than 3 per cent of moisture when briquetted, the resultant fuel being extremely hard and dense, with a smooth, shiny surface.

There is no doubt that under present conditions a ready market can be found for peat fuel in some regions, but the question as to whether this peat should be marketed in blocks, as cut from the bog and subsequently dried, or should be manufactured and sold as briquets will depend upon the formation of the peat available and upon local marketing conditions.

Lignites can be briquetted in the raw state by using a fairly high percentage of binder, but, after much experimentation and research work, it has been found that the utilization of this class of coals can best be accomplished by first carbonizing them and extracting the byproducts and then briquetting the carbonized residue. An excellent smokeless fuel, similar in many respects to anthracite, is thus obtained. Charcoal from wood-distillation plants also is being briquetted, using the waste wood tar as a binder. The resulting briquets are used in the manufacture of charcoal iron.

Mix Coal with Breeze to Lessen Abrasion

Coke breeze from gas works is often produced in larger quantities than can be easily disposed of and under certain conditions can be profitably briquetted and sold as domestic fuel. This material, however,



Interior of Briquet Mill

On the right can be seen the mixers, which make a uniform mix of the coal and binder. On the left is the briquet press with its revolving wheel studded with depressions in which the mix is fed and thereafter pressed into shape. Conveyors bring the material to be shaped from the bottom of the mixer and dump it into the top of the vertical steel chute above the press.

owing to its abrasive action on the machinery and equipment, offers certain mechanical difficulties in briquetting which if not overcome increase the cost of production to such an extent as to make the proposition unprofitable. By mixing the breeze with, say, 25 per cent of bituminous coal and thoroughly grinding the mixture before briquetting, the abrasive action can be reduced to a minimum.

Briquetting is being especially applied in the low-temperature carbonization process now rapidly being developed. The purpose of this process is to obtain a maximum yield of tar products from coal and at the same time to provide a good dense fuel suitable for domestic use. Under the Marshall-Tozer process of low-temperature carbonization the coke fines resulting from retorting are manufactured into briquets, and in the Smith method the coke dust is briquetted preliminary to the second stage of the carbonization process.

One of the efforts made to assist in meeting the fuel shortage has resulted in briquets being made from dried garbage and street sweepings mixed with coal. The garbage is first pulped and macerated, then dried. An equal weight of coal is then added and after thorough mixing the resulting mass is molded into briquets, the garbage acting as a binder to the coal dust. While the heating value of the garbage is low, it acts as a satisfactory filler. This method of utilization effectually overcomes the problem of disposing of city refuse.

There is no doubt that from the present time on the utilization of fuel materials which in the past have been considered of no value will receive much greater attention. Where an adequate supply of coal fines and binder can be obtained at reasonable prices and a near-by market exists for the product, the fuel-briquetting field offers favorable inducement for the investment of capital and will produce excellent returns.

In order to insure success, however, any fuel-briquetting proposition should receive complete pre-

ANTHRACITE CULM BANK NEAR SCRANTON, PA.

The many mountains of fine coal around the anthracite region await some form of disposal, briquetting being one of the most successful. Large quantities of still finer culm that will not settle is constantly traveling away in the black floods from the washers. Some day it will be freed by the use of thickeners and filters and will then be available for the briquetting process.

liminary analysis. The location of plant especially should be given thorough consideration. It should be examined from every angle before a selection is made. It is obvious also that a continuous supply of raw materials and facilities for distribution of the finished product are absolutely necessary.

In the matter of plant layout the storage arrangements for both raw and finished material should receive careful attention. Ample storage space should be provided, while the handling equipment should be of liberal capacity, necessitating comparatively low rates of speed in order to reduce to a minimum the possibility of break-down with its attendant reduction of output.

Cost of Briquetting Must Be Kept Low

The general design of plant and mechanical equipment should take full advantage of previous practice, avoiding the mistakes of the past and following along those lines which experience has proved to be most effective. No complicated or costly machinery is necessary under ordinary circumstances, as the processes involved are comparatively simple. The endeavor should be to provide machinery of ample strength and capacity with all items of plant equipment in correct proportion and so co-ordinated that continuous and low cost of production can be obtained.

In successful briquetting, as in any other waste-utilization project, it is highly essential that the mechanical processes should be simple and free from costly complications, as the price obtainable for the finished product always is limited by that of the higher grades of materials from which the briquets are made.

The second class of briquets, those that are not absolutely destroyed when used, but which are smelted for the recovery of metals, are mostly made up of ore fines and flue dusts. Scrap metal turnings and borings also are being briquetted in large quantities. The utilization of ore fines had not, prior to ten or fifteen years ago, occupied the attention of those interested in the management of smelting works. Owing to the increasing difficulty of obtaining supplies, however, attention has been turned to the utilization of the finer ores and to converting them into a condition suitable for the blast furnace. This can be accomplished efficiently by briquetting, and various processes are now used in the conversion of the fine ores into this form. Some of these use organic binders such as pitch and tar while others agglomerate the fines with lime. Still another process uses no binding agent, the ore being fritted by heat until the particles soften and agglutinate.

Briquetting, therefore, is the science of forming small granular materials into larger lumps by compression. In some cases a binding material is employed with or without the application of heat, in others reliance is placed upon pressure alone.

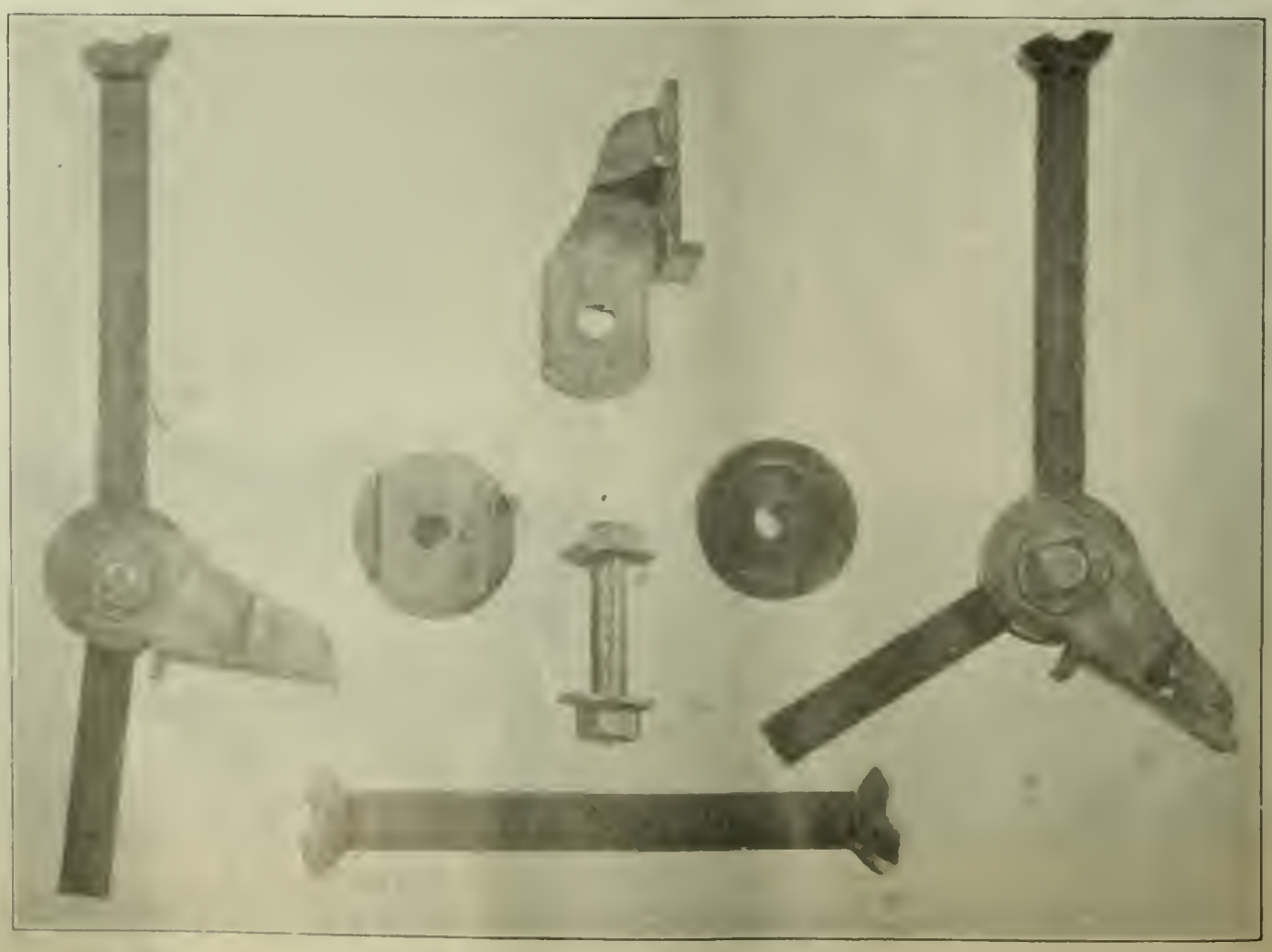
Rugged Conveyor Chain, Repair of Which Delays Operation Only a Few Minutes

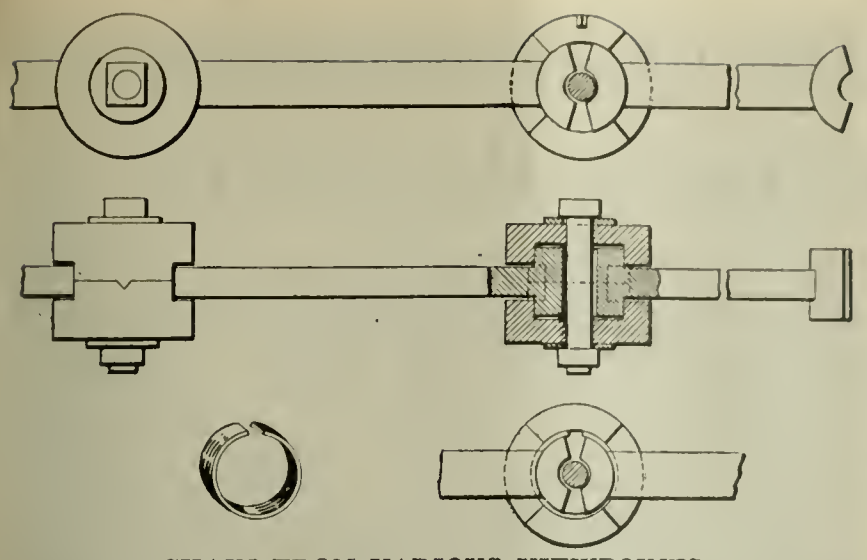
MANY improvements have been made during the past few years in the conveyor chains which find extensive employment in and about collieries. Almost without exception these improvements have sought to lessen the cost of manufacture, to render the chain more reliable and durable, to render its assembly easier or to make it more readily possible to effect the necessary repairs. One of the latest designs is that shown in the accompanying illustration. This is the invention of J. C. Law, of Scranton, Pa., and application has been made for a patent upon it.

As may be seen from the accompanying drawings and photographs, one of the chief results attained in this chain is complete elimination of the riveted joint between links. Furthermore, ease and cheapness of manufacture, as well as of assembly and repair, also are achieved. Essentially the chain consists of a bar link with a double lug upon either end, two cup-shaped drop-forged washers, two plate washers and a bolt.

Rivetless Conveyor Chain

At the base of the illustration is one of the links with its double lugs at each end. In the assembled chains these bear upon the inner surface of the cup-shaped drop-forged washers, shown on either side of the bolt. The assembled links with flight attachments are shown on either side. All that is needed to separate the links is a wrench for freeing the nut from the bolt.





CHAIN FROM VARIOUS VIEWPOINTS

The cross-section shows how the lugs on the ends of the links turn within the washers. The uppermost illustration is a side view of the chain, the operation of which is revealed at the right end by the expedient of omitting the upper washer. The middle illustration is a plan view with a section of one of the joints. At the bottom of the figure is shown a steel spring liner piece which may be inserted should wear allow the lugs too much play.

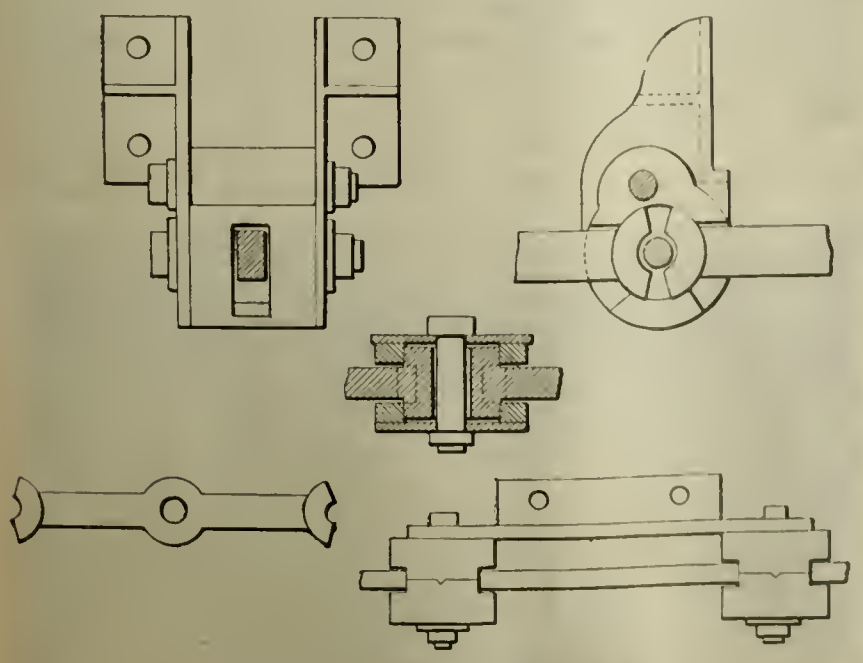
Various types and sizes of flights or other attachments may be placed either at the joint or in the middle of a link. All parts are of simple construction and except for the bolt, nut and plate washer they all may be constructed of drop-forged steel.

As will be seen, the lugs on the ends of the link are made in such shape as to fit within and bear upon the inner surface of the cup-shaped drop-forged washers. A suitable portion of the rim of the cup-shaped washer is cut away upon either side to permit the reception and movement of the link bar. This, however, leaves ample bearing surface for the lug, yet movement of the parts upon each other as the chain passes over a sprocket is sufficient to all purposes.

The nut on the end of the bolt will, of course, under normal circumstances be locked in position by some suitable means. Removal of this nut allows the bolt to be withdrawn and the cup washers removed, which permits the links of the chain to be readily separated. Thus a wrench is the only tool necessary for the assembling or disassembling of the chain.

In operation, the sprocket driving the chain will bear upon the outer surface of the cup-shaped washers. Should the surfaces of the lugs and the inner surfaces of the cup-shaped washers become worn, a ring liner of suitable size may be inserted, thus taking up slack motion in the joint. This chain may be used either single or double strand and, as has been already stated, it may carry flights of various sizes and shapes. Thus many alterations in design may be made to suit the chain to local or special conditions of application.

As is well known by mining men, one of the chief requisites of all machinery used in and about the mine is simplicity and ruggedness of construction. The type of men available for work in and around collieries, as a rule, can hardly be considered finished mechanics or machinists. Consequently any piece of apparatus entrusted to their care does not receive the best of attention, and unless it is extremely strong, it is liable to rapid depreciation. It is believed, therefore, that the simplicity, ruggedness and ease of assembly of this chain will commend it to those experienced in the installation and operation of this type of equipment.



VARIOUS FORMS OF FLIGHTS

These drawings show two of the many ways in which to carry the various flights. On the right at the bottom a wholly different arrangement is shown. Here a subsidiary link with a flight is held by both the bolts by which the two ends of a link of the chain are attached to the adjacent links.

Storage-Battery Locomotives Reduce Cost of Gathering Cars in Anthracite Field*

By K. A. Meyer†
Wilkes-Barre, Pa.

WHERE steam and compressed air formerly were used, electric locomotives and hoists are fast being installed, and where mules labored in the chambers and sideroads, storage-battery locomotives are relieving them and at the same time hauling more coal. This can readily be seen by the following, which shows the results obtained through the installation of five storage-battery locomotives in the Red Ash vein at Exeter Colliery of the Lehigh Valley Coal Co.

In the fifth vein, one locomotive, operating from inside slope to chambers, gangways and airways on roads Nos. 1,002 and 1,006, with chambers pitching both ways and grades in some places as high as 9 per cent, handles fifty cars with a maximum run of about 1,800 ft. When replacing the empty cars this locomotive is assisted by a second locomotive. The latter also covers chambers, airways and gangways on roads Nos. 1,001 and 1,006 and handles sixteen cars with a run of 1,300 ft. in each gangway with grades ranging as high as 7 per cent. To replace these two motors with mule power would take fifteen mules, five drivers and five runners.

In the Babylon vein, one motor hauls from the various working faces on roads Nos. 144 and 147 and handles twenty-five cars daily, having a maximum run of 2,100 ft., and delivers coal to the head of No. 9 plane. It would take nine mules, three drivers and three runners to replace this motor.

The fourth locomotive collects thirty-two cars from roads Nos. 39, 46 and 50 and delivers coal to a big turnout, having a maximum run in each road of 3,500 ft., 2,700 ft. and 3,000 ft. respectively. Nine mules, three drivers and three runners would be required to replace this motor.

The fifth locomotive, operating as a collecting locomotive on road No. 5 and in working faces between chambers Nos. 33 and 47, and assisting in concentrating coal from roads Nos. 65 and 4, handles thirty cars daily over a run of 1,000 ft. having grades up to 5 per cent against loaded trips. It would require six mules, two drivers and two runners to replace this motor.

*Extract from "The Storage Battery Locomotive for Gathering Purposes" in *Employees Magazine* of the Lehigh Valley Coal Co.
†Electrical department, Lehigh Valley Coal Co.

Advantages of Portable Over Stationary Compressors in Anthracite Rockwork*

Costs Less to Install Than a Central Plant and Less for Repairs and Attendance—Highly Acid Mine Water Rusts Out Long Air Lines—Greater Drifting Speed Where Drills Are Used

By F. H. Wagner†
Lost Creek, Pa.

By driving gangways in rock and connecting them by rockholes to the coal bed, thick veins such as the Mammoth and Buck Mountain of the lower anthracite fields have been successfully mined. Thus driven the gangways do not need to be heavily timbered, squeezes in the robbing of pillars are prevented, and the pillar coal is more completely recovered. If one rockhole taps the bed at too high a point for the extraction of the coal at a lower point, this coal can readily be recovered by driving a rockhole from a lower level.

In coal of a thickness of two feet or less it is necessary to lift more or less bottom rock or to blow top rock, as the case may be. The term rock gangway is, in general, applied to roadways of this type. From these gangways at comparatively regular intervals rockholes are excavated from which pillar chutes are driven up and from these the robbing of the Mammoth and Buck Mountain veins proceeds in a manner characteristic of such work.

Pneumatic Drills Speed Up Drifting Work

Driving these gangways by hand was slow work, and in order to obtain greater speed, compressed air and jackhammers were introduced. During the World War and for a long period following, much difficulty was experienced in obtaining hand rockmen, and drilling by compressed air met the difficulty even though material was slow in delivery as well as excessive in cost. In driving these rock gangways and rockholes the question arose as to whether it was advisable to use portable air compressors, or a permanent compressor plant located near the power plant with pipes leading into the mine therefrom.

Taking Packer Nos. 2, 3 and 4 collieries as an example, which are practically one, the workings of these operations all having direct inside connections, the material cost of the installation and operation of a central compressor plant with air pipes to the workings would be $18,500. As these mines are wet, the corrosive and chemical action of the highly acid mine water on the 14,300 ft. of main-airline wrought-steel pipe that would be needed was taken into consideration.

Three Weeks of Corrosion Destroys Pipe

A section of 6-in. wrought-steel pipe, in direct contact with the mine water, becomes useless in a trifle over three weeks, hence it is not deemed advisable to use long airlines where they are apt to be exposed to mine water. The application of non-corrosive paint to the surface of these air lines was considered, but the application of this coating in itself naturally adds to the cost, which is high enough without it. Air lines carried along a main haulage line and tunnel are apt to give trouble as a result of derailments, roof falls, leaky joints, blowouts along seams, etc.

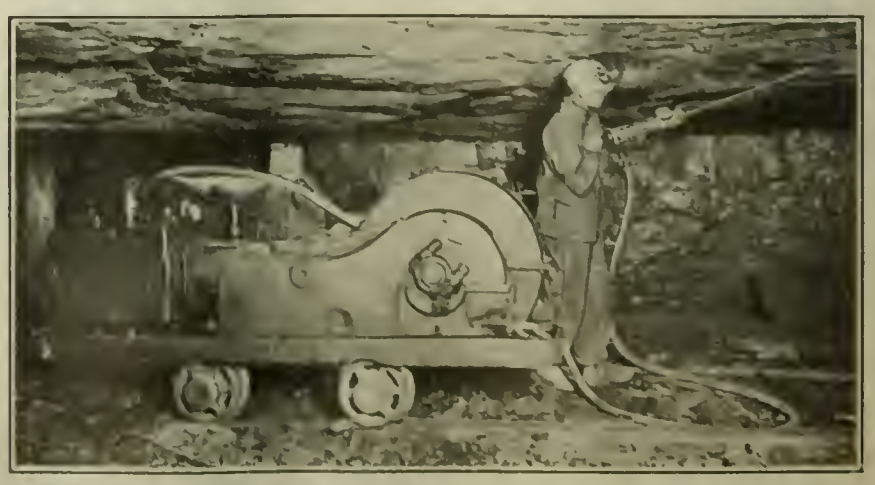
In favor of piping from the central compressor plant to the mine workings, it is argued that the pipe can be utilized in case of mine fires. I have had much experience in this direction. Some of the fires I have fought occurred in mines having a central plant, but the pipe lines unfortunately lay in the newly opened parts of the workings where development and rock work was carried on, while the fires raged in old sections in which no pipe lines were available that could be connected to a pump. Therefore, instead of a central compressed-air plant, we chose portable compressors. The mining and development warranted the purchase of five of these, the initial cost complete (air hammers and hose included) being $14,550.

These compressors were placed at convenient locations, either along a widened portion of a gangway free from the gangway track or at a gangway and tunnel junction, so near the work that short lengths of line could be used. In general the size of pipe used is 1½ in. on the 10 x 10-in. compressors and 1-in. on the 9 x 8-in. machines.

Would Favor 10 x 10-in. Air Compressors

In my opinion, the larger of these machines gives better results than the smaller, as they furnish enough air so that four jackhammers can be used at one time with fair results. When only three hammers receive air from the line and the transmission distance does not exceed 600 ft., excellent speed in drilling is obtainable. With 9 x 8-in. compressors only two hammers can be used with success.

The cost of the upkeep on the five compressors for one year amounted to $480, all five being used and seeing



PORTABLE AIR COMPRESSOR AND DRILL
This Ingersoll-Rand electrically-driven mine-car compressor and jackhammer operates in the new mines of the United States Coal & Coke Co., at Lynch, Ky.

*Article entitled "Use of Portable Air Compressors in Coal Mines" and published in the Lehigh Valley Coal Co.'s *Employees' Magazine*.

†Division superintendent, Lehigh Valley Coal Co.

AIR COMPRESSOR IN PENNSYLVANIA COAL CO. MINE
A 9 x 8-in. machine is used in the mines at Avoca, Pa. It is of the same type as that shown in the other illustration in this article. Note how the ends are protected from injury by the bumper extensions of the drill frame.

hard service. The upkeep cost on a centrally-located plant in the same division amounted to $640. The average life of short-length pipe lines running from a portable compressor is eighteen months. In contrast the main air lines from a centrally-located plant in certain sections must be practically renewed three times. On a 2½-in. line the upkeep cost in eighteen months was about $460, against $100 for the lines on the portable compressors.

These machines can be handled as easily as a mine car and have been utilized in two different sections of the mine in the same shift, the compressor being moved to its second location when the drilling in the first was completed. As received from the manufacturer these compressors had too short a wheelbase. In another make of machine the compressor and electric driving units overhung the frame. This was overcome by rebuilding the compressors on a regular car bottom with the standard wheelbase of the colliery.

These portable units need comparatively little care. The colliery electrician looks after the electrical end of the machine and a machinist attends to the mechanical or compressor end. Constant attendance is not required, but, like all other machinery, these units need a reasonable amount of supervision. They do not, however, demand the undivided services of an attendant, as does a centrally-operated air plant.

The use of portable compressors naturally is not confined to rock gangway and rockholes, as they are suited to rock work of any nature as well as to the drilling of particularly hard seams of coal.

Strength and Simplicity Mark One Trolley Ear and Ease of Alignment Another

MANY have been the devices perfected and placed on the market for supporting the trolley wire in mines, some being suited to one condition and some to another. Probably no hanger ever devised will successfully or even advantageously meet all conditions imposed by mining operations.

The clamp shown in Fig. 1 of the accompanying illustrations is notable for its simplicity. It consists of only two jaws, a boss and a jam nut. As a result these few pieces can be and are made heavy and strong and yet the clamp can be manufactured without undue expense.

The wedge clamp, Fig. 2, is extremely popular in some fields and embodies some new ideas. It aligns with the wire without placing undue stress upon the insulation. After the clamp has been screwed upon the hanger and before the wedge is driven home the jaws may be rotated sufficiently to bring them into line with the trolley. A few blows of the hammer on the wedge then tightens the clamp upon both wire and hanger. Another valuable feature of this clamp is its even distribution of pressure along the entire length of the jaws. Both of these new clamps are being manufactured and marketed by the Ohio Brass Co., of Mansfield, Ohio.

CLAMP OF FEW PARTS
Being simple it can be made strong and heavy.

WEDGE CLAMP
Aligns readily with trolley wire without setting up strain.

Output of Ruhr Collieries Grows

OUTPUT of Ruhr collieries during February, 1921, (twenty-four working days) amounted to 8,174,606 tons of coal, compared with 8,072,912 tons in January, 1921 (twenty-four working days), the daily output thus being 340,609 tons, against 332,904 tons in January, 1921, and 383,088 tons in February, 1913. The increase in daily output is largely due to extra shifts and a decrease in strikes. The total number of men employed at the collieries at the end of February is given at 539,099 compared with 537,399 men in January.

SWISS COAL IMPORTS during February, 1921, were as follows:

Origin	Metric Tons
Saar	1,666
Ruhr	10,638
Rhenish lignite	2,382
Belgium	2,667
France	1,738
England	24,054
United States	66,153
Total	109,298

The above compares with imports during January, 1921, of 215,017 tons and 100,688 tons in February, 1919.

WORKING TIME IN THE SARRE DISTRICT has been reduced by three shifts weekly. In explanation of this reduction the administration makes the statement that it has been caused by lack of demand in the case of the home market, while in the neighboring German provinces the difference of price between Sarre and German coal makes sales prohibitive. This reduction of working time decreases production at the rate of 100,000 tons per year.

SPANISH MINERS in the northern and southern districts are opposing the suggested cut in wages and are threatening to declare a general strike in protest against the proposal of the employers. The men already have left the mines in several districts in the Asturias and Jaen.

THE AUSTRIAN GOVERNMENT has contracted with Dutch collieries for delivery of coal for industrial purposes.

Long-Term Credit—The Invisible Bridge Over the Export Barrier*

Obstacle of Necessity to Pay Within Ninety Days Eliminated by Foreign Trade Financing Corporation, Organized Under Edge Act—Capital, $100,000,000; Debentures Limited to $1,050,000,000—Operation Expected Late This Spring

By F. W. Gehle

THE Belgian may give us as many francs as he used to for a dollar's worth of coal, but he will find that he still owes 63c. The Italian has to pay four times as many lire as once was his custom. For the Chinaman buying from us the exchange rates have sent prices 50 per cent higher. Even the Englishman finds a premium of 20c. on every dollar's worth of his money expended for our products. And so through the long line of countries, the $4,000,000,000 debt that has been built up in our favor has resulted in an exchange rate that is overwhelmingly against the foreign purchaser.

And, more than that, the overseas customer has been unable to buy our goods in the usual proportion because of a temporary lack of ready funds and because of our own inability to sell to him on long-term credit. We have had to ask him to pay in the usual sixty or ninety days; we have been unable to finance the transportation of our goods through their entire trip to the consumer.

It was to fill this deficiency in our financial system that in December, 1919, the Edge act was passed, providing for the organization of corporations for the financing of such credits, and it is largely through the biggest of these corporations, the new Foreign Trade Financing Corporation, that bankers, manufacturers and farmers hope for some satisfactory effect upon our waning export market.

Sale of Stock Will Begin May 1

The Foreign Trade Financing Corporation, the product of two years' thought of a committee of the American Bankers' Association, will on May 1 begin an intensive sale of its capital stock at $100 a share plus a payment of $5 a share to provide a surplus fund for emergency purposes. The authorized issue of this stock will be $100,000,000, but upon the completion of the stock sale, debentures to the amount of ten times the capital and surplus will be issued. The sale of these will be limited to $1.050,000,000.

Already part of the stock has been sold, but up to the present time the main body of the work of the corporation has been the organization of committees in the sixty-four Federal Reserve cities of the country to stimulate an interest in foreign trade, to sell the stock, and to pave the way for the sale of the debentures. These committees, with a banker, a commercial representative, and a farmer on each, assure the widest possible interest in the project. In all parts of the country, in every station of life, in every calling of mankind, they will seek to place the debentures, to the end that America's interest in her foreign trade, on which her prosperity must more and more depend, may be a wholehearted one.

The exact time of the functioning of the corporation cannot yet be announced definitely, but a recent statement by John McHugh, chairman of the committee on organization and probable chairman of the board of directors, indicates that there is some expectation that operation will begin late in the spring.

To Investigate World Trade Conditions

The actual decision as to the time of opening will be left in the hands of a committee appointed recently. This "Committee on Policy" will first make an investigation of trade conditions in the countries of the world, and upon these men will rest the decision as to the time of calling for payments on stock subscriptions. The members of this committee are as follows: Levi L. Rue, president, Philadelphia National Bank, Philadelphia; Paul M. Warburg, former governor of the Federal Reserve Board; John J. Mitchell, chairman of the board, Illinois Trust & Savings Co., Chicago; Philip Stockton, president, Old Colony Trust Co., Boston; E. F. Swinney, president, First National Bank, Kansas City, Mo.; and F. O. Watts, president, First National Bank, St. Louis, Mo.

Developments in the past few days have pointed to an increasing national interest in the organization of the corporation. Within a little more than a week the legislatures of six states have passed "enabling acts" permitting state banks and trust companies to purchase stock in this corporation. At the same time there is a movement under way favoring an amendment to the Federal Reserve law to permit the corporation to call for payments on its subscriptions as they are needed instead of at the arbitrary periods now specified by the law.

It is apparent that there is beginning to be in this country a well-defined feeling that foreign trade differs from interstate trade mainly in that state boundaries have become oceans. Both are essential to our prosperity. And it will be the capitalization of that feeling that will come to the support of American exports—that will build a bridge of long-term credit over the barrier that holds our ships at anchor, freight cars uncargoed on their sidings, and workmen idle.

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*We have been hearing so much about the Edge Law and the Foreign Trade Financing Corporation that we asked the Executive Committee on Organization of that corporation to tell *Coal Age* readers just how it affects them and how they can get in on the proposition.—Editor.

American coal is being offered to manufacturers in the region of Halle 20 marks below German coal in the world's market. The opportunity for selling American coal in Germany apparently is all the more favorable because of the unwillingness to buy English coal.

WATERFRONT AT KIEL HARBOR, GERMANY

American Export Possibilities Denoted by Sidelights on The Coal Situation in Foreign Countries

European, African and South American Markets, Formerly Dominated by Great Britain and Germany, Have Become Available to America Since the War—Substitution by Unscrupulous Exporters Has Roused Suspicion Against American Product in Italy

By Dr. Henry M. Payne*

AUSTRALIA'S consumption of coal is approximately 9,000,000 tons per year, and the average exports during the past seven years have amounted to 476,000 tons per year. Coal is found in every state in the Commonwealth. The fields of New South Wales are more extensively developed than those in any other state and consist of all grades from lignite to bituminous gas coal.

In Victoria a high-tension power station is now under construction which will supply all the power requirements of the state. To furnish the requisite fuel, extensive mining development is being made in both bituminous and lignite deposits. New coal fields have recently been discovered near tidewater in western Australia, which are expected to play an important part in building up Australian export trade to South America.

The principal coal consumers in the Argentine are the British-owned railways, comprising a system of over 22,000 miles. Until 1913 about 98 per cent of the coal imported came from Great Britain and 2 per cent from the United States. In 1919 England shipped 57 per cent and the United States 43 per cent. In 1920 the position was reversed, the United States exporting 87 per cent and Great Britain 13 per cent, the total amount being 2,070,000 tons. In the month of October, 1920, 98 per cent came from the United States, and 2 per cent from Great Britain, notwithstanding exchange rates unfavorable to America and low freight rates favorable to England.

American coal thus has come into distinct favor in the Argentine and at River Plate ports, but to hold this business will require the highest standard of commercial ethics and the development of personal acquaintance with the consignee's requirements. Return cargoes of hides, wool and cereals offer advantages to the coal exporter who is prepared also to become an importer. Many of the ports on the Plate are controlled by British shipping interests. On this account, towage, wharfage, etc., may be more expeditiously handled by the consignee. Labor troubles at Buenos Aires frequently add to demurrage difficulties.

There is a coal field of limited area at Commodoro Rivadavia which is being rapidly developed under government supervision. This output, however, will scarcely serve to supply the increased requirements that will result from extensions of the State Railways now being built.

Argentine credits usually are payable upon arrival of cargo rather than cash against documents on sailings, the shipper being secured by insurance.

Mine-Labor Costs Low in Africa

As a continent, Africa is poorly supplied with coal, the principal known deposits being 97 per cent in South Africa and 1 per cent in Rhodesia. The proximity of these deposits to the Witwatersrand gold fields has made extensive development possible by low labor costs.

South African coal now ranks second only to East Indian coal in cost of production, and is therefore rapidly becoming a factor in export trade to Aden, Ceylon, Argentina, Egypt, Uruguay, India, Mauritius and Zanzibar, as well as to coastwise African ports, and for bunker purposes.

The retail price (September, 1920) was 25s. (normal rate $6.08). Transvaal coal runs higher in ash than Natal coal, averaging about 13,500 B.t.u. A series of tests made on these fuels indicated that 100 lb. of Welsh coal were equivalent to 128 lb. of Natal coal or 182 lb. of Transvaal product.

An interesting study of wages is given in recently published statistics. The South African coal mines employ approximately 32,000 men. White men receive an average of £33 per month, Transvaal natives £2 9s. 8d. per month with food and lodging thrown in, Asiatics are paid an average of £2 11s. 9d. with food and lodging, and Natal natives £2 6s. 2d. with food and lodging. Board and lodging are estimated at 1s. per day.

A recent quotation on Natal bunker coal at Durban was

*Consulting engineer, Andrade-Eyre, Inc., 300 Madison Ave., New York City.

41s., which is the lowest price at any port in this section of the world.

In 1912 coke was imported into the South African Union to the value of £68,007. Coke ovens have been built, however, in rapidly increasing numbers, until in 1918 only £823 worth of coke and anthracite briquets was imported.

In August, 1920, ships were waiting at the port of Durban for 100,000 tons of bunker coal. In order to protect the export and bunkering industry, official standards and classification into pools, analagous to the Tidewater coal exchanges of America are being worked out.

Belgium has always used more coal than it could produce. The local production is estimated at 10 per cent gas coal, 26 per cent coking and smithing coal, 43 per cent low-volatile coal, and 21 per cent anthracite. Of this output, normally approximating 23,000,000 tons, 5,000,000 tons were exported, principally to France, and 9,000,000 tons of gas coal were imported, the imports in 1913 being 68 per cent from Germany, 29 per cent from Great Britain, and 3 per cent from the United States. These proportions were materially changed in favor of the United States during the war, but present exchange rates practically preclude the importation of American coal.

Briquets, anthracite and low-grade low-volatile coals are principally used for steam purposes, the high-volatile coals going into the gas plants and the manufacture of coke and steel.

Prior to the war, automatic stoker grates were known only through having been shown at industrial exhibitions. At the present time, the Brussels tramway power plant, Société d'Electricité de l'Escaut at Antwerp, the Glaceries Floreffe at Floreffe, the Duché Chemical Works at Vilvorde, the New Orleans Cotton Mill at Ghent, and the Bernaerts Mill at Wettern, all are equipped with American underfeed stokers. Nine other industrial establishments also have installed various types of automatic stoker.

Special Grates Needed for Belgian Coal

The American grate requires special construction, however, as Belgian coal runs so high in sulphur that grate bars, unless specially constructed, will fuse within forty-eight hours. Belgian coal also requires a very thin fire which is slow to ignite but is quickly consumed. The stoker must thus deliver new coal at the critical moment between primary distillation and reduction to ash.

There are no specific anti-smoke ordinances, but the law requires that factory chimneys shall be built at least 5 meters above the highest neighboring building within a radius of 50 meters from it. According to the civil code, however, recovery may be had at law for damage caused by smoke from a factory chimney.

Belgian locomotives are equipped with smoke consumers and the National Railroad Administration, which is the largest customer of the native mines, regulates the amount of volatile matter and ash which it will accept. These limits run from 5 per cent to 16 per cent in ash and for coke 5 per cent volatile matter; anthracite 6 per cent to 10½ per cent volatile matter; bituminous coal 13 per cent to 20 per cent volatile matter. Briquets averaging 14 to 16 per cent volatile constitute 47 per cent of the total railroad fuel consumption.

Shortness of haul from either mine or port has rendered storage unnecessary. Canalboats of 1,500-2,000 tons capacity are available at Antwerp. The cotton mills at Ghent have ample room for storage, but rarely acquire more than one week's supply.

Belgian gas coals run so high in sulphur that abnormal purifying capacity is provided at all gas plants. Gas when delivered is supposed to be sufficiently free from H_2S not to color paper impregnated with a 1 per cent solution of lead acetate. Nearly all the plants are equipped with horizontal retorts, which are charged mechanically.

Prior to the war, an average yield of 400 cu.meters (14,125 cu.ft.) of gas per ton of coal was obtained, but the present yield is about 255 cu.meters (9,005 cu.ft.), due to the quality of coal in use. From 70-100 liters of ammonia (18-26 gal.) and 55-90 liters of tar (14-24 gal.) are recovered. Gashouse coke is sold for domestic fuel, while certain plants specialize in metallurgical coke and the various coal-tar products. A high fusing point of ash is sought especially for glass furnaces, marine purposes and railways.

Few customers deal direct with the mines, as the brokers (wholesalers) give regular customers advantageous credits and by frequent visits to the mines and the consumers ensure suitable delivery in specified amounts and of proper quality, the whole keynote of the transaction being "service." At the end of each month the broker bills his sales direct to the client on statements prepared by the colliery, draws a draft for the amount thereof in favor of the operator, who is thus covered for the coal supplied. The operator then deducts the agreed percentage for each of the wholesalers and pays the same, banking the difference to his own credit.

At present, prices f.o.b. mine are fixed by the Belgian Government at an advance of from 25 per cent to 33 per cent over prices prevailing Jan. 1, 1920. German shipments are co-operatively divided among various groups of consumers and the State Railways. German coal is delivered to cars at Hamont for rail shipment, and to canalboats at Duisborg-Ruhort for water shipment (Nov, 1920) at 113.50 fr. per ton.

The port of Antwerp is admirably equipped with barges, cranes, tidal basins, etc., and contracts may be made with the port authorities for permanent use of certain moorings, quays, and warehouses at reduced rates. The harbor authorities are friendly toward American tonnage.

Return cargoes usually are available in plate glass, glassware, textiles, gloves, artificial silk, chemicals and dyes, laces, sugar, chicory, and Belgian Congo products, such as copper, ivory, and copal. Transshipment of Scandinavian lumber may be made to English ports, and Belgian rails, ingots, blooms and rolling mill products are now competing with similar products from other nations.

The present unloading capacity of the harbor of Antwerp is 500,000 tons per month, and of Ghent 250,000 tons per month. If the port authorities of Antwerp brought back the floating derricks rented by them in Ghent and Rotterdam, this port could handle 1,000,000 tons per month.

The most practical method of selling American coal in Belgium would be to organize a sales office at Antwerp with a large yard on the river front, where boats could be unloaded. The whole of northern Belgium needs industrial coal, and consumers would be glad to have more, of stable quality, at a reasonable price, but cannot get it. There is no car shortage, and labor is more efficient than at any other northern ports.

Chinese Coal Deposits Likely To Be Developed

But very little trade information has been obtained from China. There is ample cargo available for return voyages, but there is little demand in the United States for Chinese products. Trade Commissioner Whitham's reports deal extensively with terminal and unloading facilities. It is not unlikely that the extensive coal deposits of China will be developed on a commercial scale within the next few years and that Chinese coal will become a decided competitor in export trade.

Czecho-Slovakia Will Accept Good Screened Coal

During the first three months of 1920 coal was mined by 370 concerns in Czecho-Slovakia, 225 producing lignite and 145 producing bituminous. In Bohemia there are 310 operations, in Moravia 24, Silesia 33, and Slovakia 3. About 123,000 miners are employed.

The militarization of the mines during the war, while it temporarily increased production, necessarily had a detrimental effect on the equipment, which with labor troubles and car shortage, has since decreased the output.

The decision of the Entente in regard to the boundary line between Czecho-Slovakia and Poland has saved to Czecho-Slovakia 27 per cent of its coal production. With all this the Industrial Institute of Prague estimates the annual shortage of coal at 3,600,000 tons. Any good screened coal which will stand handling is acceptable.

Discharge facilities at the various ports are exceedingly poor. To offset this, however, a wide diversity of return cargoes is offered, such as lumber, magnesite, Gablonz

goods, glass, china, porcelain, sugar, malt, hops, bentwood furniture, paper, gloves, sodium cyanide, dyes and cotton goods.

A coal council advises with the Ministry of Public Works in the formation of rules and regulations for mining, distribution, equalization of production and consumption, fixing of selling prices, maximum profit of operators, quantity to be produced by each mine, and the designation of the appropriate market for each mine. The law also provides for a tax of 30 per cent of the selling price f.o.b. mine. As a result, the price of coal has advanced about 40 per cent.

Bulk of Danish Coal Imports Come from America

About one-third the total consumption of coal in Denmark is gas coal. The railways prefer screened lump for steam purposes. About 10 per cent of the industrial plants are equipped with stoker grates, but these plants consume 40 per cent of the steam coal. The large plants with stoker equipment operate crushers, while the smaller operations use slack when obtainable, or crush the lumps by hand.

Smoke consumers are not in favor, the location of plants in outlying districts being preferred. The State Railways and the Municipal Gas Works have about six months' storage capacity, while the power plants rarely store more than three months' supply.

Before the war British and German coal were principally used, but since June, 1919, American coal has constituted the bulk of the importations. This condition can be maintained, if the integrity of American exporters themselves, as well as of their coal, can be established. Unfortunate substitutions of buckwheat for gas coals by certain unprincipled exporters have created a marked distrust in Danish financial circles, which makes the establishment of credits in America increasingly difficult.

The purifying capacity of Danish gas works is ample, so that gas coal containing up to 2½ per cent of sulphur can be used. Mechanically charged horizontal retorts are the usual equipment, although the Copenhagen Municipal Gas Works are planning to install vertical retorts. The usual yield is about 5 cu.ft. of gas per pound of coal. Coke and tar are the principal byproducts. No particular effort has been made to develop further coal-tar byproducts of dyes.

No attempt has been made at collective buying, as each consumer arranges his own credits. Unloading facilities are satisfactory at Copenhagen. At Aarhus, Aalborg and Korsör the discharge rate is 500-700 tons per day.

The only direct return cargoes for the United States consist of flint pebbles and chalk. After discharging their coal cargoes American vessels usually obtain cargoes in Norway or Sweden or at other Baltic ports, consisting of iron ore, timber, wood pulp or stone, destined to England or France, and there obtain other cargoes for the United States.

Finland Depends Largely Upon Wood for Fuel

Finland imports only slack coal, as wood is the principal fuel. The Finnish merchant marine obtains bunker coal at foreign ports. The gas plants at Helsingfors, Abo and Viborg formerly obtained gas coal from Germany, but at present birch wood is used, which lowers the temperature of the retorts to about 1,200 deg. C. and gives a much lower yield of gas.

Terminal conditions are poor, but demurrage rates are low. The rate of discharge is about 400-500 tons per day for such gas slack as is imported for use in the railway shops.

Return cargoes consist principally of wood and paper pulp, and on account of low freight rates vessels usually prefer to go elsewhere for cargoes.

Exchange Curtails Export of American Coal to Italy

Italian imports of American coal have been declining, due principally to the exchange situation, which puts the British exporter in a position to undersell the American exporter in the Italian market. In November, 1920, American coal was quoted c.i.f. Italy at from 650 to 700 lire. At the same time British coal was quoted at from 115s. to 120s. f.o.b. piers, with a 25s. freight rate. At present exchange this works out to about 575 lire per ton.

With Italian exchange around 17 or 18, American coal could compete on a fifty-fifty basis with coal from Great Britain. An appreciation of the lira below this would give us a commanding position, while a depreciation above 20 turns the scale in favor of British competition.

The communistic seizure of several metallurgical plants also has militated against the importation of American coal. Many coal consumers have suspended operation.

Receipts of German coal are increasing. Under a trade agreement with France, Italy is to receive French coal in proportion to the number of Italian laborers who pass to France for work in French coal mines. It is officially stated, however, that although a steady stream of these laborers has been passing into France, less than fifty tons of coal have been so far received.

Belgium promised Italy 50,000 tons of coal per month, but has actually despatched during eight months 80,463 tons. About 56 per cent of the total Italian consumption of coal is required for the railroads, all of which must be low-volatile coal on account of the numerous tunnels and the municipal smoke ordinances of towns through which they pass. About 25 per cent of the total consumption is gas coal and 19 per cent high-volatile steam coal, usually screened lump. About 10 per cent of the industrial boiler area is equipped with stoker grates.

Storage facilities are ample and no difficulties were encountered from heating when Cardiff coal was used. Upon their introduction, Georges Creek and Pocahontas were well received and gave entire satisfaction. All kinds of coal, however, were shipped by a few unscrupulous exporters during the past year under the generic names of "Georges Creek" and "Pocahontas," and as a consequence these names no longer convey a superior significance. Substitutions of this kind, received wet, have caused spontaneous combustion and have done much to injure the reputation of American coal and American exporters.

The distinction known to American trade in the matter of seasonal coal distribution does not obtain in Italy, where snow is unknown except in the mountains and where the harbors are never frozen.

The gas plants are equipped to handle coal not exceeding 1 per cent in sulphur. During the past year, however, coal as high as 3 per cent in sulphur has been used, with consequent overloading of the purifying boxes. All the newer plants have mechanically charged vertical retorts and the average yield per ton is about 300 cubic meters (10,594 cu.ft.).

Detailed attention is paid to the recovery of every possible byproduct, and the proceeds from these sales are sufficient to cover the overhead and cost of production, leaving the returns from the gas industry as a net profit.

Wide diversity of method has existed in purchasing coal. The Royal Italian Commission in New York has conducted some of the negotiations, while many of the larger companies have sent their own representatives direct to Italy, and one company has its own agency in Genoa. As a result there is frequently a divergence in price of more than $2 a ton on consignments of coal being simultaneously unloaded at the same port.

Genoa is the logical port for northern Italy, but because of the quantities of coal and other merchandise also passing through Genoa for Switzerland, its facilities have become overtaxed, and the less congested ports of Spezia, Leghorn and Naples are equally available with only slightly longer rail hauls to the industrial centers. The new port of Savona also is being developed to relieve the congestion at Genoa. The port of Trieste, which was splendidly equipped by Austria, has ample dock and storage space, with electric cranes and other modern devices.

Return cargoes consist principally of fine marble and lemons, on which, however, freight rates are low and time required for loading is a disadvantage.

In the Orient bunker coal is still high, although it recently dropped $3 a ton and stocks are heavy. The condition in the East is due principally to the Japanese monopoly of the market and their ability to manipulate prices. England has found it impossible to compete with this country in the production of bunker coal and the future American coal interests in that country appear promising.

Problems of Operating Men

Edited by James T. Beard

Working Contorted Coal

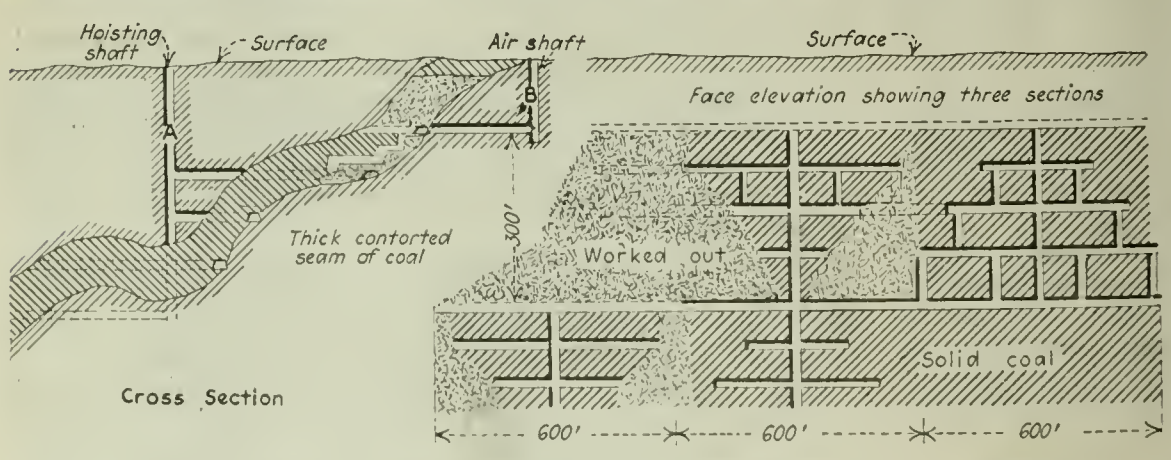
Where Coal Seams Are Much Contorted There Is Advantage in Sinking One or More Shafts, Driving Rock Tunnels to the Seam and Working Out the Coal in Separate Levels, by Gangways and Inclines Driven in the Seam. Conditions Vary the Methods Employed

HAVING been much interested in the question presented some time since in *Coal Age*, Nov. 4, p. 954, and referred to again in the issue of Jan. 27, p. 187, I am inclined to present the following brief description of methods I have employed under varying conditions and which I hope may be a help to someone.

We will first assume that the pitch of the seam is moderate and the coal, varying from 15 to 20 ft. in thickness, is soft, gaseous, and produces sufficient refuse to afford a liberal supply for packing.

As shown in the cross-section on the left of the accompanying figure, I would suggest sinking two shafts, A and B, and driving rock tunnels from each of these so as to reach the seam at different levels, say 300 ft. apart, vertical measurement. The shaft B and tunnel on the higher level can be used later for lowering timber and other supplies, after the lift above has been practically worked out. The shaft A and lower tunnel will be used for hoisting the coal from the second lift.

The extraction of the coal in either lift is started by driving gangways to the right and left of the tunnel, inclines being then driven up the pitch on the floor of the seam. The inclines are each extended from the gangway level to the gangway or level above. From these inclines level roads are driven to the right and left on the strike of the seam. The roads are driven about 40 or 45 ft. apart, while the inclines are 600 ft. apart.



PRACTICAL METHOD OF WORKING CONTORTED COAL SEAMS

The extraction of the coal, as shown in the face elevation on the right of the figure, starts at the head of each road and is carried on in steps, on the retreating plan, taking care to pack well the gob area left behind. The work proceeds in sections, each successive incline being driven in the center of its section. Three of these sections in various stages of extraction are shown in the figure.

According to the thickness of the seam, the coal is worked in successive benches. In the first bench at the floor, the coal is mined and blasted; or it may be shot off the solid. As each lower bench is advanced, the bench above is wedged down, the miners standing on the refuse built up as the work proceeds.

Where the inclination is nearly vertical and the thickness of the coal, say 90 ft. or more, the extraction is made by tunnel roads as before. But now, the work is performed in sections that are horizontal, instead of being extended in the bedding plane or inclination of the seam. These sections may have a vertical height of 60 ft.

Each section is divided into three parts by sublevels, which are again divided into three parts or benches, and these are advanced in steps, after the plan just described. It should be explained here that, in this case, the tunnels are stopped before they reach the seam; and level roads or gangways are driven, in the rock, to the right and left and parallel to the seam. These rock tunnels and roads are, of course, expensive to drive but they cost little to maintain.

From these rock gangways, small roads are driven to tap the seam, and an inclined plane is then run, either on the full pitch or across the pitch to the upper level. An additional road is also driven, from the foot of the incline to the floor of the seam where strike roads or levels are driven to the right and left the full length of the section.

Again, assuming the coal is thin, varying from 3 deep to 7 ft. in thickness, and pitching from 35 deg. to 70 deg., with bad roof or a drawslate. In this case, the coal is worked in levels as before, the sections being 20 ft. high, instead of 60 ft., and all the coal is taken out in one operation, by strike roads 25 ft. apart and well timbered.

Where coal pockets are encountered, the safest method is to drive an uprise, from the lower to the upper level at the roof of the pocket, and begin the extraction of the coal at the roof, by taking out a slice 8 by 9 ft. a distance of 12 ft. at a time. In this opening, strong timbers are first laid on the floor and cross-timbers rested on them. These are covered with heavy planks on which refuse is packed to the roof.

Now, leaving a small opening for ventilation, the work of taking out a second slice below is started, by placing heavy timbers or posts to support the long timbers above, as the coal is taken out. The work is continued in this manner down to the floor of the pocket. It is costly and dangerous and requires good packing and watchfulness. It must be performed only by experienced men.

Peru, Ill. GASTON F. LIBIEZ.

Observed Difference in the Handling of Men

Two mines visited present a strong contrast in respect to the methods of the foremen in the handling of men and the results obtained.

VISITS recently paid to two mines not a great distance apart showed such a strong contrast in the methods employed by two operators, in the handling of their men, that I decided to present my observations to the readers of *Coal Age* for their consideration. I was prompted to do this by the reading of an article not long since, entitled "Tact vs. Discipline" (*Coal Age*, Dec. 23, p. 1289).

In that article, emphasis was placed on the fact that tact in dealing with

miners should never be sacrificed to descipline. My observations at these two mines bear out the truth of that statement. For the sake of distinction, I will call the places visited Mine No. 1 and Mine No. 2. But, let it not be thought that these two mines are exceptional cases. They are no different from other mines I have visited in this and other states.

At Mine No. 1, I found men using iron tampingbars, in charging their holes with black powder. The condition of the powder kegs showed that the kegs had been opened by punching a hole in the end with a pick—a dangerous practice. In the rooms in this mine, the timber was not kept up to the faces. The tools were scattered about and everything had the appearance of a great lack of discipline; there was no order anywhere.

Disregard of Safety

Talking with the men regarding the danger of using iron tamping bars and opening kegs of powder with a pick, brought the response that they could see no danger in those things, as they had always worked that way. Coming out of the mine, I found the operator in an amiable mood, which was his usual habit. He had a smile for everybody, and was no doubt regarded as a fine man to whom none would take exception on any account.

My observations below, however, led me to inquire more particularly as to results. I found that the men did about as they pleased, came to work when they pleased, and stayed at home when they pleased. There would be a good run of coal one day and, perhaps, the mine would not run the day following. All depends on the men showing up for work. Following every payday, it was the usual habit for the men to take a rest. When sick or hurt by accident they were trusted at the store.

Everything throughout the camp was on a par with what I saw in the mine. The houses in which the men lived presented a poor appearance. Most of the families did not send their children to school, and the youngsters were to be seen any hour of the day or night playing about the streets, poorly clad. I asked myself who would want to live in these surroundings, and who would want to work in such a mine?

Effect of Discipline in Creating Safe Practices

My visit to Mine No. 2 was a pleasing contrast. Here, it was plainly evident that there was a different set of men employed. That was apparent on the surface from the tidy appearance of the buildings and other equipment. Despite the early hour, the operator was there on the job and he was a busy man with little time to spare, except for a good word with this one and that.

Going below I found no iron tampers, nor powder kegs with holes punched in them by a pick. Every man was at his place and things were moving quietly and in order. The face of every room showed that the place was well kept. I did not have to be told that the impelling force, in that mine, was discipline.

Coming to the surface, I drew from the operator, in brief intervals of questioning, that he got results by giving every man to understand that he must do what he is told. Everyone was given a square deal and was expected to give the same in return, by being prompt and regular in their attendance at the mine, which is run every day, except Sundays and holidays.

Effect Manifest in Camp Life

The streets and the houses presented a neat and tidy condition and reflected the character of the people who lived in them. I was informed that men were hired at the mines only on the condition that they would work steadily, obey orders and send their children to school regularly. There was a good school, which I believe is the backbone of the organization.

In this camp there was a good store that provided the necessaries of life, an excellent welfare building where the men were given every privilege and received teaching and training. Everyone was happy and prosperous and I departed saying to myself, What a contrast and all the results of building an organization by discipline.

Louisville, Ky. Observer.

Honesty, Safety, Efficiency

The honest miner is a safe miner and these two elements combined make him efficient.

NUMEROUS letters appearing recently in *Coal Age* have dwelt on the many features that combine to make the miner a practical, safe and skilled workman. I believe that the comprehensive meaning of all these letters is that a miner who is perfectly honest, in respect to safety, will eventually prove himself efficient, and his efforts will insure his recognition and advancement.

Few will deny that honesty is the big factor in the dealings of man with man. A man must first be honest with himself, and he will not fail in honesty toward his coworkers, his superiors in the mine and his family at home. As the immortal Shakespeare has put it, "To thine own self be true and thou canst not then be false to any man."

When a man is truly honest his sincerity of action is unquestioned, and he is regarded by all as being absolutely fair in his dealings and one to be trusted. It is this feature that makes him a safe miner, or a safe official, if he has risen to that dignity.

The efficiency of a worker, be he miner or official in charge of men, is a separate feature and depends largely on his being a *qualified* person. Without being first honest and safe, in all his dealings and practice, a man cannot be truly efficient.

A foreman may be regarded by his company as efficient because of the big tonnage produced in the mine in his charge; and yet he may lack being honest and safe, which can be proved by the many disputed claims that reach the office and the too frequent occurrence of accidents that should be avoided by more constant and thorough supervision.

Other writers have referred to the fact that "Years in the mine do not always make the skilled miner." (*Coal Age*, Nov. 11, p. 1003.) It is the man who is willing to learn that eventually develops the highest efficiency in his work.

In a recent conversation with a mining man of long experience, I was not surprised to hear him remark, "I learned something today that I have never experienced before, in my years of practice in the mines of Europe and this country." The man who is a close observer can always learn something new regardless of his "years of experience."

Responsibility of Officials

The thought comes to me, in this connection, that the responsibility of mine officials is greater than is often realized. We learn something every day, but we fail to pass on our knowledge to the other fellow. All of us are acquainted with miners who have mined coal for years, but whose methods and upkeep of their places show they have not been instructed as they should have been by those charged with their safety.

When a miner is caught by a fall of slate or coal, we invariably hear the cry of "carelessness." But why condemn the victim so severely when a foreman or assistant foreman is probably the one justly to blame. It may be true that the man was careless and disobeyed the instructions given him to set the posts that should have made him safe. But, what about the official who gave the instructions?

Either the foreman or the assistant foreman should have known the failing of the man, and have given him more careful supervision to see that his orders were obeyed promptly. Knowing the place to be unsafe, the official should have remained long enough to see that the work was done and the roof made secure.

Possible Results of Inefficient Supervision of Men

Taking the mines as a whole, the point is conceded that the larger percentage of accidents to miners are caused by falls of roof or coal; yet, taking each mine separately, it can be shown that this statement does not hold true in all cases. We must go back to Franklin's saying, "A small leak will sink a great ship." A foreman's or assistant foreman's failure to enter a man's place may be the leak responsible for his death by a roof fall a little later.

While it is not good policy to keep driving at a man constantly, there is no doubt of the need of continually preaching safety. The neglect of foremen to do this has resulted in old miners practicing unsafe methods in many ways. What then could be ex-

pected of the younger men sent into the mine and placed in charge of these older miners to receive supervision and instruction in their work.

There is one point I want to mention, however, before closing. I want to say that the miner who continually disobeys the instructions given him is a dangerous man. The foreman who keeps him on the job makes a great mistake, jeopardizing not only himself but every man in the mine. No excuse can be offered for a miner persistently disobeying orders and instructions.

Statistics show a large percentage of accidents, both fatal and non-fatal, are due to disobeying instructions. A foreman's rule should be: Tell a man once and the next time send him out of the mine. A safe miner will generally prove an efficient miner; and the mine that holds a minimum accident record will generally hold also a maximum production record. Many, indeed, are the requirements of the safe and efficient miner. I have mentioned but a few of the more prominent ones.

Thomas, W. Va. BEN.

Inquiries Of General Interest

Mining the Coal Before Blasting

Proper Mining of Coal Before Blasting Demands That the Cutting, Whether Placed at the Bottom, Center or Top of the Seam or at One Side, Shall Be Extended to a Depth at Least Equal to the Depth of the Hole to Be Charged

MUCH interest has been aroused here recently, regarding the meaning of the words "properly mined," as used in the Bituminous Mine Law, of Pennsylvania, where the law specifies how coal may be blasted in mines (Art. 4, Sec. 9).

We have debated this question at considerable length, and find that there is much difference of opinion regarding the meaning of these words. Not being able to reach a satisfactory conclusion, it was decided to submit the question to *Coal Age* and its readers, for their opinions.

The bituminous law (Art. 4, Sec. 9) reads in part as follows:

> The mine foreman shall direct that the coal is properly mined before it is blasted. "Properly mined" shall mean that the coal shall be undercut, centercut, topcut, or sheared, by pick or machine, and in any case, the undercutting shall be as deep as the holes are laid.
>
> In mines generating explosive gas in quantities sufficient to be detected by an approved safety lamp, when the coal seam is 5 ft. 6 in. or more in thickness, "properly mined" shall mean that in all entries less than 10 ft. wide, wherein the coal is undercut, it shall also be sheared on one side as deep as the undercutting before any holes are charged and fired, or the coal shall be blasted in sections by placing the first hole near the center of the coal seam.

Again, Sec. 10 of the same article reads as follows, regarding the blasting of coal:

> The mine foreman or the assistant mine foreman, under instructions from the mine foreman, shall direct that the holes for blasting be properly placed and shall designate the angle and depth of hole, which shall not be deeper than the undercutting, centercutting, topcutting or shearing, and the maximum quantity of explosives required for each hole, and the method of charging and tamping.

In debating the meaning of the expression "properly mined," some have taken the meaning in Sec. 9 to be that coal that is sheared, topcut or centercut must also be undercut as deep as the hole to be blasted.

Others have drawn attention to the fact that Sec. 10 does not mention that, "in any case, the undercutting shall be as deep as the holes are laid," as does Sec. 9. We shall be glad to learn the opinions of *Coal Age* and others, in this regard. MINE FOREMAN.

Timblin, Pa.

It would seem that the difference of opinion that arose in debating this question was probably due to assuming that the reading of Sec. 9 requires that the coal be undercut after being either centercut, topcut or sheared. In the opinion of the editor, this is not the meaning intended to be conveyed.

The intended meaning, as we understand the law, would have been made clearer had the section read as follows: The coal shall be undercut, centercut, topcut, or sheared, by pick or machine; and, in any case, the *cutting* shall be as deep as the holes are laid.

The meaning is evidently that whether the cutting be at the bottom, center, top or side of the seam, it shall be at least as deep as the hole is bored. In other words, a drillhole for blasting must not extend beyond the depth of the cutting, so that there will be no danger of the charge being laid on the solid. The same meaning is expressed in the quotation from Sec. 10.

Depth of Water in Airway When Half-Full

An airway having the form of a trapezoid is half-filled with water when the latter stands at a depth less than the half-height of the airway.

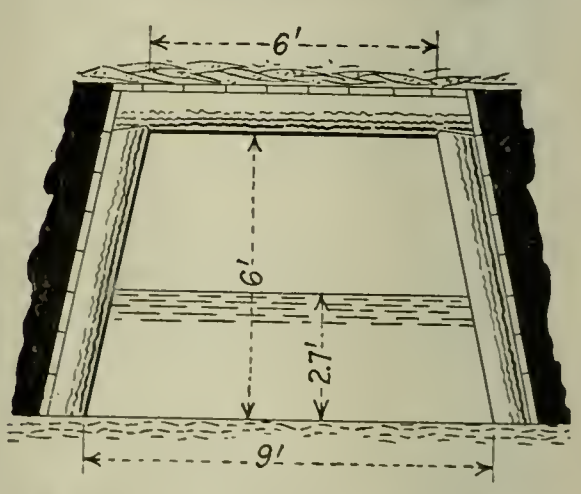
RECENTLY a problem was sent over to the mine from our High School. It drifted around from one to another and finally came to me for solution. After several trials, I decided to seek the help of *Coal Age*, as I did not care to send it back on a guess. The problem is as follows:

A mine airway 6 ft. in height has a width of 6 ft. at the top and 9 ft. at the bottom, as indicated in the accompanying figure. It is desired to find the depth at which the water will stand in this entry when the place is half-full. STUDENT.

Piedmont, W. Va.

The cross-section of this airway is a trapezoid and its area is found by multiplying the average width of the passage by its height. The average width is the half-sum of the top and bottom widths, or $\frac{1}{2}(6 + 9) = 7\frac{1}{2}$ ft. The sectional area is, therefore, $6 \times 7\frac{1}{2} = 45$ sq.ft. The sectional area of the water, when the airway is half-full is, therefore, $\frac{1}{2} \times 45 = 22\frac{1}{2}$ sq.ft.

Now, let x equal the required depth of the water when the airway is half-full. The width, measured at the surface of the water, is $9 - \frac{1}{2}x$, because the width decreases 1 ft. in every two feet of height. But, the average width of the wetted cross-section, being the half-sum of the top and bottom widths of that section, is $\frac{1}{2}(9 + 9 - \frac{1}{2}x) = 9 - \frac{1}{4}x$; and, multiplying this aver-



age width by x, the depth of the water, gives the sectional area of the wetted cross-section $9x - \frac{1}{4}x^2$.

Finally, equating this expression with the area of the water when the airway is half-full ($22\frac{1}{2}$ sq.ft.), previously found, gives $9x - \frac{1}{4}x^2 = 22\frac{1}{2}$. Multiplying throughout by —4, to clear of fractions, we have,

$$x^2 - 36x = -90$$

Now, adding to each side of the equation, the square of half the coefficient of x, or $18^2 = 324$, gives:

$$x^2 - 36x + 18^2 = 324 - 90 = 234$$

Then, extracting the square root of both members gives,

$$x - 18 = \pm\sqrt{234} = \pm 15.3$$

$$x = 18 - 15.3 = 2.7 \text{ ft.}$$

Therefore, the required depth of the water when the airway is half-full is 2.7 ft. It must be remembered that the square root of a number may be either plus or minus, since the squaring of either of these values gives a positive value. In this case, the positive value would give a result $18 + 15.3 = 33.3$ ft., which would be greater than the height of the airway and is therefore obse ved.

Examination Questions Answered

Examination, Foremen and Assistant Foremen, Twentieth Anthracite District

(Selected Questions)

QUESTION — *What are the requirements of the mine law in regard to charging holes in coal and rock, for blasting?*

ANSWER — Art. 12, Rule 30 of the anthracite law forbids the use of an iron- or steel-pointed needle, in blasting slate or rock in any mine; neither shall the hole be tamped with an iron or steel tamping bar, unless the end of the bar is tipped with at least six inches of copper or other soft metal.

QUESTION — *When a charge misses fire what are the provisions of the mine law?*

ANSWER — Art. 12, Rule 31 forbids withdrawing a charge of powder or other explosive that has been fired, or reopening the hole.

QUESTION—*What must a miner do to perform his duty after blasting in coal or rock?*

ANSWER—Art. 4, Rule 34 makes it the duty of a miner working a breast or other place in a mine, after firing a shot, to examine the condition of the place before permitting his laborer or assistant to approach the face.

QUESTION — *What is the duty of a workman when gas becomes ignited in his place?*

ANSWER — Art. 12, Rule 38 requires that the person who fires a blast by which gas is ignited must at once extinguish the gas, if that is possible, and then notify the mine foreman or his assistant. The miner must see that no gas blowers are left burning when leaving his working place.

QUESTION—*Who shall be employed in a mine evolving explosive gases?*

ANSWER — Art. 12, Rule 56 forbids the employment of any person who is not competent to understand the regulations of the mine. This rule, however, does not apply to any section of the mine that is free from gas.

QUESTION — *How would you conduct your examination of a gaseous mine to ascertain its true condition?*

ANSWER—Having carefully examined and prepared the safety lamp to my satisfaction, and having examined the ventilating fan and ascertained that it was working properly, I would proceed to the head of the shaft, examine the ropes and cages, safety gates and other hoisting equipment. This would include a visit to the engine room, where I would have a few words with the engineer in charge and observe his handling of the engine. After seeing a few trips of coal hoisted, I would ask for an empty cage and request to be lowered slowly in the shaft, in order that I might have opportunity to examine its condition from top to bottom.

Arriving at the bottom of the shaft, I would tarry a few moments to "get my eyes" and have a little conversation with the men on the shaft bottom, observing the equipment there and the method in which the work was being performed. From the shaft bottom I would proceed at once to the main intake air-course or bottom of the downcast shaft and measure the quantity of air passing into the mine. This done, I would follow the air current, observing the condition of the airways as I went. On reaching the mouth of a split or section of the mine, I would follow this split of air to the working face in that section, and then proceed to examine each working face in order, following the air out to the return airway. In the same manner I would proceed to examine each section of the mine, measuring the air at the mouth of each split and at the inside crosscut. This would enable me to judge of the condition of the stoppings throughout the mine, by ascertaining how much air fails to reach the head of the entries.

In my examination, I would make frequent tests for gas and observe carefully the condition of the timbering in each working place, in order to see that no one was working under unsafe conditions. I would also give particular attention to electric installations, the methods employed in blasting coal and rock and the tools and other equipment in use. This would include a careful examination of the haulage system throughout the mine. Having completed the examination of the mine and returning to the surface, I would enter a full report of my examination, in the book kept for that purpose, making such recommendations as seemed advisable.

QUESTION—*What is the weight of a cubic foot of anthracite coal having a specific gravity of 1.55?*

ANSWER — Taking the weight of a cubic foot of water as 62.5 lb., the weight of the same volume of anthracite coal having a specific gravity of 1.55 is $1.55 \times 62.5 = 96.875$ lb.

QUESTION—*Describe a modern safety lamp and its requirements?*

ANSWER — A modern safety lamp is one having a pressed-steel or brass oil vessel equipped with a round-wick burner and an efficient pricker or other means of raising or lowering the wick. The lamp should be designed to burn a safe non-volatile oil, in preference to a highly volatile oil requiring special equipment for its safe handling. The oil vessel is surmounted by a strong glass cylinder and a gauze chimney having one or two conical gauzes surrounded by a steel or sheetiron bonnet. The construction is such that the air enters the combustion chamber of the lamp through gauze-protected openings, at a point below the flame, the circulation within the lamp being ascensional.

The requirements of a good working lamp are the following: 1. Simplicity of construction. 2. Safety in strong currents. 3. Good illuminating power, and the flame set in the lamp so as to throw the light upward and downward at a wide angle. 4. The lamp should not be too sensitive to gas, flaming readily and being too easily extinguished in gas.

The requirements of a good testing lamp are as follows: 1. Simplicity of construction. 2. Safety in moderate currents. 3. Designed to burn a non-volatile oil that will give a uniformly accurate indication of the percentage of gas present. 4. Circulation within the lamp wholly ascensional. 5. Equipped with a sight indicator or other means of measuring the height of flame cap, or indicating the percentage of gas present and avoid guessing. 6. Free discharge openings at the top of the chimney, thereby providing a free circulation so that the condition within the combustion chamber will fairly represent that of the air outside.

QUESTION—*A dam is constructed in a tunnel and that portion of the mine is allowed to fill with water, the head of water being 200 ft. If the tunnel is 12 ft. wide at the bottom, 8 ft. wide at the top and 10 ft. high, what is the total pressure, in pounds, on face of dam?*

ANSWER—The pressure due to a head of 200 ft. of water is $200 \times 0.434 = 86.8$ lb. per sq.in. The average width of the dam is $\frac{1}{2}(8 + 12) = 10$ ft., and the surface pressed by the water $10 \times 10 = 100$ sq.ft. The total pressure on the face of the dam is then $100 \times 86.8 = 8{,}680$ lb.

QUESTION—*A duplex pump, having a water-end 12 in. in diameter and a 4-ft. stroke, is running at a speed of 70 strokes a minute. Give the number of gallons per minute the pump will handle, and the number of gallons and weight of water in tons discharged in 24 hours.*

ANSWER — The piston displacement, per stroke, of this pump is $4(0.7854 \times 12^2) \div 144 = 3.1416$ cu.ft. Assuming 7.48 gal. per cu.ft. and a water-end efficiency of 85 per cent, the quantity of water handled per minute is $0.85(70 \times 3.1416 \times 7.48) = 1{,}398+$, say 1,400 gal. In 24 hr. the pump will discharge $24 \times 60 \times 1{,}400 = 2{,}016{,}000$ gal.

The weight of this water, assuming 12 gal. per hundred pounds, or 240 gal. per short ton, is $2{,}016{,}000 \div 240 = 8{,}400$ short tons.

Foreign Markets and Export News

Output of Upper Silesian Collieries Improved During February

Special Correspondence to *Coal Age*, Berlin, March 11, 1921

Output of Upper Silesian Collieries during February showed further improvement, the average daily tonnage raised amounting to 122,257 tons. The total production is given at 2,811,904 tons for 23 working days comparing with 2,821,820 tons for 24 days in January.

Exports were 708,000 tons, as against 665,000 tons in January. The chief exports were:

Poland	264,804
Austria	170,865
Czecho-Slovakia	137,247
Italy	96,196
Hungary	17,705
Danzig	11,672
Memel	3,639

Quotations on the Netherlands market in the middle of March, 1921, were as follows:

DUTCH COAL

Non-bituminous fine coal	15.00 florins per ton ex colliery
Anthracite nuts No. I	32.50 florins per ton ex colliery
Anthracite nuts No. II	38.00 florins per ton ex colliery
Anthracite nuts No. III	34.00 florins per ton ex colliery
Anthracite, large	22.00 florins per ton ex colliery

ENGLISH COAL

Flaming nuts, Nos. I and II	30.00 florins per ton f.o.b. Rotterdam
Flaming nuts No. III	29.00 florins per ton f.o.b. Rotterdam

SCOTTISH COAL

Large coal	29.50 florins per ton

Output in January	Output in February
24 working days	23 working days
2,821,820 tons	2,811,904 tons
Output per day in January	Output per day in February
117,570 tons	122,257 tons

Last year's monthly average was 2,600,000 tons, in 1919 it was 2,160,000 tons, and in 1913, the best year of Germany's coal production, 3,620,000 tons.

Transportation was satisfactory. Of 210,000 trucks required, a shortage of 2,000 was reported. The stock of dumped coal was reduced to 352,000 tons.

Czecho-Slovakian Coal Output During 1920 Was 82 Per Cent of That of 1913

Exact figures covering Czecho-Slovakian coal production and exports during the year 1920 are now at hand, showing that output has reached 82 per cent of the 1913 figure. The amount raised during 1920 totaled 30,820,000 tons, as compared with 27,300,000 tons during 1919, of which 11,300,000 tons were bituminous coal (10,380,000 tons and 14,570,000 tons in 1919 and 1913, respectively) and 19,690,000 tons lignite (17,110,000 tons in 1919 and 22,600,000 tons in 1913). The share in tons of the various districts in the total output may be seen from the following table:

BITUMINOUS COAL

	1920	1919	1913
Ostrau	7,480,000	6,800,000	9,800,000
Rossitz	390,000	380,000	510,000
Kladno	1,900,000	1,800,000	2,500,000
Pilsen	900,000	1,000,000	1,300,000
LIGNITE			
Bruex	14,770,000	13,100,000	18,500,000
Falkenau	4,400,000	3,700,000	4,100,000
Slovakia	200,000	150,000	200,000

Coke production is given at 1,470,000 tons in 1920; 1,390,000 tons in 1919 and 2,560,000 tons in 1913, while the respective figures for briquets are 160,000 tons and 70,000 tons. Subjoined are the export figures for the various countries:

EXPORTS OF COAL FROM CZECHO-SLOVAKIA
(In Metric Tons)

	1920	1919
Pit coal	1,134,124	1,068,335
Lignite	3,426,851	2,686,217
Coke	273,650	188,621
Briquets	52,158	.....

DESTINATION OF EXPORTS

	Pit Coal	Lignite	Coke	Briquets
Germany	28,000	2,368,000	.....	40,000
Austria	522,000	1,059,000	142,000	12,000
Poland	570,000	.....	4,000	.....
Jugo-Slavia	7,000	.....	4,000	.....
Hungary	5,000	.....	5,000	.....
Roumania	1,000	.....	4,000	.....
Italy	.....	.....	1,500	.....

Better Demand for Steamers; South American Freight Rates Stiffen

Demand for export bottoms increased during the week ended March 28, according to W. W. Battie & Co.'s weekly coal trade freight report for that date. There was little change in the freight situation, however, with the exception of rates to the West Coast of South America, which have advanced considerably owing to the dearth of commercial business. Freight rates by steamers were quoted as follows:

	March 21, 1921	March 28, 1921	Tons Discharged Daily
Malmo	About $5.75	About $5.75	1,000
Copenhagen	5.50/ 5.75	5.50/ 5.75	1,000
Stockholm	About 6.25	About 6.25	800
Gothenburg	About 5.75	About 5.75	1,000
Antwerp/Rotterdam	3.75/4.00	3.75/ 4.00	1,000
Hamburg	About 4.75	About 4.75	1,000
Fr. Atlantic ex Rouen	About 4.35	About 4.35	700
Lisbon	About 5.00	About 5.00	700
Algiers	About 5.25	About 5.25	800
West Italy	5.00/ 5.50	5.00/ 5.50	1,000
Marseilles	5.00/ 5.50	5.00/ 5.50	1,000
Piraeus	About 6.50	About 6.50	1,000
Trieste/Venice	About 6.50	About 6.50	1,000
Port Said	About 6.00	About 6.00	1,000
Alexandria	About 6.00	About 6.00	1,000
Constantinople	About 6.75	About 6.75	500
Gibraltar	About 5.00	About 5.00	1,000
Teneriffe	About 5.50	About 5.50	500
Pernambuco	About 6.50	About 6.35	500
Bahia	About 6.50	About 6.35	500
Rio	5.75/ 6.00	5.75/ 5.85	750
Santos	6.50/ 7.00	6.50/ 7.00	450
Buenos Aires or La Plata or Montevideo	5.75/ 6.00	About 5.85	500
Para	About 6.50	About 6.35	500
Rosario	6.50/ 7.00	About 6.35	750
Nitrate Range	About 5.50	About 6.75	500
Havana	2.25/ 2.50	2.00/ 2.25	500
Sagua	About 2.75	About 2.75	300
Cienfuegos	2.75/ 2.85	2.75/ 2.85	400
Caibarien	About 3.00	About 3.00	300
Guantanamo	About 2.75	About 2.75	500
Manzanillo	About 3.25	About 3.25	300
Bermuda	About 3.25	About 3.25	300
p.c. and dis. free Kingston	About 3.00	About 3.00	400
Barbados	About 3.25	About 3.25	500
St. Lucia	About 3.25	About 3.25	500
Santiago	About 2.75	About 2.75	500
Port of Spain	About 3.25	About 3.25	500
Curacao	3.00/ 3.25	3.00/ 3.25	500
Curacao free p.c. St. Thomas	3.00/ 3.25	3.00/ 3.25	500
Vera Cruz or Tampico	3.25/ 3.50	3.25/ 3.50	500

N. B.—The above rates to East Coast, South American ports, are based on Welsh form. We would quote considerably less on July form.
All above rates gross form charter

ITALY IS NEGOTIATING with a group of American capitalists whereby coal and other raw materials to the value of $50,000,000 will be advanced, repayable in five years at 6½ per cent, it is reported.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

CONTINUED decline in employment is indicated in a survey made by the U. S. Employment Service of the Department of Labor, which compares conditions of March 31 with those on the last day of February. Telegraphic returns show that 1,424 firms in 65 industrial centers had employed on March 31 1,587,786 workers, a decrease of 24,825 or 1.5 per cent, compared with February 28, and 40,348, or 2.5 per cent, compared with Jan. 31. In March, as in February, the largest decrease was in the iron and steel industry. Other industries recording material decreases were metals and metal products, paper and printing, and food products. Increases were recorded in the automobile, tobacco and leather industries. Geographically the changes for better or for worse are indicated for the 65 cities on the accompanying map. This survey coupled with the most recent information of cars of freight loaded on the railroads, which for the week ended March 26 showed a reduction of 5 per cent compared with the preceding week, of 24 per cent compared with the corresponding week in 1920, and of nearly 3 per cent compared with the corresponding week of 1919, indicates that little or no progress was made in March in the revival of business. Notes on local conditions at some of the more important districts, as reported by the agents of the U. S. Employment Service, follow.

New York Reports Ups and Downs

A survey of trade in New York City shows improvement in the shoe and leather industries. The wholesale paper trade is reported to be improving, and while the mills are still working on part time increased employment is looked for in the future. Metals and metal products are reported very quiet, including hardware, metal novelties and automobile parts and accessories. There is a general reduction of forces in the transportation lines, steam and electric.

Improvement in San Francisco

Conditions in San Francisco generally show some improvement and sentiment is more hopeful. The unemployment situation has not materially changed during the past month excepting that there has been some demand for unskilled labor.

Textile Trade Stimulus Fails

There is much unemployment and part time employment in Massachusetts in all lines. The effort to stimulate business by reducing prices on goods for fall delivery seems to have failed. Paper mills are complaining of serious curtailment of orders. Foundries and machine shops are operating at less than 25 per cent normal. Shoe business is on a 75 per cent basis with other lines better. It is expected that the next few months will show marked improvement.

Business Reviving in Minnesota

Business is improving in Minnesota. It is largely a seasonal increase and so far has been felt principally in agricultural equipment lines, automobiles and supplies, and road machinery. One large foundry has reopened giving employment to more than 200 men. The railway contract repair shops are running at a maximum.

Motor Trade in Ohio Gains

In Ohio the motor industries with perhaps one exception are in the generally better condition characteristic of the automotive group. A contemplated $42,000,000 steel merger will affect three of the largest corporations in Canton if consummated. Tire sales are increasing but factories are still far under production capacity on reduced scale of operation.

Building Picks Up in Detroit

Reports of extensive building programs continue to issue from Detroit. About 5,500 motor cars daily are now being turned out in the Detroit area. Although production is only a little ahead of the demand, manufacturers regard the situation as indicative of permanent improvement and are adding to forces daily.

INDUSTRIES REPORTING A DECREASE IN EMPLOYMENT IN MARCH, 1921

Industry	Amt. of Dec.	P.c. Dec.	Weight*
Iron, steel and other products	26,979	6.5	24.2
Miscellaneous	16,311	4.9	19.8
Metals and metal products other than iron and steel	3,605	4.5	4.8
Paper and printing	1,467	2.8	3.2
Food and kindred products	3,692	2.7	8.3
Stone, clay and glass products	409	2.7	0.9
Chemicals and allied products	1,560	1.8	4.9
Textiles and their products	4,312	1.7	15.0
R.R. repair shops	1,055	1.7	3.7
Total	59,390		

INDUSTRIES REPORTING AN INCREASE IN EMPLOYMENT IN MARCH, 1921

Industry	Amt. of Inc.	P.c. Inc.	Weight*
Vehicles for land transportation	31,342	28.1	8.9
Tobacco manufacture	2,379	8.5	1.9
Leather and its finished products	744	1.7	2.7
Liquors and beverages	8	0.4	0.1
Lumber and its manufacture	92	0.3	1.5
Total	34,565		

* Per cent employed March 31 to total reported in 14 groups

Changes in employment in 65 cities, March 31, compared with Feb. 28, 1921, as compiled by the U. S. Employment Service

Coal Consumed in Production of Electric Power, by States, in Net Tons

PRODUCTION of electricity by public utility plants in January indicates that the decline in the demand for electricity shown in December continued during January. The mean daily output for the month, according to the Geographical Survey, was 114,880,000 kilowatt-hours. This is about 8 per cent less than that for January, 1920, and is less than that for any month during 1920.

Thirty-eight per cent of the total kilowatt-hours generated during the month was produced by water power. This is an increase of 5 per cent as compared with January, 1920, and probably was due to better water supply at water-power plants owing to the mild winter.

Electric power produced during October, November and December, 1920, and January, 1921, required combustion of coal indicated by the following figures, representing net tons:

State	1920 October	1920 November	1920 December	1921 January
Alabama	31,093	32,441	12,993	8,839
Arizona	777	693	596	626
Arkansas	11,814	11,799	14,160	11,522
California	0	0	0	0
Colorado	35,264	36,750	38,695	32,452
Connecticut	60,693	60,561	56,875	56,183
Delaware	9,425	11,106	11,390	9,106
District of Columbia	20,548	21,304	22,239	21,703
Florida	2,680	3,017	2,773	2,197
Georgia	10,418	9,818	8,175	8,184
Idaho	0	25	0	0
Illinois	369,952	386,365	408,638	376,062
Indiana	181,981	183,769	184,367	171,957
Iowa	84,439	87,337	92,077	91,664
Kansas	39,553	47,436	45,816	43,395
Kentucky	41,917	43,675	44,756	43,197
Louisiana	13,970	12,257	13,439	13,198
Maine	373	491	398	51
Maryland	37,108	31,091	28,140	24,559
Massachusetts	122,895	119,140	120,872	115,489
Michigan	144,516	130,018	132,342	118,472
Minnesota	50,763	52,546	61,258	58,124
Mississippi	13,093	12,872	12,650	12,443
Missouri	107,868	105,504	125,687	110,718
Montana	3,710	4,033	4,036	3,770
Nebraska	39,566	41,868	43,677	41,720
Nevada	296	237	243	221
New Hampshire	3,781	3,631	3,492	3,557
New Jersey	132,180	123,462	134,285	116,608
New Mexico	3,430	3,565	4,028	4,129
New York	408,565	412,673	420,593	388,373
North Carolina	21,929	20,936	19,326	19,435
North Dakota	15,539	17,432	18,993	16,739
Ohio	330,844	346,022	334,569	275,376
Oklahoma	9,182	9,311	9,166	8,611
Oregon	150	156	155	165
Pennsylvania	481,647	476,145	476,420	446,443
Rhode Island	20,535	16,727	15,776	13,843
South Carolina	10,584	10,449	9,752	9,301
South Dakota	7,835	7,809	8,190	7,823
Tennessee	26,001	25,639	24,103	23,422
Texas	18,223	18,590	20,259	20,286
Utah	0	50	8	11
Vermont	278	439	468	193
Virginia	47,265	43,551	39,120	38,425
Washington	2,841	3,560	4,239	3,583
West Virginia	102,212	99,412	97,326	85,359
Wisconsin	81,942	72,151	68,655	70,523
Wyoming	9,406	9,347	13,158	9,189
Totals	3,169,081	3,167,210	3,208,373	2,947,246

Wage Earners' Families Average 4.5 Persons

ONE of the contentions of the mine workers and their "consulting economist" before the U. S. Anthracite Commission last summer was that the average family in the anthracite regions consisted of 6.5 persons including boarders. Aside from any criticism of the improper inclusion of boarders—a source of revenue—when determining family budgets, this figure is open to attack as exaggerated.

The National Industrial Conference Board, whose investigations at home and abroad have been marked for their thoroughness and conservatism, has just issued a brief summary of an investigation into the size of wage earners' families. This summary is contained in Service Letter No. 54, issued by the board under date of March 7.

It has been customary to consider the "normal family," for budget determining purposes, as five persons—a man whose earnings are the only source of income, his wife, and three children under fourteen years old. The board's inquiry points to these conclusions:

Families in this country average 4.5 persons. This includes *boarders, lodgers,* servants and other dependents.

Families in which the father is the only wage earner, and in which all the children are under fourteen, comprise less than half of all the wage earners' families.

Families in which the father is the only wage earner, and in which the children are under fourteen, average closer to four persons per family than to five persons.

Families of five or more persons in most cases have other sources of income than the earnings of the father. This income may come from boarders or from the labor of the mother or of the children.

The board is now studying family budgets to bring out other phases of the question, particularly the standard of living.

Mine Ratings on Morgantown & Wheeling Ry.

FOLLOWING is a list of operators, mines and ratings on the Morgantown & Wheeling Ry. as of Feb. 10, 1921:

OPERATING MINES		Cars per Day
Randall Coal Co.	Randall Mine	..
Jarvis Coal Co.	Jarvis Mine	14
Hickman-Miller Coal Co.	Baby Mine	8
Clinton Coal Co.	Clinton Mine	4
Osage Coal Co.	Osage Mine	18
Chaplin Collieries Co.	Louise Mine	20
Virana Coal Co.	Virana Mine	8
Clev. & Morg. Coal Co.	No. 1 Mine	20
Purseglove Coal M. Co.	No. 4 Mine	12
South Penn Coal Co.	South Penn	6
Anchor Coal M. Co.	Anchor Mine	10
Cleve. & Morg. Coal Co.	No. 2 Mine	27
Soper-Mitchell Coal Co.	Mammoth Mine	12
Greenmont Fuel Co.	Greenmont	8
Soper-Mitchell Coal Co.	Berry	16
Diamond Coal Co.	Liberty	16
Davis Coal Co.	Davis No. 1	16
Gustin Coal Co.	Gustin	5
Davis Coal Co.	Davis No. 2	10
Gilbert Fuel Co.	Gilbert	6
Higgins Coal Co.	Higgins	7
Maxwell Coal Co.	Moser	2
		245
MINES UNDER DEVELOPMENT		
Sesamine Coal Co.	Sesamine	2
By-Product Coal Co.	Golden	4
Lee R. Coal Co.	Jere	5
Forest Coal Co.	Forest	5
Oak Hill Coal Co.	Oak Hill	4
Barbar Coal Co.	Barbara	2
Cass Hill Coal Co.	Cass Hill	3
Chaplin Collieries Co.	Virginia	2
Bingamon Valley Coal Co.	.....	1
		28
		273

Marine Corps Asks Bids on Bituminous Coal; Proposals To Be Opened April 25

THE Quartermaster's Department, Washington, D. C., announced April 2 that it would receive sealed proposals in duplicate until 11 a.m., April 25, 1921, for furnishing the Marine Corps the following approximate quantities of coal during the fiscal year 1922, for the following deliveries: 4,000 tons run-of-mine, Philadelphia, Pa.; 6,000 tons run-of-mine, Quantico, Va.; 15,000 tons run-of-mine and 4,000 tons domestic lump, Paris Island, S. C.; 400 tons run-of-mine, Norfolk, Va.; 175 tons Virginia anthracite stove and 100 tons run-of-mine, Charleston, S. C.; 150 tons domestic lump, Pensacola, Fla., and 120 tons domestic lump, New Orleans, La.; all bids f.o.b. mines.

Proposal blanks and other information may be obtained upon application. The right is reserved to reject any or all bids or parts thereof and to waive informalities therein. Bids from regular dealers only will be considered.

Philadelphia & Reading Coal & Iron Co. Gets Government Contract

THE Philadelphia & Reading Coal & Iron Co. has been awarded a contract by the Bureau of Mines for supplying the Government Fuel Yard with coal during the year beginning April 1. The contract covers f.o.b mine prices as follows: 7,800 tons white ash furnace and 8,800 tons white ash egg at $7.75 per gross ton each; 8,200 tons white ash stove and 1,700 tons white ash chestnut at $8.05 per gross ton each; 2,600 tons white ash pea at $6.40 per gross ton and 480 tons red ash stove at $8.55 per gross ton.

British Coal Strike Rapidly Nearing Settlement

SO LONG as the temper of the British workingmen and of the public was in doubt no assurance could be felt as to what would be the outcome of the British coal strike. It must be confessed that for a while the prospects looked decidedly glum. The mine workers' leaders were positive that they had the support of the majority of the British electorate, and Arthur Henderson, the most powerful labor leader during the war, felt sure during the uncertain early period of the strike that the Lloyd George government would be upset in the course of the struggle. On April 4 he attacked the government for "insincerity, inconsistency and inconstancy." It was regarded as significant that at widespread sectional meetings of railway and transport workers it was urged that the leaders of the "Triple Alliance" support the mine workers by any action they might deem necessary.

On April 5 rioting broke out at the Harthill collieries, near Cowdenbeath, in Fifeshire, Scotland. Strikers and others raised the red flag, besieged the police station and captured the under-manager of the mine, who refused to cease manning the pumps. The police responded to a call for aid and rescued the man, but the rioters wrecked the plant and drove away the pumpers, thus making inevitable a flooding of the mine. It was feared that twenty-five ponies left below would be drowned. Other outbreaks occurred in South Wales, in Lanarkshire and the east of Fife. The Cabinet feared to act lest the public take umbrage, and the workmen took advantage of the indecision of the government.

On April 6 Premier Lloyd George made an offer of mediation but he was adamant in his demand that the question should not be subjected to the slow processes of conciliation till the mine workers ordered the mine "safety men" to return to work. The mine workers refused to make this concession and the effort at mediation failed.

Lloyd George used all his eloquence when he met the mine workers on April 7. He declared "There'll be nothing more left here than there is in Russia if you destroy industry" and pointedly asked "Where will the miners go if Britain becomes only a home for cultivators of the soil?" He added, "It is not flooding of the mines you are doing, it is flooding the nation's industries. This is an industrial country. If it ceases to be industrial, it is destroyed."

Railway Men and Transport Workers Ordered Out

April 8 was really the culminating point in the trouble, when the situation took on the blackest garb. On that day the officers of the railway men and transport workers ordered all their followers to quit work at midnight on Tuesday, April 12, in sympathy with the mine workers. They stated that the strike was to take effect without further warning unless negotiations between the miners and the government were reopened. The King's Ministry issued a royal proclamation declaring that a national emergency existed and calling out army and navy reserves for immediate active service. The Premier issued a call for volunteers to enter a civilian army to be known as the Defense Force.

The "new poor" (those who have been impoverished by the continued high wages of certain classes of workers and the high cost of living thereby resulting), the "salariat" (those whose pay is in the form of a salary) and the "middle class union" (which believes in fighting one union by another)—three classes grading into one another and overlapping—gradually became stronger with each development in the situation and rallied round the government, so that in a few days the Cabinet was so sure of its position that it began to talk of resigning next June in order more strongly to establish itself in power by a general election.

This action was reinforced by the declaration of many of the railroad men that the action taken by their leaders was ill-advised, especially in view of the fact that it had not been submitted to the rank and file. The National Association of Colliery Deputies, which is strong in the Midlands, decided to send the safety men back to work, and branches of the miners' union in Nottinghamshire and Staffordshire began negotiations with the mine owners at about this time, when violence apparently had reached its height.

Beginning about April 5 large bodies of troops were assembled in Kensington Gardens and Hyde Park, which is located in the better part of London. Apparently these parks were chosen because the soldiers could assemble there without unnecessarily exasperating the population. As soon as they were ready for service they were dispatched to various parts of the coal fields. Two hundred Royal Marines also were sent to the mines. These men will protect those willing to work. They will not be asked to pump the mines, as the government is averse to using soldiers and sailors for that purpose.

Finally on April 9 the following agreement was made by the Cabinet and the Negotiations Committee of the railway men and transport workers:

(1) The government shall summon a conference of representatives of the Miners' Federation and the coal owners to meet at the Board of Trade on Monday, April 11, at 11 a.m., to discuss all questions in dispute between the parties.

(2) The Miners' Federation shall tonight issue notices to the branches of the Federation urging their members to abstain from all action which will interfere with measures necessary for securing the safety of the mines or will necessitate the use of force by the government.

On April 10 twenty-three South Wales pits, mainly small ones, were already completely flooded and at Skewen heats colliery a mine fire was reported to be burning.

Colorado Court Upholds Thirty-Day Clause Against Strikes and Lockouts

THE Colorado Supreme Court has upheld the thirty-day notice clause of the state's industrial law. In so doing the court also declared coal mining to be an industry "affected with a public interest." The thirty-day clause protects the public against hasty strikes or lockouts. It not only prohibits a strike before thirty days' notice has been given the State Industrial Commission but it prohibits a wage reduction until after thirty days' notice has been given. Until the commission has investigated and made a finding, neither strike nor lockout nor wage reduction can be put into effect.

The test came after officials of the United Mine Workers had authorized a strike without giving the required notice, and the Governor had obtained a temporary restraining order, late in 1919. The trial court held that coal mining is not affected with a public interest.

Justice Denison, in reversing the decision of the lower court, said: "There can be no question that the production of coal is at the present time affected with a public interest to a certainty and an extent not less than any other industry."

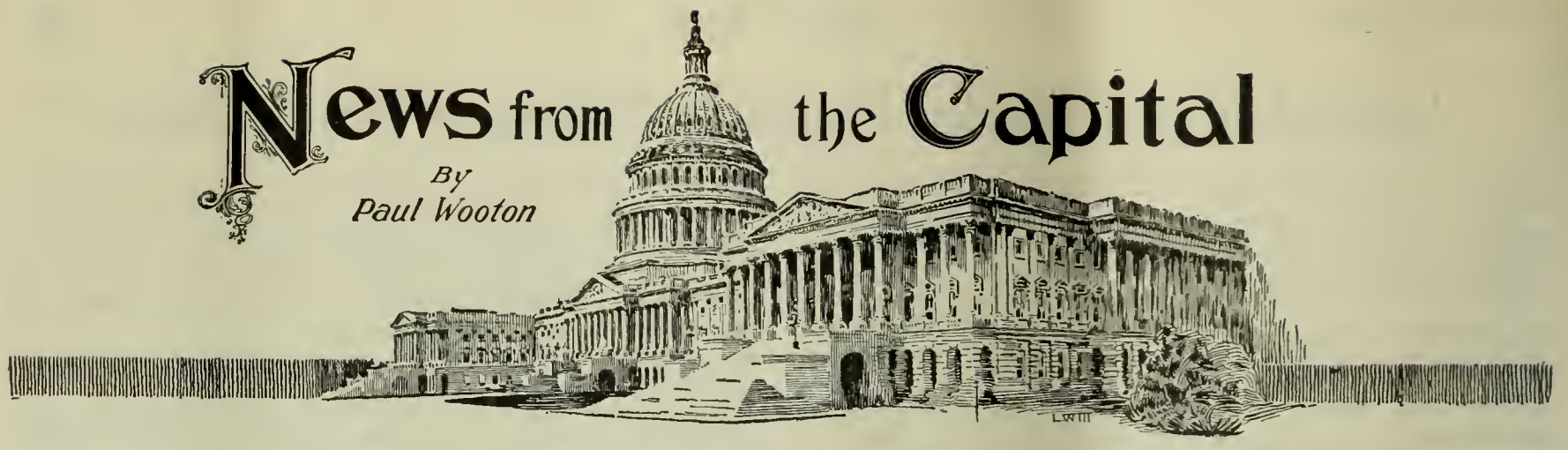
As to the effect upon labor of the provision of the industrial law, the opinion reads: "There is no involuntary servitude under this act. Any individual workman may quit at will for any reason or no reason. There is not even prohibition of strike. The only thing forbidden is a strike before or during the commission's consideration."

Old Tidewater Exchange Contemplates Legal Steps to Collect Outstanding Debts

CREDITORS of the old Tidewater Coal Exchange met with the executive and legal committees on April 1, 1921, to consider how best to collect outstanding debts amounting to $1,200,000. It was concluded that these unpaid debts cannot be collected except by court proceedings, and the committee of creditors has been authorized by the exchange to employ counsel and proceed immediately in the name of the exchange to collect by suit, if necessary, outstanding amounts due from debtors. Steps will be taken immediately to secure the necessary power of attorney from creditors in order to facilitate the work of the committee and its counsel.

News from the Capital

By Paul Wooton



Navy Awards Bituminous Contracts to Four Firms; Three Still to Be Awarded

FOUR companies were awarded bituminous coal contracts by the navy this week, as follows:

Quemahoning Coal Co., Somerset, Pa., 700 tons for Greenbury Point, Md., at $7.35 a ton.

L. A. Snead, Washington, D. C., 5,300 tons for Norfolk; 600 tons for Portsmouth, Va., and 1,250 tons for Alexandria, Va., at $3.85 per ton, f.o.b. mines.

Imperial Coal Corporation, Philadelphia, 300 tons for Cape May and 200 tons for Fort Mifflin, Pa., $3.82, f.o.b. mines; 12,000 tons for Philadelphia, $3.60, f.o.b. mines.

Dexter & Carpenter, New York, 600 tons, Annapolis, Md., $8.11; also 15,000 tons for Annapolis at $7.11.

Bids on 40,000 tons for the South Charleston, W. Va., armor plate plant will be held up indefinitely, while bids will be readvertised for 900 tons at Yorktown, Va., and 2,500 tons for Baltimore, as previous bids were unsatisfactory.

THE STATISTICAL WORK being done by the National Coal Association and by the local associations affiliated with it was the subject of a conference in Washington April 7 and 8 attended by a large number of the secretaries of the local associations. As a result of the extended discussions changes will be made which will simplify the work and eliminate duplications. This is expected to reduce the cost of statistical activities without reducing the amount of information gathered.

Some question had been raised as to the action of the national association in calling upon individual members for statistical data. It was pointed out that this was done only in cases of emergency when sufficient time was not allowed to collect the data through each local secretary. It was decided at the meeting, however, that it would rest with the local secretary to decide how the national association should obtain figures from the members of local associations. Some of the associations lack the machinery for collecting all of the information which is desired by the Bureau of Coal Economics of the national association.

ARRANGEMENTS HAVE BEEN COMPLETED for the use of the Washington Hotel as headquarters for the convention of the American Wholesale Coal Association, which will be held in Washington June 7 and 8. The banquet will be held the night of June 7. After the final meeting, on June 8, a boat trip to Mount Vernon will be taken. The executive committee and former officers of the association will hold a meeting at Bethlehem, Pa., April 19 and 20.

THE CONSENSUS OF OPINION in Washington among officials and representatives of the coal industry is that the English strike will have no important bearing on American industry as a whole. Even if the export demand should increase to the capacity of the docks it probably would have little effect on price, it is believed, so long as the mines are capable of greatly expanding the present rate of production. Moreover, it is regarded as certain that the strike must be of comparatively short duration. A national strike that would last six weeks, it is pointed out, would be unparalleled in its consequences.

Attention also is called to the fact that the United States could supply, without appreciably affecting the present situation, the entire British export trade. The ability of France to get along without American coal has been demonstrated by the practical embargo which has been placed against it. The loss of the imports from Great Britain will not seriously effect France, it is asserted, in the present depressed state of its industries.

THE RAILROAD RELATIONS COMMITTEE of the National Coal Association met in Washington April 5 and discussed the notice given recently by the Interstate Commerce Commission that an investigation is to be made of the distribution of privately-owned cars and cars used for railroad fuel. The committee decided that it would be best for the National Coal Association to take no action at this time. Such action as may be taken is to be decided upon at the next meeting of the Board of Directors, in New York May 18.

PAYMENTS AGGREGATING $103,946,990.05 had been made to the railroads under the Winslow Act up to and including April 5, the date of the last report.

L. E. Slack Ordered to Confer with Justice Department on Coal Removal Cases

L. ERT SLACK, special assistant Attorney-General of the United States in the coal conspiracy cases, received notice April 8 to report in Washington April 11 for a conference with Department of Justice officials prior to the hearing on the removal cases filed there and set for hearing. The cases are a part of those included in 226 indictments against coal men returned by the Federal Grand Jury in Indianapolis in February and which resulted in the injunction suit filed in Washington last week by officials of several coal companies and organizations, in which it is sought to prevent the removal of several of the defendants to Indiana for trial. It is presumed that Mr. Slack will aid in the defense of the suits filed in both Washington and Pittsburgh, where a similar suit was filed recently. The indicted firms who are fighting removal in Pittsburgh are the Pittsburgh Coal Co., the Henderson Coal Co., the Carnegie Coal Co. and the Chartiers Creek Coal Co. Hearing is set for April 18.

Panama R.R. Awards Contracts to C. G. Blake Co., Inc., and Pocahontas Fuel Co.

C. G. BLAKE CO., INC., of New York City has been awarded a contract to furnish the Panama Railroad Co. 220,000 tons of New River coal as the result of the opening of bids on March 31. The proposals of the company called for requirements estimated at 700,000 tons, and it was announced at the office of the railroad company on April 9 that the balance of the coal not furnished by the Blake company would be supplied by the Pocahontas Fuel Co.

The bid of the Blake company provided for furnishing 10,000 tons in May and June, and the balance of 200,000 tons in monthly installments, at $3.36 per gross ton. (See *Coal Age*, April 7, page 642.)

The proposal of the Pocahontas Fuel Co. provided for supplying 360,000 gross tons, navy standard, price to be named by the seller on the 25th of each month, but not to exceed $4.08 at any time. The company is said to have agreed, however, to make its price $3.36 per gross ton.

Coal Jobbers Not Opposed to Legislation Safeguarding Consumer, Says Cushing; Price Only Public Interest

THE position of the American Wholesale Coal Association on pending legislation is set forth by George H. Cushing, its managing director, in the following letter to Senator Frelinghuysen:

"You have been so deeply interested in coal, I presume—maybe without warrant—that you will feel disposed to express yourself about it in the forthcoming extraordinary session of Congress. It may interest you, therefore, to have the revised views of the wholesaling group. I have taken advantage of the breathing spell since March 4 to ascertain the sentiment of the members of this association. To that end, I have traveled most of the territory east of the Rockies.

"The great majority of our membership are disposed to say to you:

"(1) We will not resist any proper legislation designed solely to protect the legitimate interest of the public, provided that such legislation does not impair the efficiency of the industry or limit its competition.

"(2) If the government wants to gather information about coal, we will not only not resist any proper compilation but will co-operate gladly, provided this information is intended primarily for use by Congress, or the administrative branch of the government, and provided that any public use made of it shall be designed solely for the benefit of the consumer. While not wishing or intending to withhold any proper data, we doubt the wisdom of bringing all of that information to a focus in a federal bureau or commission, as that has a tendency to tempt such bureau or commission to try to make itself the leader or the regulator of the industry. Therefore, as a matter of good public policy, we probably will recommend that the gathering of all desired information be decentralized or so combined with data about other industries that the impulse to paternalism is smothered.

"(3) If the government shall decide that it wants to stabilize or try to stabilize the coal industry, we will no longer resist that effort, provided the Congress makes it clear that this is undertaken solely for the benefit of the consumer rather than as a benefit to the miner or the operator. Provided, however, that the government does not, in the matter of price, try to interfere between buyer and seller in the interest of either the buyer or the seller. We want nothing of dividend or price insurance from the government. We oppose any organized effort to interfere with prices — high or low — or with the dividend prospects. . . .

"(4) If the government should decide to try to stabilize the coal industry, and if, to carry the purpose of Congress into effect, it should become necessary for the members of the coal industry to work collectively, we should want the Congress to stipulate that collective action for that purpose only is not in violation of the Sherman anti-trust law.

(5) We believe that the only public interest in coal is in the price charged for coal. We believe that prices became objectionably high only because an abundant productive capacity in the mines could not result in an abundance of coal at the market because there was insufficient transportation. We believe that the insufficiency of transportation is the direct result of too rigid regulation. Therefore, we believe it would work away from, rather than toward, a solution of the coal problem—as the public views it—if we should try further regulation of the carriers in an effort to effect a regulation of coal."

Indictment Quashed, E. L. Humes Thanks P. C. Madeira For Helping Make Lever Law Effective for Good

INDICTMENTS returned against Madeira, Hill & Co.; Percy C. Madeira and Robert C. Hill; the Haddock Mining Co. and Henry Meeker were quashed in the U. S. District Court of New York on April 7, on motion of Chief George Winship Taylor of the criminal bureau of U. S. Attorney Francis F. Caffey's office. This action was taken on the report of Assistant U. S. District Attorney Maxwell S. Mattuck that the U. S. Supreme Court had declared the "profiteering section" of the Lever Act unconstitutional.

After the indictments had been quashed it was learned that E. Lowry Humes, special assistant to the Attorney General, had written a letter to Mr. Madeira thanking him for his assistance. The letter follows:

"At last the Lever Act is a thing of the past in so far as its criminal features are concerned. The decision of the Supreme Court was no surprise to me and it is probable that you have realized during all of the weeks during which we have been in contact on the anthracite coal situation that I have felt that this act would in the end be declared unconstitutional. It was for this reason that I was especially concerned about adopting some constructive method of securing a compliance with the spirit of the act rather than to undertake to pursue a destructive policy which in the end I felt would avail nothing. I have always been a firm believer in the proposition that a criminal statute should be so clear and plain that every man might know what the law was and what it prohibited.

"Of course, we must recognize that the Lever Act has served a wonderful purpose in this country by impressing upon the people the moral responsibility of the producers and distributors of necessities in a time of stress. It has been my experience in enforcing this law that most men were given to a realization of this responsibility and were ready to co-operate in making the spirit of the law effective for good. . . .

"I feel that the assistance and co-operation which you gave me in connection with the stabilization of the anthracite coal situation entitled you to better treatment than was accorded you by some of my contemporaries in the government service, whose desire for publicity was greater than their desire to serve the best interest of the public, and I keenly regret that you should have been annoyed and embarrassed as you have been. Of course, the decision of the Supreme Court has vindicated you legally, but I can realize that you still must feel the sting and embarrassment of the personal attacks which have been made upon you in the press.

"I feel under very great obligations to you for the assistance and co-operation which you gave me in the performance of my official duties as a special assistant to the Attorney General in connection with the operating end of the anthracite industry. I sincerely appreciate your most valuable assistance, as well as the assistance and co-operation which I received from many other gentlemen engaged in the anthracite industry, and especially the members of the Fair Practice Committee, of which you were the head. Your services and the service of that committee were invaluable and accomplished much good, and the decision of the Supreme Court has vindicated us in the method which we adopted for meeting the emergency situation which confronted the country and the anthracite industry I want to thank you personally for your assistance, co-operation and tireless effort in connection with my work, and I would be pleased to have you convey to the other gentlemen of the committee my thanks for their painstaking and valuable service in this connection."

Remove Inequalities in Interstate Freight Rates from Head of Lakes; Virtual Mileage Basis in Effect

THE decision of the Interstate Commerce Commission on case 6194, instituted by the Holmes & Hallowell Co., of Minneapolis, has brought about a rather general revision of interstate rates on coal from the Duluth and Superior docks. The decision practically puts all freight rates upon a mileage basis. The ruling lowers rates to many points in North and South Dakota and in portions of Minnesota. In the western half of Minnesota, however, rates are quite generally raised.

It is impossible to give a definite outline of the effect of the decision without going into detail upon almost every station affected. The net result has been to order that rates shall be based upon the shortest mileage basis possible by physical connection where not more than three railroads are affected. But until it is ascertained whether there is a track connection at a common point, it will not be possible to assume a combination of two or three short hauls to give any single town the advantage of the order.

Certain lines of the Great Northern running east and west across the northern part of Minnesota had maintained interstate rates, because their line looped into Wisconsin and back into Minnesota. The same applied to the Soo Line in the same general locality. On these lines the freight on coal was considerably above the intrastate rate of Minnesota, which was based upon a mileage rate. Crookston, near the western border of Minnesota, is a common point of the Great Northern and the Northern Pacific. The latter, having an all-Minnesota route, had to conform to the intrastate rate. The Great Northern met the competitive rate there as well as at Moorhead, on the boundary line. The Great Northern rates on non-competitive points east from these points, toward a kind of center point upon the line to Duluth, were graduated upward from a basing rate of the competitive station. This resulted in a "hump" of rates in the center, which produced a weird combination, the shorter-haul station by about ten miles having a rate in excess of the station next west—which had benefited by the contiguity to the competitive point—of as much as 60c. These inequalities are to be ironed out by the decision.

New Order Will Go Into Effect July 6

The order is to become effective July 6. It provides for a distance tariff on hard and soft coal, starting with 80c for each on thirty miles and under, and graduating by ten mile increases up to 400 miles, at which soft coal takes a $2.85 rate and hard coal $3. From that distance to 650 miles the rate advances in 25-mile units, with a 10c. advance for each section of twenty-five miles. The new rates do not affect the Twin Cities rates. Ashland and Washburn are placed on the same basis as Duluth and Superior for all roads. These cities are already on the same basis with some roads.

If the effective date of the change remains at July 6 it will add materially to the delays already threatened in getting dock coal forward, for no one will order coal into the interior, where the rate has been lowered, until the new rate is effective. Of course, those points which are to be increased doubtless will rush in their orders ahead of that date. There will be an effort made to induce an earlier change of the rates.

The rates which are instituted are the original Minnesota distance tariff rates plus a 33⅓ per cent increase granted last season by the Interstate Commerce Commission. The net result probably will be to extend in some degree the territory in which the dock interests can operate in competition with the all-rail trade. The latter will gain in sections where the revision set higher rates from the docks.

Some of the inequalities which are to be removed are the following: Watertown, S. D., 320 miles, interstate rate, $2.75 while the intrastate rate to Minnesota points of the same distance is $2; Airlie, Minn., intrastate rate for 328 miles, $2.20, and Flandrau, S.D., eight miles further, interstate rate, $2.85; Duluth to Grand Rapids, Minn., 111 miles, rate $1.10; Cohasset, five miles further, rate $1.30. In South Dakota, from Yankton to Janousek, five miles, the rate changes from $3.15 to $3.70 and from Janousek to Platte, forty-five miles, the increase is 70c.

C. P. White Retires from the Coal Industry

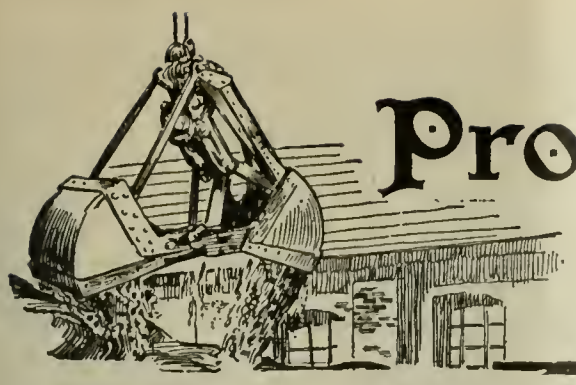
ANNOUNCEMENT is made of the resignation of C. P. White as vice-president of the Clarkson Coal & Dock Co. and general manager of the Clarkson Coal Mining Co. and his retirement from active interest in Cleveland coal circles. He has been connected with the coal industry for more than thirty years, having left his Ohio home in the '80s to become affiliated with dock interests at the Head-of-the-Lakes. Subsequently he became general manager of

C. P. WHITE
Retiring executive of Clarkson coal interests

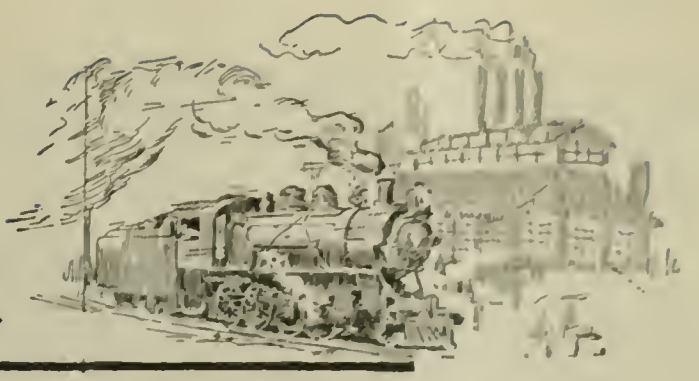
the Pittsburgh Coal Co., in charge of its business north and west of Chicago for a number of years; vice-president of the Carnegie Dock & Fuel Co., Minneapolis, in charge of dock interests in the Northwest for seven years; secretary of the Pittsburgh Vein Operators' Association of Ohio, for two years; manager of Lakes and Canadian distribution, U. S. Fuel Administration, Washington, D. C., during the war; vice-president, Clarkson Coal & Dock Co. and general manager, Clarkson Coal Mining Co., Cleveland, Ohio.

During his long association in the coal industry Mr. White has won the esteem of a host of friends and well-wishers. Before making further plans he expects to enjoy a few months' vacation on his farm in Virginia.

THE CITY COUNCIL OF BUFFALO, N. Y., has thrown out all the bids, ten in number, for furnishing 45,000 tons of waterworks coal, the lowest bid of $2.40 with a rail rate of $2.51 added being considered too much above the current price. Coal will be bought in open market and stocked.



Production and the Market



Weekly Review

INQUIRIES from abroad for spot prices on export coal and the prospect of a little business marked the beginning of the second week of the British strike. There is as yet no expectation that a demand for export will materialize out of the crisis in Great Britain. A settlement there is impending and no prospect of a coal shortage.

Having just completed a "coal year" with an output of 522,500,000 net tons of bituminous coal, the third largest in history, shippers are looking forward with hope and expectancy to the next twelve months' coal business. The outlook may be summed up in few words —production unprecedently low and still sinking, spot prices as low as they can or will go, buyers without confidence in the market and making no current purchases of coal, coal-mine labor idle but unions decidedly opposed to discussing even the possibility of wage reductions and finally the railroads fast getting in such shape with reduced man power and such an increasing number of coal cars in bad order that they will be able with difficulty to take care of any increase in coal shipments later on. The foregoing facts taken together point toward a sharp rise in soft coal prices next autumn. It is pointed out, for instance, that in the Middle West buying is at such a low ebb that by autumn, if no improvement takes place in the meantime, there is certain to be a car shortage with no greater consumption than at present.

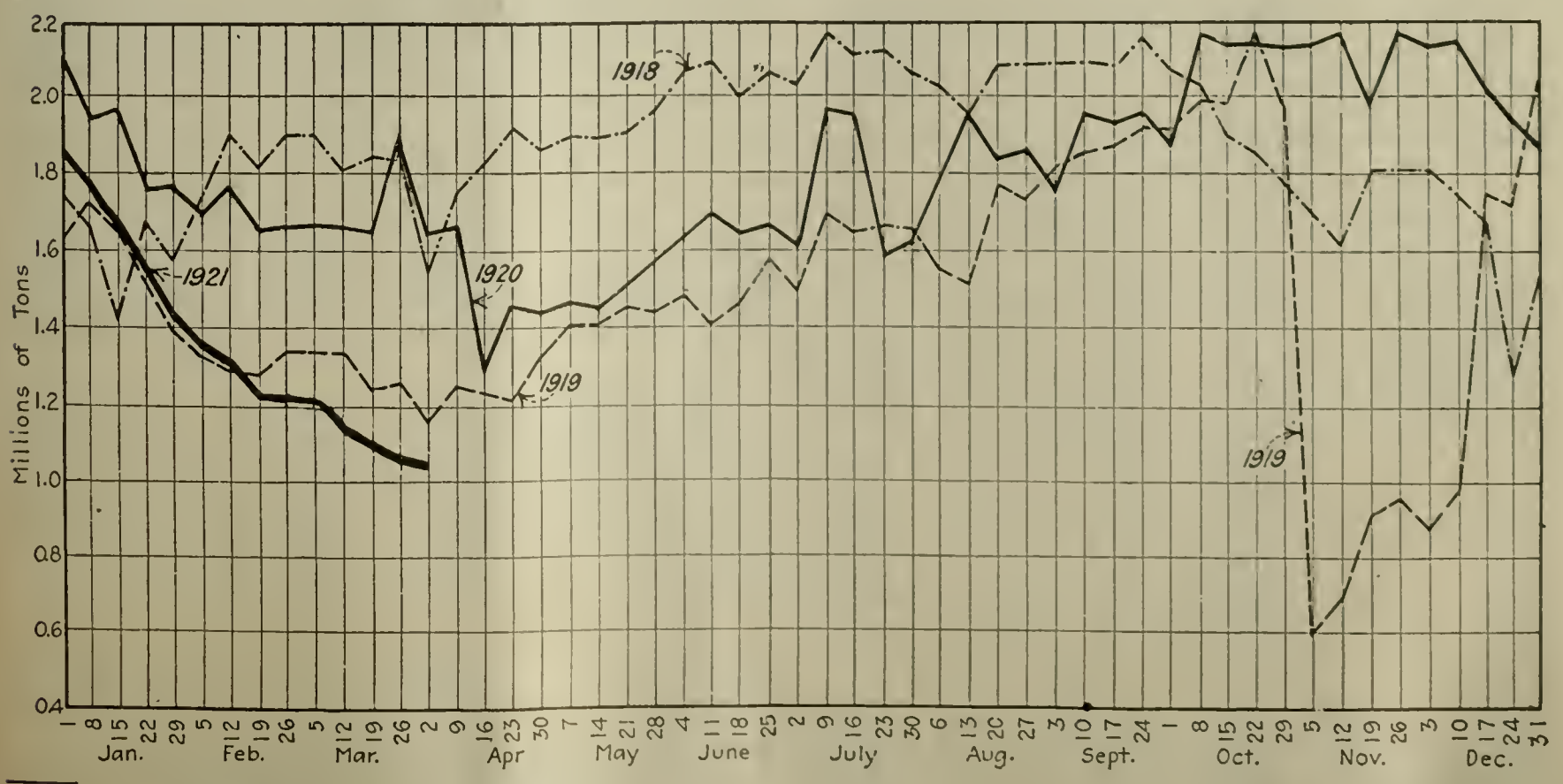
Prices are practically stationary, *Coal Age* index of spot prices of soft coal for this week being 102, a gain of one point in one week. There is absolutely no profit in these prices, equivalent as they are to a price level of two years ago and with labor costs up 40 per cent in the same period.

Lack of Confidence Delays Buying

As the weeks go by it is being realized that what is holding back buying of coal and other basic commodities is lack of confidence—that prices are not going still lower. Scattering reductions in wages of coal-mine labor are being reported from non-union fields, but there is no indication that union labor will suffer a reduction and it is certain that the larger non-union fields, as the Pocahontas, will not initiate such a move. Inasmuch as contracts can be had with provision for wage reductions, it is not apparent why buyers should hold off entering into arrangements for tonnage in expectation of lower prices.

Prices, in fact, do not seem to be the stumbling block on commercial coal contracts, as they are proving to

Daily Average Production of Bituminous Coal*

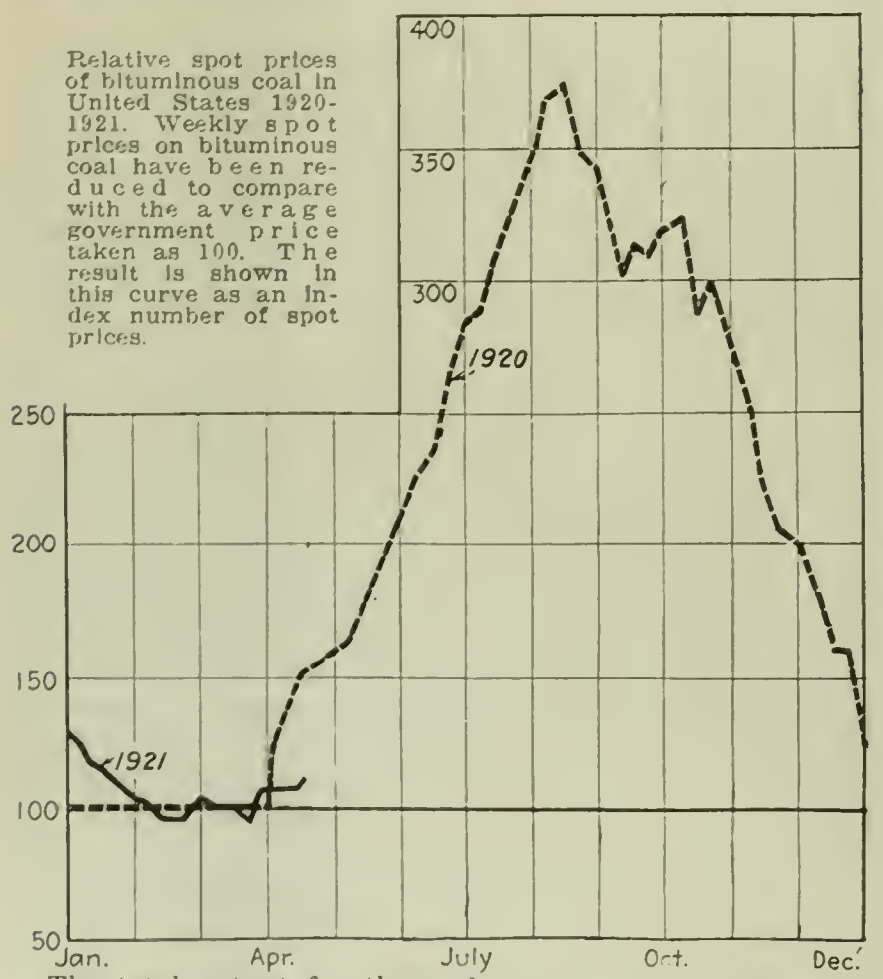


*From weekly report of Geological Survey.

be on future railroad fuel business, for some small business is reported closed in the Central and Middle West covering deliveries as late as next autumn with price open.

BITUMINOUS

As the coal year came to an end production continued to decline. According to the Geological Survey, the output for the week ended April 2 was 5,797,000 net tons, or a decrease of 670,000 tons from the output for the week preceding. Idleness on Easter Monday and Mitchell Day, April 1, was a factor that accounted for the loss of one and one-half days of production.



Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.

The total output for the coal year 1920-21 is estimated at 522,458,000 net tons. Comparative tonnage for the preceding years follows:

1913–14	482,682,000	1917–18	548,715,000
1914–15	399,898,000	1918–19	552,041,000
1915–16	479,929,000	1919–20	486,899,000
1916–17	504,1[illegible]4,000	1920–21	522,458,000

Coal Age index of spot prices for the week ended April 12 increased one point and now stands at 102. Spot demand has increased very little, but the observance of spring price schedules made by operators effective April 1 has caused this advance. Talk of possible railroad and miners' wage reductions and lowered freight rates, coupled with the great uncertainty of what the future may hold, has all combined to make the buyer feel inclined to hold off in the hope of a further lowering of coal prices.

Lakes business is slow. Practically all available bottoms at the Lower Lakes docks are now under load awaiting the clearing of ice at the "Soo." There will be no early movement of ore, consequently after the winter fleet sails it may be some time before any additional vessels will be available for loading. Reduction of freight rates for coal off the docks of Duluth and Superior, effective July 6, will have a tendency to delay any early inland buying, which in turn will reflect on the demand at the mines.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date
March 19	6,512,000	90,344,000	10,348,000	115,570,000
Daily average	1,085,000	1,362,000	1,725,000	1,743,000
March 26*a*	6,467,000	96,811,000	11,015,000	126,585,000
Daily average	1,078,000	1,339,000	1,836,000	1,751,000
April 2*b*	5,797,000	102,608,000	9,715,000	136,300,000
Daily average*c*	1,054,000	1,310,000	1,763,000	1,741,000

(*a*) Less 2 days' production during first week in January to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date *a*
March 19	1,687,000	20,304,000	1,601,000	18,688,000
March 26	1,564,000	21,868,000	1,921,000	20,609,000
April 2	1,157,000	23,025,000	1,314,000	21,923,000

(*a*) Less 2 days' production during the first week in January to equalize number of days covered for the two years.

BEEHIVE COKE

Week Ended Apr. 2 1921 *a*	Week Ended Mar. 26 1921 *b*	Week Ended Apr. 3 1920	1921 to Date	1920 *c* to Date
93,000	99,000	476,000	2,567,000	5,951,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

	Market Quoted	Mar 1920	Mar. 15 1921	Apr 5 1921	Apr. 12 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$3.50	$3.50	*$3.35*
Pocahontas lump	Columbus	2.60	5.50	5.50	5.50
Pocahontas mine run	Chicago	2.35	3.65	4.15	*3.25@ 4.50*
Pocahontas lump	Chicago	2.60	5.00	5.15	*4.50@ 5.50*
•Smokeless mine run	Boston	....	5.65	5.85	**5.75@ 6.25**
Clearfield mine run	Boston	2.95	2.50	2.45	*2.00@ 2.75*
Somerset mine run	Boston	2.95	3.00	3.05	2.35@ 3.75
Pool 1	New York	2.95	3.25	3.40	3.25@ 3.50
Pool 1	Philadelphia	2.95	3.50	3.50	....
Pool 1	Baltimore	2.95	3.00	3.15	3.15
Pool 9	New York	2.95	3.05	2.80	2.65@ 3.00
Pool 9	Philadelphia	2.95	3.25	3.05	**3.25**
Pool 9	Baltimore	2.95	2.85	2.90	**3.00**
Pool 10	New York	2.95	2.45	2.45	*2.25@ 2.50*
Pool 10	Philadelphia	2.95	2.50	2.65	**2.75**
Pool 10	Baltimore	2.95	2.50	....	2.50
Pool 11	New York	2.95	2.20	2.15	2.00@ 2.25
Pool 11	Philadelphia	2.95	2.30	2.00	**2.00@ 2.25**
Pool 11	Baltimore	2.95	2.30	....	2.25
Pool 71	New York	2.95	2.75	3.15	3.00@ 3.25
Pool 71	Philadelphia	2.95	2.75	3.00	....
Pool 71	Baltimore	2.95	2.65	....	3.00
High-Volatile, Eastern					
Pool 34	New York	2.50	2.10	2.00	*1.80@ 1.90*
Pool 34	Philadelphia	2.50	2.15	2.15	*1.75@ 2.00*
Pool 34	Baltimore	2.50	2.00	2.05	**2.00@ 2.25**
Pittsburgh mine run	Pittsburgh	2.35	2.75	2.25	2.00@ 2.50
Pittsburgh sc'd gas	Pittsburgh	2.35	2.85	2.85	2.75@ 3.00
Kanawha mine run	Columbus	2.70	2.25	2.35	*2.25*
Kanawha lump	Columbus	$2.95	$3.50	$3.35	**$3.50**
Hocking mine run	Columbus	2.50	2.25	2.25	2.25
Hocking lump	Columbus	2.75	3.50	3.25	3.25
Pitts. No. 8 mine run	Cleveland	2.35	2.15	2.25	2.00@ 2.50
Pitts. No. 8 lump	Cleveland	2.60	3.50	3.45	**3.25@ 3.75**
Midwest					
Franklin, Ill., mine run	Chicago	2.35	2.85	3.40	3.25@ 3.50
Franklin, Ill., lump	Chicago	2.55	3.40	3.55	3.45@ 3.65
Central Ill., mine run	Chicago	2.35	2.00	2.25	2.00@ 2.50
Central Ill., lump	Chicago	2.55	2.50	2.85	**2.75@ 3.25**
Ind. 4th Vein mine run	Chicago	2.35	2.65	2.65	2.25@ 3.00
Ind. 4th Vein lump	Chicago	2.55	3.15	3.15	2.75@ 3.50
Ind. 5th Vein mine run	Chicago	2.35	2.50	2.50	**2.25@ 3.00**
Ind. 5th Vein lump	Chicago	2.55	2.75	2.75	**2.75@ 3.25**
Standard mine run	St. Louis	2.35	1.90	1.95	*1.85@ 2.00*
Standard lump	St. Louis	2.55	2.60	2.40	*2.25*
West Ky. mine run	Louisville	2.35	2.45	2.40	2.00@ 2.75
West Ky. lump	Louisville	2.60	3.15	3.05	*2.90*
South and Southwest					
Big Seam mine run	Birmingham	2.45	2.95	2.85	**2.90@ 3.25**
Big Seam lump	Birmingham	2.75	3.75	3.15	**3.25@ 4.00**
S.E. Ky. mine run	Louisville	3.00	2.75	2.70	*2.50@ 2.75*
S.E. Ky. lump	Louisville	3.25	3.75	3.55	**3.50@ 3.75**
Kansas mine run	Kansas City	3.50	4.50	4.40	4.25@ 4.50
Kansas lump	Kansas City	4.00	5.50	5.50	*5.00*

* Gross tons, f.o.b. vessel, Hampton Roads. Quotations on Pocahontas mine run, Boston market, heretofore quoted included both Pocahontas and New River and will henceforth be quoted as West Virginia "Smokeless."

† Advance over previous week shown in heavy type, declines in *italics*.

The British strike has had no effect on the American market so far as actual orders placed are concerned. Dumpings at Hampton Roads for the first week in April were 173,965 gross tons, considerably under the weekly average for March.

Shipments coastwise to New England are diminishing as demand practically does not exist. Recent cargoes on consignment have resulted in disastrous sales. The Panama R.R. bids show that the Hampton Roads market has not improved, and producers are extremely careful to make no shipment unless there is an order in hand to cover. All-rail shipments to New England improved somewhat during the week ended April 2, when 2,755 cars were forwarded through the five rail gateways.

ANTHRACITE

Production dropped to 1,157,000 net tons during the week ended April 2, as against 1,564,000 tons the week preceding. The decline reflects in part the observance of holidays, although "no market" losses are growing rapidly. The total output for the coal year is estimated at 89,950,000 net tons. Cumulative production for the calendar year to date stands at 23,025,000 tons, an increase over 1920.

Retail yards are well stocked, taking the country as a whole, but the public is not buying in a manner to cause orders to be placed with producers. Retail prices have been slashed in an effort to invite business, but the consumer, who is just becoming accustomed to the reduction idea after many months of advancing prices, evidently likes the taste and is in favor of more—at any rate, he is not placing orders as in former seasons.

Receipts of anthracite in New England in February, 1921, were 1,114,371 net tons, of which 350,267 tons came in by water and 764,104 tons by rail. In the same month a total of 1,264,607 net tons of bituminous coal was received, 543,848 tons by tide and 720,759 by rail. The total receipts of anthracite in New England in the eleven months of the coal year, April 1, 1920, to Feb. 28, 1921, were 11,046,032 net tons, and of bituminous 20,807,111 net tons, according to the Massachusetts Fuel Administration.

COKE

Declining production of beehive coke was unchecked during the week ended April 2, and there is yet no definite indication that the bottom of the depression has been touched. Total production for the week ended April 2 was 93,000 tons, according to the Geological Survey—less than one-fifth of that in the corresponding week of 1920. At two or three of the Connellsville coke works the men have refused to work at the reduced independent scale recently announced, although this is not affecting the region's production. Prices are now low enough to stimulate consumption if they were a governing factor, but the consumers simply do not want coke. Connellsville spot quotations are $3.75@$4 for furnace and $5@$5.50 for foundry, the contract market being nominally quotable at the same level.

Reports From the Market Centers

New England

BOSTON

Receipts Steadily Diminish—Few Scattering Contracts Closed — Operators Driving Hard for Spot Business — Domestic Anthracite Comes Forward — Market Quiet.

Bituminous—Notwithstanding talk of possible difficulties at home and overseas there continues a steady decrease in receipts both all-rail and by water. The outlook is too uncertain to warrant any resumption of contracts on any basis that would be mutually satisfactory to operators and consumers. Reserves of 75 per cent of the steam-users are much too large to admit of spot shipments and the wide margin that still exists between spot quotations and those of contract creates a deadlock not likely to be broken during April.

Dealers find it extremely difficult to move steam coal of any grade. In Boston, because of local differences among distributors, the price has again been reduced, this time a full dollar per ton making the new price $9.75, delivered. If $3 be allowed for overhead, this new figure scales down to $2 per net ton at the mines for Pocahontas and New River.

On the smokeless coals a few scattering contracts have been closed, in all amounting possibly to 100,000 tons, but we have yet to hear of any tonnage actually closed on any basis higher than $3.

We hear of no distress coal now on the market, at least at this end. In view of the present utter lack of demand he would be a hardy merchant who would dare send coal here on consignment. Certain municipal requirements that conveniently absorbed market cargoes a few weeks ago have now been arranged for, and there is practically no opening for steam coal in any direction at this writing.

The experience of the Panama Railroad Co. makes it clear that the Hampton Roads market has changed in no important particular. But one of the several tenders was on the basis of $3 per net ton at the mines, and that for only 220,000 tons, but after the higher bids were rejected the buyer found little difficulty in covering the balance of the 700,000 tons at the same basis.

Pocahontas and New River, f.o.b. Boston and Providence, have sold down to $8.25 per gross ton. Other quotations are shown in the Weekly Review.

Anthracite—While domestic sizes are coming forward in fair volume the bulk of the business is for stove size. Egg and chestnut were shipped last season in such undue proportion that considerable stocks are being carried over. Pea can hardly be accepted.

Retail demand continues extremely quiet. There have been so many news items with respect to reductions the past four weeks that the general public feels strongly that a reduction of only a dollar from last season's peak price, as in Boston, is by no means enough. Should the buyers' strike continue through all the spring months, however, there would undoubtedly follow grave consequences the latter part of the year.

Tidewater—East

NEW YORK

Anthracite Market Shows Improvement — Steam Coals Scarcer — Bituminous Situation Better—Contract Prices Practically Withdrawn.

Anthracite—Conditions show an improvement. Buying is steadier and consumers have begun to lay in their winter fuel. All branches of the trade have announced the new spring and summer prices and while the producers have not so far let it be known, it is expected their prices will advance 10c. per ton on domestic coals on May 1.

Dealers are encouraged by the heavy receipt of orders since April 1. Appeals have been sent out by City Department Heads and the dealers, urging early buying to avoid the rush next fall.

The situation has been steadier with the closing down of many mines, mostly independent, because of the dullness of the past few weeks. This had a tendency to maintain prices for independent domestic at or slightly above company prices. Independent egg is being quoted at $7.35, and stove and chestnut at $7.75.

Pea coal is in large supply and hard to move. Quotations for independent stocks range $4.75@$5. The buckwheats are not so much in evidence because of the closing down of many independent mines. There is a strong market for rice and barley, the latter size being quoted by independent shippers at 10c. above the company circular. Buckwheat and rice are being held stiff at $3.50 and $2.50 respectively.

There has been a gradual cleaning up of loaded boats of buckwheat and rice and the latter part of the week quota-

tions ranged around $5.75 alongside for buckwheat and $5 for rice.

Current quotations for company coals, per gross ton, at mine f.o.b. Tidewater, lower ports, are as follows:

	Mine	Tidewater
Broken	$7.10@$7.75	$ 9.71@$10.36
Egg	7.10@ 7.75	9.71@ 10.36
Stove	7.35@ 8.10	9.96@ 10.71
Chestnut	7.40@ 8.10	10.01@ 10.71
Pea	5.65@ 6.00	8.12@ 8.47
Buckwheat No. 1	3.50	5.97
Rice	2.50	4.97
Barley	1.50	3.97

Bituminous—There is a better feeling in this market. Quotations are a trifle steadier and there is not much surplus coal to be had. The strike of the English miners has resulted in many inquiries but few if any orders have been reported.

The ending of contracts on April 1 has had the effect of closing down some mines that had been kept open by contracts. However, the trade believes the worst is over.

The making of contracts for the new year has been a disappointment to many. Some shippers estimate that only about 5 per cent of the usual number have been closed. Because of the present market conditions, contract quotations have been practically withdrawn for the present, producers depending entirely upon spot sales. Liners are providing against a possible shortage of British fuel by taking on a double supply of bunker coal here.

There is not much of the higher grades on the local docks. The railroads are buying considerable coal in the open market at low prices.

Quotations for the various pools, f.o.b. this harbor ranged about as follows: Pool 1, $6.15@$6.30; Pool 9, $6.10 @$6.25; Pool 10, $6@$6.10; Pool 71, $6.15@$6.30; Pool 11, $5.50@$5.75; Pool 18, $4.50@$4.75. Mine quotations are reported in the Weekly Review.

PHILADELPHIA

Anthracite Shows Temporary Briskness — Consumer Expects Further Reduction—Bituminous Shows Slight Improvement—Contracts Quiet, But Firm Export Inquiries Only.

Anthracite—For over a week now the retail trade has had in effect the spring prices, which represent about $1.50 reduction. While there was some quickening of the trade, it must be admitted that in the main the response has been disappointing.

Retailers are generally keeping to prices of $13.50, per gross ton, for egg, $13.75 for stove and nut, and $10.50 for pea. There is some price-cutting, and in one section in particular where the highest prices were charged last winter, one dealer is now selling egg at $12.75, stove and nut at $13, and pea, $10.50.

The trade is using its best efforts to get the public to take in coal now, assuring them that prices are now at the lowest level, but the public seems to feel that further reductions must be in order.

Operators report their mines working full-time and profess to believe that they will be able to keep going for some time at this rate. This condition is true more of those concerns who have come close to company figures in their price schedule.

It is in the steam sizes that the greatest amount of trouble is being experienced. The companies are storing heavily, as the current demand is far below production. The independents are often satisfied if they can make sales of their surplus buckwheat at $3, and we have heard it hinted that rice on some occasions has touched below $2.

The company prices per gross ton mines for line shipment and f.o.b. Port Richmond for Tide are as follows:

	Line	Tide
Broken	$7.25	$ 9.95
Egg	7.25	9.95
Stove	7.55	10.20
Nut	7.55	10.20
Pea	5.90	8.30
Buckwheat	3.50	6.00
Rice	2.50	5.00
Boiler	2.00	4.40
Barley	1.50	3.90

Bituminous—There is just the slightest shade of change for the better indicated. Whether this is due to real improvement or some moral effect of the British trouble is difficult to say, probably a little of both. By some the claim is made that with the further curtailment of mining what little demand there is has a tendency to stimulate prices for the small available tonnage. Spot prices are quoted in the Weekly Review. There is also a slight tendency on the part of the consumer to take in more coal.

The contract situation is unchanged. Concerns with tonnage to offer are growing more firm in their decision to hold to their prices, as they have found the consumer entirely unwilling to enter into contract. It seems to be the intention of the buyer to go along through the summer at least on the basis of market prices.

Some interests profess to see some stiffening in the export trade due to British labor troubles, yet when this is carefully studied it can easily be seen that it would take a period of months to affect the local market. The fact remains that millions of tons could be assembled at the seaboard for foreign delivery without affecting the domestic situation.

BUFFALO

No New Business Developing as Contracts Expire—Spot Market Inactive—Anthracite Demand Dulled by Price Question.

Bituminous—Production outlook for the next thirty days is not promising. No business revival is taking place and all members of the trade are sitting back and waiting for the dull period to work out. Next to nothing has been done as to the making of new contracts. The matter of price appears to be the main deterrent as consumers would sign up at $3 a ton, at which price producers say they can and will not mine coal for the next twelve months. About $3.50 appears to be rock-bottom from the producers' standpoint.

Mines are now idle that practically never shut down before. It is generally believed that there will be a revival in demand in May, although consumers whose contracts have now expired have been buying much coal on the outside right along, so they are not short as they would be otherwise, for their contracts were easily $1 over the current price and they would not stock up from that source.

Prices are not very uniform, a fair average being $3.50 for Youghiogheny gas lump, $3 for Pittsburgh and No. 8 lump, $2.60 for all mine run and $2 for slack.

Anthracite—As mild weather has apparently come to stay, the demand is extremely light, and all movement will hereafter be for next winter's use. The public has a notion, apparently unfounded, that prices are likely to be reduced again and are not buying for future needs. Some independent coals are still bringing a slight premium.

Loading for Lakes is still brisk and will continue as long as the vessel tonnage lasts. Apparently there will not be many more cargoes loaded until the arrival of the down fleet, as the soft-coal ports want all available bottoms.

Coke—Of the local byproduct plants, one is shut down and the other is running only one of its three batteries of ovens. Only occasional orders are placed, at bottom prices, $5.25@$6 for 72-hour Connellsville foundry, $4.25@ $4.75 for 48-hour furnace, $3.75 for stock and $5.50@$6 for domestic sizes.

HAMPTON ROADS

Dumpings Decline — Prices Stiffen — British Strike Fails to Stimulate Trade.

Tide accumulations fell off during the first week of April. The British strike has had no effect on the tonnage moved, although prices have advanced—Pools 1 and 2 are now around $6.50, and other pools are $5.25@$5.50. Business is extremely dull, although the trade believes the new steamship contracts, May 1, will stimulate business, with the reduction of wages by 20 per cent and consequent reduction in operating costs.

Figures for the first week in April at the coal piers are as follows:

C. & O. piers, Newport News—	
Cars on hand	2,621
Tons on hand	130,550
Cars dumped	1,222
Tons dumped	61,569
Tonnage waiting	1,725
Virginian Ry. piers, Sewalls Point—	
Cars on hand	1,321
Tons on hand	66,050
Car dumped	779
Tons dumped	38,968
Tonnage waiting	28,700
Cars on hand outside pool	245
N. & W. piers, Lamberts Point—	
Cars on hand	1,962
Tons on hand	87,243
Cars dumped	1,367
Tons dumped	73,428
Tonnage waiting	3,350

BALTIMORE

British Strike Brings Many Inquiries—Prices Are Stiffening and Market Is Sensitive — Anthracite Market Is Dull.

Bituminous—The British strike has stiffened the American soft coal situation. For ten days a stream of inquiries has been coming in. And the end is apparently not yet, for the inquiry line is increasing rather than diminishing. Whereas it first came

only from southern Europe, it now runs from South America to the Scandinavian countries.

The home market is still slow, although prices on better coals are responding to the "feeling in the air." The sensitive nature of the market is shown in the fact that good coals on fairly large lots are openly seeking a market at prices much below those offered when a purchaser offers to take a large amount and for quick delivery to Tide. The undoubted tendency is to push coals as much as possible on both spot and contract business on pretty low figures in the home market but to hold out for a good share on foreign business offering or expected shortly.

Prices are shown in the Weekly Review and are slightly stiffer. Very little Pool 18 is in the market, as there is no true demand for this. There is little gas lump offering, as the lack of demand for slack is making the operations force out mine run. Export movement at present continues light.

Anthracite—Urging customers to buy at once as this is the low purchase period of the year, and being received by said purchasers in many cases with a feeling of uncertainty, is the experience of the hard coal trade here. The present retail figures are one dollar off those of the past winter, but it is hard to convince many consumers that another cut is not in prospect. They will probably purchase coal slowly, in the hope that another cut is due.

Consumers this season are again being asked to sign order blanks, on which they agree to accept the coal ordered at the convenience of the dealer and at prices prevailing at time of delivery. The Baltimore Coal Exchange has backed the public up in the complaint that much of the coal received here in the past two years has not been properly prepared, and the various producers have been addressed a communication in which it is asked that the large proportion of impurities be reduced, and that the mixing of smaller sized coal with ordered sizes be discontinued.

Northwest

MILWAUKEE

Dealers Predict May Cut in Anthracite —Coke Tumbles—First Coal Cargo Arrives.

Very little is doing and while prices are held steadily, there is considerable speculation as to the future of the market in this respect. A leading dealer is responsible for the statement that a reduction of 50c. per ton on anthracite will become effective May 1, and that an additional reduction will be made upon the arrival of substantial Lakes receipts probably late in April. After the basic price for hard coal has been determined, the price will be increased 10c. each month as has been customary for years past.

Solvay coke has been reduced 50c. Large sizes and nut are now sold at $14 and the smaller sizes at $11. Gas coke was let down $1. Nut is now $12.50 and small nut $11. The coke piles are decreasing very slowly.

The first cargo for the season arrived on April 4, and consisted of 10,000 tons of soft coal screenings. Wages of 1,500 men employed on the coal docks at Superior and Duluth will be reduced from 20 to 30 per cent beginning May 1. Fifteen companies are concerned in the movement. Milwaukee dock companies have taken no steps in this direction as yet.

MINNEAPOLIS

No Market Activity, Despite Warning of Seasonal Rush—Northwest Is Not Absorbing Sufficient Tonnage to Justify Early Stocking.

The new season in the coal trade arrived with nothing more stirring than the customary argument from Judge McGee that the Northwest should buy coal early to guard against a possible fall rush. However, this has been fairly well discounted by the local jobbers.

Coal men are confident of their ability to handle the season's business as well as they did in all the years preceding the period of war control. Lately they were handicapped by apron-stringed methods of supervision and irresponsible direction, causing delay and trouble for which the trade was blamed.

But they cannot see any outlet for early bought coal, although they do see additional expense to carry it through several months until the demand does set in. The agitation for a reduction of freight rates will cause retailers to hold back on their orders in the hope of this being accomplished. Retailers would hardly buy coal even with a reduction in freight because they know their own chances of moving it at an early date are not good. All hands propose to wait until they can see a place to sell before they undertake to stock very much coal at any prices which are likely to be quoted them.

It is not secret that dealers and consumers regard the cost of coal laid down in the Northwest as too high and they hope for relief, although it is not plain from whence their relief is to come. Certain it is that there is no snap to the buying demand as the new season opens. All signs point to an extremely sluggish movement of coal until the season has progressed for several weeks.

DULUTH

Sales Are Slow — Docks Operate Half-Time — Wage Reductions Effective April 15.

With the clearing of the harbor, it is now possible for boats to move to any of the docks. Boats will move just as soon as ice at the "Soo" is sufficiently broken to allow their passage. No improvement is shown in coal sales and all of the docks are still working half-time.

The Coal Dock Owners have presented a new wage scale to employees. All operators, etc. are to be reduced 10c., and labor is reduced 15c. per hour. Eight, nine or ten hours is to constitute a day's work and no overtime will be paid until ten hours work has been performed in any one day. The employees have until April 15 to accept or reject the new schedule.

Inland West

CHICAGO

Business Very Unsatisfactory — Few Contracts Closed — Industries Using Reserves.

Some of the railroads are showing signs of a little worry over the coal situation but they are feeling the lack of ready money so strongly that they are unable to step into the market and purchase coal. Besides, the average operator does not feel like selling a large tonnage to a railroad at a very close price and then receiving no payment for the coal until six months hence. Coal stocks are being reduced steadily and no steps are being taken toward replenishing the supply in spite of the fact that the air is filled with rumors of railroad strikes and other foreseen and unforeseen difficulties.

To give an idea of market conditions, we talked to the sales manager of a large coal concern the other day, and this gentleman said that he had a man traveling in South Dakota, Minnesota and Iowa, who had been out three weeks and sold but one car of coal. Another concern reports that their best salesman, who under normal conditions was good for 5 or 10 cars a day, has been two weeks in northern Illinois without selling a pound of coal.

Some contracts have been closed on steam coals during the past week or so, but these call for shipments to start later on rather than immediately We know of one case where a large tonnage of Indiana steam coal was contracted at $2.65 per ton for 2-in. screenings. Another contract on Indiana fifth vein coal went at $2.40 for screenings. Steel companies are running on a very unsatisfactory basis and are subsisting almost entirely on their storage coals. The packers are holding down their contracts to a minimum, and purchasing considerable coal on the open market.

ST. LOUIS

Spring Conditions Prevail—No Domestic Moving — Steam Demand Fairly Good.

Spring weather has made itself felt to a marked degree in the movement of domestic tonnage. The campaign, opened last week by large newspaper advertisements suggesting the advisability of storing coal early on the part of consumers has not as yet made itself felt.

Anthracite received so far is not up to grade and there is likely to be a lot of rejections. Some so-called anthracite from Virginia is arriving and is being rejected on account of the poor quality. There is no activity in smoke-

less, and the price of Arkansas coals almost makes them prohibitive.

Steam business is slowing up for some unaccountable reason. Screenings, which were in demand a week ago, are somewhat easy and prices are breaking. This is in the face of the fact that many additional mines are shutting down and not as much tonnage is being offered. A little steam coal is moving to Chicago and some to Omaha, but other than that there is nothing doing.

CLEVELAND

Slack Market Firmer — Retail Prices Cut—Production Slumps and Outlook Is Gloomy—Lakes Movement Delayed.

Bituminous—Numerous contracts are expiring and consumers are filling their restricted needs by hand-to-mouth purchasing. Each week is bringing out a fair volume of inquiries on contracts, but consumers apparently feel that they have nothing to lose by holding off. In addition to the feeling that lower prices may prevail later in the year, industrial users are uncertain about their exact needs in view of the trade uncertainty. Thus far, the only important increase in manufacturing being noted is in the automobile industry. Additional shops are closing down, however, counteracting any gains that have been made.

The immediate industrial outlook in this district is far from encouraging for the coal trade.

Receipts of bituminous coal during the week ended April 2 were the lightest in many weeks, amounting to 599 cars steam and 208 retail; total, 807 cars, as compared with 928 cars the previous week.

Spot No. 8 slack is now quoted at $2.25@$2.50, compared with as low as $1.85 a few weeks ago.

Anthracite and Pocahontas—Further lowering of anthracite prices has featured the market in the last week. Pocahontas prices have not been moved downward but readjustments are expected before the month ends. The market continues painfully dull and stocks of dealers are large.

Lake—Most of the steamers at this end have been loaded. Carrying charges on coal have not been fixed and it is not believed that this matter will be closed until action is taken on ore rates. Prices for bunker coal will be announced soon. The ore movement is expected to be extremely slow in starting and the coal movement will be correspondingly delayed.

Retail prices of coal delivered follow:

Anthracite—Egg and grate, $13.75; chestnut, $13.90; stove, $13.95.

Pocahontas—Shoveled lump, $11.40; mine run, $9.50.

Domestic Bituminous — West Virginia splint, $10; Pittsburgh No. 8, $8.45; cannel lump, $12.15.

Steam Coal—No. 6 and No. 8 slack, $5.75; No. 6 and No. 8 mine run, $6; No. 8 3-in. lump, $6.

DETROIT

Dullness, with Very Narrow Buying Demand Continues—No Contract Interest —Over-Supply of Hard Coal.

Bituminous—Sales of bituminous are of small volume, and it is extremely difficult to interest buyers of either steam or domestic. The most favorable feature of the unsatisfactory market is the circumstance that the mines are sending on very little coal. Consequently, the market is not struggling with a burden of over-supply.

Very little interest has developed in the matter of contracts. Buyers are indifferent, while some of them express a belief that they will be able to supply their requirements in the open market at prices as favorable as would be named in contract arrangements. Ohio lump is $3.50@$3.75, mine run, $2.50@$2.60, nut and slack $2@$2.25. Four-inch lump from Kentucky or West Virginia is $4, 2-in. lump, $3.75, egg is $3.50, mine run, $2.75, and slack is $2.25. Smokeless lump is $5.50@$6, mine run $3.75, and slack $2.25. The foregoing prices serve in contract negotiations. Some sales of spot coal are at a lower level.

Anthracite—With the arrival of summer temperatures householders have withdrawn from the market. Retail yards appear rather well supplied. Dealers are apparently disinclined to take losses on this stock that might result from selling on the lower price basis, which most of the producers made effective April 1.

CINCINNATI

Contract Market Inactive—Steam Sizes Weaken—Retail Prices Are Steady.

The British strike has not proved any lever toward hurrying up those who are dallying in the making of their coal contracts. One effect of absence of contract business has been to cheapen the price of nut and slack. There has been no great drop, but the market is easier for free-coal offerings. The price is $1.75@$2 for southern Kentucky and West Virginia tonnage, and while this is little changed from the values named last week, the inclination is downward. This seems to be traceable to the expiration of steam contracts, the takers going into the open market for their coal, the tonnage released adding to the burden of a top-heavy market.

Mine run continues to be in excess of requirements and hard to dispose of. The spot price is around $2@$2.25. Block and lump have increased a little. Last week where the usual quotation was $3.25@$3.50 it is now $3.50@$3.75.

Quotations for future business are quite out of line with the immediate market. High-grade West Virginia products are being quoted $2.65 for steam sizes, $3 for mine run and $4 for lump. The first of the month saw no change in the retail price situation.

COLUMBUS

Little Contracting Reported—Better Tone to Market—Retail Prices Weaken

While showing a better tone, the coal trade is still dull and inactive. Buying on the part of retailers as well as steam users is restricted to present needs only and there is no disposition to take a chance in buying for the future. It is strictly a buyer's market, with considerable cheap coal offering at all times, which has the effect of keeping down quotations. But the best feature is the fact that the quantity of track coal is now diminishing.

The Lakes trade is now one of the important features. Reports show that loading of vessels at the Lower Lakes ports is still going on and this will take some tonnage for several weeks to come. With ice out of the lower passages several boats have sailed. Other cargoes are expected to move soon. Very few Lakes contracts have been closed. Dock owners with operating connections are the principal shippers so far.

Retail prices have declined again in sympathy with the weakness at the mines. Hocking lump is now $6.75, mine run $5@$5.25. West Virginia splints are $7.50 for lump and $6 for mine run. Pocahontas lump is $9.50.

Railroads are asking for bids. Some few railroad contracts have been closed but others are still going begging. Public utilities are the best customers at this time and are taking all of the available screenings. As a result of the reduced production of lump, screenings are stronger all along the line. The usual mine price ranges $1.85 @$2.15.

South

LOUISVILLE

Some Contracts Being Closed—Retailers Reduce Prices for April—Spot Prices Firm.

It is reported that the L. & N. has just closed annual contracts at figures around $3 and slightly higher for eastern Kentucky mine run, of six-inch and upward size; $2.75 western Kentucky; $3.30 and up on Alabama. Tonnage contracts have been reduced somewhat in the Hazard, Alabama and western Kentucky sections, but on the Cumberland Valley division in southeastern Kentucky tonnage contracts are slightly higher, due to existing transportation facilities. Some Lakes contracts are reported to have been made, and others are in the making.

Retailers have reduced quotations for April stocking, the majority of houses quoting western Kentucky lump at $7; nut, $6.50; mine run, $6.25; nut and slack, $5.50; eastern Kentucky, lump, $8.25; Straight Creek, $8.50@$8.75; mine run, $7.50; screenings, $6.50; anthracite, $17; coke, $14; Smokeless, lump, $11; mine run, $10. Some companies are quoting 25c. under these prices where coal is dumped at destination.

BIRMINGHAM

Domestic in Fair Demand—Steam Unimproved — Production Practically on Basis of Trade Requirements — Prices Stiffen.

Dealers have evidently awakened to the wisdom of entering the market and making provision for their supply for the coming year. Contracting is pro-

ceeding in a satisfactory manner for all the better grades of domestic fuel. One of the largest sales agencies are sold up through the year on their allotment of Cahaba, Black Creek and Montevallo from their principals, with good inquiry for Carbon Hill and other medium grades and some business being booked for the product from this field. Quotations are as follows for lump and nut per net ton mines: Big Seam $3.25@$4; Cahaba and Black Creek $4.50@$5; Carbon Hill $3.75@$4.25; Montevallo $6.50.

There has been no improvement in the demand for steam sizes and apparently there will be little or no change until the middle of the summer. Resumption in industrial lines is very slow. Railroads are suffering from a lack of freight and are taking from one-third to three-fourths of minimum under contract. Prices are shown in the Weekly Review.

Mining operations are following very closely the actual fuel needs as evidenced by the market and there is comparatively little coal being mined which has not been sold in advance. Operations average two days per week.

Southwest

KANSAS CITY

Oil Competition Dwindling — Better Tone to Steam Market—Prices Firm.

Oil competition, which has been disturbing the coal trade for the past few months, is passing away. Large oil companies will not make contracts for a year at a definite figure and steam plants are reluctant to close with smaller concerns for fear the supply will be cut off when the pinch comes.

Manufacturing shows a little gain, some plants that had been idle resuming operations. The outlook for the steam market is now more encouraging, although consumers still hope for lower prices. High labor cost is the hardest obstacle to overcome as there is no possible chance for reduction in labor for at least a year in this section. It is not so much the increase that was granted lately but the inefficiency caused by this increase that is adding to the operators' problem.

Domestic grades are in lighter demand than for several years. Arkansas lump for April is $6, mine run $4.50, slack $3.50; Kansas lump and nut is $5, mine run $4.25@$4.50, mill $4, slack $3.75; north Missouri lump is $4.50, mine run $4, and washed slack $4.05.

West

DENVER

Production Slightly Better — Storage Buying Is Sluggish—Retailers Shave Prices.

What is believed to be the first indication of an upward climb in output came the last week in March after a low level for the winter in the week ended March 19—114,000 tons. The output for the week ended March 26 was 125,667 tons of a possible full-time production of 257,620 tons. The opening days of the April storage business have brought no assurance of a steadier market.

Retailers on April 1 met the price of $10.50, which the largest operator is selling through its bituminous department, but there is no effort to push tonnage at that figure. The margin of the leading company is down to about $2.05, and retailers buying from other operators have to shave their intended gross margin 15c.

Routt County lump bituminous is $11.50. The mine price in both fields is $5.50, although some operators are adhering to $5.65, made before the Colorado Fuel & Iron Co. announced its April price of $5.50.

Coking steam coal has dropped from $3.50 to $3, reflecting a cut from $8.05 to $7.40 on the Denver market. Louisville lignite for household use has tumbled 75c., making the retail price $8.50.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Output Declines Sharply — Demand Is Not Improved — Lower Production Per Man May Necessitate Part-Time Operations.

Curtailment of production continues. Washeries are not operating, many smaller producers are closed down, and some of the larger companies have reduced their forces to the lowest possible point. A peculiar labor condition exists in some parts of the region. Production per man has been reduced to such a point that some of the collieries may soon be forced to work part time to keep down their overhead and bring production costs to a better relation to the selling price.

The Jermyn operations, which recently offered to resume work if the miners would take a reduction in pay, are still idle, as the men have decided not to accept any cut.

The output for the week ended April 2 was 1,157,000 net tons, the sharp decline reflecting the observance of holidays during that week.

PITTSBURGH

Connellsville Reduction Increases Competition — No Interest in Contracts — Spot Market Remains Irregular.

The coal trade is greatly interested in the wage reduction made April 1 by independent operators in the Connellsville region, which is non-union, and is wondering to what extent fresh competition in the market will result. Already one or two short-term contracts have gone to the Connellsville region which otherwise would in all probability have fallen to the Pittsburgh district. The independent Connellsville scale which is practically general except for the Steel Corporation interest, carries a rate for mining and loading room and rib coal of $2.29 per 100 bu. of 76 lb., or about 60c. per net ton.

Buyers are still very apathetic, taking scarcely any interest at all in contracts, and fears are increasing that so much production will be lost that late in the summer there will be more demand than can be met. The spot coal market continues soft and irregular, no strength at all being exhibited except in high-grade gas coal. Prices are shown in the Weekly Review.

Production has decreased still more and is now running at well under 40 per cent, with no prospect of improvement in the near future. Only occasional cargoes of Lakes coal are being arranged for.

EASTERN OHIO

Holidays Further Cut Production—April Outlook Gloomy—Demand for Slack Increases.

Production for the week ended April 2 amounted to only 217,000 tons, the lowest weekly output since the strike of November, 1919. Operations were restricted because of the observance of Easter Monday and April 1. The operators' association reports that mines worked 38 per cent of possible worktime but produced 43 per cent of rated capacity. With a monthly potential capacity of over two and one-half million tons the field actually mined during March 1,300,000 net tons, the resulting loss of over a million tons being mainly due to no market.

With railroads well supplied, contracts expiring, and but scanty industrial buying, operators are not sanguine as to the outlook for the next 30 days. When the further deterrent factor of a slow Lakes opening is added, many predict the low ebb of production for this month. However, shippers are hopeful that their efforts may be successful in seeking reduction in freight rates to the Lower Lake docks in order that competitive relationship may be re-established with Illinois coal to the Northwest, in which event it is expected an impetus will be given to the movement of Lakes coal from this field.

Owing to the small output of prepared sizes a scarcity has developed in the supply of slack. Aside from this, spot prices are practically unchanged

and range as follows: Slack, $2@$2.15; mine run $2.20@$2.35, ¾-in. lump $2.75 @$2.90, 1¼-in., $3@$3.25, and domestic lump $3.25@$3.75.

UNIONTOWN

Production Not Yet Stimulated by Wage Cuts — Market Continues Inactive for All Fuels.

Reduction of independent wages in the coke region has not yet brought any general renewal of business and in that respect operators were not disappointed.

The Orient plant of the American Coke Corporation resumed operations last week, producing only coal. No announcement was made as to whether the resumption was of a temporary or permanent nature.

The market for all grades of fuel continues dead with only occasional sales of steam coal made at $1.85@$2 and with no activity in byproduct at $2.25@$2.75. The spot furnace market continues around $4@$4.25 but distress tonnage last week went begging at $3.75. Foundry coke has the same quotation of $5.25@$5.75 with very little moving.

Very few independent plants are operating at anything like capacity. The plants of W. J. Rainey, Inc., however, continue to run 90 per cent and the Washington Coal & Coke Company last week made a substantial increase in production.

There was no protest made to the wage cut and it is now apparent that the miners will accept it once the plants start working again. There remains no information about a wage cut by the Frick company, whose plants last week operated 20 per cent on coke and 45 per cent on coal.

CONNELLSVILLE

Wage Reduction Creates No Serious Difficulty—Price No Issue, as Requirements Are Simply Too Light.

At two or three of the coke works the men have refused to work at the reduced independent scale. The situation has been met by the works being formally closed, to make certain improvements for which plans had been laid, and there has been so little employment for months past in the region that it is expected no serious difficulty will be experienced.

Coke requirements continue to decrease, at the steel works blast furnaces, at the merchant furnaces and at foundries. The *Iron Age* report shows only 102 blast furnaces active April 1 out of a total of 419, and of the furnaces tributary to the Connellsville coke region the proportion of idle stocks is larger still. As to foundries, while they have largely exhausted the stocks of coke they had Jan. 1, they are taking less now than a fortnight ago.

Coke operators feel now that the market has come down amply far enough to stimulate consumption if price were a governing factor, and there is indeed no price dispute. The consumers simply do not want coke. Nothing of importance marketwise has occurred since the sale of furnace coke at $3.75, noted in last report. We quote the spot and prompt market $3.75@$4 for furnace and $5@$5.50 for foundry, the contract market being nominally quotable at the same level.

The *Courier* reports production in the week ended April 2 at 25,665 tons by the furnace ovens, and 24,410 tons by the merchant ovens, a total of 50,075 tons, a decrease of 3,945 tons.

UPPER POTOMAC

Many Operations Remain Closed—Producers Favor Future Spot Market.

About 60 per cent of the operations in the region were closed down because of a dearth of orders. But few new contracts were signed during the week ended April 2, and a great many producers do not expect to make any, preferring to take their chances on the future open market. Prices were not a factor in preventing spot sales, as the demand simply did not exist.

CENTRAL PENNSYLVANIA

March Production Gains—Operators Optimistic—Contracts Not Being Renewed.

Operators are beginning to feel that the peak of the slump has been reached and that indications point to better business in the near future. Production in the central Pennsylvania field for the month of March totaled 56,800 cars or approximately 3,840,000 tons, as compared with 90,144 cars or 4,507,200 tons in the same month in 1920. This represents a decrease of 36.99 per cent and was greater than either January or February, according to the following statement:

	1920 Cars	1921 Cars
January	79,114	67,037
February	65,499	56,355
March	90,144	56,800

Production during the first five days in April was about on the same scale as for March. Practically all railroad contracts have expired, and with but few exceptions have not been renewed. The effect of the strike in Great Britain has not yet been reflected here.

FAIRMONT AND PANHANDLE

No Replacement of Expiring Contracts —Operators Marking Time—All Markets Are Listless.

Fairmont

With the termination of many contracts, and in the absence of new shipping agreements, less coal than ever was produced during the week ended April 2. Another factor in retarding production was the celebration of the 8-hr. day on April 1. Spot demand was non-existent and there was no activity in the new contract market, except on the part of the railroads, where a few contracts have been closed with a price of $2.75 established. But little coal was being shipped to Tide.

Northern Panhandle

Marking time was the principal diversion of operators while awaiting a revival of demand. Railroad fuel loadings were a trifle heavier than they have been recently. A few contracts were being closed in the neighborhood of $3.50 a ton, but negotiations were not proceeding on a very large scale. Production was still equivalent to only one-third of normal.

Middle West

MIDWEST REVIEW

Coal Movements More Sluggish—Talk of Freight Reductions Delays Buying—Higher Prices Inevitable.

Probably less coal moved last week than any week since the first of the year. This applies both to steam and domestic. The coal situation in the Middle West has been complicated somewhat lately by a number of cheap politicians who are seeking a little free publicity. These politicians have been widely heralding the news that railroad rates are too high and that they ought to be reduced.

The unfortunate part of this situation is that large numbers of people who buy coal, believe these statements and consequently are putting off purchasing until such time as rates are reduced. They do not stop to think that a reduction in freight rates will necessitate a reduction in labor and that any reduction in railroad labor cannot possibly be brought about before the next ninety days, if then.

Should the buying public discontinue purchasing for the next three months as they have done since the first of the year, it would be a physical impossibility to supply the demand which will naturally develop as the season advances. If the industrial situation does improve, as it is bound to, it will mean that the coal shortage will be that much more aggravated. This spreading of talk of lower freight rates is extremely pernicious at this time because this country cannot achieve an economically sound condition unless the railroads are taken care of, and this agitation for lower rates is just postponing that much longer the time of railroad readjustment.

The industrial situation shows practically no signs of change. The market on steam coal is just as dead as it has been at any time since the beginning of the year. One reads in the newspapers of industries starting up, but one does not get the news of industries that started some time back and after operating for a few weeks, had to close down through lack of orders.

In Iowa, Minnesota and the Dakotas, the situation so far as domestic coal is concerned is gradually improving. The farmers, who up until recently have been holding last year's crops in the hope of a strengthened market are now shipping their grain freely. These agricultural buyers now have a little money in hand and are coming into the market in better fashion. Some few current orders for coal have been placed by elevator companies in the Northwest, but the bulk of the orders placed

call for shipments late in the season and on the basis of prices current at the time of shipment.

In spite of the fact that practically all of the large operators and sales agencies have resorted to the most aggressive tactics, sales managers, very closely in touch with conditions surrounding the coal industry, are not looking for any improvement in the market before July. If, however, there should be a strike on the part of railroad labor, it is possible that the coal market would strengthen very quickly, as there is hardly an industry, or domestic dealer, in the West who has an adequate supply of coal on hand.

SOUTHERN ILLINOIS

Screenings Still in Good Demand—Retail Program Halted by Poor Household Buying—Field Conditions Unimproved.

Retailers do not seem to take hold of the early storing idea as yet, although some orders have been placed for immediate shipment. Dealers advise that they cannot take much coal unless the public can be induced to buy accordingly. Steam demand has been good, as a matter of fact, several mines are now crushing coal to apply on screenings contracts, as steam sizes are easily moved.

In some communities miners are having a hard time making both ends meet. The feeling prevails that mine operations will be resumed fairly well by the latter part of May. Duquoin mines are running a bare two days weekly with no uniform price. In the Mt. Olive district domestic tonnage is gradually falling off with prices ranging $2.75@$3.25. Steam sizes are scarce and there are no mine run quotations. Railroad tonnage from all fields is unusually light.

Additional Standard mines have shut down for an indefinite period but operators are doing much repair work so as to be in good working shape when demand returns. When the screenings market went above $2 several shippers billed lump on their mine run contracts, holding back screenings, and this market has again weakened to $1.90@$2.

WESTERN KENTUCKY

R.R. Contracting Develops Better Tone —Production Still Low—Prices Well Maintained.

Operations are draggy. Some of the larger companies are only working a part of their mines, while some of the one-mine companies are only putting in a day and a half to two days a week.

Reports of very fair prices secured for mine run on contracts placed by the L. & N. R.R. have strengthened the market somewhat, and will probably result in operators holding more firmly for fair contract prices. Action of the railroad in placing contracts early also leads to the belief that traffic conditions later in the year may not be so ideal as they are now, and that with the L. & N. afraid to take chances, other consumers will feel the same way about putting off buying.

The larger companies are maintaining prices. Averages for the field show: Prepared, $2.90; range, $2.55@$3.35; mine run, $2.25—range, $2@$2.75; screenings, $1.75—range, $1.50@$2.60.

Middle Appalachian

HIGH-VOLATILE FIELDS

Expiring Contracts Lower Production—All Markets Sluggish—Not Much Activity Expected in April.

KANAWHA

There was a marked slump in production as the coal year closed. However, part of the idleness during the week was due to the miners' holiday. As comparatively few new contracts have been closed to take the place of those which expired March 31, it was even more difficult to place production and prices were as weak as ever.

LOGAN AND THACKER

Loadings in the Logan region, while somewhat increased, could not be construed as reflecting an improved market condition, but instead grew out of the fact that producers were storing coal on a large scale. The spot market was extremely inactive and no new contracts were being made.

Thacker production was on about the same level as during the preceding week, or about one-third of normal. In view of expiring contracts and the fact that but few new agreements have been made, production is expected to be smaller during the next few weeks.

NORTHEASTERN KENTUCKY

A slight increase in production was not indicative of any permanent market improvement. There was an output of 21 per cent as compared with only 18 per cent during the preceding week. Demand was a trifle firmer for slack but only because such grade was hard to obtain. The contract market is still displaying a sluggish condition.

VIRGINIA

Production figures remained virtually unchanged, or about 50 per cent of capacity, although cut down somewhat because of the expiration of contracts. Some established connections continue to take coal and it is believed that with a growing demand in Southern markets not only would current expirations be offset by new business but that a better condition might soon be expected.

LOW-VOLATILE FIELDS

Production Low, with Holidays and Poor Markets—Somewhat Better Tide Demand Helps Offset Contract Expirations.

NEW RIVER AND THE GULF

Although the close of the coal year brought the termination of a number of contracts, the slight slump in production in the New River region during the week ended April 2 was due to a general observance of the anniversary of the establishment of the eight-hour day, rather than to any other cause. Conditions may be termed as slightly improved, as vessels were taking bunker coal for round trips. Any stiffening of Tidewater demand has so far failed to raise prices appreciably although there is no doubt that the market is somewhat firmer.

Winding Gulf production remained at about 30 per cent. Just as there was no spot business in sight so also were contract negotiations lagging, not only for commercial coal but also for railroad fuel.

POCAHONTAS AND TUG RIVER

Dullness was decidedly marked in the Pocahontas region at the beginning of the new coal year with the output not reaching more than 40 per cent of capacity. However, it is hoped that expiration of contracts may be temporarily offset by new business at Tidewater in view of the British trouble. The contract market is extremely sluggish. So far no agreements have been made on the N. & W.

Tug River mines were producing contract coal only and as few agreements have been closed, operations were somewhat reduced as the coal year came to an end. New contracts have not been placed for those expiring but indications are not lacking to show that a revival of the spot demand might soon compensate for the loss of such contracts.

West

UTAH

Mine Operations Further Curtailed—All Demands Are Weak.

Production rate is unchanged and does not exceed 45 per cent of capacity. The outlook is not improved by the closing down last week of the mines of the Utah Copper Co. at Bingham, as the smelters will need even less coal than they have been using. According to Coal Inspector Crawford of the Utah State Industrial Commission, who has just returned from an inspection trip, there is only one mine actually closed in the Utah fields.

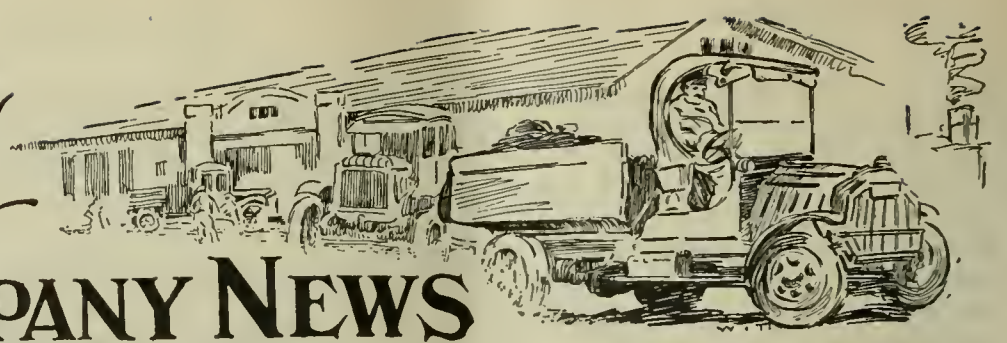
PROPOSALS FOR FURNISHING COAL STATE OF NEW YORK

Albany, N. Y.

Sealed separate proposals will be received until 12 o'clock, noon, Wednesday, April 27, 1921, and opened at that hour at each of the institutions named, for supplying Anthracite and Bituminous Coals as shown in the proposal forms, for a period from that date to March 31, 1922.

Proposals should be addressed to the following officers at the institutions named: Lewis E. Lawes, Agent & Warden, Sing Sing Prison, Ossining, N. Y.; E. S. Jennings, Agent & Warden, Auburn Prison, Auburn, N. Y.; Harry M. Kaiser, Agent & Warden, Clinton Prison, Dannemora, N. Y.; William Hunt, Agent & Warden, Great Meadow Prison, Comstock, N. Y.; Raymond F. C. Kieb, Medical Superintendent, Matteawan State Hospital, Beacon, N. Y.; John R. Ross, Medical Superintendent, Dannemora State Hospital, Dannemora, N. Y. Proposal forms giving specifications may be obtained by addressing the Agent and Warden or Medical Superintendent of the institution for which it is desired to submit proposal. Albany, N. Y., April 11, 1921.

MINE And COMPANY NEWS



ALASKA

Thirty tons of bituminous coal, the first shipment from the **Evans Jones Co.'s** mines in the Matanuska district, recently arrived in Anchorage. The company expects to make regular shipments in the future.

The Alaska Coal & Coke Co. has secured a lease on Blocks 26 to 31 in the Bering River coal field, according to information received at Juneau. The land covered by the lease comprises approximately 2,000 acres and embraces a portion of the famous Cunningham group of claims which figured prominently in the Ballinger-Pinchot controversy and finally resulted in the withdrawal of Alaskan coal and oil lands from entry. The group of claims leased is situated about one mile east of the Falcon Joslin leasehold and lies north of Kushtaka Lake and east of the glacier of the same name. The company is a Washington corporation with offices in Seattle.

COLORADO

At the stockholders' annual meeting of the **Colorado Fuel & Iron Co.** Raymond Blaine Fosdick, of Washington, was named as a director to succeed the late Mr. McKennan. The other directors re-elected are: Starr J. Murphy, J. H. McClement, David H. Taylor, Willard P. Ward, M. D. Thatcher, J. F. Welborn, George B. Berger, S. G. Pierson, Albert A. Reed, John C Mitchell and Fred Farrar. The first five named are from New York City. Mr. Thatcher is from Pueblo and the other directors are from Denver. The directors elected the following officers: J. F. Welborn, president; Starr J. Murphy, New York, vice-president; Fred Farrar, Denver, general counsel and executive assistant to the president; Wendell Stephens, Denver attorney; S. G. Pierson, treasurer; A. H. Lichty, Denver, in charge of industrial relations; E. S. Cowdrick, Denver, assistant to vice-president; E. H. Weitzel, Pueblo, general manager; F. E. Parks, Pueblo, manager Minnequa Works; D. A. Stout, Pueblo, manager fuel department; T. Aurelius. Denver, manager sales department; A. W. Sampson, general auditor.

ILLINOIS

After two weeks of hard labor in the entries of the **Kathleen mine** at Dowell six rescue teams finally reached the point where the seven victims of the fire during the latter part of February had fallen in their last attempt to save themselves. Officials express the opinion that the plant will resume operation at an early date, after having a fight with a mine fire such as has never before been recorded.

A special meeting of the stockholders of the **Franklin County Mining Co.** has been called for the purpose of considering the advisability of buying 5,000 acres of high-grade coal land lying in Cave township in Franklin County. The coal is owned by Robert R. Ward and W. W. McCreery, of Benton, and is one of the largest tracts of coal land in that county now owned by private parties.

A big deal was completed recently when the **Lake Export Coal Corporation** signed papers with **A. F. Jakoubek**, wealthy St. Louis coal operator, giving to the Huntington, W. Va., firm a big place in the Illinois coal industry. In the deal, which involves more than $1,500,000 in coal output to be handled by the Lecco Co., is included the noted "Star Mine," fifteen miles from St. Louis, at Freeburg. Two other mines at West Belleville, the West Belleville mine and the Highland mine, also will be Lecco operations under the deal.

The Chicago, Wilmington & Franklin Coal Co., one of the largest operators in the Franklin County field, will at once begin the work of sinking a new shaft between Benton and West Frankfort. According to the plans as given out, this will be the biggest and most modern colliery ever constructed, and will have an hourly capacity of one thousand tons. The company now operates three mines in Franklin County and two in Williamson County.

The Pilot Knob Ore Co. has disposed of its coal properties, formerly held by the **Big Muddy Coal & Iron Co.**, to the **Consolidated Coal Co.**, of St. Louis.

INDIANA

Fire destroyed the tipple of the **Black Diamond Coal Co.** at Boonville, March 28, causing a loss estimated at $100,000, partially covered by insurance. The origin of the fire is unknown.

Charles Waldron, who with Jesse E. Eschbach and E. D. Farmer, administered the **State special coal and food act**, has filed a last report of their work, showing total receipts of $113,350.55, of which the administration of the law took $39,924.70, so that a net balance of $73,425.85 remains in the state treasury. The law has expired. The tax of 1c. on each ton of coal mined raised $91,535.25; the $5 license fee from 1,972 retailers produced $9,860; the $10 license fee from wholesalers produced $2,030 and the $25 license fee from 397 operators produced $9,925. Further collection of fees stopped because of litigation. All litigation arising out of the law enforcement has been or is to be dismissed, it was said.

KENTUCKY

The Trace Fork Mining Co. will build a commissary, coal tipple, etc., at Tesley. L. Ryley is president of the company.

The Elk Horn Creek Coal Co. is to contract for the immediate erection of twelve miners' houses at Pikeville.

The Big Four Coal Co. is planning to build twelve miners' houses at Sand Lick.

The Amburgy Coal Co., Dalna, will build a coal tipple, as well as ten miners' houses and a church.

Quite a number of mines are seizing the opportunity of slack operating time to make extensive improvements to their properties, in the way of new tipples, machinery, etc. **The New Straight Creek Mining Co.**, located on Straight Creek, has completed a new tipple, tramroad, etc., and has also installed new Goodman low-vein cutting machines. **The Federal Coal Co.** has rebuilt its tipple at the Glendon mine on Straight Creek, and has also installed some new Sullivan cutting machines at their Cary mine. The **Vinson-Harlan Co.** has about completed arrangements at its new mine on Straight Creek, and will be ready for operation in the near future. **The Liberty Coal & Coke Co.** is building a new and modern tipple at the Easley mine, with all machinery being furnished by the Webster Co.

OHIO

The Montour & Lake Erie Coal Co. has been incorporated with a capital of $50,000 to mine and ship coal. The incorporators are J. H. Price, W. C. Graves, C. S. Turner, W. C. McCullough and R. B. Turner.

The authorized capital of the **Bremer Coal Co.** has been increased from $25,000 to $100,000 by papers recently filed with the Secretary of State.

The Central Hocking Coal Co. of Columbus is opening a new mine in No. 7 seam at Longstreth on the H. V. Ry. in Athens County. The company controls 600 acres at that place and is busy driving an entry. A small switch is being constructed to connect with the railroad. It is expected to be loading coal about May 1 if not earlier.

Now that the gas rate in Columbus has been increased from 33⅓ to 50 per cent coal men are looking forward to a number of householders changing over from natural gas to coal as a fuel. Coal men, especially the retailers, are urging their customers to lay in their supply early as they predict a period of stress later on unless something is done now toward laying in the supply for the coming winter.

The Great Lakes Coal Mining Co., in eastern Ohio, is running full time. All production is being shipped to the company's docks at Huron and Toledo. The company produces about 6,500 tons daily.

The Commercial Coal & Coke Co., Cleveland, capital $25,000, has recently been incorporated by Messrs. O. Ruby and F. L. Leckie.

PENNSYLVANIA

A deal has been closed at Ebensburg, Cambria County, whereby the Caldwell Mine No. 3 located at Hastings passed into the hands of **L. W. Maurer, F. R. Maurer** and **Andrew Rhody**, all of Patton. The property was purchased from the **Caldwell Coal Co.**, represented by Campbell, Peacock & Kerr of Philadelphia. The price paid was in the neighborhood of $85,000. A company to be known as the **Miller Run Coal Mining Co.**, will be incorporated to operate the new holdings.

Work in the Connellsville coke region remains about the same. The coal and coke plant of the **Briar Hill Steel Co.**, at Briar Hill, has closed down for the first time since the plant was started 18 or 20 years ago. The Crystal plant of the **Hillman Coal & Coke Co.**, which has for several weeks past been working two days per week, is now down. **The Westmoreland-Fayette Coal & Coke Co.** has started up its plant at Cheat Haven, which has been idle since their tipple and bin were destroyed last fall by a B. & O. train.

Six of the leading coal companies of central Pennsylvania, now occupying quarters in the First National Bank Building, Johnstown, will occupy in the near future new quarters, the first exclusive coal office building in Johnstown. The building was purchased by the six companies and remodeled to suit their needs. The companies occupying the new building are the **Wilbur Coal Co., Jassahill Coal Co., Somerset Coal Co., Telford Coal Co., Knickerbocker Smokeless Coal Co., and the Knickerbocker Fuel Co.**

Stockholders of the **Pittsburgh Coal Co.** have voted for a reduction in the capital stock of from $80,000,000 to $75,000,000 and to retire and cancel $5,000,000 of preferred stock in the treasury. This will leave a total preferred stock outstanding of $35,000,000. R. B. Mellon has been elected a director in the place of A. W. Mellon. The other retiring directors were re-elected.

Four mining companies have consolidated, with a capital of $75,000, into the **Rice Fuel Co.** The merger combines companies in Fayette and Westmoreland counties. The incorporators are W. E. Rice, W. P. Stillwagon, J. E. Wallace and R. D. Klinedinst. Through the merger the Donald Coal & Coke Co., of Cheat Haven, the Robinson Coal Co., the Northern Connellsville Coke Co., and the Irwin Valley Gas Coal & Mining Co. are consolidated.

An exchange of property has been made between the Donner interests and the Warwick Coal Co., of Pittsburgh, the latter company having extensive holdings at Gray's Landing. By one deed **William H. Donner**, of Buffalo, transfers to the **Donner Coal Land Co.**, of Pittsburgh, eleven tracts, located in Monongahela township, containing 500 acres and two tracts of surface containing 16 acres. By another deed a tract of 102 acres is transferred to the **Warwick Coal Co.** and still another deed shows a transfer by the Warwick Coal Co. to the Donner Coal Land Co. of a tract in the same township also containing 102 acres.

VIRGINIA

Bids opened by the Housing Corporation for 12,000 tons of coal for use on the **Norfolk-Portsmouth ferries** ranged $3.50@$4.25 per ton. Four bids at $3.50, one at $3.75, one at $3.95, twelve at $4 and one at $4.25 were received. Contract has not yet been awarded.

WEST VIRGINIA

The American Gas & Electric Co. has completed work on the opening of a new coal mine on the Wheeling-Steubenville line. The company is erecting several large buildings at this place.

Operations on a fairly large scale are presaged in Logan County by the organization of the **Logan Black Band Coal Co.** The new company is capitalized at $50,000. Among those actively interested are: E. D. Wilson, Midkiff; E J. Elkins, A. F. Black, C. C. May, all of Hamlin; J. C. Messinger, of Sheridan.

The Smith Big Vein Coal Co., of Meyersdale, has been organized as a West Virginia concern, its capitalization being fixed at $75,000. Closely identified with the new concern are: A. J. Smith, James B. Hostetler, of Meyersdale; Hugh G. Smith, Clarksburg; R. Marsh Dean, Elk Garden, W. Va.

Marshall County mining operations will be undertaken by the **Cameron Mining & Development Co.**, which has a capitalization of $1,250,000. Offices of the company for the time being will be at Cameron. Leading figures in the new concern are: George T. Myers, H. L. Chambers, George W. McCracken, J. L. Earnest, and James F. Donahue, all of Cameron.

A new mine is to be opened by the **Central Pocahontas Coal Co.** on Brown's Creek. W. C. Atwater & Co. has acquired an interest in this company.

Plans are being drawn by the **Boone County Coal Corporation** for the construction of a new tipple at a large expenditure at its plant at Monclo, but such a structure will not be erected until market conditions are somewhat improved. At such a time as the new tipple is built it will have a capacity of 2,000 tons a day, all coal from mines 2 and 3 being dumped over this tipple.

Boone County coal territory will be developed by the newly organized **Coal River Collieries Co.**, with headquarters at Huntington, this being a million-dollar concern in which the following people are interested: Harry Leaberry, Henry L. Porter, Harry D. Davis, of Huntington; J. T. Keister, Peru, Ind.; C. E. Glass, Hinton, W. Va.

J. T. Neylon and H. C. Vanover, of Mullins, have returned from a business trip to Ashland, Ky., having leased a valuable tract of coal land in northeast Kentucky on which they expect to begin development work in the near future.

The East Wheeling Coal Co. has secured additional coal land in Ohio County, having just purchased forty acres from D. G. Frazier and wife in Liberty district, this acreage being on McGraw's Run. The consideration was in the neighborhood of $4,000.

The purchase price paid for 400 acres of coal land just acquired by the Cambria Coal Co. on Ten-Mile Creek in Harrison County was $60,000. This coal is in the Pittsburgh seam. It seems probable that the company will build a short railroad to the B. & O., right of egress to the B. & O. having been reserved in the purchase of the property.

The New River Co. has been granted permission through a certificate issued by the Secretary of State to increase its land holdings in Fayette and Raleigh Counties from 23,000 to 28,000 acres.

The Middle Fork Mining Co. is one of the largest companies recently formed in southern West Virginia, having a capitalization of $500,000, some well-known coal men of Huntington being interested in this concern, which will operate on Middle Fork. Among those largely interested are: A. J. Dalton, E. L. Hogsett, J. F. Grossenbach, C. B. Brown and F. W. Dulaney, all of Huntington.

Organization of the **Dodge Coal Co.**, of Clarksburg, with a capitalization of $50,000 presages early development of coal land in the Harrison County field. Among those most largely interested in this corporation are: Lloyd W. Garrett, F. K. McClure, Clara B. McClure, J. W. Barnard, and D. Bruce Mason, all of Clarksburg.

In preparation for an early resumption of business several companies in the Monongalia County region are endeavoring to get their plants in the best shape possible while demand is such that the time of employees may be utilized in making repairs. **The New England Fuel & Transportation Co.**, for instance, is understood to be ready to start work on 700 new houses for its plant at Lowesville on the Monongahela Ry., near Morgantown.

The Pulaski Iron Co., which Isaac T. Mann of Bramwell acquired some time ago, is not only enlarging the number of houses for miners at its Eckman plant during the lull in the coal business, but it is also installing a large sub-station and power plant at Eckman so that when there is a revival in demand the company will be fully prepared to produce a large tonnage.

As showing the faith the **Davis Coal & Coke Co.** has in the future of the coal business during the present year the company has gone to large expense in constructing a steel head-frame at its plant at Pierce, in place of a wooden headframe. The company is also having constructed a large steel storage bin with a concrete lining, with capacity of 600 tons. The company has been using the same apparatus at its Kempton plant for the last five years and in time expects to equip all its plants in this manner.

Operations on a very large scale will be conducted by the **Huntington Coal & Mining Co.**, which will undertake the development of coal property in the vicinity of Belle in the Kanawha field, this concern being capitalized at $150,000.

WYOMING

The Union Central Coal Co. has been incorporated with a capital stock of $100,000, the operations of the company being principally in Laramie and Carbon counties. Active in the new organization are W. C. Kinkead, H. B. Henderson, Jr., and F. D. McMillen.

At the mines of the **Hotchkiss Coal Co.** just beyond Dietz work has commenced in development of a lower vein of coal than has yet been marketed, known as the Monarch vein. Another crew has been put to work on Salter Creek about a mile and a quarter above Alger on the Carney vein. The president announces the intention to put in a modern tipple at that point. A spur track of the Burlington will be built to the mine.

BRITISH COLUMBIA

Coal prices can be reduced by over two dollars a ton if consumers will take mine run and accept delivery in loose form instead of in sacks. There are eight coal dealers in Victoria to a population of less than 50,000 and there should be two. The above are some of the statements made at the coal inquiry at Victoria recently before Commissioner Alexander Henderson by J. M. Savage, general manager of the Canadian Collieries (Dunsmuir), Limited.

Coal areas of the Hazleton district may be extensively developed in the near future. The ever-increasing price of fuel oil is causing renewed interest in all new and promising coal fields. The Telkwa River, Morice River, Zymoetz River, Peave River, and Groundhog fields have all attracted attention and but for the admitted transportation difficulties they might now be in the production class. Some coal was mined in 1920 by the Telkwa Collieries and nearby a new seam is being opened up. The property is now being worked by J. M. Gillespie, who also has a lease on the Aveling coal property, situated six miles up the Telkwa River from the town of Telkwa and about two miles distant from the property of Telkwa Collieries.

NOVA SCOTIA

That at the present time the **Dominion Coal Co.** can only market 100,000 tons per month, or about one-third of normal capacity, was brought out in a recent statement made by assistant general manager H. J. McCann. There is a possibility that the company will not close any more of its collieries, but will operate at reduced capacity in order to give all workmen their share of employment.

Traffic News

The Beaumont (Tex.) Chamber of Commerce has complained to the I. C. C against unreasonable rates on coke from Beaumont to Lake Charles, La.

The Supreme Court has refused to review the case of the **Phoenix Portland Cement Co.**, of Nazareth, Pa., which appealed from an adverse decision in its suit against the B. & O. arising out of the seizure of 44 carloads of fuel. The Pennsylvania court decreed that a railroad having a contract with coal companies for fuel may commandeer coal in transit for its own use.

The Wayne Coal Co. complains against discriminatory ratings in connection with the distribution of coal cars at its mines on the Pittsburgh & West Virginia R.R., which are alleged to be in favor of the Pittsburgh Terminal Railroad & Coal Co.

In the complaint of the **Oxford Paper Co.** an I. C. C. examiner recommends that rates on bituminous and small sizes of anthracite from points in Pennsylvania and from Fairmont, W. Va., to Rumford and South Brewer, Maine, between June 25, 1918, and various dates in August and September 1918 were unreasonable.

The Railroad and Utilities Commission has handed down an order in the case of the city of Knoxville against the Southern Ry., in which it grants a substantial decrease in the rate on coal from Coal Creek, La Follette and Jellico to Knoxville. The commission also differentiated on run of mine, which heretofore had been classed the same as nut and placed it in the same class as steam coal.

In the case of the **Robinson Clay Product Co.**, the I. C. C. decides that the rates on bituminous coal from Sugar Creek, Ohio, to Parral, Ohio, during Federal control were not unreasonable.

The commission has further suspended until April 27 proposed increase of 20c. per ton on coal from points on the Cumberland railroad to points on the L. & N. in Alabama, Georgia, Illinois, Indiana, Kentucky, North Carolina, Ohio, Tennessee, and Virginia and on connecting lines in Kentucky and Tennessee.

The National Supply Co., of Lincoln, Neb., in a complaint to the commission, attacks the combination rate of $1.17 on shipments of lump coal from West Clinton, Ind., to Ottumwa, Iowa, and other points, and asks for rates not exceeding those in effect via Peoria.

The Refinite Co., of Omaha, Neb., in a complaint attacks as unreasonable the rates on coal from points in Wyoming to Ardmore, S. D.

The commission has decided that rates on coal from the **Castle Gate group of mines** in Utah are unreasonable, and provides that the rates shall equal those from the mines of the United States Fuel Co., at Panther, Hiawatha, East Hiawatha and Mohrland, Utah.

The El Paso & Southwestern Ry. Co. has recently announced an increase of ten per cent in freight rates on coal from northern Mexico to El Paso.

In the complaint of the **Hydraulic Press Brick Co.**, an I. C. C. examiner recommends that the rates of 60 and 70c. per net ton charged for run of mine coal from the Brazil, Ind., district to complainant's plant at Brazil from June 25, 1918 to Feb. 29, 1920, were unreasonable because they exceeded 50c.

In the complaint of the **Tuffli Bros. Pig Iron & Coke Co.**, the commission's examiner recommends that the charge on a carload of smithing coal from Douglas, W. Va., to Chicago, reconsigned to Oakdale, Cal., and subsequently to Los Angeles, was legally applicable.

In the complaint of **J. J. Steeley** an examiner recommends that the rate on lignite coal from Stanton, N. D., to Hecla, S. D., was unreasonable.

The I. C. C. has discontinued its proceeding concerning the lawfulness of rates, charges, regulations and practices covering storage charges on coal and coke, the carriers having canceled the schedules under suspension.

The I. C. C. has decided that the practices of the Director General of Railroads during the period from July 1, 1919, to March 1, 1920, in the distribution of coal cars to mines on the Monongahela Ry. and the Morgantown & Wheeling Ry. were unduly prejudicial to operators of coal mines on those roads. The case is held open for further hearing as to the extent of damages if any suffered by members of the **Northern West Virginia Coal Operators' Association** as the result of the undue prejudice.

The Navy Department has filed a complaint with the commission against the B. & O. attacking excessive rates on coal and other commodities from Lake Denmark, N. J., to various points in the United States and Canada and from these points to Lake Denmark. A refund of $110,000 is requested.

The Far West Clay Co., of Tacoma, Wash., complains against unreasonable rates on coal from the Wilkeson group of mines in Washington and from Foran to Clay City, Wash.

Industrial News

New York, N. Y.—The Tuttle Corporation has moved its offices from the fifth to the third floor of the Mills Bldg., 15 Broad St. Telephone numbers will remain unchanged—Hanover 1497-8-9. **Commander Carlo Pfister**, formerly Italian naval officer, will represent the corporation in Europe, with headquarters in Genoa, Italy.

Johnstown, Pa.—The Peerless Coal Co. has opened an office in the Dibert Building, removing to this city from Windber.

Cleveland, Ohio—E. F. Pegg has opened an office at 827 Engineers Building for the purpose of handling contractors' equipment of all kinds.

Cleveland, Ohio—Lawrence P. Crecelius and Victor B. Phillips announce the organization of the firm of Crecelius & Phillips, consulting, constructing and operating engineers. At the present time this firm is undertaking extensive work for coal mining interests in Ohio, Pennsylvania and West Virginia.

Pittsburgh, Pa.—The Carnegie Institute of Technology will conduct a four weeks' course preparing miners for the examinations of the State Department of Mines for positions as fire bosses and mine foremen. The course starts June 27, 1921; mornings at 9 a.m. at the Institute, afternoons at 1:30 p.m. at the United States Bureau of Mines. Address, Supervisor, Co-operative Dept. of Mining Engineering, Carnegie Institute of Technology, Pittsburgh, Pa.

Personals

D. A. Stout, promoted from the position of assistant manager to manager of the fuel department of the Colorado Fuel & Iron Co.,, is an Eastern man. Coming to Colorado in 1908, he worked at various mines of the company. In September, 1918, he was appointed chief engineer of the fuel department and less than a year later became assistant manager, retaining the duties of chief engineer.

D. A. STOUT
Manager, Fuel Department Colorado Fuel & Iron Co.

J. R. Routten, formerly general manager for the Inglesby-Patterson Co., of Norfolk, has become general manager of the C. & O. Coal & Coke Co.

E. K. Downey, general manager of Dexter & Carpenter Co., New York, was in Norfolk recently, making an inspection of coal piers and calling on the trade. He also visited the company's J. B. B. mines, at Twin Branch, W. Va.

A. W. Giles of the University of Virginia recently conferred with **Messrs. Campbell and Eby** of the Geological Survey, regarding Virginia co-operative coal work.

H. I. Smith of the Bureau of Mines has been co-operating with the land classification board of the Survey in consideration of the establishment of coal land leasing blocks in the Western States, especially Utah.

T. J. Robson, general sales manager of the Wyatt Coal Sales Co., and of other companies in the Kanawha, Logan, and New River regions, was a visitor in New York and other Eastern markets recently.

William B. Jess, well known in Illinois and president of the Springfield District Coal Mining Co., was recently elected a member of the Board of Directors of the Springfield Gas & Electric Co.

V. H. Halstead, manager of the coal department of Halser & Co., New York, was in Norfolk recently, visiting the local offices of the company.

J. W. Porter, who for a long number of years has been manager of sales for the Alabama Co., one of the leading pig iron manufacturers and coal and coke producers of the Birmingham district, has been promoted to the vice-presidency of the company. Mr. Porter has shown marked ability in the handling of the sales department and his elevation to the vice-presidency of the corporation is well merited.

Lucius T. Koons, president of the Majestic Coal Co., New York City, who spent part of the winter in Florida, has returned to his office.

Effective April 1 the office of fuel agent of the Frisco System at St. Louis was abolished and **B. T. Wood**, vice-president and chief purchasing officer, took charge. **W. H. Burke**, who has been fuel agent, will continue in the services of the company as assistant to Mr. Wood.

A visitor in Charleston recently was **M. D. Reed**, of Clay, W. Va., who is the president of the Carver's Fork Coal Co.

J. M. Pack, of Bluefield, identified with the Pocahontas coal field, was a visitor at Charleston, W. Va., during the last week of March.

C. M. Gates, who has a large operation in the Mingo field, spent a few days in Charleston on business late in March.

After spending a part of the winter in Florida, **J. H. Murray**, president of the Clear Creek Coal Co., has returned to his office at Huntington.

W. F. Coale, of New York, president of Coale & Co., recently spent about a week in the New River, Winding Gulf and Kanawha fields. Mr. Coale is largely interested in the recently organized New River, Raleigh & Pocahontas Coal Co., capitalized at $7,500,000. The Huntington office of Coale & Co. has been closed for the time being.

A recent visitor in the Logan region was **James H. Clagett**, field representative of the Solvay interests with headquarters at Ashland, Ky.

J. L. Brooks has severed his connection with the General Coal Co. to engage in business for himself, his office being in Huntington, W. Va.

A visitor in Huntington during the latter part of March was **J. H. Stewart** of the Kentucky Gem Block Coal Co., who has headquarters at Ashland, Ky.

The appointment of **Harry S. Jones** as sales manager of the Wholesale Coal Co. at Covington, Ky., has been announced.

Under the terms of a co-operative agreement effected between the National Safety Council and the United States Bureau of Mines, **C. L. Colburn**, who has served as Assistant Chief Mining Engineer of the Bureau of Mines for the last two years, has been given the duty of visiting the various coal and metal mines of the country for the purpose of acquainting the operating companies with the scope of the technical safety service available to them through this co-operation. Mr. Colburn's work will be under the general direction of **B. F. Tillson**, chairman of the Mining Section of the National Safety Council, who also acts as Consulting Mining Engineer of the Bureau of Mines.

A recent visitor in the Pittsburgh market was **J. E. Gaskill**, of Fairmont, president of the Southern Coal Corporation.

C. V. Critchfield, of Mt. Vernon, Ohio, vice-president of the Domestic Coke Corporation, was a visitor in the Fairmont region lately.

Fred W. Schoew, of Huntington, has been appointed secretary, treasurer and general manager of the Noew Howard Coal Co., at Matewan, general offices being at Huntington.

Voris Hall, who makes his headquarters at Dayton, Ohio, and who is connected with the Royal White Ash Coal Co., operating on Coal River at Alcol, W. Va., was a recent visitor in Huntington.

J. W. Montgomery, of Ashland, Ky., head of the Rich Block Coal Co., operating on Coal River in the Kanawha field, and president of the Platts Fork Mining Co., in Kentucky, was a recent visitor in the Huntington market.

Guy D. Goff, of West Virginia and Wisconsin, formerly of the Shipping Board, has been appointed Assistant Attorney-General in the Department of Justice.

Harry Boyd has resigned as superintendent of the Edenborn plant of the H. C. Frick Coke Co. in order to look after his personal business interests.

Obituary

Word has been received of the sudden death of **D. A. Wood**, who lived in Owensboro, Ky., for about twenty-four years and was engaged in the coal business.

Lewis Burnett Blair, aged 51 years, a member of the firm of Blair Brothers Coal Co. of Tyrone, Pa., died at his home recently, death being due to Bright's disease. He was a lifelong resident of Tyrone and the son of S. S. Blair, a pioneer resident.

Recent Patents

Crusher. Carl Wendell, Rockville Center, N. Y., 1,366,985. Feb. 1, 1921. Filed Aug. 1, 1919. Serial No. 314,732.

Coal Car. George Kushner, Avella, Pa., 1,367,271. Feb. 1, 1921. Filed July 10, 1920. Serial No. 395,249.

Car. George M. Fite, Newhall, West Va., 1,367,365. Feb. 1, 1921. Filed Feb. 14, 1919. Serial No. 277,004.

Automatic Coupling for Mine Cars. C. G. Humphrey, Wilcoe, West Va., 1,368,153. Feb. 8, 1921. Filed June 8, 1920. Serial No. 387,394.

Coming Meetings

Indiana Retail Coal Merchants Association will hold its convention at Indianapolis, Ind., May 4, 5 and 6. Secretary, R. R. Yeagley, Indianapolis, Ind.

American Society of Civil Engineers will meet at Houston, Tex., on April 27 to 30. Acting Secretary, H. S. Crocker, 33 West 39th St., New York City.

American Institute of Chemical Engineers will hold its spring meeting June 20 to 24 at Detroit, Mich. Secretary, Dr. J. C. Olson, Polytechnic Institute, Brooklyn, N. Y.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7 and 8. Secretary, G. H. Cushing, Woodward Bldg., Washington, D. C.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill., May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The National Coal Association will hold its next annual convention at the Waldorf-Astoria Hotel, New York City, May 19 and 20. White Sulphur Springs hotel reservations have been cancelled. Secretary, W. B. Reed, Commercial National Bank Bldg., Washington, D. C.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

National Retail Coal Merchants Association will hold its annual meeting May 12, 13 and 14 at the Jefferson Hotel, Richmond, Va. Special rates on all railroads. Secretary, E. G. Gordon, Philadelphia, Pa.

The National Foreign Trade Council will hold its eighth annual convention May 4, 5, 6 and 7 at Cleveland, Ohio. Secretary, J. G. Hammond, 409 Park Bldg., Cleveland, Ohio.

Illinois Mining Institute will hold its spring outing the latter part of May on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on May 26 and returning on May 29. Secretary, Martin Bolt, Springfield, Ill.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The 24th annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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The Producer as Consumer

IT IS one thing to tell the other fellow how to do it and another thing to do it yourself. The consumer of coal is being told that he should take in his coal now for next month's and next winter's requirements. There is sound reasoning behind the advice, for if he does not buy his coal now or very soon, he may have some real difficulty getting it later when the great majority also will want their coal. The railroads say they cannot haul everybody's coal all at once. But the coal consumer, unless he is more than usually well informed, does not recognize that as a convincing argument, if he knows of it at all; he simply looks upon the warning of the coal man as a sales argument in dull times.

Industry is so slack now that plants are operating in the aggregate less than half capacity, the great steeel industry is down to 35 per cent, the railroads have but little to haul. A typical coal consumer who is using but a small proportion of his normal quantity of coal is either buying that in the spot market in small lots or is using from a storage pile accumulated in more flush times. As for the future, he hesitates to put his money into coal, which, for all that he knows, may be cheaper later and, furthermore, he is taking in so little money now that he hesitates, even if able, to invest in coal or any other raw material, though he know full well he will have use for it later, when his business picks up. In other words, it is hard to sell coal now.

The coal producer is a consumer of a multitude of materials and equipment necessary to the operation of his mines and the turning out of his product. Let him apply to himself the same arguments he puts to his customer before he condemns as shortsighted the man who will not take coal in storage now. The coal man knows, and is secure in the knowledge, that if coal is not produced now, it must be later on. To produce that coal he will require much in the way of supplies and machinery that he has not on hand. Buying that material now is applying some Golden Rule philosophy that will start the demand for more coal.

Don't Drop the Pilot

ASSOCIATIONS of coal operators were first organized for dealing with labor. Some still have their existence for that purpose, but the so-called association idea in the coal industry that has given us the locals we have today grew out of the need for more widespread knowledge of the real facts of the business—those matters that in the distant past were held as trade secrets, as costs, distribution, and sales realizations. Doubtless the greatest incentive to co-operative action and the mutual exchange of statistical data, which reached the height of its development and usefulness in the local associations a year or more ago, came in the Middle West as a measure of protection against the combinations of the large and powerful purchasers of steam coal, particularly in the Chicago market. Coal associations gained in usefulness and spread over most of the fields through the period 1916-1918, encouraged by the Fuel Administration. Men of a particularly high grade and energetic type were called as secretaries to organize and operate the associations, and new ideas and activities were developed.

The formation of the National Coal Association was facilitated if not made possible by the existing locals. As a federation it was originally planned that the secretaries would be the executive body of the larger organization.

Events in the past year and a half, or since the coal strike of 1919, have operated to decrease the opportunities for helpfulness of the local coal operators' associations. The first indictments at Indianapolis and the hardwood lumber case were interpreted by the coal men as indications that reports of prices charged for coal, even though collected in a manner presumably entirely legal and certainly morally beyond question, were not looked upon with favor by the Department of Justice at Washington, and therefore were something that had better not be continued.

Associations, unions, any grouping of men, must have a common purpose and the expectation of advantage to be gained, if they are to prosper and to endure. The fundamental, underlying purpose of the trade associations in the coal industry is to improve the conditions under which coal is marketed, to assist in taking the guesswork out of the coal business and render more stable its operation. Uniform cost accounting is an obvious aid to these ends because it sets up standards. Credit information is organized protection. Open market reports, those giving the results of a previous day's or week's business, are legitimate tools of trade; just as much so as reports of production and car supply.

These props to efficient operation of the trade are being assailed and the foundation of the coal trade associations is being undermined. President Harding in his address to Congress last week referred to "open price associations" and stated that the Federal Trade Commission had advised him that to these agencies is to be attributed the failure to adjust consumers' costs to basic production costs—in other words, because one business man knows what his competitor is charging for his product, the price is maintained. The President referred to a measuring rod of fair prices that will satisfy the country and give us a business revival to "end all depression and unemployment." What better measuring rod of fair prices can he desire than the reports of closed transactions, as he says, operating "within the law"? He suggests some suitable inquiry by Congress. Can he be referring, in relation to coal, to a continuation of the work of those eminent members of the ruling party, Senators La Follette and Calder?

Mr. Harding would have been better advised had he

been told that it is not so much the price levels of basic commodities that is causing the hesitation in construction and industry as it is the uncertainty with respect to the stability of those levels. So with respect to coal prices. Coal producers want business, and although the ruling price for smokeless is accepted as $3.50—there being no "open-price association" to give the figure a stamp of authority—coal of this grade has been sold as low as $3 by those who are willing to figure closer than others. Perhaps more are quoting the lower price than is generally known, and the very absence of "open-price" reports is serving to keep up the general price level. Definite and positive knowledge of the price of copper has not served to maintain a price at which even half the mine capacity can be operated. Exact figures at which steel products are being sold—and they are what "open-price" reports are—have not put the price down.

There is a new era dawning. No machinations of a power-hungry coterie of senators can prevent the United States becoming a part of the world. The future of this country as an industrial nation depends upon the degree to which we present a national front to our national competitors—that is, to how far we go in overcoming our provincialism and combine. It is for this reason that organization within the coal industry must be maintained and strengthened. We are prone in times of dull business such as these to stress the need of education of the consumer, when we need as well the enlightenment of the coal producer. It is times such as these that make difficult the work of the trade organizations and it is in these times that their efforts are most needed. The man of small vision quits, the association that cannot see beyond its immediate pressing selfish interests would withdraw. Growing pains all.

The first need of organizations in the coal industry—to promote confidence within the trade—has been well started on its way. The larger task lies ahead—to gain the confidence of the public. The President's message conveys a measure of the common suspicion of business. To the larger problem the coming spring meetings of the national associations of producers, jobbers and retail coal merchants might well address their thought.

An Ore Engineer Questions Coal Methods

EVERY little while foreigners come to our shores and reveal somewhat soon that there are, at least, two things with which they are acquainted—our country and their own. In their untrue comparisons they prove that what they know about their native land is really a dead and not a conscious knowledge and that what they know about ours is the most loose of generalizations. Arthur J. Mason in his article before the American Economic Association, printed in another part of this issue, finds himself in a different but not entirely unsimilar predicament. Very naïvely he compares the surface methods of the iron industry with the underground methods of the coal industry, forgetting that the iron industry has its underground workings and the coal industry its surface operations and that "like with like" is always a good principle of comparison.

He opens his address by comparing the personnel, high and low, in the two industries and declares in favor of the ironworker and his employer. As regards the former it might be permissible to inquire if the United States Steel Corporation believes that, by reason of the freedom from hard work which its "dock wallopers" and the dockmen at its furnaces experience under the new régime, the morale of these men has been raised in any degree above that of its coal miners. It is probable that the company would deny the superiority of these dock workers, and would declare that the men in their mines are the more responsible employees. That, it is true, probably is the result of other causes than the nature of the work which has to be accomplished by the two classes of workmen.

The coal workers, being housed for the most part in small towns and company houses, are more favorably circumstanced than men who drift from place to place and live in slums which the company does not own and cannot control. As mines usually are opened in country sections, they are worked extensively by men who were originally farmers and therefore are of native origin. These are advantages which a little hard labor cannot overcome. Mr. Mason apparently has a horror of hard work. To him a hand shovel is a symbol of debasement even more than an emblem of efficiency.

He leaves it to be assumed that not a hand shovel is to be found in the iron mines. As a matter of fact machine loading has made about equal progress in both industries, though conditions are more favorable in metal mines, where the material is heavier and gives the machine more work for a given range and where the ore can be loaded without scruple as to breakage.

His comparison of the methods in the Panama Canal with those in the mines is amusing. Does he not know that in bituminous coal strip pits bigger shovels are used than were used in excavating the Panama Canal? The methods and equipment employed in the shoveling of overburden in surface mines is something of which the bituminous region may well be proud. The small locomotives and cars in these strippings and all the Lilliputian equipment in the average anthracite open-cut mines might be the subject of animadversion, but the actual shoveling of surface material in the bituminous strip pits is done by equipment so mammoth as to place it in a class by itself. Only just recently have the big pits in the anthracite and iron regions begun to see the light as to the advantage of these stupendous shovels.

His third count, that a reform in use and distribution of coal at large cities is needed, is not made as an ore engineer but as a citizen, and undoubtedly he is right. In answer to his fourth criticism, that coal should be classified and pooled like wheat and iron, it may be said that at Tidewater that is just what is being done. More of the same kind of work is inevitable later. Quite strongly does he point out the advantages of this practice.

However, he is, we think, disposed to give somewhat too much emphasis to the simplification of practice in the iron ranges. As a matter of fact, while there are four standards, the ore does not, of course, align itself with any of them with any exactitude, many kinds of ore coming from each pit. At the mine an analysis is taken of each carload, and when the cars arrive at the dock they are dumped in such a manner as to supply as nearly as possible the exact rating required by the furnace for which any given boat is plying. Boats are loaded with material that averages up to a given grade and not with ore from a single deposit, often not from a single mine, and that distinction is important. When the boat arrives payment is made on the basis of the analysis which is made of its contents.

SURFACE WORKS, CONSOLIDATED COAL & COKE CO., PLUMVILLE, INDIANA COUNTY, PENNSYLVANIA

At Plumville Coal Is Dumped in Mine and Carried by Apron Conveyor to Tipple

Refuse from Picking Table Is Conveyed to Separate Rock House—Natural Gas Engines Drive Generators Supplying Power to the Mines and Prove Themselves Cheaper Than Steam-Driven Machines

By Donald J. Baker
Wilkinsburg, Pa.

AT PLUMVILLE, Indiana County, Pennsylvania, near the Armstrong County line, at a plant of the Consolidated Coal & Coke Co. a steel apron conveyor has been installed in the slope which leads from the surface down to the coal bed. This slope has been driven to develop some 2,800 acres of coal which lies in a nearly level deposit. This bed has a cover, at the tipple, of about 70 ft. When this plant was constructed, a little over two years ago, it was decided to depart from the somewhat usual practice of employing a hoist and to dump the coal inside the mine, bringing it out, as stated, by a steel apron conveyor. Dumping underground is becoming increasingly common, the coal being brought to the surface by skip, belt or, as in this case, by an apron conveyor.

It was confidently believed that such an installation would prove so advantageous in operation that it would far more than compensate for the greater expense of this form of equipment. With such a conveyor fewer men are needed at the bottom and upon the tipple. The foot of the incline was extended so that its slope went approximately 16 ft. below the mine-car tracks, this extension being made so that a storage hopper and dump could be provided. A feeder is used to bring cars to the dump.

Feeder Speed Regulated to Suit Conveyor

Main-line haulage locomotives of the 13-ton Baldwin-Westinghouse type bring trips of fifty or sixty 2-ton cars to the feeder in single trips. Each locomotive on reaching the feeder passes on until the first cars have been engaged by the dogs. The cars are then uncoupled from the locomotive, which then travels up the feeder, the grade being only slightly against the load. When it reaches the head of that short incline it switches back and picks up the empties.

The power for the feeder is provided by a 15-hp. motor which is belt-connected to the feeder flywheel. Between the motor and flywheel several gear reductions and the driving sprocket are interposed. Several operating speeds are provided so that the cars may be fed with the frequency requisite to satisfy the need of the conveyor by which the coal from the bin is carried up the slope. This later conveyor does not always have an equal hourly coal-carrying capacity, as it is operated at a speed to suit the needs of the occasion. At the head of the car haul are placed the operating levers that control it.

They are so placed that the man who uncouples the cars may also control the trip feeder. When a load reaches the head of the haul the movement of the feeder is temporarily arrested so that the car can be uncoupled. Being on a down grade it runs freely and passes over a Streeter-Amet scale, where it is automatically weighed. It then arrives at the Phillips crossover dump, where its load is discharged, and it passes onto the kickback and is directed to the empty track. This road parallels the loaded track but between the two is placed a locomotive switching track.

Trip Maker Assembles Empties into Trips

The empty track, like that for loads, is level, and consequently a trip maker has been installed to eliminate the necessity for pushing cars by hand. This trip maker operates on exactly the same principle as the trip feeder, but its operation is entirely independent. The man who couples the cars regulates its running. As fast as cars arrive at the head of the trip maker they are coupled up to the cars ahead, and the string of cars in the track is pushed forward by the mechanism one car length, so as to leave room for the next car that will leave the kickback. However, should more cars be received than will constitute one full trip, by failing to

couple one of the cars, two trips are provided, the first of which will contain the correct number of cars. The empty yard is 800 ft. long and calculated for the reception of many more cars than a single locomotive will haul into the mine at one time.

The dumped cars deliver the coal into a 5-ton hopper, from which it is discharged by a reciprocating feeder which insures that the conveyor and also, in consequence, the preparation machinery on the tipple will be evenly loaded. This feeder forms the bottom of the hopper. The four sloping sides are not integral with the bottom but suspended from above. The feeder plate oscillates on four wheels which are supported on shafts running in roller bearings. This construction assures greater ease in operation as well as easier and more efficient lubrication than if the shaft were attached directly to the plate. The plate is caused to oscillate by an eccentric shaft.

Trip Feeder

The feeder elevates the loaded cars in a trip up a short, easy slope at the mine bottom. When the first car of the trip reaches the top of the incline the trip feeder is stopped while the operative uncouples one car from the trip.

Apron Conveyor

This conveyor, though it appears nearly level, is pitching upward on a grade of from 28 to 30 deg. Note the side plates on the conveyor, which travel with it and thus circumvent the friction which exists when coal rubs past stationary side plates.

Lumps on Conveyor Ride on Bed of Slack

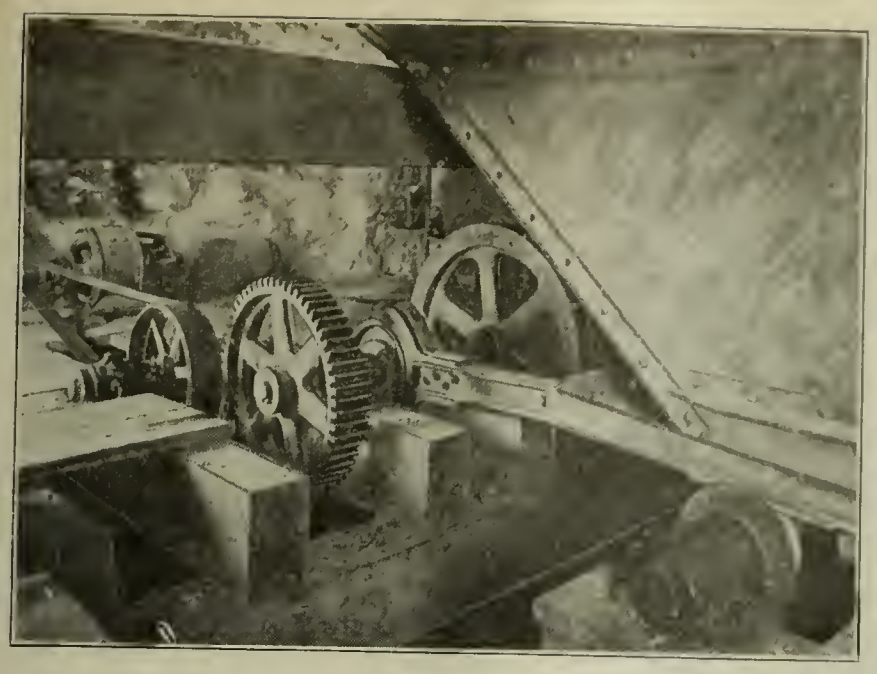
From the feeder the coal is passed over a slotted lip screen, which roughly separates the lump from the fine material, so that in traveling on the conveyor the slack will cushion the larger lumps. When the conveyor delivers its burden to the tipple screen the lumps are still resting upon the smaller material. The screens are thus enabled to perform their function in a minimum space of time and with minimum degradation.

The conveyor is 248 ft. long from center to center and lies on a 28-deg. slope. It is of the apron type with the side plates attached to the bedplates. This is somewhat of a departure from common practice, but this construction is followed in order to permit the entire mechanism to move upon rollers which operate on a narrow-gage track supported by a wooden trestle. Each side plate is bolted to an iron bar which carries a roller. The corresponding bedplate is bolted to the same bar.

A mechanism of this kind must of necessity perform heavy duty, and the construction here followed lends itself admirably to that end. As built the conveyor is not subjected to the undue friction that would result if pieces of coal or other material were traveling between stationary sides, which is the construction usually provided in conveyors of this kind. The moving parts of this type of conveyor take the head and tail sprockets quite as easily as do those of the ordinary pan conveyor.

The conveyor is driven by a 75-hp. motor installed near its upper end. This motor is controlled by means of a push button located beneath the building conveniently adjacent to the platform upon which the car trimmer ordinarily works. This man is thus enabled at any moment to stop the movement of the conveyor and consequently the flow of coal through the tipple. This he does when he desires to shift cars either under the loading chutes or the loading boom. At the head of the conveyor, which is within the tipple, the coal is discharged onto balanced shaker screens.

As has already been stated, these screens are balanced. the two sections, forming a continuous screen bed, being operated from the same shaft and driven by a



OSCILLATING FEEDER WHICH LOADS THE CONVEYOR
A 5-hp. motor is belt-connected to a pulley which, through gear reductions and an eccentric, operates the feeder. The oscillating feeder plate is not mounted on trucks, though it carries the full weight of the coal in the bin. It rests on two shafts, the end of one of which is shown.

15-hp. motor. The first screen contains slotted perforations arranged in steps. It is 5 ft. wide, and the perforations measure $\frac{5}{8}$ x $\frac{3}{4}$ in. Material under this size is thus removed, while the larger pieces pass on to the second screen. A veil plate is suspended by counterweights above the screen, so that in an emergency run of mine may be loaded by lowering the veil and elevating the screen plate. Thus either slack or run of mine may be loaded into cars upon the first track. Ordinarily, however, only slack will be loaded under this section of the building.

FEED CHUTE LOADING CONVEYOR AT FOOT OF SLOPE
Note the coal as it leaves the chute and its changed appearance as it lies in the conveyor. The fine coal is screened out and falls on the conveyor before the lumps can reach it. Thus the coarse coal falls on the fine and travels up the slope cushioned by slack and so saved from degradation.

Slack Storage Steadies Tipple Operation

When slack is being loaded at this point the product first passes into a storage hopper that is equipped with an undercut gate. When the trimmer desires to move a car upon this track it is not necessary for him to stop the conveyor, as room is provided in which to store this product for a short space of time. During the period required for shifting cars slack is filling the bin and loading may proceed upon the other two tracks.

The second portion of the screen is provided with $1\frac{3}{4}$ x 2-in. slots and its motion is exactly the reverse of that of the section above it. Here the nut size is

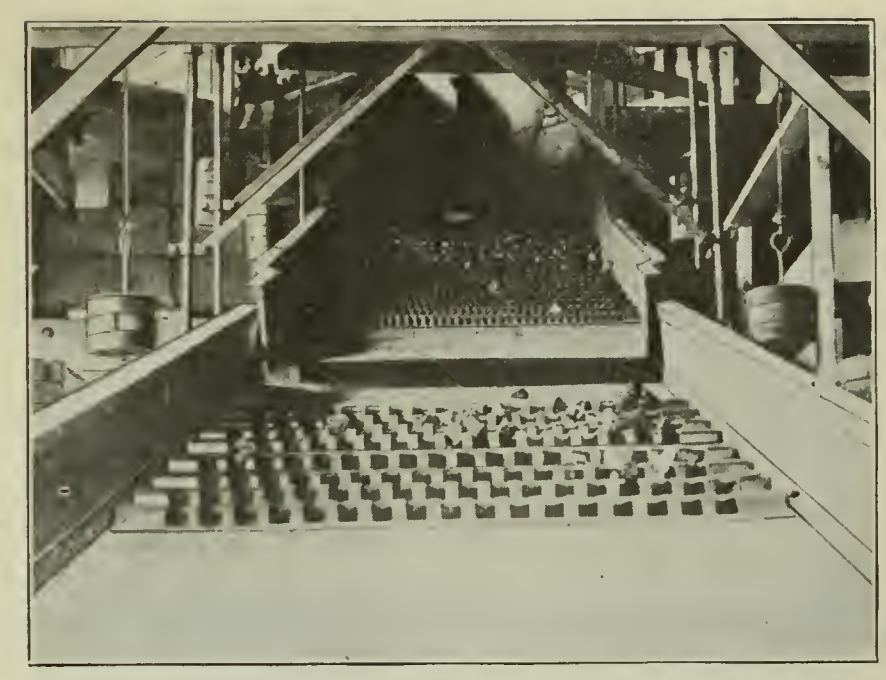
CONVEYOR HEAD DISCHARGING ON SCREENS
Flaring sheet-iron sides encompass the conveyor head and serve to prevent loss by spillage as the coal is directed on screens. Note that the sides as well as the bottom of the conveyor move up the slope and over the end sprockets.

removed. Slack also may be loaded in an emergency through a cross-connecting chute leading beneath the building from the first section of the shaker. The second screen section also is provided with a counterweighted veil plate, so that, if necessary, run of mine may be loaded upon the third track.

That track is utilized chiefly for the loading of lump. From the discharge lip of the screening section the coal passes to a picking table extending at right angles to the shaker. This picking table terminates in a hinged loading boom, both level and inclined section being driven by a 10-hp. motor situated at the rear end of the table. The boom is counterweighted and may be raised and lowered from controls on the trimmer's platform. Its vertical movement is, of course, electrically actuated.

Steel Conveyor Takes Refuse to Waste Bin

Adjacent to the tipple and at its farther end a refuse bin has been constructed. This building houses the pickings from the table. A narrow steel conveyor operating at right angles to and underneath the flooring below the picking table brings the refuse to this point. This conveyor has a speed of 80 ft. per min.



END VIEW OF THE TWO SHAKER SCREENS

The many counterweights may occasion remark. They aid in the suspension of the veil plates, which are lowered so as to cover the slots in the screens when run-of-mine is to be loaded on any of the three tracks under the tipple.

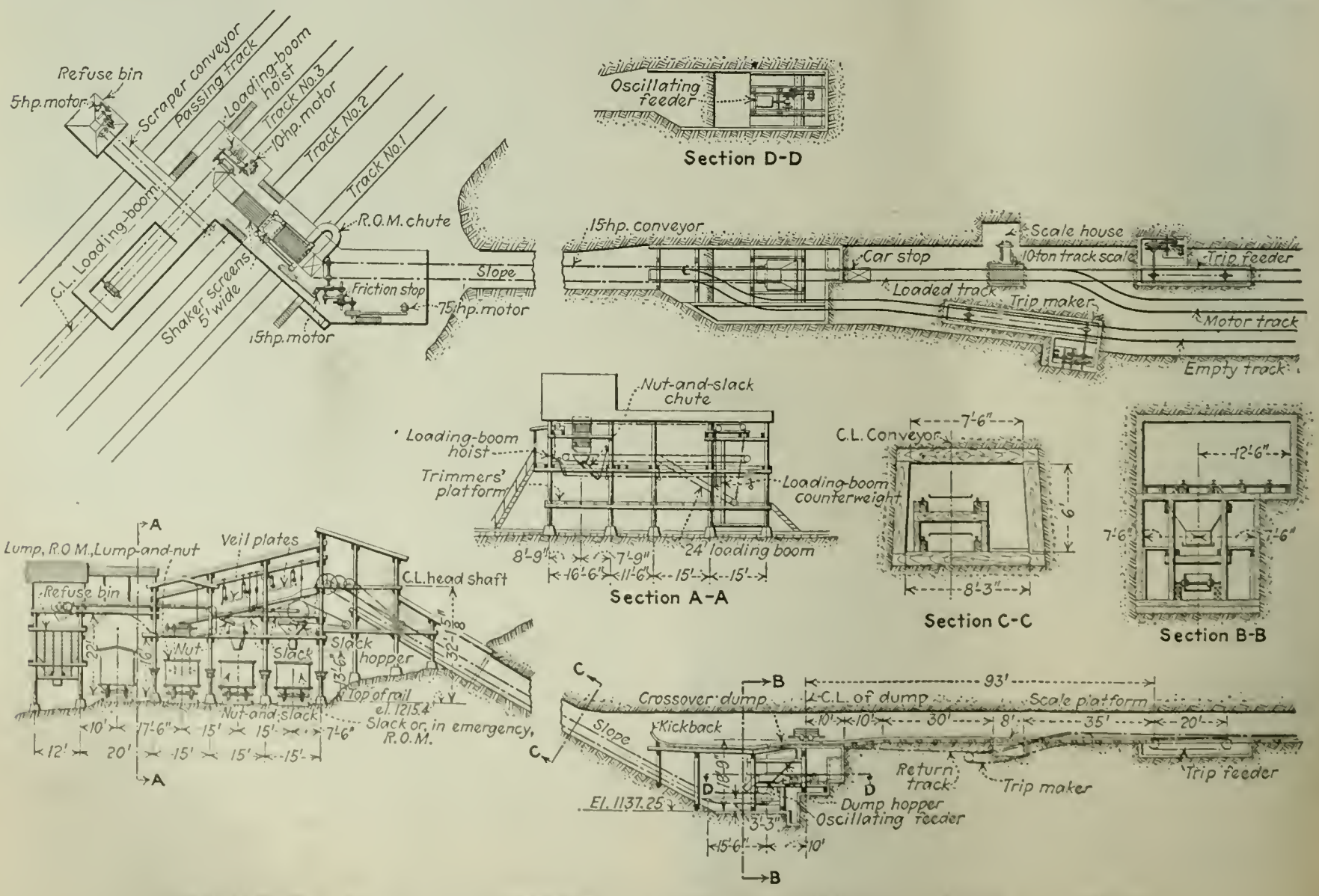
and is operated by a 5-hp. motor situated in the bin building. It passes over one head and two tail sheaves. The return is made above the picking table, thence vertically downward 6 ft. in a box compartment to the run beneath the tipple floor. The lower tail sprocket is provided with suitable take-ups.

As refuse is removed from the coal on the table it is tossed into chutes leading to the lower strand of this conveyor. In this respect this tipple varies radically from others in the Pittsburgh district. The common practice there followed is to chute the refuse by gravity to a bin within the structure itself. By storing the slate in a building apart from the tipple, that structure can be designed more compactly, and the preparation and loading equipment can be brought more intimately together. At the present time the slate is used for filling low places around the surface works. Eventually, however, it will be loaded into railroad cars and dumped at some distance from the plant.

One Man on Tipple, One on Railroad Car

So simple is the installation of the preparation and handling equipment that only two men are, and indeed will be, employed in and about the tipple even though eventually it will have a capacity of 4,000 tons in eight hours. One of these attendants is stationed at the picking table while the other trims and loads cars beneath the tipple.

The elevating or mine conveyor may be operated at three distinct speeds. That which delivers 2,500 tons of coal per day is at present employed. The mine is not yet sufficiently developed to permit the delivery of maximum tonnage to the tipple, and the surface works have only recently been completed. At present the tipple is not kept working a full day. Until capacity operation can be attained loads are allowed to accumulate at the bottom landing in such number that when the conveyor is started it is able to keep going at



PLAN AND ELEVATION OF TRIP FEEDER, TRIP MAKER, CONVEYOR-LOADER APPLIANCES, HEAD OF MINE SLOPE AND TIPPLE

A slack hopper over track No. 1 holds enough coal to enable the car dropper and trimmer, who is one and the same man, to move up a railroad car without stopping the conveyor and the tipple machinery meanwhile. The screens are set on an angle of 15 deg., but the perforated plates are bent so as to form a series of steps with horizontal treads and vertical risers. The slack is taken out by passing it through ¾ x ⅝ in. perforations. Nut is removed by passing the material which does not fall through this screen onto one having 2 x 1¾ in. perforations.

The distance from the first timber to the point of intersection of the grades near the foot of the incline is 185 ft. 3 in. and the whole distance between centers of conveyor sprockets is 248 ft. Note that the inclinati on the trip feeder is so small as not to be noticeable in the drawing.

Gas Displaces Coal

At this mine, where natural gas is readily available, gas has displaced coal for the generation of power. The 100-kw. 250-volt direct-current generators are driven by three 165-hp. gas engines. They are steady and economical in operation and can be readily started by using compressed air. At this mine the gas is handy, whereas the high-tension current would have to be carried a long distance.

capacity for a few hours. As the output is now between 800 and 1,000 tons the tipple can be kept running only a portion of each day.

The plant is served by the Buffalo & Susquehanna R.R., one of the smaller carriers of Pennsylvania. The company owning this road has a subsidiary which operated a mine also located at Plumville. The subsidiary concern was unable, however, to fill the fuel requirements of the railroad, which finds it profitable therefore to purchase coal from the Consolidated Coal & Coke Co.

Consequently the firm has enjoyed a somewhat enviable position, as its market, as one might say, has always been located beneath its tipple, the railroad taking over the loaded cars at that point. It is consequently to the railroad's advantage to keep the plant well supplied with empties. This it did throughout the period when most coal-producing concerns were clamoring for cars. The result has been that thus far not a single day since operations began has been lost by reason of car shortage.

Gas Engines Supply All the Needed Power

Mention should be made of the generating equipment installed at the power plant, as it is markedly different from that usually found at bituminous coal mines. Natural-gas engines drive the direct-current generators. These units are three in number and were manufactured by the Bessemer Engine Co., of Grove City, Pa. Each machine has a capacity of 165 hp. and is belt-connected to a 100-kw. 250-volt generator. These engines are in constant use and cost less to operate, even when the cost of the fuel consumed is considered, than do the steam engines at the near-by plant of the Buffalo & Susquehanna Coal Co.

In starting the engines are "turned over" a few times by compressed air, when they begin operation as internal-combustion engines. The company officials maintain that for an isolated mine this type of power plant is the most efficient now available, for dependence is not placed in long high-tension transmission lines, as is the case where energy is purchased. The services of three or four firemen who would be necessary if the plant were steam-operated also are dispensed with.

May Use Midwest Coal for Water Gas

THAT it may be possible to replace coke by the cheaper grades of Indiana and Illinois bituminous coal in the generation of water gas, thus reducing the cost of operation of many water-gas plants in the central Mississippi Valley that have been experiencing financial difficulties, is indicated in Technical Paper 246, "Water-Gas Apparatus and the Use of Central District Coal as Generator Fuel," by William W. Odell, fuel engineer, just issued by the U. S. Bureau of Mines.

By reason of the greatly increased cost of the gas oil which is used to enrich water gas, and the higher costs of coal and labor, many gas companies, especially those having franchises that call for the delivery of gas of a certain quality at a certain price per thousand feet, are having financial difficulties, says the author. Reconstruction of plants to manufacture coal gas instead of water gas is difficult if not economically impossible under present conditions. The situation calls for the use of practicable economies and methods. One of these economies is the use of cheaper grades of coal to replace anthracite or coke. In the course of its investigations for increasing efficiency in the use of fuel the Bureau of Mines has given attention to various problems bearing on the manufacture of water gas. This paper presents certain preliminary studies made while considering the possibility of substituting Indiana and Illinois coal for coke in water-gas generator sets.

The report is founded on the author's experience during a number of tests of several months' duration wherein Central District bituminous coal was used as generator fuel, but is preliminary to a study of the design of water-gas apparatus especially adapted for use with bituminous coking coal. Some of the striking differences between the operation with coke and with coal fuel are pointed out. Indications are made of the saving of generator fuel realizable in operating with coal fuel when means are provided for utilizing the excess heat in the blast gas and obtaining the same efficiencies as prevail when operating with coke fuel, which is the usual practice, favored because supplementary to the old-style bench-retort system of making coal gas.

Despite a High Hill and Winding Approach Tunnel Rapidly and Accurately Driven

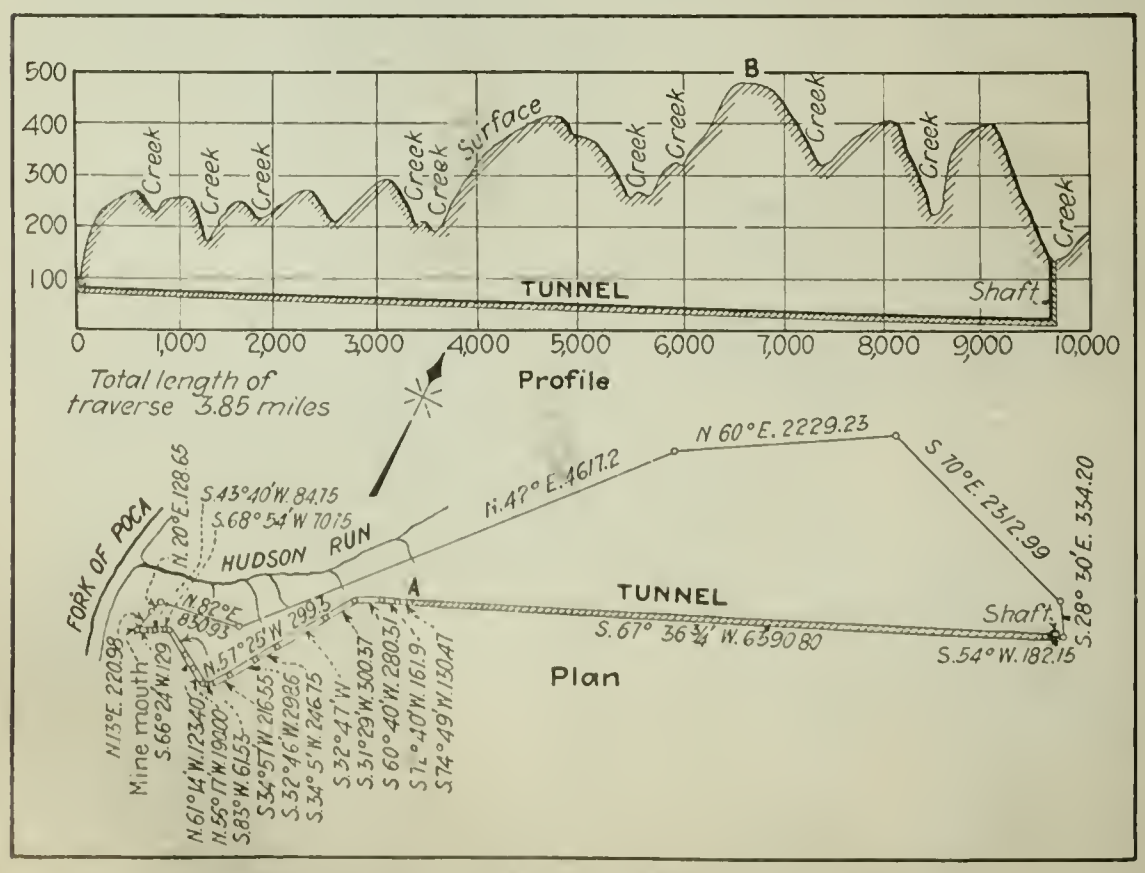
Tunnel of 7 x 10-Ft. Cross-Section Driven at Rate of from 440 to 700 Ft. Per Month, While on a Survey of Between Three and Four Miles the Centre Lines Lacked an Inch and a Half of an Exact Coincidence

By M. W. Venable
Charleston, W. Va.

RECENTLY a tunnel was completed for the Plymouth Coal & Mining Co., of Plymouth, W. Va., the object of which was, by passing through barren territory, to reach a body of high-grade coal lying some 6,400 ft. eastward from the old workings of the mine. It is believed that a good record was made in this work, both in rapidity of driving and accuracy of alignment.

Having ascertained by core drilling the nearest point at which good coal could be found east of the old workings, a suitable place for a shaft was selected, and work begun. This shaft, 12 x 20 ft. in dimensions, was sunk through the ordinary shales and sandstones of this region, reaching the coal floor at a depth of 144 ft. It was completed and ready for the driving of the tunnel and developing the mine fifty-seven days after work began.

A survey was then made from a point in the head of the old workings (at A on the map) running westward to the mouth of the mine, thence to the right and along the valley of a small creek through timbered lands, crossing the ridge 450 ft. above tunnel grade, thence to the shaft, down it and about 180 ft. along a short entry driven westward at right angles to the long axis of the shaft, to two spads or eyelets in the roof, on the line of this entry.



PROFILE AND PLAN OF PLYMOUTH TUNNEL

The grades on this illustration are exaggerated fivefold by the use of a vertical scale five times as large as the horizontal. Nevertheless it is easy to see that the survey was made under most adverse conditions. The use of sewer pipes as a return airway for a distance of three quarters of a mile from each starting point shows how conduits of this kind can be effectively utilized.

The traverse was calculated for the length and direction of the tunnel, the total length of traverse being 3.85 miles. The point A in the mine was then located on the surface in the usual manner, and the calculated course of the tunnel was run for about two-thirds of its length, or 6,550 ft., to a point at *B* on the main ridge, where hubs were carefully set. Next the point in the heading west of the shaft was similarly located on the surface and the calculated course of the tunnel was run westerly to the two points already set at B. It thus was ascertained that the two lines passed each other practically parallel and only ½ in. apart. No correction was attempted, but driving was commenced on the centers as calculated.

Tunnel Driven Through Cannel Slate

Work was begun on Oct. 15, 1919, on the west end, and on Feb. 20, 1920, on the shaft end of the tunnel. With the exception of six weeks lost by reason of a strike, the work was prosecuted continuously, Sunday and holidays excepted, until the headings met on Feb. 17, 1921, the center lines passing each other within 1½ in. with an angular divergence of less than one minute.

In transferring the line down the shaft the plummet wires were less than 8 ft. apart, fine piano wire being used. The tunnel was 7 x 10 ft. in cross-section. The material excavated was a petroliferous black shale almost a cannel coal in physical characteristics, though somewhat harder. It drilled and blasted well and was generally self-supporting. The grade undulated considerably, following the strata, but had a general drop of about 80 ft. from the mine mouth to the shaft, a distance of 9,700 ft.

As no parallel entry was driven, adequate ventilation was a serious consideration. This was accomplished, however, by means of 12-in. vitrified sewer pipe laid in cement. Air was supplied by 16-in. electric fans. At points 2,000 ft. in from each end 14-in. booster fans were placed. These kept the air in good condition until about the time the headings met, when it became slightly stagnant. About 100 ft. of flexible canvas hose was used near the faces because of blasting. No trouble on account of ventilation is expected in operating this tunnel with electric motive power. The sewer pipe used for conveying the air was taken out with little

breakage soon after the two sections of the tunnel met.

After the work was systematized the driving was done in 8-hr. shifts, with two men and a helper to the shift, drilling, blasting and loading all material. The average monthly advance was 400 ft., while the best drive for any one month was 700 ft. The track is of 30-in. gage and will be laid with 60-lb. steel rail. The car capacity is 2½ tons and the motive power will be furnished by 20-ton electric motors. The accompanying map and profile show clearly what work had to be done.

Survey work on this job was done under my direction by Charles B. Holsclaw. No attempt was made to measure exact horizontal distances. The slope distance multiplied by the cosine of the vertical angle was used for their determination, and as the ground was quite rough, practically all measurements had to be made in this way. W. C. Mitchell, vice president and general manager, had charge of the work for the company.

Looking Ahead With the Diamond Drill*

Lehigh Valley Coal Co. Has Drilled About 96 Miles of Diamond Drillholes to Ascertain Cover Over Coal, Some to Vein and Some to Upper Surface of Rock—Methods of Locating and Recording Such Drillings

By Robert A. Evans†
Wilkes-Barre, Pa.

A FEW years ago, having platted a borehole record on our maps, I remarked that the use of the diamond drill was fast becoming as necessary an adjunct to mining as the miner's drill. That borehole was No. 747 of the Wyoming Valley series. Last week I received a record of borehole No. 4,101. Allowing 800 unassigned numbers for the four divisions in Wyoming Valley, I realized that within the past eight years we have drilled 2,554 boreholes having an aggregate depth of ninety-eight miles.

About 2 per cent of this drilling was done with the churn drill, the holes ranging in diameter from 4 in. to 20 in. and in depth from 50 ft. to 700 ft. These holes were used for operating purposes, short cuts for steam lines, electric cables, air lines, silt, pump dischargers, etc. The other 98 per cent was accomplished with the diamond drill, and the data thus obtained supplied the mining engineer's department with a knowledge of the otherwise hidden condition of the coal measures and overlying strata, much as the Roentgen rays reveal to the surgeon the subcutaneous structure of the body. This great amount of diamond drilling is made necessary by two factors: safety and economy.

Diamond Drilling as a Safety Factor

It was found by unfortunate experience and by subsequent drilling that the rock floor of Wyoming Valley is covered with 50 to 300 ft. of sand, gravel and clay, which was deposited by the river long after the glacial period, at which time the ice caps from the north ground down this rock far below the original level of the valley (Bulletin 45, Bureau of Mines, 1913). The voids or space between the grains in the sand deposits and the pebbles in the gravel are filled with water which seeps in from the river and the surface.

Unfortunately, the glacial action did not plane the rock floor smooth and our drilling reveals the existence of hills and valleys, perpendicular cliffs 100 ft. to 150 ft. high, and pot holes from 40 ft. to 300 ft. in diameter and from 10 ft. to 60 ft. deep. The cliffs were due to the varying hardness of the rock, the ice scooping down deep into the softer rock and meeting greater resistance in the harder material, and the pot holes were caused by streams under the glaciers which, swirling along for thousands of years, gradually bored down into the rock stratum at the eddies and formed these circular depressions.

Under this floor are the beds of anthracite coal which have made Wyoming Valley one of the most prosperous sections in the world. These beds also have their hills and valleys and perpendicular cliffs caused by the same great force which formed our surrounding hills, and our whole Appalachian Mountain chain. As a result of these actions we find the coal beds at varying depths below the floor of the valley.

The problem for the engineer to determine is how close to the rock floor of the valley can we mine with absolute safety to the men and the workings. In the early days of mining many serious disasters occurred from removing the coal at points where it was too close to the rock floor the mining resulting in a failure of the roof of the workings and a consequent inrush of the saturated sand and gravel (Bunting, American Institute of Mining Engineers Proceedings, 1915). To determine what is a safe thickness of rock over the workings a thorough study must be made of the composition of the surface wash and of the character of the rock over the coal bed.

For instance, where the roof of the bed was a hard sandstone the coal was successfully mined within 20 ft. of the top of the rock under wash varying in thickness from 50 to 75 ft. In another case the rock was poor, but the problem was solved by driving the breasts only 15 ft. wide, thereby diminishing the span of the slab. In another place it was found that while the surface wash

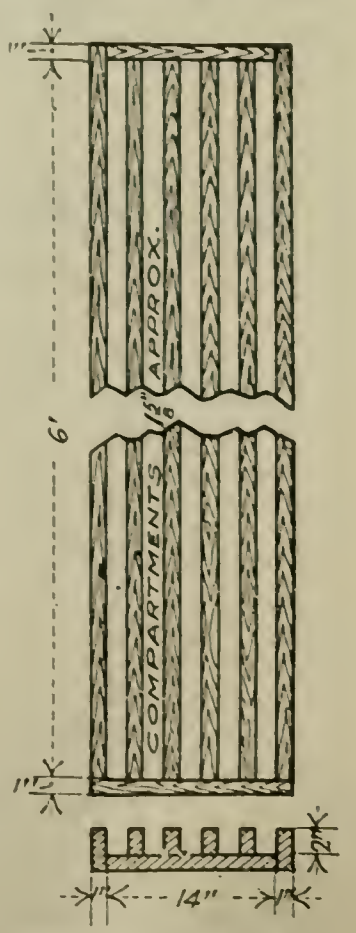


FIG. 1. CORE BOX
Rock is put in core box for inspection, but is thrown out after examination by the engineer in charge.

*Reprinted from Lehigh Valley Coal Co.'s *Employees' Magazine*.
†Mining engineer, Lehigh Valley Coal Co.

BORE HOLE NUMBER	COLLIERY	PROPERTY	NORTH-ING.	SOUTH-ING.	EAST-ING	WEST-ING.	SURFACE ELEVATION	DEPTH	DRILLER	DATE FINISHED	COST	COLUMNAR SECTION PLOTTED	KIND OF HOLE AND SIZE	REMARKS
4100				293598		3350.26	1187.89	206.00'	J. Doe	10-21-20	$491.09	10-25-20	D.D. 1¼	2 bags of Cement in Hole.
4101														
4102														

FIG. 2. DATA REGARDING BOREHOLES ARE CAREFULLY ENTERED INTO A BOOK FOR REFERENCE
Record not only contains details as to drilling location and cost but gives the co-ordinates of the survey for locating the hole on the mine map. As they are all entered in one volume, they are handily located for examination.

was 125 ft. deep, a stratum of blue clay 40 ft. thick immediately overlaid the bed, and it was found possible to mine directly to this stratum, leaving no rock over the bed. Under these conditions to recover a maximum percentage of the coal at a minimum risk the mining engineer must have some means of looking ahead of the workings. His X-ray is the diamond drill, and the data obtained must be gained intelligently and with the utmost accuracy.

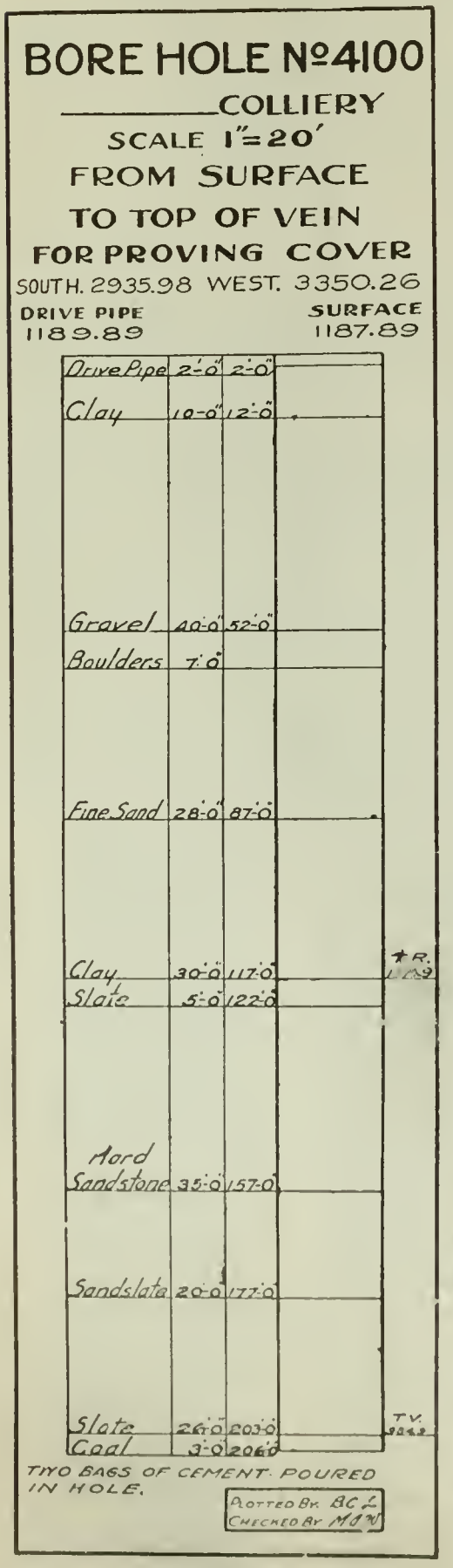


FIG. 3. COLUMNAR SECTION OF BOREHOLE
Every borehole is plotted, the names of the different types of strata being standardized so that like material is always similarly described. Comparison is easy in consequence. Lineal scale used is twice that in cut.

It is known, say, through experience that the rock forming the roof of a certain coal bed is of such a character that breasts 24 ft. wide can be driven with absolute safety to points which are 75 ft. vertically below the rock floor of the valley. Our cross-sections, based on the elevation of the workings and general borehole data, show that the faces have advanced to the point where the overlying rock is from 125 ft. to 100 ft. thick.

The engineer in charge then knows that he must have more detailed knowledge of the topography of the rock floor, and he proceeds to lay out a sufficient number of boreholes to obtain it. From the data at hand he plats, on a blueprint of the workings, the outline of the area which will have a probable rock cover between 100 ft. and 60 ft. thick. (These preliminary limits vary according to whether the vein is flat or on a pitch.) He then lays this area out in blocks which are 200 ft. square when the rock-cover limit is to be over 50 ft., and 100 ft. square when less than 50 ft. He accommodates the lines to previous drillings or to the course of his workings.

At each corner of these blocks a borehole is to be drilled and he makes an estimate of the number of feet of wash and rock to be drilled through. Estimating the cost of drilling at a fair price per foot and making a proper allowance for attendance, he determines the cost of the work. An estimate is then made of the number of tons of coal involved and an application is made for an appropriation, the cost of the work per ton being stated. When the work is approved by those in authority and authorized by the president, the contract for drilling is let out on competitive bidding.

Great accuracy must be used in the preliminary location of these boreholes. A start is made from a survey of known accuracy and stakes are set at each hole location, a continuous survey carried from stake to stake, and a closing meridian and co-ordinate tie made from the last stake to a station of a closed survey.

Preliminary elevations are taken on the stakes and on the surface at the stakes with the same degree of accuracy. Each borehole is given a serial number, which is marked on the stake by the location party. As a check this survey is calculated and platted in pencil in the usual way. I have seen several cases where drilling was valueless because of careless and faulty preliminary location.

Contractor and Drill Runner Keep Record

When the hole has been staked out and the surveys are closed satisfactorily, the drilling contractor is supplied with a sufficient number of blank forms on which he is required to report the number of feet drilled during the week, together with a measurement of the various strata as exhibited in the core and a description of such strata. This is certified by the drill runner.

The back of this form is arranged so that it can be used for filling in the report number, serial number of borehole, date, colliery location, co-ordinate location, elevation, etc. This report is valuable in that the division engineer can keep in touch with the drilling and that it supplies an irrefutable original record. The driller is next shown the hole locations and is given a sketch of the layout showing the order of drilling, the borehole numbers and information as to the probable depth that each hole will be drilled.

It is here necessary to explain that our practice in drilling to prove rock cover is to drill at least one hole in each block directly to the vein—that is, in working to a rock cover greater than 50 feet, the vein holes are drilled in 400-ft. blocks, and in 200-ft. blocks where it is intended to work to a rock cover of less than 50 feet.

This is done in order to determine the character of the rock over the bed and to eliminate any possibility that the amount of rock cover might be erroneously calculated as a result of the elevations in the bed work-

ings being incorrectly recorded. Where it is desirable to obtain an elevation of the bottom of the bed, the hole is drilled through the coal for that purpose; otherwise it is drilled only far enough into the bed to identify it.

The other holes are drilled into the solid rock to a depth of 10 ft. to guard against the presence of large boulders such as pot holes are apt to contain. That 10 ft. of rock drilling is sufficient to prove solid rock is apparent from the fact that to my knowledge no boulder of such thickness has been encountered in any of our drilling.

The driller is now furnished with boxes built at the colliery, in which to place the core as drawn. (See Fig. 1.) Where the purpose of the drilling is to prove rock cover only, the core is thrown out after it has been examined and checked by the engineer in charge. When two or more drills are employed an engineer is in constant attendance from the time that drilling is started. It is his duty to see that the drill runner makes a close inspection of the washings while sinking the drive pipe, in order that the composition of the wash may be thoroughly determined.

It is of prime importance to know, for instance, whether the material directly on top of the rock is clay or quicksand and the thickness of the stratum. The experienced driller can readily determine this by his washings. Where only one drill is employed and the drill runner is so experienced and reliable that the division engineer does not feel warranted in placing an engineer in constant attendance, the drill runner is given a clear understanding of the importance of identifying the wash through which he drives his pipe, and is instructed to notify the office when he is confident that he has reached solid rock. Upon such notice a man is sent out so that he may be present while the rock is being drilled.

Why Some Coal Drillers Need To Be Watched

I may state that footage is of first importance to the driller, and I have seen cases where, in a caving hole, the 10 ft. of rock core he was required to deliver was substituted from another hole, while in another case the driller, after reaching the rock with great difficulty, found easy boring, and after drilling 20 ft. threw all but 10 ft. of core away. These cases are rare, the runners, for the most part, being reliable men, but with so much at stake, the element of chance should be reduced to a minimum.

When the borehole is finished the engineer measures the drill rods as they are hoisted, first placing a mark on the rods flush with the top of the drive pipe, as this is the base from which the driller records his measurements. The total depth is compared with the driller's measurement, so that any difference may be adjusted and checked on the spot.

The distance from the top of the drive pipe to the natural surface also is measured and compared, and a stake is driven near the hole with its top level with the top of the drive pipe, in order that the surveying party on final location may determine by levels the elevation of the driller's measuring point.

Where the hole has been drilled to the vein, the driller is instructed to prepare a sufficient quantity of portland cement to fill that portion of the hole which has been drilled through the rock. One bag of 100 lb. will fill about 50 ft. of the usual 1¾-in. hole. This cement is mixed thoroughly with water and poured into the drive pipe, care being taken that no lumps larger than ¼-in. diameter are allowed to enter. The solids are given a short time to settle before backing up the drive pipe.

The workings have cut a number of holes treated in this manner and I know of no instance where we have discovered them leaking, whereas in workings where we have cut holes not cemented we have no end of trouble in plugging them in order to stop the inflow of water. We have recovered cement cores in pieces as long as three feet and with sufficient tensile strength to withstand breaking when ordinarily handled.

The drive pipe is measured as pulled and its length recorded by the engineer, in order to check and compare on the ground the driller's record of the amount of surface wash. Whenever possible the final survey location is made and the elevation is taken as soon as the holes are completed; otherwise a marker is set in the site after the drive pipe is pulled.

The core recovered from the vein holes is examined carefully by the engineer and an effort is made to express the driller's identification of the strata in terms by which the character of the rock may be determinable later. The inexperienced runner is prone to misreport a wet core, and, therefore, we recognize only six classes of rock; namely, pea conglomerate, hard sandstone, seamy sandstone, sand slate, slate and fine clay.

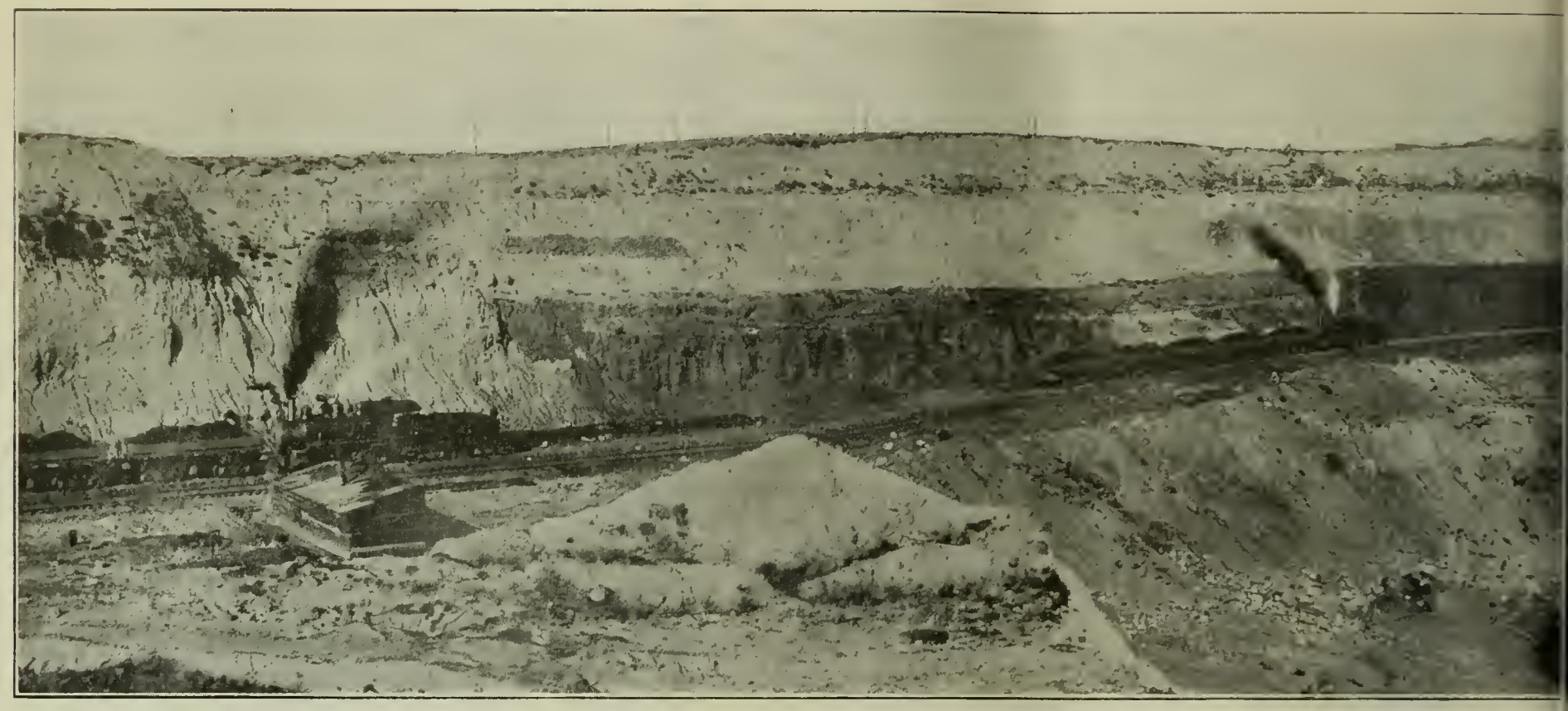
Much Care Used in Compiling These Records

The preliminary and final locations of the boreholes are referenced in the field and office notes by their serial numbers and by the calculated co-ordinate values, and the elevations are checked as soon as possible after completion. These data are entered in an office record book, specially prepared for this record. (See Fig. 2.)

Within a reasonable time after a hole is completed, the drilling contractor furnishes a record of the strata cut, as measured from the top of the drive pipe, stating the height of the drive pipe above the natural surface. This record is compared with the weekly reports, and the depth of wash and the total depth of the hole are checked with the engineer's measurements as entered in the office record. A columnar section is then drawn on tracing cloth to a scale of 20 ft. to 1 in. (See Fig. 3.)

Sufficient drilling having been completed, the engineer contours the rock floor of the valley in the area tested with a view to determining the existence of pot holes or abrupt ledges, and if the contours appear uniform and he is satisfied that no additional drilling is necessary he prepares to direct the workings forward to the approved limit. He first proves, absolutely, the correctness of his bed surveys and elevations and then provides the mine foreman with a print showing a preliminary safe stopping distance, referenced to a survey station, and instructs him to stop the breast or gangway at once should any abnormal pitch of the vein be encountered.

No working place is allowed to enter a block unless all four corners have been drilled. When a place reaches its preliminary stop distance, the foreman notifies the division engineer, and a level party is sent out to find the elevation of the normal roof at the most advanced point of the breast. If the roof is regular, the engineer can then usually determine from this the final stop distance of the place. A foreman experienced in driving to a rock-cover limit can so arrange his requests for final elevations and stop distances as to avoid any interference with his output. Surveys of places that are driving toward areas of shallow rock cover should be frequently extended.



THE SHENANGO IRON PIT IN THE MISSABE RANGE, MINNESOTA, EXHIBITS WELL HOW THE IRON INDUSTRY HAS

Coal Mining as Seen

Believes That Four Improvements Necessary: Mechanical Loading, at Points of Large Consumption, and Classification According to

By Arthur J. Mason

JUST before the war circumstances took me for the most part of a year into contact with coal mines and mining. I had passed a good many years in the steel business participating in the reform which changed the manipulation of the raw material used in steel making from hand work to machine, and had seen the cost of a typical unit act, such as unloading a ton of iron ore from ship, drop from 25c. a ton to 5c. or less. I had watched the slow sobering of the personnel in a plant as the introduction of machines took from the shoulders of the sons of men excessive physical work—so excessive as each night to leave a man in such a state that relaxation and entertainment could come to him only through the use of alcohol.

I had watched the process of picking out and promoting the brighter spirits in the crews to jobs calling for greater skill and thought and had noted the stimulating and uplifting effect on groups of men as they participated in bringing about a plan to do more and better work, each one, each day. Through such observation I have come to a firm and definite conclusion of the value of labor-saving devices to masses of hard-working men in elementary work, even though the first effect seems to be to run them out of a job.

Labor-Saving Devices of Primary Importance

Part of that conviction is the belief that there is no other procedure to raise the status of such groups but in labor-saving devices. Further, that the enormous economic advantages are not more important than the moral effects which contemporaneously and naturally flow from the use of such devices. Only through them can we lighten, sweeten and render more profitable the lives of the millions of men who now work out of sight in coal mines.

The poor Asiatic actually regards jealously a beast of burden as his competitor and rival. We will not go very far until we remove from down in the coal mine the obsession that steam and electric beasts of burden are competitors and rivals of men's bodies—the Asiatic view—and substitute the belief that these agencies are friends and humble aids just as much as domestic animals.

We are met to study the economics of the coal harvest. The viewpoint I am to take is that of an outsider. Not always does the onlooker see most of the game, but his view is bound to vary either from the coal operator, who is too close to the game and too interested in its habits, or the economist and statistician, whose mind dwells on the refinement of the existing order of things as set forth in recorded facts. The ore man first realizes the radical difference surrounding the art of ore handling as a stage of steel making from its kin the art of coal mining.

The steel business is dramatic; it has been very profitable; great fortunes, remarkable men, are associated with it in the public mind. Vast numbers of fine technically-trained young men seek it. Steel plants are adjacent to large cities; the personnel participates in the life of such places. It employs all the arts, and its work is easily translated into readable journalism. On the other hand, coal getting is essentially provincial. It is a dirty occupation; out of sight. It attracts a large number of simple-minded, vigorous men, largely of foreign birth, who from their isolated lives have small chance for what we call Americanization. This is not an unfair statement, and explains the fact that iron-ore handling has gone so far—has already achieved the reform in procedure which coal mining awaits.

The four great opportunities in coal production and use appearing to me are:

(1) Mechanical loading of the coal after the face is shot in the mine.

(2) The establishment of great storage piles at points of large consumption.

(3) Reform in use and distribution of coal at large cities.

(4) The classification of coal from its chemical and physical characteristics in the manner that wheat and iron ore is now classified.

I will deal with these four ideas in order.

The outsider with technical training and experience is astounded when he first comprehends the fact that nearly 700,000,000 tons of coal each year is shoveled by hand into mine cars in this country alone. It is to him as though we were to go back to spading our land in agriculture instead of plowing it. Let me try and visualize this work for you. The coal we burn in the months of January and February would fill up the whole Panama Canal. Who would contemplate that great work as a possibility with hand tools!

A million men in the United States, another million in

*Abstract of paper read before the American Economic Association at Atlantic City, Dec. 28, 1920.

OBTAINED BIG RESULTS FROM THE USE OF LARGE LOCOMOTIVES AND CARS FOR STRIPPING AND LOADING

by an Ore Engineer*

in Coal Production and Use Are Establishment of Storage Piles Reform in Use and Distribution, Chemical and Physical Features

the United Kingdom, pass their working lives down in the mine or near the pit mouth in the work of transferring coal from its long resting place into railroad cars.

Were it not for the peculiar psychology underground, were it not for the fact that this mining is dirty and its details unknown to society this matter would have been disposed of long ago. Give access to the mechanical ability of the nation, spread news of the need and opportunity, and the same kind of wit which dealt with the harvest will speedily and easily deal with coal.

I do not regard this problem as mechanical so much as psychological. In view of what we now do in other forms of excavation, I do not regard the job as especially difficult. My observation for the past forty years leads to the belief that intellectual and economical appeals, however logical, sound and fortified, make little headway unless accompanied by some moral and sentimental appeal.

Can one conceive a proposal more splendid than one to bring to the surface and the light of day 700,000 men to do some finer and better work, and to bring upward with them their families and dependents? One cannot escape the conclusion that mechanical loading of coal is the principal change necessary to do this.

The prices the miner receives so much referred to in our daily papers require him to bore the auger holes, furnish the explosives and pay for the cost of undercutting the coal by machine. After the explosion he must shovel the coal into cars. The cost of providing for the explosion, plus the cost of undercutting, amounts to about 15c. If the total paid miners be, as it is in Illinois, $1.04, then for the job of shoveling a ton of coal into a car the miner and his "buddie" get not less than 89c.

This is the particular act the wastefulness of which I would now emphasize. If in agriculture the land were prepared by such a primitive process, then either wheat would be worth $15 a bushel or agricultural labor be paid at a rate of not more than $100 a year, a sum much greater than is now paid in China, where such primitive methods do prevail in agriculture. The truth is that the mechanical genius of the nation has passed by this great opportunity unaware.

Is it just to the rest of us that this particular calling should remain so far behind? When one recalls the wonderful things done by labor-saving devices in the mighty aggregate effort of this nation each year, no sensible, reasonably-qualified mind can doubt that this work of shoveling can and will be done for a fifth of its present cost by machine, and at the same time everybody's job be lighter, pleasanter and more profitable, precisely as such has been the case with the changes in handling iron ore. Furthermore, the work of boring the auger holes and loading them with explosives will be better done by experts who do nothing else, just as the undercutting has already been relegated to experts, in whose hand the undercutting machines now do this work far, far cheaper and less wastefully than the old-fashioned miner, wielding a short sharp pick, could ever do it.

"Machine-Mined" Characterized as Misleading

Let me state here that when you hear of machine mining of coal it refers only to coal under which the slot has been made by machine. The expression "machine mined" is misleading. It is true that machines are available to do the major operation, but so far they don't do 1/5th of 1 per cent of the loading, and their extensive use is always threatened by the natural mistrust engendered by an old-world attitude prevailing in the rooms of our coal mines.

I am about to state a most glorious fact, not much known, yet which often cheers the little groups of choice spirits in each art who have brought about the wonderful labor-saving devices at the bottom of our national success. That fact is that whenever we start up some bold and economical change in our work we almost invariably find collateral, incidental and unsuspected benefits as great as those we first had in mind. I will name one out of a mass.

When we undertook to handle iron ore mechanically, the great comprehensive tools brought forth enable the ore to be piled in such masses that we abolished winter. I will pass to contemplation of the collateral benefits necessarily flowing out of a system of complete mechanical mining of coal.

Roughly speaking, one may justly say that the operating cost of putting a ton of coal on a railroad car is twice the sum paid the miner. The half not paid him forms the cost of creating and maintaining in the mine local transportation, ventilation, drainage, light, search and safety, management, lifting coal to the surface, and general maintenance.

This whole group of costs varies directly with the underground area from which the coal is gathered. For my pres-

ent purpose it is a fair assumption to state that for each 1,000 tons brought up 100 acres below is provided with a labyrinth of entries, rooms, tracks, switches, ventilation devices, so that in a big mine, raising 5,000 tons, almost a section or mile square is so organized—a city underground, which utterly bewilders the novice on first acquaintance.

This area largely arises from the pseudo ownership which every miner acquires of his room or rooms, technically known as his place. This place he inhabits with his "buddie" and owns for perhaps a year. An unwritten charter has for a century given him rights which are sacred. He works, or does not work, like the rest of us, according to his health, his wife's health, national holidays, his interest in sports, his funerals, his marriages, his quarrels. The problem of supplying empties or taking away loads from his rooms or places, thus becomes a sort of game of chess, almost impossible of proper organization. From this the miner himself suffers most of all.

It is trite to say that progress at any point in a coal mine, like any tunnel, will proceed with the frequency with which a face is shot. I find that the room faces are shot in southern Illinois on an average about once in four days. If these faces were shot every day, it must surely follow that the area kept alive with all the agencies I have mentioned would be cut down correspondingly. That is to say, two and one-half acres become the equal of ten acres, and the cost of mining over what is paid the so-called miner would fall in much that measure.

Machine Loading Will Concentrate the Work

Machine loading will necessarily abolish the institution of places in coal mining. A group of six men with loading machine and gathering motor should average 100 tons of coal per hour loaded in mine cars and delivered to the general transportation system of the mine. This crew will proceed from room to room, with much the same sort of order that we follow in other work of a kindred character above ground. Machine loading will enormously concentrate the work. Inasmuch as there will always be a gathering locomotive in attendance, there will be hardly any limitation to the size of mine cars. They should rise to ten, or even fifteen tons, instead of two or three or four as a present average.

Throughout the procedure everyone will thing and act in larger units, and this is no small matter. Ten years ago in an earnest inquiry I could find no reason, nor could any of my expert friends on the ground find any, for the fact that coal in London, 250 miles by water route from two great coal fields, was $3.70 per ton f.o.b. cars, while coal in Chicago, 300 miles by rail, plus a terrible winter, was $2.30 f.o.b. cars—wages in Illinois being almost three times wages in England. No other reason, I say, but thinking and acting in our case in large units. The Englishman did his work in what I can find no other fitting expression for but a piddling way, his mine cars like baby carriages, his railroad cars hardly bigger than our delivery trucks. No one could pretend that English miners are inferior to our miners as miners. When they come here they hold their own. Yet they get but 250 tons per year against our 600 tons. Our surprise at this is only heightened when we find that the miner of the Steel Corporation doubles this figure again, and gets twice as much coal as the miner outside the Steel Corporation. There seems no limit to what a man can do when properly fortified by organization and tools.

Predicts Material Fall in Coal Production Cost

Having prognosticated certain things twenty years ago with success, I will go into the game again and prophesy that coal production cost at the pit mouth will fall two- or threefold within the coming ten to twenty years, and yield more profit to all concerned than ever before, excepting of course our last three years' spree.

The greatest economical waste in the coal situation is the waste of manhood—waste both physical and intellectual. Most of our miners come from a European environment—cruelly hard and lacking in opportunity. Life in the mine and a home in the vicinity do not afford what all good men most desire, an opportunity for prompt Americanization. Being isolated groups, often nationally coherent, forces are very strong to preserve the old world mentality and habits.

This situation is aggravated by the fact that coal mining has been allowed to become a seasonal industry, due to our severe climate and its caprices—my second great opportunity.

From the beginning our ore industry stopped each year with the freezing of the Great Lakes. We were forced to introduce storage systems, and out of them has developed a most astonishing group of effective mechanisms, which are ready to the hand of those manipulating coal. The intermittent characted of bituminous-coal mining is very demoralizing. I wonder how many men in this room would retain their equanimity did they live under circumstances wherein day after day, week after week, year after year, they could not forecast from day to day when they would work, how much they could work, bread and butter requiring that they must work.

Our soft coal mines have not probably averaged 200 days' work in the year. The difficulty has always been—what 200 days; no one could tell a week ahead. The obvious remedy for this is the storage pile at centers of consumption.

An Instance of Economical Coal Carrying

It is interesting to know that this system has long been in existence in dealing with the coal for our Northwest. Many millions of tons are carried annually by the returning ore vessels to Duluth and other points, and from there distributed as the demand arises. This coal has been carried a thousand miles for the last twenty years for something between 30c. and 50c. a ton—an economical achievement without parallel. Northwest practice has fairly abolished the bugbears of deterioration and of spontaneous combustion, save in very high sulphur coal.

The devices are available now in the car dump and the great storage bridge to put soft coal into stock, and take it out of stock, for something like a total of 10c. or 15c. a ton. The creation of a system of storage and equipment will give continuity to coal mining, but its collateral advantages will be even greater. No longer will railroad cars choke the great yards at division points, demoralizing prices and stopping traffic. The railroad will run its regular trains throughout the year to move the coal. No longer will the coal supply in our cities have its chills and fever as the weather varies. The severe winter storm not only suddenly causes a great demand for coal, it also brings conditions under which even a normal demand cannot be met.

It is an open secret that 0.4c. tariff per ton mile never was, or will be, a profitable figure for railroad transportation in our severe winter. There is every prospect that it will be profitable as a steady volume of business during the fine-weather part of the year. Moreover, a good deal of this ultra coal movement is contemporaneous with the transfer of the harvest. It is altogether desirable that these two maximum streams of transportation should be separated in season if we can do it.

I come to my third item: Reform in the use and distribution of coal in cities. We use about the same amount of coal per capita as England, say six tons each per annum. In our case a large modicum is used to meet a severe climate—that is, keep our bodies warm and commodities from injury; in short to promote comfort.

All of this fuel is very wastefully used. It is a safe statement to say it is burned at a rate corresponding to six or more pounds per horsepower hour, whereas it might be burned in large installations at two pounds per horsepower hour to effect the same result. This fuel is distributed to thousands and thousands of destinations by wheel vehicles along the streets, wearing out pavements and interfering with the traffic. In the same manner the ashes and partly-burned coal, amounting to one-eighth in weight, probably one-fourth in volume, are gathered and finally disposed of.

The primary saving which would ensue should municipalities undertake to furnish heat to the citizens, as they now do water, by means of great central stations, would reach a sum measurably equal to the present total taxation in those cities. The secondary saving, due to the absence of smoke, the prolonged life of carpets, wall paper, clothing, furniture, curtains, laundering, paint and a thousand directions, would, if justly stated, reach such a mighty sum as

CLOSER VIEW OF THE CORE OF THE SHENANGO PIT

It will be noted that the locomotives, cars and shovels, especially those in the foreground, are immense as judged by anthracite-stripping standards. Stripping cars in such pits have air dumps discharging either to right or left. The iron ore itself is loaded into standard 50-ton railroad cars built for discharging into chutes at the docks. The iron-ore pits are just beginning to use shovels such as are used for stripping bituminous coal, and they are being utilized not only to load overburden and waste rock but to load the marketable iron ore into full-sized railroad cars. Large stripping projects can be handled only by large equipment.

even to attract the notice and respect of one of our industrial boards in Washington during the late war.

A man in a city should no more be allowed to light a soft-coal fire in his house than he is allowed to maintain a private water supply in his back yard in the form of a shallow well.

The fourth major reform which the steel business suggests is the classification of coal from its physical and chemical characteristics.

Twenty-five years ago there were perhaps one hundred different varieties of iron ore on the Messabe range, each ore bearing the name of the mine—fondly supposed by the owner to have special merits. The Steel Corporation classified all this ore into five grades or groups. This act has enormously simplified the movement of fifty million tons. In the same way, our wheat loses its identity the moment it appears at a railroad. It then merely becomes so many bushels of No. 1 Red or some other grade. It would be impossible to move our harvest if the identity of each parcel of grain were preserved.

Further Economy in Systematization

The benefits which would accrue from a systematization of this character in coal would be very great, and ramify in many directions. Let me pick out one. The bulk of our coal in cities is delivered to team tracks and shoveled from the cars into wagons or trucks. I know of land in Chicago worth a half million dollars an acre devoted to such a purpose—a most wasteful use of car time, team time and land time. All this coal should at once be classified by disinterested officials, be mechanically unloaded by car dumps, elevated into great structures like grain elevators, and loaded by gravity into wheeled vehicles for distribution. The cost by such a plan would be an infinitively small part of the present cost, a vast amount of tonnage would be handled on a small area, and the railroad equipment released in a few hours instead of days.

Twenty-five years ago an empty ore car arriving at a Lake Erie port spent some four days before it departed as a weighed load for Pittsburgh. Today it is not a tenth of that time at good harbors. Perhaps you will visualize the saving of space when I state that a metropolitan elevator will store the grain contained in a train of railroad cars six miles long.

The classification of coal according to its genuine contents will protect the public in the same manner that statutes of our states protect farmers regarding fertilizers, throwing out of the game much bunk, clarifying the business and benefiting both producer and ultimate consumer. Today we are able on a dock front 600 feet long to do a volume of business in iron ore of over three million tons. Twenty-five years ago it took a frontage of a mile to handle half as much. The treatment of coal in cities is susceptible of improvement of the same order.

I have deliberately kept to the last two things which it seems must inevitably arise in coal mining when mechanical loading of coal becomes general, both due to the celerity with which a given area will be attacked and the coal robbed. The first one is its effect on safety in coal mining. The public mind is, from time to time, aroused over the story of some great calamity. It sees pictures in the newspapers showing hundreds of women with shawls over their heads, waiting for the bodies of their beloved to come to the surface. Not at such times, statistics show us, do the fatalities arise. The preponderance of fatal accidents comes from pieces of roof falling, not extensive, a few hundred pounds at a time.

Considers Complete Machine Mining Safer

Now every engineer knows that caving, whether in open cut or underground, is but a question of time—ground which is quite safe for a week is utterly unsafe in a month. It is plain to me that nearly all fatalities from local roof falling will disappear with complete machine mining. It is not uncommon to leave coal in the roof merely to strengthen it. I know of mines in Illinois where as much as 20 per cent of the coal is not taken out for this reason: to wit, the roof is not safe for a year without it, but if the same roof was only called on to stand a month, it generally would be safe without the reinforcement of two feet of coal left in place.

The second great collateral advantage I confidently predict as a consequence of rapid machine loading will come from the fact that almost all our bituminous coals may then be taken out by the longwall system, thus winning all the coal, not the dubious 70 per cent we now flatter ourselves with. If this be so, it means a beneficent revolution in all the stages of coal mining. For one thing, the longwall will abolish the dangerous and expensive robbing of pillars in all systems of stall and pillar mining, under which the most of our coal is won.

I find myself so often referring in the steel business to twenty-five years ago. This was the moment when the metallurgical side of the business had so far progressed that the technical groups turned their minds to the perfection of mechanical procedure. It is only just to say that the formation of the Steel Corporation, bringing together large numbers of highly-trained young men in friendly relation, who stimulated, aided, yet competed with each other, has perhaps been the largest factor in bringing about this burst of enthusiastic effort with its grand results to all of us.

The coal business is ripe for changes along the lines indicated in the same spirit—perhaps, too, the moment is opportune. Sadly we must admit we seem to be at the portals of a period of depression. Is this not the very moment to establish in our cities, on our railroads and in our mines the agencies for production to adequately meet the next wave of prosperity and demand? Indeed, will not such a program accelerate the coming of that happy time?

How Long Will It Take the Consumer to Boost the Price Of Coal, at the Present Rate of Production?

Charge That Producers Manipulate Supply to Force Up Prices Shown To Be Unfounded—Expense of Government Regulation of Industry Overlooked—Early Purchase and Storage Would Place Solution of Problem in Hands of Consumer

By Henry W. Gabell* and Dr. Henry M. Payne†

COAL is a necessity of which a certain minimum amount must be burned every year no matter whether the price is $10 or $1 per ton. Its consumption is highly inelastic and almost entirely unaffected by market conditions because a permanently low price has little effect on the total amount of coal consumed. A permanently high price has little effect on the amount consumed because there is no adequate substitute for coal. It might therefore be argued since we in America have a practically unlimited supply of unmined coal and since high prices do not decrease consumption nor do low prices increase consumption, competition should force the price of coal down to the cost of production. The law of supply and demand is commonly supposed to be unfailing in its operations. Why, therefore, should it sometimes fail with coal? It has failed time and again with coal in the last five or six years—the price of bituminous coal has skyrocketed every year, except when the government arbitrarily fixed the price.

This article deals only with bituminous or soft coal. Retail dealers and consumers of Pennsylvania anthracite or hard coal should not read into these statements a parallel to the situation with respect to that kind of fuel.

The consumer, who is the chief complainant on the high price of coal, naturally concludes that some one interested in the production and distribution of coal is arbitrarily blocking the operation of economic laws in order to fill his pockets at the consumer's expense. Public opinion has, therefore, indicted the coal trade for profiteering in a vital necessity, and it behooves the trade to answer the indictment.

The consumer's interest lies in getting the coal he must have at as near the cost of production as possible. Since the consumption of coal is inelastic, the producer's interest is in producing just enough coal to supply the demand. If there is temporarily an overproduction, competition forces the closing of a sufficient number of mines to balance demand, and if there is a short production the resulting higher prices attract new producers in the efforts to balance the supply. The huge untapped sources of supply, the variety of coals, and the great number of people in the coal business make it impossible for the producers or wholesalers of coal to control the price of coal in any way. Nevertheless, during the past two years coal has cost the consumer more than it should have.

The mere production of coal does not solve the problem. When a consumer buys coal he not only buys that which he burns but he also buys transportation. The coal he burns can be produced, but it must be carried from the mines to the consumer before it is of use. A coal shortage therefore is a shortage in delivered coal.

No matter how high the price of coal goes in times of emergency, it does not serve as an incentive to produce and deliver more coal, because no matter how greedy the producer may be, the absolute limit to the profit he can derive from the situation is the amount of coal that can be transported. The railroads, to whom that incentive should then naturally accrue, also are prevented from taking immediate advantage of it because the price of their service is definitely fixed by the government and is not free to follow the dictates of the law of supply and demand.

There can be little question of the absolute truth of the premises outlined above. They are based on the simplest laws of economics and should be thoroughly understood by the buying public. However, there is a widespread conclusion based on these premises, which is entirely incorrect. The consumer argues that since a shortage of delivered coal causes an increased price and since the railroads get no benefit from that increased price, the producer reaps the benefit and therefore endeavors to create a situation necessitating high prices. In further support of this conclusion the consumer introduces the premise that producers deliberately hold coal for speculative purposes in order to increase the difficulty of procuring it at its point of consumption.

Coal is a bulky commodity. The only storage space available for coal before it reaches the consumer's bins is in railroad cars. Any consumer of coal can readily determine how long it would be possible to hold coal for speculative purposes in railroad cars and still make money after paying the demurrage, for the collection of demurrage on a car of coal is as inevitable as death and taxes. Stocks of bituminous coal, according to the U. S. Geological Survey, have been as high as sixty-three million tons. Where has this sixty-three million tons been stored? In the only logical and possible place—the consumer's own bin.

Coal Not Usable Until Delivered to Consumer

It must be remembered that even if the coal has been mined and has been placed in railroad cars, it is of no usable value until it has reached the place where it is to be burned. In times of a transportation breakdown coal delayed in transit is neither a reserve insuring the consumer against a shortage, nor a reservoir in which the coal can be held until the price reaches that desired by the speculator. Granting then, that, compared to the total production of coal, it is highly impractical to withhold coal from the market for speculative purposes, there still remains the fact that the producer derives the benefit of high prices resulting from a shortage in the consumer's bin. Therefore it might still be argued that, although the producer does not attempt to withhold coal from the market, he welcomes transportation difficulties in order to increase his profit.

It must be kept in mind that the consumer's interest lies in obtaining delivered coal and that as long as he pays a reasonable price for that coal, he is entitled to get it. In contemplating his coal difficulties, therefore, he is inclined to look with suspicion on the man who benefits by his inability to obtain delivered coal, and this accounts to a great extent for the popular belief that the producer is not only desirous of bringing about a condition of affairs which will make it difficult to procure coal but that he goes out of his way to cause such a condition to exist. The consumer's general indictment of the producer on that account would indeed have some weight if it could be proved that the producer does profit by such a situation.

*Assistant sales manager, Eyre Fuel Co., New York City.
†Consulting engineer, Andrade-Eyre, Inc., New York City.

Again applying the law of supply and demand, we find that although the actual consumption—the total quantity burned—has remained practically the same, being highly inelastic, in times of a railroad emergency the part of the demand that can be satisfied is restricted to the amount of coal that can be transported. It does not follow, however, that when the amount of coal that can be delivered has been restricted, competition becomes keener among the producers who are in position to supply that amount of coal, and that as a result the price would be forced down. The fact is that it is the consumer himself who forces up the price under such conditions.

During the past six months consumers of all commodities have conducted a determined and concerted campaign to reduce prices by refusing to buy. In the same way the price of any commodity can be forced skyward without regard to competition that may exist among producers, provided consumers insist on buying more of the commodity than there exists to sell. Therefore, although the producer of coal does benefit by a transportation tie-up or car shortage over which he has no control, the amount by which he benefits is strictly limited by the extent to which consumers will bid against each other for a fixed amount of coal.

Panic Prices Are Seldom of Lasting Benefit

The profit made on coal in a period of emergency is of no real and lasting benefit to the producer. In the first place, a panic market always attracts outsiders who have no legitimate excuse for dealing in the commodity and whose efforts are always destructive. The profit which these outsiders derive from such a situation always is a total loss to the consumer and to the producer, both because their ineffective attempts to break into a business of which they know nothing aggravates the transportation situation and because they lack the necessary stability and financial responsibility for any element of permanency.

In the second place, a panic market in a vital necessity such as coal can only operate to destroy good will, an asset of real and lasting value to any established business.

In the third place, an emergency of any sort is always needlessly expensive to everyone involved. Therefore, that excess which the producer is accused of appropriating to himself must be entirely dissipated in the fight for survival during the existence of the useless additions to the trade in rebuilding good will and defraying the expenses of the emergency. Hence, in the ultimate analysis, neither the railroads nor the coal producers derive any lasting benefit from a high-priced market and the consumers' indictment of the producer does not hold water.

On the contrary, does not the accuser become the accused? The railroads most certainly do not relish a tie-up and a high-priced market is of no benefit to the producer. Since both elements of supply are proved guiltless is not demand the only offender left? Supply and demand are the only two factors in any market which can determine price. Is it necessary to eliminate supply in order to convict demand? The consumers themselves are the only ones capable of preventing the offense of bidding against each other for deliverable coal which does not exist.

Can the Wholesaler Prevent Coal Panics?

But before the responsibility for high-priced coal can be definitely placed on the consumer justice demands one more explanation from the coal trade. Granting that high prices are the direct result of bidding for coal which cannot be shipped why does the coal trade permit that condition to exist? Is it not the function of the wholesaler, if not the producer, to prevent such panics?

In times of stress the first to bear the brunt of criticism is the wholesaler. The consumer naturally looks to the jobber for an explanation and relief. When neither is forthcoming, it is human nature to damn the wholesaler and let it go at that. The wholesaler is put on the defensive for a condition which has been brought about by the consumer, and still the consumer places orders with him to buy more coal at any price.

True, the wholesaler's commissions per ton jump from 5c. or 10c. in normal times to 50c. and more in times of stress, but the cost of his service to both producer and consumer increases. He has to increase his traffic staff, send men to the mining region to scout for coal in cars and, in all phases of his business, exert greater efforts to obtain the coal the consumer demands. Since he not only receives no lasting gain from the situation but must bear the brunt of the consumer's wrath as well he is more than desirous of avoiding a panic.

Good intentions, however, must bring results. The consumer is right in demanding reasonably priced coal, and if the coal trade cannot meet that demand the consumer is warranted in seeking a power that will. Government regulation is in the mind of every consumer today as the logical solution of the difficulty. Let the government fix the price of coal—make it unlawful for consumers to bid against each other—and the problem is apparently solved!

Government Regulation a Costly Expedient

But what a lesson we have had on the cost of government regulation! Everyone knows what it cost to build our merchant marine and operate our railroads. True, the cost of winning the war was cheap at any price, but can we continue to pay such prices in peace times? Glance at a map of our coal areas. Contemplate, for a moment, the amount of coal consumed every year—550,000,000 tons. In spite of the size of the undertaking no one will deny that the government can regulate the industry, but at the same time can anyone guarantee *at what price* it can be done?

The producer cannot solve this problem alone, nor can the wholesaler. If the consumer undertakes to invoke government regulation he is inviting even higher cost. Why pay any cost, either for a panic market or government regulation? *Coal is cheap now.* It cannot get much cheaper; certainly not enough to warrant running the risk of waiting until bins are empty and coal is in demand. The railroads can carry coal today, and if the load is distributed over a reasonable period of time, their difficulties will be minimized. Fill bins now while they can be filled and with cheap coal as well. The railroads themselves say that they cannot possibly avoid another transportation crisis next winter. Therefore the cheapest possible way of avoiding another panic with all its attendant evils is to buy deliverable coal now when coal is cheap and transportation available.

Shipments of Anthracite Receded in March; Falling Off Attributed to Mild Weather

SHIPMENTS of anthracite in March, as reported to the Anthracite Bureau of Information, amounted to 5,737,771 gross tons, as compared with 5,966,101 tons during the preceding month of February, and 6,077,821 tons in March, 1920. The decrease last month is generally attributed to the abnormally mild weather of the preceding winter and of the month itself, and to the policy of consumers of holding off purchasing for future needs on account of uncertainty as to prices which might be put into effect at the beginning of the new coal year, April 1. Many consumers of anthracite had sufficient supplies on hand to carry them over the month, and by far the larger part of the shipments made was stocked in the yards of dealers and not distributed to their customers.

The total shipments for the coal year ending March 31 amounted to 69,366,731 tons, as compared with 69,815,034 as reported for the coal year ended March 31,1920, a decrease of 448,303 tons, which, considering the mild weather of the past winter, is remarkably small.

Shipments in gross tons by originating carriers were:

	March, 1921	February 1921
Philadelphia & Reading	1,018,858	1,170,753
Lehigh Valley	1,022,714	1,063,508
Jersey Central	540,556	515,551
Lackawanna	1,020,381	920,788
Delaware & Hudson	837,644	813,191
Pennsylvania	333,687	426,350
Erie	561,013	633,706
New York, Ontario & Western	144,930	153,017
Lehigh & New England	257,988	269,237
Totals	5,737,771	5,966,101

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

WILLIS H. BOOTH, vice president of the Guaranty Trust Co. of New York, recently returned from a three-months' trip through the leading commercial countries of Europe, is of the opinion that, in spite of the difficulties the European commercial and financial situation obviously presents, the recuperative powers and the industrial will-power of the peoples of Europe still remain unimpaired and he states that in no country did he find the spirit of despair which the hardships under which they are suffering might not unnaturally produce.

In commenting upon the situation generally Mr. Booth said: "One of the most reassuring factors in Europe today is the rapid recuperation of the French people from the effects of the war. This is evidenced by the turn in their trade balance last month, which, for the first time in years, was favorable to France. Of course, the great outstanding problem today is the situation in Middle Europe, particularly in Austria. The problem of how Austria's needs are to be financed is the deep concern of England and France, and so far no effective method has been devised. The Russian situation, of course, then presents the most critical aspect in Europe. Until Russia, either as one country or many countries, is restored to orderly economic life, there can be no sustained prosperity in Middle Europe. Germany is marking time pending some decision on the reparations question. England is in a state of industrial unrest, the outcome of which it is difficult to foresee. Until her labor conditions are stabilized it is certain that England will not be able to function efficiently in either commerce or industry."

Willys-Overland Output Growing

There are now 4,000 men at work at the Willys-Overland Co.'s plant at Toledo, Ohio, according to vice president Charles B. Wilson. General upbuilding of this force will continue, and it is expected that 6,000 men will be on the payroll by May 1. Production is also increasing at the Willys-Overland plant. Orders are coming in so satisfactorily now, Mr. Wilson says, that the working time has been increased from four to six days a week, which is equivalent to adding an additional 2,000 men on the old basis. It has been necessary to increase production schedule again to meet sales requirements. Dealers are reporting increased business in various parts of the country, and the company is looking forward with optimism to the recovery of business in general.

Jersey Central Shops to Open

Workers in the shops of the Central Railroad of New Jersey at Elizabeth, N. J., were expected to return to work April 18, according to a report following an announcement April 13 by C. E. Chambers, superintendent of motive power, that the shops would be reopened. The shops were closed seven weeks ago when the road announced that it could no longer pay the current scale, and it was said that the men probably would accept the cut.

Youngstown Steel Mills Speed Up

Steel mill operations in the Youngstown district were increased last week, particularly in sheet and tin mills. The spurt is said to be due principally to insistence of small buyers on quick deliveries. The Trumbull Steel Co., at Warren, increased the number of operating sheet mills from six to seventeen, and the Falcoln Steel Co., of Warren, which was closed two weeks ago, opened seven sheet mills. The larger steel plants show slight gains.

Missouri Pacific Shops Shut Down

The Missouri Pacific R.R. shops at Sedalia, Mo., with the exception of the storeroom department, closed April 7 for an indefinite period. Twelve hundred workers are affected.

New Prices Stabilize Steel Trade

Leaders of the iron and steel industry expressed their approval of the price reductions put into effect by the United States Steel Corporation, agreeing that the new schedule should have the effect of stabilizing quotations by all the manufacturers. Prices of the principal independents and the corporation are now practically on a parity as the result of the action announced April 12 by Elbert H. Gary. Opinion is by no means unanimous, however, that the placing of all steel prices on the same level will attract a large volume of new business immediately. The chief obstacles to a revival of industrial activity, asserted the vice-president of a leading independent manufacturer of steel, are the present tax system, high freight rates and the big wages paid in the building industry. Lower prices, according to his view, while acting as a stabilizing factor, will not attract a great amount of new orders.

Factory Work Gains in New York

A slight improvement in the number of factory workers employed in the State of New York during March was shown by the report of the State Industrial Commission made public April 12. The gain was one-half of 1 per cent. greater than February, which also showed an increase. The small gain was largely the result of seasonal activity, the industries showing increases mainly being those engaged in the manufacture of building materials, wood products, wearing apparel and food articles.

Canadian Steel Plant Closes

Officials of Armstrong Whitworth of Canada announced April 13 that the concern's plant at Longueil will be closed because of failure of the Dominion government to give tariff protection to manufacturers of locomotive steel tires. The company, which also made high speed and carbon tool steels, is a branch of the great steel firm which operates the Elsick yards on the Tyne, England.

Tin Plate Mill Closes

Orders having been issued to shut down the entire plant of the American Sheet & Tin Plate Co., at Sharon, Pa., the sheet mill suspended operations Saturday, April 9, and the tin mill Wednesday, April 13. About 2,500 men are affected.

Durant Motor Co. Incorporated

A charter was filed at the State Department at Dover, Del., early this month for Durant Motors, Inc., with an authorized capital of $100,000,000. The company is authorized to manufacture and dispose of automobiles of all kinds.

Problems of Operating Men

Edited by James T. Beard

Coal Loading Machines, a Type of Progressive Mining

Many Instances on Record Prove Development and Progress in Mining Require Co-operation. Manufacturer and Operator Equally Responsible in the Attainment of Success Where Improved Methods and Equipment Are Involved

READING the letter of C. R. Stahl, *Coal Age*, Feb. 17, p. 319, has drawn me out of my shell. If the preponderance of opinion of the great army of mine managers was in line with the ideas expressed by Mr. Stahl, regarding the development of improved mining equipment, the fact would prove a discouraging feature in the manufacture and introduction of improved machines in mines.

It is encouraging to know that those who are in closer touch with the situation and alert to the present needs in coal mining are both expectant and tolerant in their attitude toward this era of mechanical coal-loading, which they regard as rapidly approaching, though there is undoubtedly much yet to be done in the way of development.

It is indeed interesting to speculate as to where the coal-mining industry would be today if everybody had proved a standpatter. Mr. Stahl argues that "if a machine cannot go into a mine worked under these conditions (the development of centuries) and demonstrate its superiority it is not a machine that is wanted and will not prove a success."

What Has Been the Record of Past Improvements?

To accept this statement would be to practically eliminate every great advance in mining and block the course of progress. Did the electric locomotive replace mule haulage without changing the conditions determined by previous practice? Was it a violation of good practice to replace 16-lb. iron with heavier rails, on the main haulage roads, and locate partings at strategic points for locomotive haulage?

The stringing of wires along mine roads and passageways in order to conduct the power needed for the operation of electric coal-cutters working at the face was a radical departure from the practice of centuries; but it would be difficult to find a mine official today who would condemn this innovation in established methods in mines.

Indeed, instances galore could be cited to prove the stupidity of believing that a mechanical device must be capable of operating under conditions as they exist in order to be a success. Arguments such as these prove a lack of acquaintance with the work of designing and perfecting mining machinery.

The manufacturer knows better than anyone else that a machine in operation must produce sufficient revenue to make the investment a profit to the operator who is to purchase and install the machine. Coal-loaders are no exception to this general rule. The design is to promote economy in the loading of coal at the working face.

Co-operation Needed

In the article that started this discussion, N. D. Lavin emphasizes the necessity of co-operation in the work of making loading machines a success, *Coal Age*, Dec. 30, p. 1321. It is a reasonable request and one that no thinking person would refuse. The following instance will show how helpless is any machine without the exercise of foresight and interest on the part of the operator.

Some time since, a coal-loading machine was shiped by request, to a certain mine. It had hardly been installed a week when the complaint came back that it was difficult to keep it running. The suggestion that, owing to possible defective bonding, the voltage at the machine was low met with a prompt denial by the operator.

It so happened, however, that similar trouble was experienced in other sections of the mine and the company had ordered an additional generator, which was installed after a delay of six weeks. In the meantime the loader was standing idle. But, to the surprise of the operator, the additional generator gave no relief and the request for a voltmeter reading at the machine was at last reluctantly granted. The reading taken showed a pressure that varied from 140 to 160 volts, instead of the 250 volts required for successful operation.

It was at once apparent that the loss was in the defective bonding as first claimed. Let me suggest here that no manufacturer transcends his rights when he protests against the recurrence of conditions unfavorable to the successful operation of his machine. Co-operation is essential if the results are to be obtained that will make the machine a profitable investment.

To show the amount of preparation necessary in a mine adapted to the use of a loader I will cite the case of a machine that, on arriving at the mine and being unloaded, traveled under its own power from the mine entrance to the working face in 45 minutes and 15 minutes later was loading coal into the mine cars.

No preparation was made in advance to enable the machine to work. This is not an exceptional case but illustrates how well the machine is adapted to its work. On another occasion the same machine, after loading the coal at the face of one room, traveled through the crosscut and started to load the coal in the adjoining room in less than 5 minutes. The only work necessary to enable the machine to move, in that case, was the resetting of a few posts.

It is true that this was done by a machine working in the Pittsburgh seam where the conditions are admittedly more favorable than are to be found in the Buckley seam where Mr. Stahl has charge. The citation, however, serves to emphasize the fact, which is as true in mining as in many other things, that our fears are often greater than the actual realization.

Pittsburgh, Pa. E. N. Zern.

Oxygen Cylinder, Rescue Apparatus

American manufacture of oxygen cylinders for rescue apparatus is not surpassed in strength and utility by any foreign make.

KINDLY permit me to refer to a misstatement of facts that was made in an article describing a type of breathing apparatus recently designed under the direction of Dr. Henry Briggs, Edinburgh, Scotland. The article appeared in *Coal Age*, Jan. 6, p. 3. In describing the oxygen cylinder the author gave the following data pertaining to the dimensions, capacity and weight of the cylinder:

"The oxygen cylinder is made of a high-grade carbon steel and is constructed to Dr. Briggs' specifications. It is 13 in. long and 4½ in. in diameter, with a capacity of 290 meters at a pressure of 120 atmospheres and 360 meters at 150 atmospheres. It weighs, exclusive of the valve, 7 pounds."

After reading this statement I became skeptical as to its correctness. Believing that there is no such light cylinder on the market, I took the trouble to ascertain where the cylinders of the Briggs apparatus are made.

My correspondence with the manufacturer elicited the fact that they specify a weight of 10 lb., exclusive of the valve, which corresponds very nearly with the weight of cylinders of the same capacity made in this country. The total weight of these cylinders, including the valve, is stated as about 14 pounds.

Knowing that *Coal Age* would appreciate the interest taken by American engineers and manufacturers in the matter, I am giving this information in order that no one may be led to think that our manufacturers are not obtaining the best equipment possible for use in this important type of equipment.

JOHN S. BOARDMAN, Safety Engineer,
Anaconda Copper Mining Co.
Butte, Mont.

Make the Mines Safer

Prevention better than cure. What are we doing to increase safety in mining work? We preach safety-first, but do we follow up the admonition by what we advocate in practice?

ALLOW me to offer a few comments for consideration relating to the efforts made or that should be made to increase mine safety. On approaching or entering a mine one is confronted with conspicuous signs "Safety First."

Would the question cause any surprise if I ask, How many miners read these signs. daily, and what impression do they make on their minds? Is not the common thought, "Oh, that is for the other fellow—the man who is careless or the follow who does not think."

Smoking Cigarettes and Pipes Dangerous in Mines

In the issue of *Coal Age*, March 10, pp. 453, 454, appear a number of letters giving the thoughts of writers on the danger of smoking cigarettes or pipes in the presence of gas. But, let me say, this danger does not cease with the smoldering end of a cigarette, or the glowing tobacco in a pipe, but involves the lighting of these. To smoke either the man must light them first, and the question is, "What with?"

Speaking of the oft repeated injunction and the preaching of safety-first by word and sign, let me ask would it not be better to substitute for this well worn slogan the admonition, "Prevention is better than cure."

Take the subject of lighting in mines, of which I am reminded in looking over again the account of the Minnie mine explosion that I prepared for *Coal Age* and which was published in the issue Feb. 10, p. 267. It was thought by some that the cause of that explosion was a defective safety lamp.

Following a disaster of this kind it is usual to collect what lamps can be recovered from the mine and test them experimentally to ascertain if they are defective. The results show that it is rare if such tests prove anything, because the tests are not made under conditions similar to those to which the lamps were subjected in the mine.

In the testing of the lamps that were recovered from the Minnie mine no foreign coal dust was introduced into the testing gallery, nor were there any conditions created that would represent or correspond to the shock or concussion of air, which always accompanies a heavy fall of roof in a mine.

We all know that these conditions have a powerful effect to cause the failure of a lamp of an approved type, though the lamp may have no defect that would be manifested in an ordinary laboratory test. For this reason we should realize that tests of this character mean little and prove nothing unless we can duplicate more nearly the conditions existing in a mine at the moment of explosion.

Now, a word in regard to arresting an explosive flame so as to prevent the propagation of a local explosion in a mine. It would seem that too much faith exists in respect to humidifying the mine air by steam or by spraying in one form or another.

Investigations Made by the Bureau of Mines

Allow me, here, to refer to the investigations made by the Bureau of Mines, the results of which were published in Bulletin 83, entitled "The Humidity of Mine Air." The bulletin states (page 16) as follows:

> The result of these experiments indicated that slight dampness of the dust was not sufficient to prevent flame propagation by an explosion, but that there could be no propagation when the total moisture content of the dust approached 30 per cent.

Another reference to the wetting of coal dust is made in Technical Paper 84, also issued by the Bureau of Mines, where it is stated (page 10):

> Merely moistening coal dust is not sufficient. The dust must be so wet that dust particles will stick tightly to surfaces or stick together, a test of which is whether the wet dust is plastic when molded in the hand. This means that if the coal dust is fine and pure it must contain at least 30 per cent (of the weight of the dust) of mechanically held moisture.

Safety in Stone-Dusting

The paper is entitled "Methods of Preventing and Limiting Explosions in Coal Mines." Besides the reference just quoted, there is given far more valuable information relating to the method of rendering coal dust inert by the admixture of stone dust, of which George S. Rice, chief engineer of the Bureau of Mines, is a strong advocate.

Referring again to the Minnie explosion, I believe that the fireclay floor in that mine had a great effect in limiting the explosion to a comparatively small area. It is worthy of note that the damage to empty cars standing in the entries was very small, which shows to what extent the force of the explosion was reduced. In most cases the cars would have been blown to matchwood.

In closing allow me to ask if it was a departure from the safety-first order when the overman (foreman) allowed his men to work on the return-air side of a weighting goaf?

JAMES ASHWORTH,
Mining Engineer.
Livingston, Alta, Canada.

Sealing a Section to Be Avoided

Future trouble often the result of sealing off a section of a mine generating gas, especially where mine creep develops.

REFERRING to the letter of Stephen Arnott, *Coal Age*, March 3, p. 409, I was particularly interested in his statement that a creep developed in the section of the mine in question and threw an enormous pressure on the room and entry pillars.

Any one who has witnessed the effects of a creep in a mine will agree that great heat is often generated, raising the temperature of the mine air and making the workings very warm. In addition to this, much gas may be liberated from the strata. To my mind, these conditions have an important bearing on the pulsation observed in the breathing of the sealed section mentioned

However, without going further into this matter I want to suggest that trouble is often laid up in store by sealing off great or small areas in a mine, for the purpose of isolating sections generating gas. This is especially true where the mine is subject to creep. It has always been my practice to keep these abandoned places open and ventilate them by circulating air through them as far as possible.

Creep Started the Trouble

In his letter Mr. Arnott states that the roof slate underlying the so-called "steel band" would hardly average more than 3 ft. in thickness. It was stated previously that this section generated large quantities of gas when the roof slate broke to the steel band. But, according to Mr. Arnott, there was no trouble of this kind, until the development reached room No. 10, when creep started and crossed the barrier pillar and threatened the main haulage road.

Now, though not acquainted with all the conditions in this case, it seems to me that it would have been better to have pushed the intake air into that section to a degree sufficient to insure good ventilation. It might even be well to drill holes from the surface for the purpose of draining off the gas. At the same time everything possible should be done to draw the pillars even at an extra cost.

My experience is that seals, say from 1 to 5, or 1 to 65, may be built with extra care and may stand indefinitely, being examined daily. Then, suddenly, a leak will develop that is hard to find and from that time trouble begins. This is especialy true where the mine is subject to creep, as appears to be the case in this instance.

Gans, Pa. R. W. LIGHTBURN.

Inquiries Of General Interest

Forge and Equipment of a Mine Repair Shop

The Up-To-Date Mine Repair and Blacksmith Shop of a Large Mine Must Be Planned and Equipped for the Work That It Is Expected to Handle. Wherever Available, Electric Power Will Generally Be Found Better Adapted and More Serviceable Than Steam

WE have in contemplation the building of a brick forge and repair shop. The forge is to be equipped with an electric blower and must be adapted to handling all blacksmith work, including the repair of mine cars, sharpening of machine bits, also the picks and drills of the miners and other work connected with the mine.

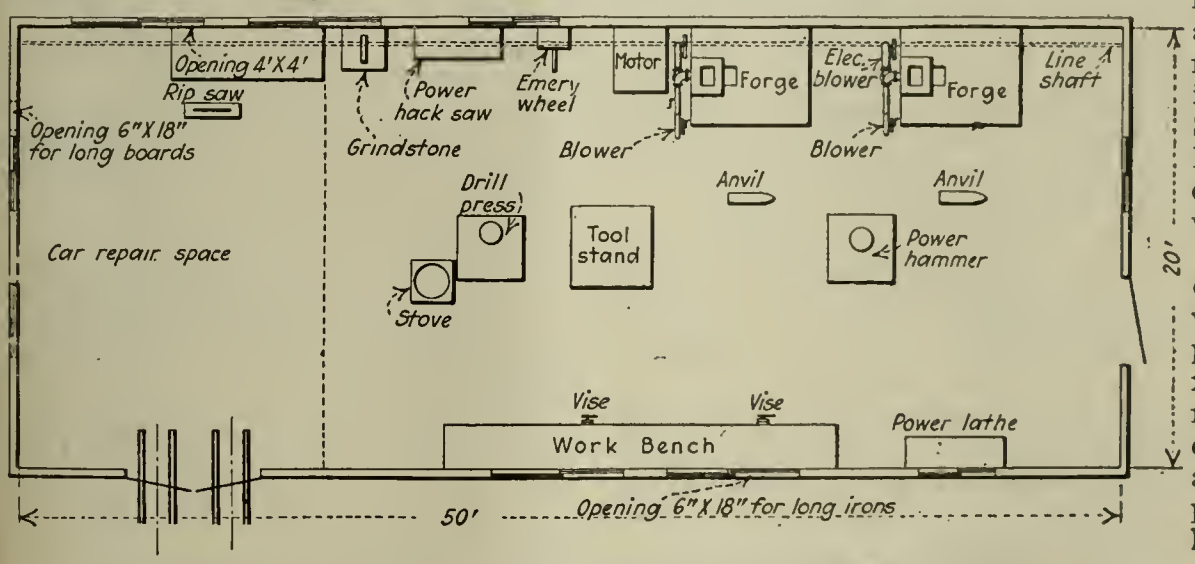
While we are familiar with the usual style and construction of a brick forge, filled in with earth, which is to be seen at almost any mine, I believe that the problem of the most desirable design of a forge of this kind has been worked out, at times, and shall be glad of any suggestions along this line.

R. B. DENNIS, Pres.,
The Morgan Run Coal & Mining Co.
Coshocton, Ohio.

In answer to this inquiry, which is an interesting one, we are glad to be able to give the general plan of a repair and blacksmith shop located at one of the large mines in Pennsylvania. The plan and description of equipment have been kindly sent us, by the general manager of the company, at our request. The statement is made that both the plan and equipment of such a shop must necessarily vary to conform with local requirements at a mine and the kind of work to be handled.

In Fig. 1 is shown the general plan of the shop and location of the machines commonly required in the repair work to be done at a mine. It will be observed that a line-shaft, running the length of the shop on one side, supplies power to the ripsaw, hacksaw, grindstone, emery wheel and blowers for the forges.

In this arrangement, other machines such as the drill-press, power-hammer and lathe are operated by a jackshaft belted to the main power shaft. The position of these machines in the shop is immaterial; they can be located to suit the convenience of the operator. The plan shows a heating stove to supply the necessary warmth in winter, unless the shop can be heated by exhaust steam from the powerhouse, which is desirable.



GENERAL PLAN OF A MINE REPAIR AND BLACKSMITH SHOP

The space shown in this plan as devoted to car-repair is unusually small, being 14 x 20 ft., though it is stated that it has proved ample for the repair requirements of 450 mine cars, which are old enough to have reached the stage of a uniform average in mine operation. These cars are small and light, having a capacity of ½ ton, 750 lb. tare.

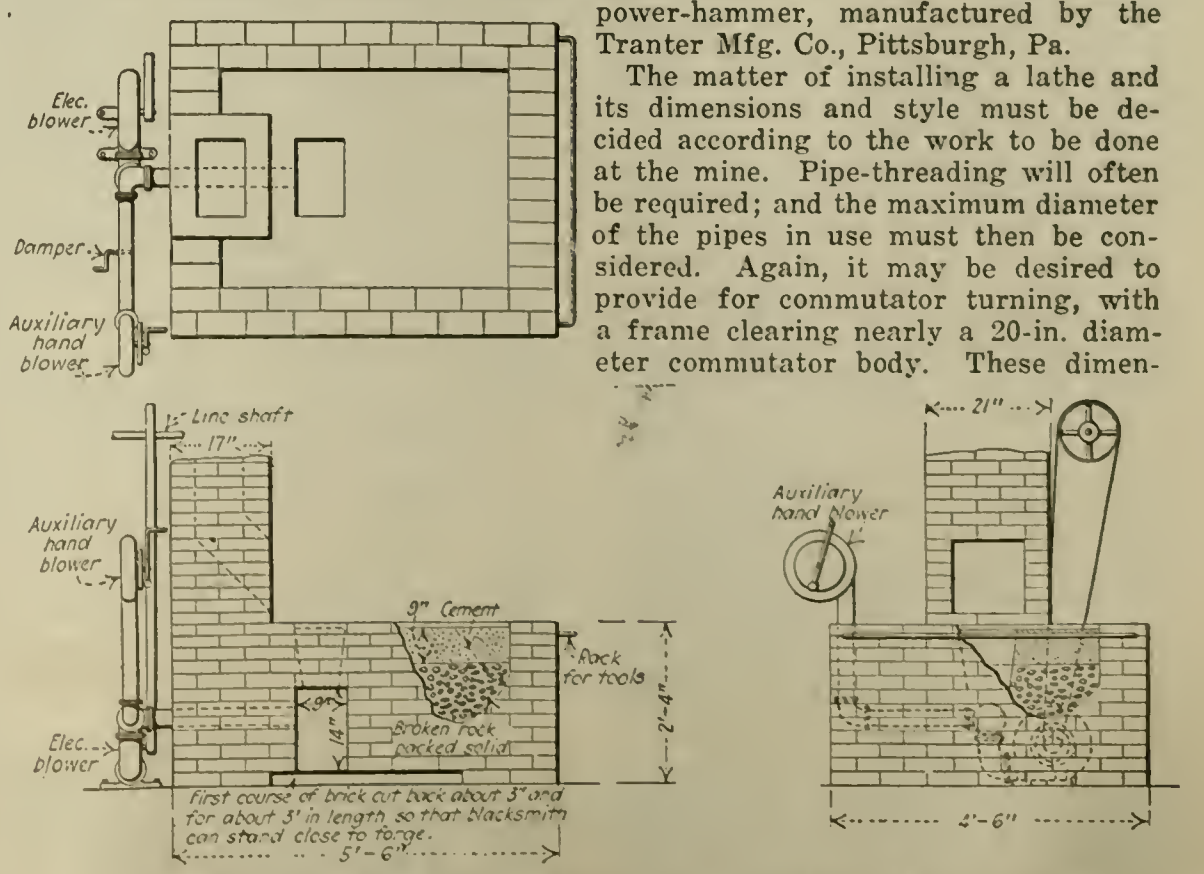
Larger cars would require more space and a winch; or, possibly, a light traveling crane could be installed to expedite their handling. At any time, additional space can be provided by extending the end of the building. One or two tracks, as desired, can be made to enter the door at the side; or a door can be made in the end of the building to suit the particular conditions.

Where much work of the kind is required a shop may be equipped with a large standard machine, combining rip and crosscut saws, a 6-in. joiner, 12-in. sanddrum and boring equipment. Such a machine is manufactured by the Parks Ball-Bearing Machine Co., Cincinnati, Ohio. A small power hacksaw will be found useful.

It is important to provide openings of sufficient size in the shop walls, wherever they are necessary for the purpose of running out long boards from the saw, or handling long irons or rails in forging or other work. Experience will generally show that it is advisable to equip the shop with a light power drill-press, in preference to a hand-power press.

While blacksmiths keep their regular tools that are in constant use hanging on the rack built into the forge, there should be a tool-stand, located at a convenient distance from the forge, on which special tools can be kept that are less frequently used. In the plan is also shown a 50-lb. "Little Giant" power-hammer, manufactured by the Tranter Mfg. Co., Pittsburgh, Pa.

The matter of installing a lathe and its dimensions and style must be decided according to the work to be done at the mine. Pipe-threading will often be required; and the maximum diameter of the pipes in use must then be considered. Again, it may be desired to provide for commutator turning, with a frame clearing nearly a 20-in. diameter commutator body. These dimen-



PLAN AND SIDE AND END ELEVATIONS OF BLACKSMITH'S FORGE

sions are fairly large, but the strength requirements are moderate.

Electric-welding equipment may be desirable and the work will often need to be finished in a lathe, without which the utility of a welding equipment is much reduced, except in the case of rail-bonding where lathe work is not required. In case much pumping is necessary in the mine, a power bolt-and-piper threading machine will be found useful.

In respect to the construction of the forges, shown in Fig. 2, in plan and side and end views, the thickness of the walls surrounding the forge should be two bricks, of good quality. The space within is filled with rocks broken to a uniform size and packed solid. As shown in the figure, a clean-out opening is provided under the duck-nest and in an up-to-date shop, a convenient tool rack is built into the end of the forge where it will not interfere with the blacksmith in his work.

An important point in the building of a forge is to provide a recess in the brickwork, at the floor line, by setting the first two courses of brick back two or three inches at the place where the blacksmith stands, on the side of the forge. The blacksmith is then able to handle heavier material to better advantage as his toes will not then strike against the bricks. The duck-nest and the tuyeres required can be secured from the Buffalo Forge Co., Buffalo, N. Y.

In forgework, an important part of the equipment is an electric blower located at a convenient point close to the forge where it can be controlled at will by the blacksmith. For this purpose, a No. 1½ electric blower such as manufactured by the Champion Blower Forge Co., Lancaster, Pa., will generally serve every purpose.

While a blacksmith is too expensive a man to require him to devote his time to turning the crank of a hand-blower, there should always be installed an auxiliary hand-blower on at least one of the forges, for use in case the electric power is shut off at a time when work is needed in the mine.

Openings should be provided in the shop walls, at each forge, for handling long pieces, such as switch rails, pipes, rods, etc. It should also be mentioned here that the rafters or truss-beams of the roof must be high enough to be in no danger of striking them when a sledge hammer is given a full swing.

Owing to the fire hazard in a blacksmith shop, a frame building is not desirable, unless it be protected with a good coating of gunite, inside and out, so as to render it practically fireproof. Because of the frequent necessity for enlargement, or other change required in the development of a mine, a brick building is not generally recommended, unless the future plans are carefully considered beforehand. No mention has been made, thus far, of the work of horseshoeing; but where the mine mules are brought out of the mine for that purpose, it will be well to provide space for shoeing them, in the shop.

Examination Questions Answered

Miscellaneous Questions Asked at Anthracite Examinations

Answered by Request

QUESTION—*How much water will be discharged by a pump having a water-end 10 in. in diameter, a 4-ft. stroke, and making 48 strokes per minute? If the lift on this pump is 60 ft. what will be its horsepower?*

ANSWER — The sectional area of a water-end 10 in. in diameter is $0.7854 \times 10^2 = 78.54$ sq.in. For a stroke of 4 ft., the piston displacement is $4(78.54 \div 144) = 2.18$ cu.ft. per stroke; or $48 \times 2.18 = 104.64$ cu.ft. per min. Then, assuming an efficiency of 85 per cent in the water-end, the quantity of water discharged by this pump is

$$Q = 0.85(104.64 \times 7.48) = 665+ \text{ gal. per min.}$$

For a lift of 60 ft., the effective horsepower required is

$$H = (665 \times 8\tfrac{1}{3} \times 60) \div 33{,}000 = 10+ \text{ hp.}$$

Assuming 75 per cent as the efficiency of the steam-end of this pump, the power required to drive the pump is $10 \div 0.75 = 13\frac{1}{3}$ hp.

QUESTION—*What are the advantages and disadvantages of electric lamps used by miners?*

ANSWER—An electric cap lamp gives a better illumination, is more portable and needs less attention than a safety lamp, while being at the same time safe in an explosive atmosphere. The electric lamp gives no smoke, is clean and its power is more easily replenished. The lamp requires less care in its preparation than a safety lamp. An electric lamp will continue to burn in an atmosphere that would extinguish any other lamp. The practical disadvantage of an electric lamp is that it gives no warning of the presence of explosive gases or poisonous gases.

QUESTION—*An arched tunnel is to be driven 10 ft. high to the crown of the arch, 10 ft. wide and 1,000 ft. long. The arch is a semicircle 10 ft. in diameter. Two bids are received for the work: "A" bids $70 per lineal yard and "B" bids $7 per cu.yd. To which contractor would you give the work and why?*

ANSWER—The length of the tunnel is $1{,}000 \div 3 = 333\frac{1}{3}$ yd. A's bid, at $70 per lineal yard is, therefore $70 \times 333\frac{1}{3} = \$23{,}333\frac{1}{3}$.

The sectional area of this tunnel is $(5 \times 10) + \frac{1}{2}(0.7854 \times 10^2) = 89.27$ sq.ft., and its cubic contents is, therefore, $(89.27 \times 1{,}000) \div 27 = 3{,}306\frac{8}{27}$ cu.yd. At $7 per cu.yd., B's bid is $7 \times 3{,}306\frac{8}{27} = \$23{,}144\frac{2}{27}$.

The bid should be given to B, other things being equal, since the difference is $\$189\frac{7}{27}$ in favor of B.

QUESTION—*If the barometer stands at 28.4 in., what is the pressure on a square inch?*

ANSWER — The atmospheric pressure corresponding to a barometer reading of 28.4 in. is $28.4 \times 0.49 = 13.916$ lb. per sq.in.

QUESTION — *What precautions would you suggest as being necessary to be adopted at a colliery, inside and outside, where electric haulage, pumping or lighting systems have been installed, and what voltage would you prefer for the several kinds of work?*

ANSWER — All power lines for transmitting electric power to the face or other points in the mine should be thoroughly insulated. Trolley wires must be protected at all points where men are liable to come in contact with the wire. Where it is necessary for men to travel a haulage road, the trolley wire must be carried on the opposite side of the roadway from the clearance space required by law. All electric installations should be made by a mine electrician and the wires supported by proper hangers. Circuit-breakers should be provided at the mouth of each section or district so as to enable the current to be cut off from that section when not required for haulage or power at the working face.

The voltage of electric currents in mines should not exceed 250 volts, except for the transmission of power on an insulated cable, to points inside of the mine, where the high voltage is reduced before being used in the operation of the machines. Electric installations should not be made in mines generating gas in dangerous quantity, requiring the use of safety lamps.

QUESTION—*How would you plan or lay out a mine having three splits of the Mammoth vein and the Skidmore vein in order to mine a maximum output?*

ANSWER — The work in each seam should be laid out in panels measuring 1,000 ft. on the gangway. By making the Skidmore seam the main haulage road, it will be possible to mine out the three splits in the Mammoth seam on the advancing plan, which will greatly reduce the cost of maintenance of haulage roads. The panel system of mining will insure the largest possible extraction of the coal and avoid danger from roof falls and bad ventilation.

Foreign Markets and Export News

Shanghai Market Becoming More Active

Resumption of busines sactivity in Shanghai followed the China New Year, according to Wheelock & Co.'s coal market report, dated Feb. 24. There is a better inquiry for Japanese coals. Prices for lump coal in Japan, however, are still much too high for buyers' ideas, especially at the present rate of exchange. Dust coal, being cheaper, is easier to negotiate. Fushun and Kaiping coals are unchanged, with very little fresh business to report. Stocks of the latter are much below the average and demand for the better grades is in execess of the supply.

Fu Chung spot coal stocks have been increased, a brisk demand has sprung up and a fair business is being transacted.

Coal prices are quoted as follows:

	Taels per Ton ex Wharf
JAPAN COAL	
Miike lump, Miike small, Miike dust	Contracted for
Kishima lump	16.00
Shakano lump	15.00
Arate lump	14.00
Shimoyamada Kirigomi	13.00
Shin Shakano	13.00
Yoshinotani No. 1 lump	14.00
Yoshinotani No. 2 lump	12.00
Ochi lump	14.50
KAIPING COAL	
No. 1 lump	Contracted for
No. 2 lump	11.50
Washed nuts	13.50
Washed slack	10.50
No. 1 slack	8.50
No. 2 slack	8.00
FUSHUN COAL	
Dust	11.00
Kirigomi	No stock
Lump	No stock
FU CHUNG (ANTHRACITE) COAL	
Nos. 1, 2 and 3 Cobbles	14.00
Boiler coal	13.50
Dust coal	9.50

Austria's Coal Supply in 1920 Increased 700,000 Tons; Coke Scarce

Special Correspondence to *Coal Age*, Vienna

Austria's coal supply during 1920 amounted to 6,500,000 tons, of which 2,500,000 were raised at inland collieries while the remaining 4,000,000 tons were imported, the principal sources of supply being Upper Silesia, with 2,500,000 tons; Czecho-Slovakia with 500,000 tons, and the rest Bohemian and Polish pit coal and lignite. The total 1920 supply shows an increase of 1,700,000 tons over 1919, imports alone having increased by 1,300,000 tons.

The coke supply leaves much to be desired. As Austria produces next to no coke, practically the entire supply has to be imported. The normal demand for coke is estimated at 100,000 tons per month, the quota for the different industries being calculated as follows, in tons:

Iron and metal industry	65,000
Cement works	4,700
Household coke (Vienna)	5,500
Household coke (Provinces)	16,000
Chemical industry	1,900
Traffic and transportation	600
Miscellaneous	6,300
Total	100,000

Supplies during the past year fluctuated, however, around only 20,000 tons per month, so that the total imports barely exceeded 300,000 tons. Considering that the iron works of the Alpine Montangesellschaft one of the largest Austrian concerns require 600,000 tons of coke annually, it will be obvious that if the coal supply is bad, the coke famine is even worse.

GERMAN INDUSTRIALS plan to purchase American coal to partly replace the supply which up to now has been obtained from Great Britain. Hugo Stinnes, German industrial and financial leader, has sent his representative H. Holleson, to New York City, where offices have been opened at 44 Beaver St. The coal shipments will largely be financed by letters of exchange. German importations are now somewhat restricted by edicts providing that foreign coal may only be used by plants which devote at least 50 per cent of their product to export. Poor railroad conditions also forbid the transportation of foreign coal for more than a short distance.

ITALIAN COAL IMPORTS have shown an increase of late. During the second half of February, about 326,000 tons were imported of which 170,000 tons were for private account and the rest for State account. England heads the list of suppliers with about 161,000 tons while 80,000 tons were shipped by the United States, 85,000 tons by Germany and an insignificant tonnage by Belgium.

FRENCH COAL STOCKS are so heavy that in view of the present reduced industrial consumption the British coal strike will not have any marked influence on American exports of fuel. French output and deliveries of German coal are almost sufficient to cover current requirements, and it is unlikely that any demand for outside coal will develop for the next six months at least.

GERMAN INDUSTRIAL CONDITIONS continue to be seriously affected by coal shortage. According to the *Bergwerks-Zeitung*, of Essen, the glass branch is getting 800,000 tons, as against 2,500,000 before the war, the porcelain branch 300,000 tons, against 720,000 tons, the lime branch 850,000 tons, against 3,000,000 tons, and the cement branch 780,000 tons, against 3,600,000 tons. These figures refer only to bituminous; most works are, in addition, getting large quantities of lignite, which has low heating power, and requires reconstruction of furnaces.

AMERICAN COAL OWNERS are offering terms to Italian and French buyers which enable them to purchase American coal at less that half the price of Welsh coal, it was declared by a deputation from the Coal Exporters' Association to the Commercial Committee of the South Wales Owners' Association recently.

INCREASED BUNKER COAL ORDERS are resulting in higher cargo rates to Italy and Rotterdam. Contracts for foreign shipments, however, have not been strengthened by the British strike, the only effect being that vessels are ordering coal for round trips.

GERMANY PROTESTS AGAINST the sale by Allied Governments to neutrals of coal delivered by her on the reparations account in a note addressed to the Reparations Commission and the Belgian Cabinet by the German Government. It is asserted that Belgium is disposing of German coal in Holland, aggregating several thousand tons, which has been offered for sale abroad at prices below those Germany is able to quote.

ITALY AND CZECHO-SLOVAKIA have completed a commercial treaty which is advantageous to the former, since it opens the road for the transportation of coal from Upper Silesia through Bohemia, while Czecho-Slovakia is favored by traffic privileges through the port of Trieste to the Levant and Mediterranean districts generally.

Meager Coal Shipments Blamed for Decline in Freight Movement

RAILROADS of the United States, according to the Car Service Division of the American Railway Association, report a further decrease in the number of cars loaded with revenue freight during the week which ended on March 26, due principally to a continued decline in the loading of coal. The total for the week was 687,852 cars, or a reduction of 3,855 compared with the preceding week; 212,534 below the total for the corresponding week in 1920 and 25,423 cars under that for the corresponding week in 1919.

Declines compared with the previous week in the loading of grain and grain products, live stock, coal, coke and forest products were shown, while increases were reported in the loading of ore and merchandise and miscellaneous freight, which included manufactured products. The loading of merchandise and miscellaneous freight alone totaled 447,189 cars, or an increase over the preceding week of 6,259 cars, but a decrease of 89,000 cars compared with the corresponding week in 1920. Decreases in the loading of all other classes of freight compared with the corresponding week in 1920 also were reported.

During the week 122,189 cars were loaded with coal, which was a new low record. This was a decrease of 3,800 from the preceding week's loadings and a decrease of 78,785 compared with the corresponding week in 1920. Compared by districts, the number of cars loaded during the week in each region was less than during the corresponding week last year, but all showed increases over the week of March 19 except the Central Western and Southwestern.

Strikers Shoot Up Mingo County Coal Mines

COMPARATIVE peace prevailed in the Mingo County, West Virginia, field throughout the duration of the Matewan trial. This seems to have come to an end and determined attempts to close down the mines by a manifestation of force appear to have recommenced. On Tuesday night, April 5, a veritable fusillade was poured on the village and plant at Merrimac, where the White Star Mining Co. operates. The attack was more violent than any that preceded it.

As soon as the shooting was reported to the Sheriff's office at Williamson, five miles from Merrimac, Captain Brockus and fifteen members of the state police with Sheriff Lon Pinson and a member of deputies went to the beleaguered town and took charge of the situation, returning the fire, which came not only from the Kentucky hillsides but from those in West Virginita also.

The mode of attack on Merrimac was a little different from that heretofore undertaken. It resembles rather that made on Willis Branch in that the dwellings of the miners, the company office and the store became the target for the attacking party.

According to reports made to Sheriff Pinson an attack was made on the same night on the mining community of Burnwell, and as at Merrimac the dwellings of the miners, the office and store and the home of the superintendent were fired on. As the bush warfare in the Williamson district resembles that employed on Willis Branch, the deduction is made that such attacks have the same originating head.

Washington State Miners Still on Strike

BEN FARRIMOND, president of the state district of the United Mine Workers of America, and Sam Caddy, Washington district member of the national executive board of the big coal-mine workers' union, have returned to district headquarters in Seattle from Indianapolis, where they went to report to the international board on the situation in their state, showing that virtually all the commercial coal mines have been closed down since Feb. 16 as a result of the refusal of the local unions to accept a 23 per cent wage cut. The situation has not changed in any way since the shutdown.

Sufficient men to man the pumps and keep the properties in repair are at work at all the commercial mines. Apparently no bitterness exists between operators and miners; but both sides are standing pat on the position they have taken.

The miners contend that their agreement does not expire until April 1, 1922, and that if the mines work at all they must do so at the wage scale provided in that agreement. The operators contend that unless the miners agree to a wage reduction of approximately 23 per cent the mines will remain closed, as they cannot meet the outside competition of the Vancouver Island coal and of that mined in Utah by non-union miners, especially in view of the fact that fuel oil from California is at all times a strong competitor.

The ranks of the miners are solid, and no attempt has been made by the operators to import any non-union men. The national union of mine workers, speaking through its executive council, has indorsed the position taken by the miners of Washington.

Operators and Miners Protest Against Mattes Mine-Cave Bill

REPRESENTATIVES of the leading anthracite coal companies testified before the members of the joint Mines and Mining Committee of the Pennsylvania Senate and House against the Mattes mine-cave bill, which would tax all anthracite companies for the damage done by mine caves. The testimony pointed out that only in Scranton was such damage being done and that it would be unfair to make other companies pay for the damage which certain coal companies in Scranton and the vicinity alone were causing.

Judge F. W. Wheaton, representing the Lehigh Coal Co., said that his company would support a bill similar to the Workmen's Compensation Act which would require each company to make reparation for the damage it causes by surface subsidence. Senator Albert Davis has prepared a bill along these lines, which would overrule the waiver clause which leaves the owner of a property undermined no recourse at law for such damage. The Delaware, Lackawanna & Western R.R. Co., Coal Department, and the Pennsylvania Coal Co., which already pay such compensation where the property is valued at less than $5,000, were not represented by counsel.

Mark Edgar, for the General Citizens' Mine Cave Committee, said that it was only a question of time when the whole anthracite region would be thus affected. The coal could not be removed, he contended, without destroying the surface.

Howat Fined $200 for Ordering Strike

JUDGE ANDREW J. CURRAN of the Crawford Country District Court, Kansas, sentenced Alexander Howat, district president of the United Mine Workers of America in Kansas, on April 8, to pay a fine of $200 for having ordered a strike of coal miners two weeks ago. Howat also was required by the judge to give a bond for $5,000 that he would not again violate the anti-strike injunction that was issued last autumn. This order of the court he has violated twice in the course of the present year.

In February last he, with other defendants, was found guilty of causing a strike and was sentenced to serve a year in jail. Thomas Harvey, secretary-treasurer of the Kansas mine workers, broke with Howat in February and refused to call a strike. For this the friends of Howat are seeking to have him ousted. August Dorchy, district vice president, on the other hand, backs Howat in the ordering of strikes despite the requirements of the state law in Kansas.

Columbus Rejects Bid of $1.85 for Coal

H. CLAYTON CAIN, secretary of the Columbus City Board of Purchase, has rejected all bids for coal for various city departments opened April 4. The reason for the rejection as given by the board is the belief that with the opening of the Lake trade and the mining of lump, screenings will be much cheaper than at present. The low bid received was $1.85 per ton, Hocking nut, pea and slack, f.o.b. mines.

New York City Awards Contracts for 293,941 Tons of Coal; Tenders To Be Asked on 109,554 Tons More

CONTRACTS for 293,941 tons of coal and coke have been awarded by the Board of Purchase of the City of New York as the result of bids opened on March 16. The total tonnage called for in the proposal was 403,495 tons, consisting of 317,681 tons of anthracite and 85,814 tons of bituminous. As it is necessary that provision be made for obtaining the entire tonnage required by the various departments, the Board of Purchase will soon ask for bids for the balance of 109,554 tons required.

It will be noted that these prices include delivery and are therefore to be considered as on an approximate parity with retail prices on Manhattan Island. The attempt of the city to obtain a bid on the entire requirements of both anthracite and bituminous coal, as reported in *Coal Age* of March 10, page 464, met the fate that was predicted by the trade at the time, and as a result the city is awarding a contract for each small parcel of its requirement.

The successful bidders and the tonnages awarded them follow:

Bellevue and Allied Hospitals.—Inter City Fuel Co., Bellevue Hospital: 27,040 tons buckwheat No. 2, barge deliveries, $6; 112 tons stove coal, $13.65; 23 tons semi-bituminous, $8.85. Gouverneur Hospital: 33 tons stove, $13.85; 73 tons chestnut, $13.85; 3,248 tons buckwheat No. 2, $7.90.

Whitney & Kemmerer—Harlem Hospital: 5,600 tons buckwheat No. 2, $7.65.

William Farrell & Sons—Fordham Hospital: 3,472 tons buckwheat No. 2, $7.95; 33 tons chestnut, $13.65; 55 tons semi-bituminous, $8.99.

Fire Department.—Francis M. A. Leach: 7,839 tons (3,079, 2,352, 840, 952 and 616 tons) semi-bituminous, $8.12; 100 tons cannel coal, $17.90.

W. J. Howe & Co.: 526 tons egg coal, $12.74; 109 tons chestnut, $12.74.

Police Department.—Francis M. A. Leach: 1,344 tons semi-bituminous for steamer John F. Hylan, $8.12.

Department of Plants and Structures.—Commonwealth Fuel Co., Brooklyn delivery: 1,008 tons buckwheat No. 1, $8.99; 336 tons semi-bituminous, $9.24; 6,048 tons semi-bituminous, Municipal ferry terminal, Astoria, $8.42.

Penn Fuel Co.: Municipal Ferry, 39th St., Brooklyn, 26,880 tons buckwheat No. 1, $7.45.

William Farrell & Son—St. George Ferry Coal Pockets: 80,640 tons buckwheat No. 1, $7.98.

Department of Water Supply, Gas and Electricity.—George D. Harris & Co., Ridgewood (Brooklyn) Pumping Station: 10,304 tons semi-bituminous, $7.27.

Department of Parks, Manhattan.—William Farrell & Son, truck deliveries: 1,400 tons broken, $13.63; 587 tons egg, $13.63; 272 tons, stove, $13.63; 10 tons chestnut, $13.63; 24 tons, George's Creek, $9.99.

Department of Parks, Bronx.—Richard Morrison, truck deliveries: 280 tons egg, $12.74; 359 tons stove, $12.74.

Department of Parks, Brooklyn.—Commonwealth Fuel Co., truck deliveries: 556 tons egg, $13.83; 693 tons stove, $14.18; 336 tons buckwheat No. 1, $8.99.

Department of Public Welfare, Manhattan Deliveries.—Inter City Fuel Co.: 67 tons stove, $13.85; 1,568 tons semi-bituminous, $9.05.

Department of Public Welfare, Brooklyn Deliveries.—V. H. Youngman & Co.: 15,792 tons mixed (75 per cent No. 3 and 25 per cent slack), Kings County Hospital, $7.42; Greenpoint Hospital, 2,800 tons buckwheat No. 2, $7.49.

Commonwealth Fuel Co.—Kings County Hospital, 504 tons stove, $14.10; Greenpoint Hospital, 101 tons stove, $14.10; Coney Island Hospital, 78 tons stove, $14.60; Cumberland Street Hospital, 1,008 tons semi-bituminous, $8.98 and 33 tons stove, $14.10; 106 tons stove to two points of delivery, $14.10.

Coney Island Coal Co.—Coney Island Hospital, 1,680 tons mixed (75 per cent No. 3 and 25 per cent slack), $9.23.

William Farrell & Son—Seaview Hospital, Richmond, barge delivery: 17,808 tons mixed, $8.94; 638 tons, stove, $12.99.

New Dorp Coal Corporation—Seaview Hospital, barge delivery: 560 tons buckwheat No. 1, $8.90.

Inter City Fuel Co.—City Hospital, 8,818 tons buckwheat No. 1, barge delivery, $7.00.

B. Nicoll & Co.—City Hospital, 2,942 tons semi-bituminous, run-of-mine, barge delivery, $7.14; Metropolitan Hospital, 10,640 tons semi-bituminous barge delivery, $714; City Home, Blackwell's Island, 7,280 tons semi-bituminous, barge delivery, $7.14.

William Farrell & Son—Randall's Island, 14,291 tons mixed, barge delivery, $7.99; 672 tons stove, barge delivery, $12.99; City Home, Blackwell's Island, 728 tons coke, barge delivery, $12.99.

Department of Health, Manhattan.—Inter City Fuel Co.: 600 tons buckwheat No. 1, $8.75.

William Farrell & Son: 50 tons pea, $10.95; 1,140 tons pea for steamboats, $11.49.

Inter City Fuel Co.—Willard Parker Hospital, 6,000 tons buckwheat No. 2, $6.45.

Department of Health, Brooklyn.—Commonwealth Fuel Co.: Flatbush Avenue and Willoughby St., 196 tons buckwheat No. 1, $8.98.

V. H. Youngman & Co.—Kingston Avenue Hospital, 7,200 tons buckwheat No. 2, $7.94.

Whitney & Kemmerer.—Riverside Hospital, North Brother Island, 5,600 tons buckwheat No. 2, $7.47.

L. R. Wallace—Otisville (N. Y.) Institutions, 3,100 tons stove coal, f.o.b. siding, $11.90.

Department of Correction.—Inter City Fuel Co.: City Prison, 224 tons buckwheat No. 3, $6.50; 50 tons semi-bituminous, $8.55. Penitentiary, Blackwell's Island, 373 tons buckwheat No. 3, $4.50; 298 tons semi-bituminous, $7.55. Workhouse, Blackwell's Island, 560 tons buckwheat No. 3, $4.50. Riker's Island, 149 tons semi-bituminous, $6.75. Hart's Island, 381 tons buckwheat No. 3, $4.65, and 560 tons semi-bituminous, $6.70.

Coal Output of Principal Countries of the World, Calendar Years 1919 and 1920

OTAL production of coal by the principal countries of the world during the calendar years 1919 and 1920, according to information received by the U. S. Geological Survey up to April 9, 1921, is shown in the following table. The data are subject to revision as final official figures are received. Lignite and brown coal are included; they are given separately where possible.

PRODUCTION OF COAL IN PRINCIPAL COUNTRIES OF THE WORLD, CALENDAR YEARS 1919 AND 1920

(In metric tons of 2,204.622 lbs.)

Countries		1919	1920
NORTH AMERICA			
Canada	Coal	9,756,019	15,080,597
	Lignite	2,655,309	
Greenland		2,160	*a*
Mexico		693,866	*a*
United States		495,460,893	585,732,560
SOUTH AMERICA			
Argentina		*b* 4,784	*a*
Brazil		*a*	*a*
Chile		*b* 1,539,314	*a*
Colombia		*a*	*a*
Peru		339,560	*a*
Venezuela		*b* 25,177	*a*
EUROPE			
Italy	Coal	*c* 1,158,541	149,315
	Lignite		1,662,430
Austria	Coal	89,794	133,173
	Lignite	1,986,964	2,387,996
Belgium		18,342,950	22,413,535
Bulgaria		577,000	*d* 744,000
Czechoslovak Republic	Coal	10,384,800	11,130,800
	Lignite	17,110,500	19,695,500
France	Coal	21,546,000	24,300,000
	Lignite	895,000	1,000,000
Germany	Coal	*e* 116,500,000	*e* 140,757,433
	Lignite	93,800,000	111,634,000
Greece		*f* 157,956	*a*
Hungary		*a*	*a*
Jugo Slavia		2,497,394	*a*
Netherlands	Coal	*g* 3,540,064	*g* 4,115,638
	Lignite	1,881,962	1,395,851
Poland		6,083,700	*a*
Portugal		*a*	*a*
Rumania		*d* 3,000,000	*d* 3,000,000
Russia		*a*	*a*
Spain	Coal	3,901,637	5,367,625
	Lignite	539,872	552,866
Spitzbergen		*h* 88,776	*h d* 170,000
Sweden		429,267	*a*
Switzerland		*a*	*a*
United Kingdom		233,467,478	232,975,000
ASIA			
British India		22,991,217	*d* 18,000,000
China		23,000,000	*a*
Chosen		*b* 187,623	*a*
Federated Malay States		194,363	*a*
Indo-China		*b* 636,000	*a*
Japan		*i* 30,236,000	*d* 31,000,000
Russia		*a*	*a*
Turkey		481,331	*d* 700,000
AFRICA			
Algeria		7,419	*a*
Rhodesia (Southern)		462,698	524,796
Tunis		*b* 46,305	*a*
Union of South Africa		9,313,232	11,181,846
OCEANICA			
Australia		10,736,321	9,100,000
British Borneo		*a*	*a*
Dutch East Indies		841,705	*a*
New Zealand		1,847,848	*a*
Philippine Islands		*b* 15,663	*a*
Totals		1,157,535,000	1,300,000,000

(*a*) Estimate included in total. (*b*) 1918 figures. (*c*) Includes bituminous shale. (*d*) Based on incomplete data. (*e*) Includes Saar basin 1919, 8,990,000; 1920, 9,410,433 tons. (*f*) 1917 figure. (*g*) Includes slack. (*h*) Shipments to Norway and Sweden. (*i*) Figures represent output from coal mines, producing not less than 10,000 tons and from lignite mines producing not less than 3000 tons.

News from the Capital

By Paul Wooton

THE SECRETARY OF THE TREASURY recently asked the opinion of the Comptroller of the Treasury as to whether the department had authority to contract and pay for coal for the fiscal year beginning July 1 next, in advance of the availability of the appropriation therefor on that date, for coal for Federal buildings under its control. The supervising architect in charge of public buildings is prepared to invite bids from mine operators for this coal. The Treasury had in mind saving money on coal by purchases in April, May and June, taking advantage of reduced anthracite prices. The Comptroller rules that the Sundry Civil Act of March 4, 1921, authorizing the Treasury Department to contract for the purchase of fuel for public buildings in advance of availability of appropriations, also sanctions advance contracts for fuel for the next succeeding fiscal year not to exceed the needs of that year. He holds, however, that authority to make contracts does not imply authority to pay for deliveries made in advance of July 1, the purpose of Congress being to enable the government to obtain and benefit by lower prices for early contracts and early deliveries.

CONGRESS HAS RECEIVED a petition from the Delaware Legislature urging legislation to regulate coal prices in the interest of the consumer. The petition favors "some strong and effective government action in the interest of the public for control of industries that produce prime necessities of civilization, such as coal." It declares that during the past year all commodity prices except coal have declined steadily, while the price of coal to the consumer has mounted higher and higher. The petition also declares that there is a widespread belief among the people that the mine owners have deliberately retarded production with a view to creating a scarcity and boosting the price of coal.

THE COLOMBIAN TREATY, now before the Senate for ratification, provides that coal which is the product of Colombia, for Colombian consumption, passing from the Atlantic coast of Colombia to any Colombian port on the Pacific coast, and vice versa, shall, whenever traffic by the canal is interrupted, be transported over the Panama Railway free of any charge, except the actual cost of handling and transportation, which shall not in any case exceed one-half of the ordinary freight charges levied upon similar products of the United States passing over the railway and in transit from one port to another of the United States.

THE REASSEMBLING OF CONGRESS on April 11 marked the introduction in the House by Representative Newton, of Minnesota, of the Calder coal regulation bill. Senator Calder did not reintroduce the hill in the Senate, although he is expected to do so later.

REPRESENTATIVE LAMPERT, OF WISCONSIN, introduced his bill, which failed in the last Congress, providing for investigation of coal mines and coal lands looking to government ownership of coal mines.

EDITORS OF NEW YORK BUSINESS PAPERS spent Tuesday, April 12, in Washington, where, at the invitation of Secretary Hoover, they familiarized themselves with the personnel and work of the Department of Commerce as the work of the bureaus of that department touched each of the fifty-six industries represented by the editors of these papers. In the evening Secretary Hoover was the guest of the editors at an informal dinner at which there was general discussion of the problems of industry and relation of the Department of Commerce to American business. In the afternoon the editors visited the Bureau of Efficiency where Herbert D. Brown, the director of the bureau, explained in an interesting manner the work of his organization.

EFFECTIVE MIDNIGHT APRIL 12 the Interstate Commerce Commission vacated and set aside Service Order No. 5 providing for preference and priority for pooled over non-pooled lake cargo coal and movement of non-pooled lake cargo coal; Service Order No. 10 providing for preference and priority in the supply of cars assigned to the Ore and Coal Exchange at any Lake Erie port for transshipment by water to Northwestern States and Service Order No. 11 providing for preference and priority for coal consigned to the Tidewater Coal Exchange for transshipment by water to New England.

THE MONTANA LEGISLATURE has asked Congress for authority to lease state lands for coal and other minerals on terms and conditions to be prescribed by the Legislature. It declares the present 5-year lease is too short and has resulted in failure to develop the lands.

SENATOR POINDEXTER, OF WASHINGTON, has introduced a bill for 20-year leases of coal and other minerals on school lands in Washington State.

THE WISCONSIN LEGISLATURE also has petitioned Congress to control profiteering in necessities of life, saying the states cannot control the price of coal. It is requested that Congress determine the possibilities of state action, in addition to prescribing federal legislation.

CHAIRMAN BUTLER OF THE House Naval committee has introduced a bill authorizing the President to requisition fuel necessary to maintain the navy.

CONSTRUCTION BY THE shipping board of a fuel station at Hazzell Island, Virgin Islands, is provided in a bill introduced by Representative Greene, of Massachusetts.

SENATOR SMOOT HAS INTRODUCED a bill for agricultural entries on coal lands in Alaska.

IRA JEWELL WILLIAMS, of the firm of Brown & Williams, Philadelphia, attorneys for the New River Collieries Co., Inc., in its suit against the United States Government (*Coal Age*, April 7, 1921, page 639), called our attention to the fact that it is hardly fair to say that the trial judge "set a new and startling precedent for the coal trade," as Judge Peck of Ohio and Judge Meyer of New York had made exactly the same ruling, following decisions of the U. S. Supreme Court and of courts of the various states in eminent domain cases. "Indeed," stated Mr. Williams, "no case to the contrary was or could be cited as to the measure of damages of just compensation where a market exists for the property of a citizen."

British Coal Strike, After Causing Split in Triple Alliance, Seems Doomed to Early Failure

SELDOM have negotiations between the government, capital and labor been subject to more sudden and dramatic changes than those of the present British coal strike. Lloyd George's contention that the union should withdraw its order compelling the "safety men" to abstain from pumping out the mines and working the hoisting engines being withdrawn, negotiations between the mine workers' representatives and the operators opened on Monday, April 11, as already stated. April 12 still found the mine workers obdurate, only one of the eight proposals of the government being looked upon with favor. This was that after wages had been adjusted the government would give temporary financial aid to offset too sudden reduction in wage in some of the mining areas.

The railroad men and transport workers, who were to have struck on midnight of April 12, had delayed their strike, but as soon as the disagreement took place the date was set for Friday, April 15. The feeling in favor of the sympathy strike, apathetic at first, was getting stronger, a manifesto of the Triple Alliance dated April 11 having given it life. This statement declared that while prices are 141 per cent above the pre-war standard, the wages which it was proposed to be fixed would be 50 per cent below the cost of living. It emphasized the fact that control of the railroad by the government would end, according to present schedule, on Aug. 31, and that when they fell back into private control a similar attempt would be made to reduce wage schedules. Where then would be the dockers' minimum of 16 s. ($3.88) per day, and where the seaman's rate of pay?

At the same time it began to be realized that the declaration of the Lime St. Railroad station men at Liverpool that their leaders were steering them to Bolshevism, and that they would not strike, was merely a hoax or an attempt to start a movement in opposition to the action of the alliance.

Wholesale Sympathetic Walkout Threatened

To add further to the desperateness of the situation the Amalgamated Society of Locomotive Enginemen and Firemen, comprising 75,000 men who are not in the Triple Alliance, announced that they also would strike on Friday. The executive board of the Railway Clerks' Association recommended that the membership of that union join in the strike, and the Electrical Workers of London, also threatened to quit their jobs. The next day, April 14, the Federation of General Workers, of which J. R. Clynes, Member of Parliament, is head, and which controls a million and a half persons in more than one hundred industries, decided to join the general strike called for 10 p.m. of the following day.

On the day preceding the evening set for this stupendous event the Triple Alliance broke up, declaring that the miners were wrong in refusing to reopen negotiations with the colliery owners. There also was what amounted almost to a split in the mine workers' ranks, Frank Hodges, the secretary of the Miners' Federation, having informed Members of Parliament on the night before that the miners were ready to discuss wages first and make the matter of distribution of profits something for later consideration. Lloyd George consequently invited the colliery owners to be present, but after waiting for more than an hour for the arrival of the mine workers the Premier had to report to Parliament that the promise had been repudiated.

The mine workers clearly overreached themselves in their anxiety to satisfy their political aims. They bitterly realized the rebuff they had received and severely reproached the Alliance officials and Frank Hodges. As a result that official resigned, but his resignation was not accepted. A meeting was held on April 15 at the Russell St. headquarters in London, at which the mine workers' representatives decided to return to their several districts and consult the rank and file, following this with a meeting on April 22.

Reports as to the flooding of the mines vary. In South Wales twenty-three pits, mostly small ones, are said to be flooded. Other reports say that eighteen mines are ruined. On April 11 pumping had been resumed in Monmouthshire at all collieries but two. The Scotch miners received with bad grace the order to permit pumping to be resumed and at Cowdenbeath they attempted to bomb the police station. The Fifeshire pits are all flooded. Several Staffordshire pits are irretrievably ruined. W. E. Bridgeman, Under Secretary of the Board of Trade, asserted that throughout the length and breadth of Great Britain forty mines had been flooded, affecting the employment of 16,000 men out of more than 1,000,000 engaged in the British mines.

It seems certain that when an agreement is made the wages of the mine workers will be substantially reduced. The mine workers' latest position is that they would be willing to accept a 2s. reduction (49c.) in the daily wage. The mine owners proposed twice as large a cut. The wages, even if reduced to suit the operators, will still be much larger than in pre-war days. Even in South Staffordshire they will be 55 per cent higher and in Durham they will be 141 per cent.

Business is being severely curtailed by the strike. The Federation of Iron and Steel Manufacturers announced that on April 12 only thirty furnaces out of 109 operating April 1 were in blast and that before the end of the week all would be damped down. Since April 14 a signed order has been necessary to obtain coal for domestic use. Appeal has been made for economies by the cutting down of lights in homes, the curtailing of the use of gas and the minimizing of illumination in public halls.

Recruiting of the defense organizations has gone along most satisfactorily but has been ultimately stopped by the filling of quotas. Every preparation had been made for the transport strike and it was fully expected that the people would have been supplied with food without serious trouble by the motor-transport service provided.

F. M. Chase, Lehigh President, Dies

FRED. M. CHASE, president and general manager of the Lehigh Valley Coal Co., died at 2:15 a.m. Friday, April 8, at his home, 184 South River St., Wilkes-Barre, Pa. His death was caused by a blood clot on the brain that formed following a stroke of paralysis. Dr. S. P. Mengel, chief surgeon of the Lehigh Valley Coal Co., who with Mr. Chase has labored for years in the improvement of the towns of the Lehigh Valley and in the care of the health of the employees, attended Mr. Chase in his last hours.

Mr. Chase was born Jan. 24, 1865, at Broad Top, Huntington County, Pennsylvania. At the age of fourteen he migrated to Wilkes-Barre and took a position as office boy with the Lehigh Valley Coal Co., Israel Morris, then one of the company officials, finding him the humble post. In turn he became clerk, chief clerk, assistant to the general manager, general superintendent, and assistant general manager. When in 1912 Samuel D. Warriner left the Lehigh Valley Coal Co. to become president of the Lehigh Coal & Navigation Co., Mr. Chase became vice-president and general manager under E. E. Loomis, who headed both the coal company and the Lehigh Valley Railroad Co. On Jan. 10 of this year Mr. Chase was made president and general manager.

The work of Mr. Chase in the Lehigh Valley Coal Co. has from a technical point of view always been progressive, but the outstanding feature in his administration has been the unfailing interest he has had in the welfare of the men who worked for the company. Mr. Chase was a vice president of Coxe Bros. & Co., Inc. One of his brothers

F. M. CHASE

is Edward B. Chase, general sales manager of the Berwind-White Coal Co.

J. M. Humphrey, of Dorrancetown, Pa., has been elected president in place of Mr. Chase. He has been chief engineer of the company for the past six years. Thomas P. Thomas, also of Dorrancetown, has been elected general manager. Judge Frank W. Wheaton, recently appointed vice president and general counsel, becomes chairman of Board of Directors, a newly-created position. L. A. Tompkins, of New York City, is elected vice president. These appointments were made on April 13.

Government to ask Dismissal of National Coal Action

Ohio Companies Obtain Temporary Injunctions—Contend that Hearing of 224 Cases at Once Would Prevent Fair Trial

AT THE request of the government, the date on which it is to present its case in the action brought in the Supreme Court of the District of Columbia by the National Coal Association has been extended. A temporary restraining order was granted, which was answerable on April 12. The government was not prepared to make its case at that time and the order was extended in the form of a temporary injunction to remain in force until a further order of the court. A hearing was set for April 25.

Another order in the same category was that granted by the court at Toledo, Ohio, in the case of the Ohio Collieries Co., the Cambria Collieries Co., the Tropical Mining Co., the George M. Jones Co. and George M. Jones versus various prosecuting officers of the government. The hearing in that case has been set for April 29.

According to L. Ert Slack, special Assistant Attorney General in the prosecution of the coal cases, on his return to Indianapolis last week from Washington, where he has been in conference with Guy D. Goff, the government intends to make a motion to dismiss the suit filed by the National Coal Association against various Federal officials in the Supreme Court of the District of Columbia.

The Pittsburgh Coal Co. and the Great Lake Coal Mining Co., the former of which has a branch office in Columbus and the latter its main office, have obtained a temporary restraining order from Judge Sater of the U. S. Court at Columbus, Ohio, to restrain federal officers in the Southern Ohio court district from serving summons on them to appear for trial in the Indiana courts. The defendants with G. C. Weitzell, vice president of both corporations, contend that it is unconstitutional to bring them to trial in the Indiana courts when they are residents of the Southern Ohio district. It also is alleged that the trial of 224 cases at once would prevent a fair trial. The two companies are indicted on five counts, including conspiracy in restraint of trade, illegal combination and monopoly. Violations of both the Clayton law and the Lever Act are alleged. The temporary restraining order is effective until April 19, from which date the corporations ask a permanent injunction.

Indiana coal operators, miners, union officials and companies indicted for alleged violation of the Sherman Anti-Trust law by the Federal Grand Jury will not have to face Judge Albert B. Anderson on arraignment day, May 3. Instead they will be arraigned before Judge Ferdinand A. Geiger, of Milwaukee, who comes to Indianapolis April 25 to sit for Judge Anderson for about two weeks. The matter of arraignment is wholly a formal proceeding and it is believed that if and when the cases finally come to trial Judge Anderson will be on the bench.

Ohio, Kentucky and West Virginia Coal Men Obtain Return of Pre-War Differential

MANY interested shippers and coal operators from the various points in Ohio, Kentucky and West Virginia concerned in the proposed increase in rates on coal over the Louisville & Nashville R.R., attended the joint hearing of the Coal, Coke and Iron Ore Committee of the Central Freight Association and the Southern Freight Traffic Committee for the railroads, held at the Hotel Sinton, Cincinnati, last week. Coal rates from eastern Kentucky and West Virginia to Cincinnati, Louisville and intermediate points were among the chief topics discussed at the meeting.

Present rates on bituminous and cannel coal from the McRoberts district on the L. & N. are $1.75 a ton, while those from the Kanawha district are $2.10 a ton. The difference was created when increased rates went into effect last August. Prior to last August the rates were practically the same, but when an increase of 40 per cent was made on coal from the Kanawha district and of 25 per cent on coal from the McRoberts district, the relation of the tariffs from the two sections was thrown out of alignment.

An agreement was reached which eliminates a large part of the 35c. and 45c. differential on coal from the Kanawha and New River fields. The rate recently in effect on coal from points on the L. & N. has been increased to $2 a ton. It will thus be observed that the differential has been reduced to 10c., the pre-war basis.

H. L. Ogden Advises Placing Coal Contract Now to Avoid Being Caught Short Later

H. L. OGDEN, purchasing agent for the Gas & Electric Improvement Co. of Boston, told the members of the New England Association of Purchasing Agents, at a meeting held in the Westminster Hotel at Boston on April 11, that they had better contract for future coal needs. Mr. Ogden quoted statistics showing the production and consumption of coal and recommended that all purchasing agents place contracts now, so as to avoid being caught short later in the year. About 250 purchasing agents were present.

The officers of the National Association of Purchasing Agents will urge all purchasing agents to contract at once for their coal supply.

The coal contract recently adopted by the Fuel Committee of the National Association of Purchasing Agents has been adopted and put into use by the United Collieries Co. of Chicago. L. F. Boffey, secretary of the association, states that other companies are contemplating similar action.

Frelinghuysen Bill Would Vest Coal Commissioner's Powers in Director of Geological Survey

WASHINGTON CORRESPONDENCE

SENATOR FRELINGHUYSEN'S revised federal coal commissioner bill vests the powers therein granted in the Director of the U. S. Geological Survey. The director of that bureau, which is in the Department of the Interior, is to bear in addition the title of Federal Coal Commissioner. "The commissioner," reads the bill, "for the performance of his duties as such, and without prejudice to his right to receive compensation as director of the U. S. Geological Survey, shall receive an annual salary of $5,000."

With the foregoing exception, the bill stands practically as it was introduced originally by Senator Frelinghuysen. The bill provides that the commissioner shall investigate the "organization, management, and practices of dealers and operators; costs and profits in connection with the mining, sale and distribution of coal; the terms contained in leases of coal mines, the prices demanded or received for coal, the distribution, storage and sale of coal and the methods and processes employed therein; the consumption of coal, and the transportation of coal in commerce, including the distribution of coal cars."

In addition, the commission is to investigate "wages, working conditions, terms of employment and the living expenses of miners and other workmen employed in mines from which coal is transported in commerce," as well as "methods and processes for the storage of coal."

SCOPE OF PROPOSED COMMISSIONER'S POWERS

The commissioner is charged with specific instructions to co-operate with the Interstate Commerce Commission in promoting the proper distribution and most efficient use of coal cars. He is instructed to investigate the desirability and practicability of prescribing statutory standards for various kinds and grades of coal and is to make recommendations on such subjects to Congress. In another section of the bill the commissioner is instructed to investigate the desirability of a statutory zoning system defining the distance from the mines within which coal therefrom may be transported in commerce.

Full powers are granted to insure the appearance of any persons engaged in the coal trade and to require from them reports dealing with any phase of their business in coal. Penalties are provided to cover disobedience to the subpoena of the commissioner and to cover any wilfully false report. The bill goes into a great deal of detail as to the type of assistants who may be employed and as to general procedures. An appropriation of $50,000 is provided for the annual expenses of the work.

It is known that Dr. George Otis Smith, director of the U. S. Geological Survey, has expressed the opinion that the bill should head up in the Secretary of the Interior. Dr. Smith also has gone on record as being thoroughly opposed to the placing of fact finding and of regulatory functions in the same bureau.

Senator Frelinghuysen states that he expects to discuss the bill with the Committee on Interstate Commerce at an early date. In view of the extensive hearings which have been held on the bill, he is not certain that further hearings will be necessary.

NO INFORMATION IS FORTHCOMING from the Interstate Commerce Commission as to the probable date for the hearing on the assigned-car matter. As the commission makes a practice of giving three weeks' notice in important cases of this kind, and from the fact that such hearings usually are set for the latter part of the month, when they will not interfere with the regular conferences held during the first three weeks of the month, it is regarded as practically certain that the matter will not come up before the last week of May. Probabilities favor the last week in June as the more likely time for the investigation.

IN ORDER THAT more subjects may be covered, the National Coal Association has decided to continue its annual meeting for a day longer than was originally planned. The meeting will be held in New York May 19, 20 and 21. The original plan was for a two-days' session only. No announcement has been made as to any feature of the program, but it is expected that five topics covering matters of greatest current interest will be assigned to men particularly qualified to handle them. Ample opportunity is to be given for discussion of these topics, as well as other phases of the coal industry.

Central Pennsylvania Operators Want Mine Workers to Agree to Reduced Wage Scale

A MEETING of union and non-union coal operators was held at Altoona, Pa., April 13, for the purpose of a general discussion of the serious problems now confronting the public, operators and miners of the central Pennsylvania field. None of the operators' associations which deal directly with the United Workers of America was officially represented, the purpose of the meeting being an exchange of individual views and information. There were 115 coal-producing companies represented at the meeting.

Production in the district has fallen from a maximum during the week of Dec. 12, 1920, of 2,515,000 tons to 1,051,000 tons during the week of April 3, 1921, or a decrease of 58 per cent. Part of this decrease is due to lack of demand and part of it is due to the inroads made by other districts employing non-union labor on the markets formerly supplied from this region.

It also was brought out that many consumers who usually contract for their yearly supply have refused to renew their contracts, being firmly of the conviction that the cost of coal must come down even lower before American business can hope to resume a normal stride. Operators who employ union labor stated that it was impossible to make any further price concessions at the present wage scale.

They also said that the consuming public could not expect that the present wage agreement fixed by the award of the U. S. Bituminous Coal Commission appointed by the President of the United States would be broken unless the union would consent to a modification of its terms.

At the conclusion of the meeting the following resolution was unanimously passed. "Resolved, that the executive committees of the operators' associations authorized to negotiate wage agreements with the United Mine Workers of district No. 2 be urged to promptly tender an offer to the officers of the United Mine Workers of America to meet in joint conference at an early date to discuss the grave problems confronting the central Pennsylvania field."

Anthracite Mine Workers Accept Wage Cut

MINE workers at the Chauncey colliery of the George F. Lee Coal Co., at Avondale, Pa., in the northern anthracite region, Luzerne County, on March 27 accepted a wage reduction of 10 per cent, following the closing of the colliery on March 24. The men of the Jermyn Coal Co.'s mine continue to refuse to accept any reduction and at a meeting of the tri-district board of the United Mine Workers of America, April 6, the members of that board went on record as being opposed to the acceptance of any such reduction. The board proposes to use its good offices to find work for the men at other collieries. The Red Ash colliery in Laurel Run has closed down because of the depression.

Coal Output of 1920 Near Pre-War Level; Effect of War Offset by Heavier Production in Neutral Lands

THE year 1920 will be a memorable one in the history of the world's coal supply. The prices reached were the highest of modern times and, as usually happens at such a time, the quality of the output deteriorated. In the last two years of the war the world's output had risen close to the pre-war level. After the armistice, however, the cessation of munitions manufacture and the delay in resumption of normal business curtailed the demand for coal. Industrial disputes both in Europe and America closed many mines late in 1919 and further reduced the supply. Thus when in 1920 the world set its face to work again and industrial activity was resumed, where resumption was possible, consumers' reserves of fuel proved insufficient, according to F. G. Tryon, of the Geological Survey, and an almost universal feeling of apprehension over the coal supply swept around the world. The reasons for this alarm —lately a thing of the past—become clear when the world's production in 1920 is cast up.

Reports received by the U. S. Geological Survey indicate that the total output in 1920 was about 1,300,000,000 metric tons. This, although a great increase over 1919, was still 42,000,000 tons short of the output in 1913, the last year before the Great War. The course of production during the last decade is shown in the following table. The unit of measurement, it will be noted, is the metric ton, which will be most easily remembered by American readers as roughly equivalent to the gross ton of 2,240 pounds.

THE WORLD'S PRODUCTION OF COAL, 1910-1920
(In metric tons)

Year	Production (In Part Estimated)	Per Cent Produced by United States	Year	Production (In Part Estimated)	Per Cent Produced by United States
1910	1,160,000,000	39.2	1916	1,296,000,000	41.4
1911	1,189,000,000	37.9	1917	1,345,000,000	44.0
1912	1,249,000,000	38.8	1918	1,331,000,000	46.2
1913	1,342,000,000	38.5	1919	1,158,000,000	42.9
1914	1,205,000,000	38.6	1920	1,300,000,000	45.1
1915	1,196,000,000	40.4			

The fluctuations in world coal supply become somewhat clearer if expressed as index numbers, taking the output in the year 1913 as equal to 100. The production in the other years then becomes as follows:

1910	86	1916	97
1911	89	1917	100
1912	93	1918	99
1913	100	1919	86
1914	90	1920	97
1915	89		

The present rate of production in the world is the resultant of conflicting forces; the decline in the war-torn countries is being offset in part by an increase in regions remote from the battlefields. In the belligerent countries of Europe the war cut heavily into production. Sometimes the cause of the decline was physical destruction of the mines, as in France; sometimes it was the drain upon the manpower of the nation; sometimes it was merely the economic disorganization and disruption of normal trade which attended the war. In France the 1920 output (excluding the Saar and Alsace-Lorraine) was 46 per cent less than that of 1913; in Great Britain the decline was 20 per cent; in Germany (also excluding the Saar and Alsace-Larraine) the output of bituminous coal decreased 24 per cent, a decrease which was in part, however, offset by the increased production of lignite. In Eastern Europe—the old Austro-Hungarian Empire, Russia, and the Balkans—the breakdown caused by the war was even greater than in Western Europe, and the decline in output was proportionately large. Of all the major European belligerents only Belgium had in 1920 practically re-attained its pre-war rate of production.

The decrease in output centering in Europe may be likened to a condition of vacuum. To fill the void on the Continent and in the maritime markets formerly supplied by Great Britain and Germany the outlying coal fields of the world increased their production greatly. The stimulus of demand was felt not only in the neutral countries of Europe—Spain, Holland and Scandinavia—all of which developed their scanty resources to the utmost, but extended to the Americas, Africa and Asia. Japanese, Chinese and East Indian mines took over the bunkering business relinquished by the British in the Far East.

In the bitterness of Europe's need coal from the Appalachians was shipped through Trieste and Fiume to Austria, or carried up the Rhine to Switzerland, passing within gunshot of the great Ruhr field of Germany. Considerable tonnages were brought from South Africa, and a stray cargo from China found its way to Europe. Even the East Indies and far-away Spitzbergen felt the stimulus. The manner in which the outlying countries came to the assistance of Europe is shown in the following table, which gives production, by continents, before and after the war. Only Oceanica, of the distant lands, produced less in 1920 than in 1913, and there, as in Europe, the cause was the disorganization caused by the war, for Australia and New Zealand both sent a large proportion of their able-bodied men to Europe and have not yet regained their pre-war productivity.

Thus, while in 1913 Europe led all the continents as a producer of coal, contributing 54 per cent of the world's output, in 1920 she had yielded first place to North America and her share of the world't total had shrunk to 46 per cent.

The largest factor in filling the void caused by the war in Europe was, of course, the United States. Our production increased from 38.5 per cent of the total for the world in 1913, to 45.1 per cent in 1920. In that year our sea-borne exports of coal were 22,500,000 net tons, five times what they were in 1913.

PRODUCTION OF COAL BY CONTINENTS, 1913 AND 1920
(In Metric Tons)

Continent	1913	1920	Increase or Decrease *	Per Cent of Change*
North America...	531,600,000	601,300,000	+ 69,700,000	+13.1
South America...	1,600,000	1,700,000	+ 100,000	+ 6.2
Europe.....	730,000,000	597,500,000	— 132,500,000	—18.1
Asia.....	55,800,000	75,800,000	+ 20,000,000	+35.9
Africa.....	8,300,000	11,800,000	+ 3,500,000	+42.2
Oceanica.....	15,000,000	11,900,000	— 3,100,000	—20.7
World.....	1,342,300,000	1,300,000,000	— 42,300,000	— 3.2

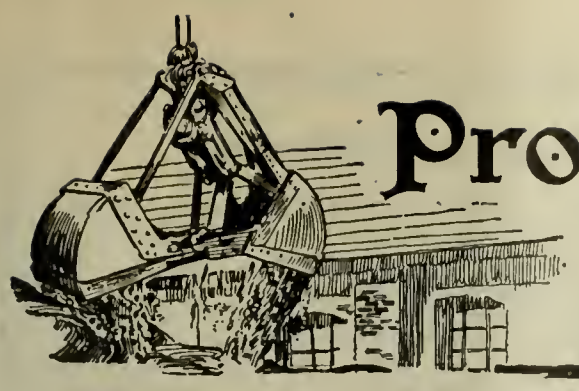
* A plus sign denotes an increase; a minus sign, a decrease.

Supreme Court Upholds Rent Laws, Citing Coal Decisions as Precedents

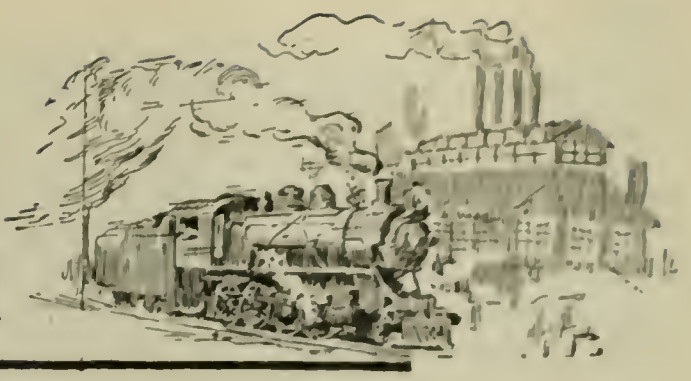
IN AN important decision the U. S. Supreme Court on Monday April 18, upheld the right of Congress to control necessities of life in the public welfare. The decision sustained the Ball rent law of Congress, in which the court made some general conclusions of interest in view of the difference of opinion which has existed as to the right of Congress to control the coal and other basic industries. Five justices of the court joined in a majority report read by Justice Holmes, to which the Chief Justice, Mr. White, was one of four who dissented, holding that the Constitution guaranteed the right of property and contract and could not be superseded by legislation in the interest of the public welfare. Justice McKenna delivered the dissenting opinion, which was a dramatic declaration against government control.

The majority opinion cited previous mining and coal decisions in support of its view that a matter of private concern could be clothed with public interest. Justice Holmes said that circumstances may so change in time or so differ in space as to clothe with public interest what at other times or in other places would be a matter of purely private concern.

Justice McKenna said the law impaired obligations of contract and was contrary to the law of lessor and lessee. He insisted that the security of property against the exertions of government was the "essence of liberty."



Production and the Market



Weekly Review

PRICES and production of bituminous coal continued to bump along on the bottom during the first half of April. It is confidently expected, however, that from now forward production will gradually gain until a real demand is felt that will push it upward more nearly to normal. Prices will follow the same uninteresting course so long as consumers are quiet.

The British strike, which has been in effect nearly three weeks, has produced an abundance of inquiries for coal from abroad but no orders and no shipments that can be traced directly as a result of English conditions. American exporters have suffered no disappointment on that account, for it was known that markets in continental Europe were overstocked and present conditions were forecast. Until stocks become very much depleted, as for instance, in France, Italy and Switzerland or in Scandinavia, these countries are not going to buy coal here at present rates of exchange and with present difficulties in obtaining credits.

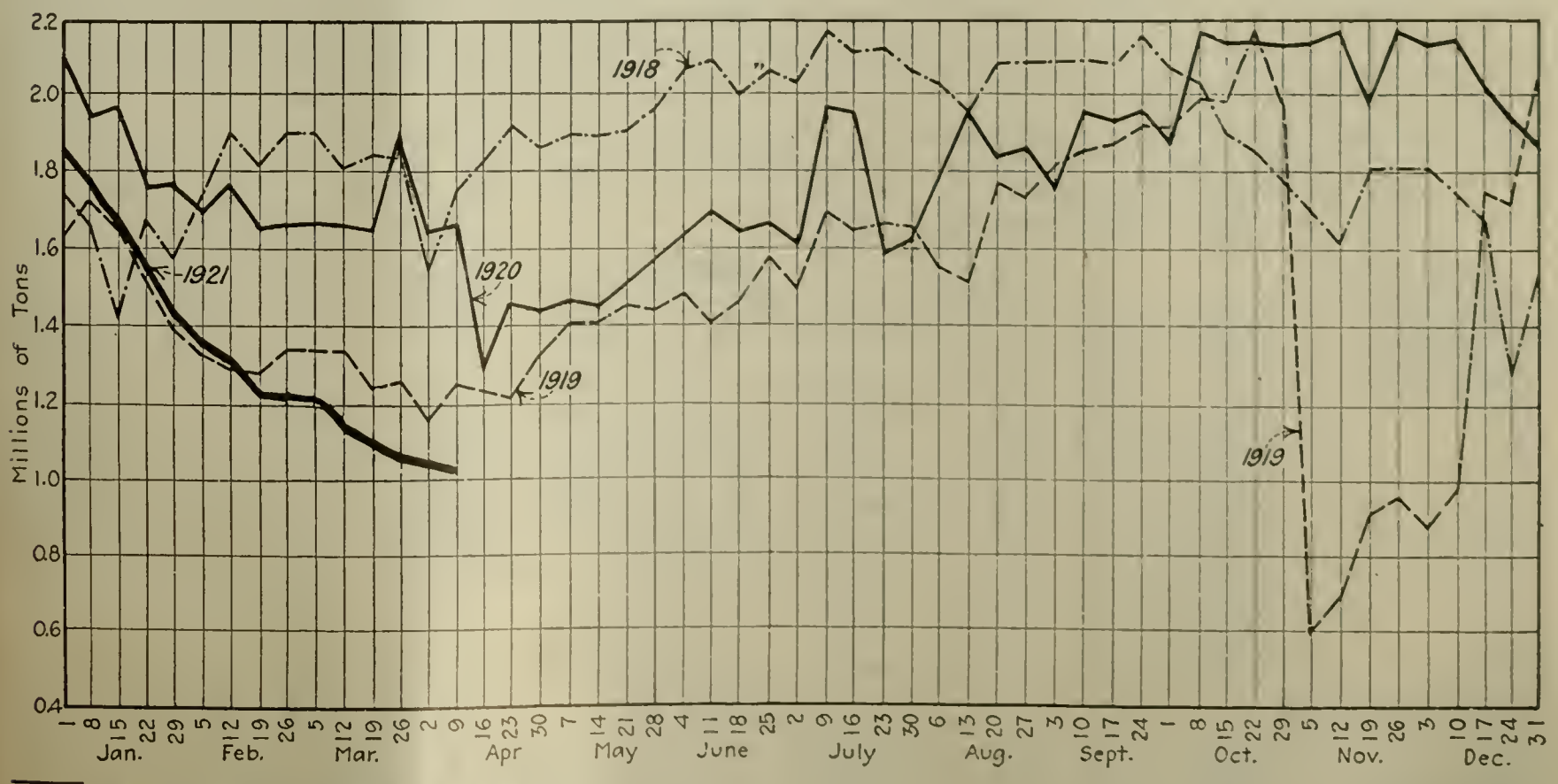
Home markets for coal are dead because industry is marking time. Of nineteen coals quoted by *Coal Age* the spot prices of eight gained, five dropped and six were unchanged from a week ago. The gains were mainly in high-grade low-volatiles on the Atlantic seaboard, though some of the better Western coals developed a little strength. The net result, considering the market as a whole, was a gain of one point in *Coal Age* index of spot prices, from 102 to 103.

Anthracite, after one slump, during the week ended April 2, climbed to 1,865,000 net tons, which is above the weekly average so far this year and well above that of the same period of 1920. Anthracite operators have not felt as yet a slack domestic market and they are hopeful of rousing sufficient interest in summer storage by consumers to tide them over the early summer months. Not until real hot weather hits the East will it be known whether the scant price reductions of this month will tempt domestic purchasing. The opinion is more or less commonly held that 50c. or even a dollar is too little reduction to stimulate buying.

Consumers Hope Freights Will Fall With Wages

Anticipated reductions in freight rates are holding up summer purchasing of coal, both hard and soft. The decision of the Railway Labor Board last week set July 1 as the latest date at which wage adjustments are to be consummated. By inference it is anticipated that freights will go down wher wages do and no one wants to invest in high freight cost now. Westbound coal, as anthracite and high-grade fuel from eastern Kentucky.

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

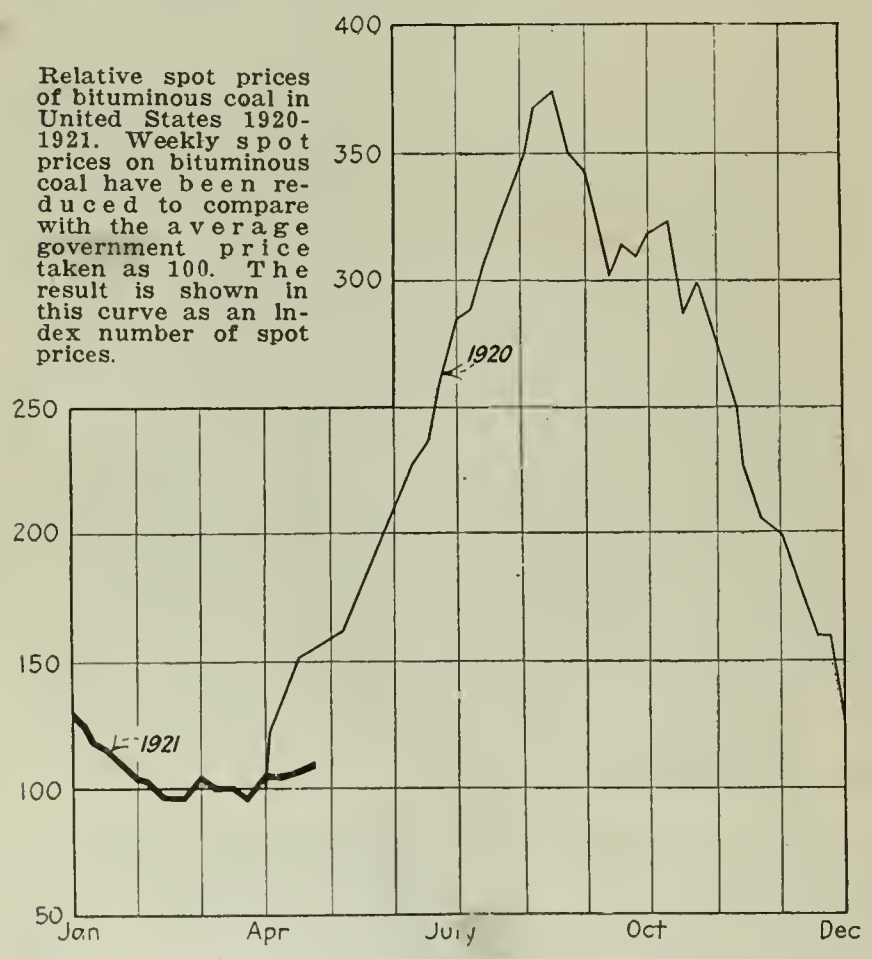
is suffering from sluggish demand in the Midwest as a result.

What has happened to beehive coke is readily appreciated when it is realized that the output in the week of April 9, 1921, was less than the daily output in the same week of 1920. Coke for iron furnaces is coming from byproduct ovens—the beehive ovens, in fact, have at last become standby plants.

BITUMINOUS

Production during the week ended April 9 was 6,089,000 net tons, according to the Geological Survey. The rate per working day continued to decline, although the output exceeded that of the holiday week preceding. Loadings improved slightly on Monday and Tuesday, April 11-12.

Steam coals are in slightly increased call in the Central and Southwest States, as reserves appear to be getting lower. The upturn is scarcely perceptible, but coupled with continued low production and fewer forced sales, is giving a better tone to the market. Contract making apparently is being indefinitely postponed.



Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total bituminous, including coal coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date *a*
Mar. 26*b*.....	6,457,000	96,801,000	11,015,000	126,585,000
Daily average...	1,076,000	1,339,000	1,836,000	1,751,000
April 2*b*.....	5,823,000	102,624,000	9,715,000	136,300,000
Daily average...	1,059,000	1,311,000	1,619,000	1,741,000
April 9*c*.....	6,089,000	108,713,000	9,690,000	145,990,000
Daily average...	1,015,000	1,290,000	1,615,000	1,732,000

(*a*) Less two day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date *b*	1920 Week	1920 Calendar Year to Date *a*
Mar. 26.....	1,564,000	21,183,000	1,921,000	20,609,000
April 2.....	1,157,000	22,747,000	1,314,000	21,923,000
April 9.....	1,865,000	24,612,000	1,538,000	23,461,000

(*a*) Less one day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

BEEHIVE COKE

Week Ended April 9*a* 1921	Week Ended April 2*b* 1921	Week Ended April 10 1920	1921 to Date	1920 *c* to Date
79,000	87,000	477,000	2,633,000	6,428,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Union miners are adamant in their refusal to consider any reduction in their wage scales. However, slack operating time has brought out an interesting labor condition—union miners are migrating to non-union fields, seeking work where wages have been lowered. During the past week more than five hundred union miners sought employment in the Connellsville region, where a cut in wages has been in effect since April 1.

Lakes demand is dragging. There are some 8,000 cars at the lower ports, awaiting bottoms and an extremely sluggish start of the season is indicated. Freight rates inland from the upper docks have been revised, generally downward, effective July 6, to afford dock fuel more even competition with Illinois and Indiana all-rail. This is the occasion of an active drive for business by the mine operators, who are seeking to establish their customers before the new rates

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

	Market Quoted	Mar. 1920	Mar.22 1921	Apr.12 1921	Apr. 19 1921†
Low-Volatile, Eastern					
Pocahontas mine run....	Columbus.....	$2.35	$3.25	$3.35	*$3.25*
Pocahontas lump.....	Columbus.....	2.60	5.50	5.50	5.50
Pocahontas mine run....	Chicago.....	2.35	4.15	3.85	**3.50@ 4.50**
Pocahontas lump.....	Chicago.....	2.60	5.00	5.00	4.50@ 5.50
*Smokeless mine run.....	Boston.....	....	5.85	6.00	*5.85*
Clearfield mine run.	Boston.....	2.95	2.50	2.35	2.00@ 2.75
Somerset mine run.....	Boston.....	2.95	3.00	3.05	2.35@ 3.75
Pool 1.....	New York.....	2.95	3.30	3.40	**3 25@ 3.75**
Pool 1.....	Philadelphia..	2.95	3.50	....	3.50
Pool 1.....	Baltimore.....	2.95	3.05	3.15	**3.25**
Pool 9.....	New York.....	2.95	2.75	2.80	2.60@ 2.95
Pool 9.....	Philadelphia..	2.95	3.05	3.25	*3.00*
Pool 9.....	Baltimore.....	2.95	2.90	3.00	**3.00@ 3.15**
Pool 10.....	New York.....	2.95	2.65	2.35	**2.35@ 2.75**
Pool 10.....	Philadelphia..	2.95	2.50	2.75	**2 75@ 3.00**
Pool 10.....	Baltimore.....	2.95	2.35	2.50	2.50
Pool 11.....	New York.....	2.95	2.20	2.15	2.00@ 2.25
Pool 11.....	Philadelphia..	2.95	2.30	2.15	**2.25@ 2.35**
Pool 11.....	Baltimore.....	2.95	2.30	2.25	2.25
Pool 71.....	New York.....	2.95	2.75	3.15	*2.70@ 3.25*
Pool 71.....	Philadelphia..	2.95	2.75	3.15	**3.25**
Pool 71.....	Baltimore.....	2.95	2.95	3.00	**3.00@ 3.15**
High-Volatile, Eastern					
Pool 34.....	New York.....	2.50	2.00	1.85	**1.75@ 2.20**
Pool 34.....	Philadelphia..	2.50	2.15	1.85	**1.85@ 2.00**
Pool 34.....	Baltimore.....	2.50	2.00	2.10	*2.00@ 2.15*
Pittsburgh mine run.....	Pittsburgh....	2.35	2.25	2.25	2.00@ 2.50
Pittsburgh sc'd gas.....	Pittsburgh....	2.35	2.85	2.85	2.75@ 3.00
Kanawha mine run.....	Columbus.....	2.70	2.25	2.25	*2.00*
Kanawha lump.....	Columbus.....	$2.95	$3.25	$3.50	*$3.25*
Hocking mine run.....	Columbus.....	2.50	2.15	2.25	*2.15*
Hocking lump.....	Columbus.....	2.75	3.25	3.25	3.25
Pitts. No. 8 mine run....	Cleveland.....	2.35	2.15	2.25	2.20@ 2.35
Pitts. No. 8 lump.....	Cleveland.....	2.60	3.50	3.50	**3.50@ 3.75**
Midwest					
Frankl n, Ill., mine run..	Chicago.....	2.35	3.35	3.40	3.25@ 3.50
Franklin, Ill., lump.....	Chicago.....	2.55	3.55	3.55	3.45@ 3.65
Central Ill., mine run....	Chicago.....	2.35	2.00	2.25	**2.25@ 2.75**
Central Ill., lump.....	Chicago.....	2.55	2.50	3.00	2.75@ 3.25
Ind. 4th Vein mine run...	Chicago.....	2.35	2.65	2.65	**2 50@ 3.00**
Ind. 4th Vein lump.....	Chicago.....	2.55	3.15	3.15	**3 00@ 3 50**
Ind. 5th Vein mine run...	Chicago.....	2.35	2.50	2.65	**2.50@ 3.00**
Ind. 5th Vein lump.....	Chicago.....	2.55	2.75	3.00	2.75@ 3.25
Standard mine run.....	St. Louis.....	2.35	1.85	1.90	**1.90@ 2.00**
Standard lump.....	St. Louis.....	2.55	2.60	2.25	2.25
West Ky. mine run.....	Louisville.....	2.35	2.50	2.40	*2.00@ 2.50*
West Ky. lump.....	Louisville.....	2.60	3.15	2.90	**3.00**
South and Southwest					
Big Seam mine run.....	Birmingham...	2.45	2.95	3.05	2.90@ 3.25
Big Seam lump.....	Birmingham...	2.75	3.75	3.60	3.25@ 4.00
S.E. Ky. mine run.....	Louisville.....	3.00	2.75	2.65	**2.75**
S.E. Ky. lump.....	Louisville.....	3.25	3.60	3.60	**3.75**
Kansas mine run.....	Kansas City...	3.50	4.50	4.40	4.25@ 4.50
Kansas lump.....	Kansas City...	4.00	5.50	5.00	5.00

* Gross tons, f.o.b. vessel, Hampton Roads. Quotations on Pocahontas mine run, Boston market, heretofore quoted included both Pocahontas and New River and will henceforth be quoted as West Virginia "Smokeless."

† Advance over previous week shown in heavy type, declines in *italics*.

take effect. Agitation for lower rates from the mines to the lower ports continues.

All-rail shipments to New England fell off during the week ended April 9. Reports show that 2,274 cars were forwarded through the five rail gateways.

Now that the danger of a general British strike seems to have been averted for the moment, there is little prospect of any greatly increased export demand. Heavier bunkering business and an increasing line of inquiries have raised Tidewater quotations. During the week ended April 14 the Hampton Roads piers dumped 360,000 tons.

BITUMINOUS COAL DUMPED AT ATLANTIC PORTS IN FEBRUARY AND MARCH, 1921, IN THOUSANDS OF NET TONS

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Mar. Total	Feb. Total
Coastwise to New England	114	20	86	364	..	584	518
Exports	.....	73	95	421	43	632	712
Bunker	350	47	41	228	2	668	626
Inside capes	.....	158	91	27	1	277	235
Other tonnage	601	...	3	59	4	667	611
March total	1,065	298	316	1,099	50	2,828	....
Feb. total	1,009	254	252	1,146	41	.....	2,702

ANTHRACITE

Prompt recovery followed the depression attending the Easter holidays. During the week ended April 9, 1,865,000 net tons were mined, an increase of 708,000 tons. Production for the coal year 1920-1921 is estimated by the Geological Survey at 89,700,000 net tons and is compared with preceding years in the following table:

PRODUCTION OF ANTHRACITE, COAL YEARS, IN NET TONS

1913-14	88,323,000	1917-18	100,372,000
1914-15	90,298,000	1918-19	92,791,000
1915-16	93,318,000	1919-20	91,900,000*
1916-17	87,947,000	1920-21	89,700,000*

Loading for Lakes continues active and bottoms are still available. New England reports a better domestic demand, as the public seems to have awakened to the fact that further price reductions are out of the question. The New York market also is active, but Baltimore trading is sluggish. Rumors of an advance of 20c. on domestic sizes on May 1 are heard in Philadelphia, where a cold snap has furnished a temporary spurt.

COKE

Beehive coke production continued to decline and another low record was set—79,000 net tons for the week ended April 9. The Connellsville market is very stagnant but prices are well established at $3.50 for spot furnace, $3.75 for contract; foundry, $5@$5.50, spot or contract. At two or three works there have been some slight interruptions due to labor trouble, where the wage reductions of April 1 were not willingly accepted.

Reports From the Market Centers

New England

BOSTON

Only Occasional Inquiry — Operators Follow the Spot Market Closely — Hampton Roads Situation Unchanged —Anthracite Shows Signs of Better Demand.

Bituminous—Disquieting news from England caused a slight renewal of interest in the current market, but this quickly subsided when the threatened strike was postponed. There is occasional small inquiry from those able to find room for spot coal, but no pronounced buying sentiment has yet developed in any quarter. Many consumers find themselves with such large reserves that for the next twelve months they will be obliged to buy only 40 or 50 per cent of their normal requirements. So general is this that buyers feel no apprehension over continued light output at the mines.

Operators are continuing meanwhile to keep closely in touch with the spot market. In general the range of price remains with little modification, but now and then inducements are made to provide a week's operation for this or that mine. Sales agents are laying siege to buyers and every rumor of possible purchase is run to earth.

Receipts are on the same light basis characteristic since April came in, and neither by water nor by rail has there been noted any sign of increase. At the New York and Philadelphia piers very few cargoes have been cleared coastwise, even though there is a great surplus of bottoms, and rates, under the conditions, are on a moderate basis. On bituminous in P. & R. Ry. barges the rate to Boston is now $1.60 and to Bangor but 30c. more.

There is now the closest competition for retail bituminous business. The low bid for 14,000 tons to be supplied to City of Boston buildings for the twelve months to end April 1, 1922 was $9.43 per net ton delivered.

Pocahontas and New River are still suffering from a stagnant market. At all three terminals the volume of coal standing is far in excess of boats either waiting or engaged, and now that British colliery trouble seems to have been composed for the moment there is little prospect for any real demand overseas. The close basis is still $3 per net ton at the mines for contract.

Current mine quotations on bituminous are shown in the Weekly Review. On cars for inland delivery Pocahontas and New River remain on the basis of $8.25@$8.50 per gross ton, Boston and Providence.

Anthracite—While there is as yet no decided impetus to the domestic demand there are beginning to be signs of better retail trade. There is more apparent confidence in the current price basis as the lowest of the season, and active sales efforts on the part of dealers are beginning to show results. The pressure in the cities is for egg and stove, and elsewhere for stove alone. The lack of demand for broken and chestnut will soon halt shipments of stove in excess of the actual proportion mined. It is likely, therefore, that movement to this territory will be somewhat accelerated the next few weeks.

Tidewater—East

NEW YORK

Independents Advance Schedule Prices — Demand Is Stronger — Bituminous Shows Improvement — Less Coal Moving—Prices Up.

Anthracite — Buying is brisk and while company coals have always found a ready market, independent product is becoming scarcer and hard to pick up. Most of the independents who continued to mine coal during the recent depression in the market report heavy bookings. Quotations for independent domestic sizes range 10c. to 30c. above the new company prices, depending upon grade.

Efforts to induce early buying is bearing fruit, the only fear of the retailers being that so much coal might be put away during the next couple of months that it might result in a comparatively dull summer.

Current quotations for company coals, per gross ton, at mine and f.o.b. Tidewater, lower ports, are as follows:

	Mine	Tidewater
Broken	$7.10@$7.75	$ 9.71@$10.36
Egg	7.10@ 7.75	9.71@ 10.36
Stove	7.35@ 8.10	9.96@ 10.71
Chestnut	7.40@ 8.10	10.01@ 10.71
Pea	5.65@ 6.00	8.12@ 8.47
Buckwheat No. 1	3.50	5.97
Rice	2.50	4.97
Barley	1.50	3.97
Birdseye	2.50	5.02

Bituminous—A stronger market exists. Demand is slowly picking up and prices are a trifle steadier, although the general average shows little difference from last week.

Locally the situation shows little change, but a betterment is noticeable inland. Not much benefit has resulted here from the British strike. There has been a marked increase in the number of inquiries but actual sales are comparatively few. Liners continue to

take on a double quantity of coal to avoid any possible trouble in making the return trip. There are between 200 and 300 vessels at anchor in this harbor awaiting cargoes, which, if they could obtain them, would mean a rush for bunker coals.

The renewal of contracts is slow work. Consumers are not entering into new deals at a price around $4 when good grades can be bought in the open market at approximately $1 lower.

Some of the good grades are said to be well sold ahead. This is particularly true of coals included in Pools 9 and 71. It was also said that one operator entered orders for a considerable tonnage of Pool 9 at $3.

Quotations for the various pools, f.o.b. local docks show a wide range. The trend, however, seemed to be about as follows: Pool 1, $6.25@$6.50; Pool 9, $6.20@$6.30; Pool 10, $6@$6.25; Pool 71, $6.25@$6.50; Pool 11, $5.25@$5.50. Mine quotations are reported in the Weekly Review.

HAMPTON ROADS

Business Picks Up — Prices a Trifle Stronger—Better Pier Conditions.

Business at the piers has been a little more brisk than at any time during the previous four weeks, the British coal strike apparently having the effect of stimulating both price and demand. Pools 1 and 2 are now $6@$6.75; other pools range $5.50@$5.75.

The situation at the three piers for the week ended April 14, was as follows:

N. & W. piers, Lamberts Point—	
Cars on hand	1,998
Tons on hand	91,862
Cars dumped	2,511
Tons dumped	137,116
Tonnage waiting	18,945
C. & O. piers, Newport News—	
Cars on hand	2,589
Tons on hand	128,950
Cars dumped	2,345
Tons dumped	121,987
Tonnage waiting	5,000
Virginian Ry. piers, Sewalls Point—	
Cars on hand	1,338
Tons on hand	66,900
Cars dumped	2,060
Tons dumped	103,041
Tonnage waiting	11,400
Cars on hand outside pool	118

The Lamberts Point piers Friday morning were filled with ships awaiting cargo, every berth being taken for the first time in several weeks. Many of these are going to England.

Contracts continue to be held in abeyance here, only a few local dealers having renewed contracts for the new year.

BALTIMORE

Slump Continues Acute Despite Anticipated Strike Stimulus—Much Coal Uncontracted—Hard Coal Trade Inactive.

Bituminous—While a good line of export inquiry continues, actual closings remain few and the slump in movement from this port has become more pronounced, only two ships having cleared with export coal for the first half of April. The anticipation of the British strike caused a tightening of quotations on future delivery by holders of better coals and a better tone in local trading. There is much good coal on the market uncontracted. Holders of best coals are figuring that there will be ample demand a little later, but nevertheless the temptation to sell is causing coals to be let go at figures in many cases entirely too close to the margin of production. Prices are shown in the Weekly Review.

It is an odd coincidence that the new coal pier of the Western Maryland has been completed and put into commission at the time of lowest handling in a long period. The pier was tested out the past week by loading the collier Melrose for New England.

Anthracite—Hard coal men are bewailing the public attitude of not ordering. Personal urging, newspaper advertising and other measures have failed to change this situation. A serious time is ahead for both dealers and consumers if the great majority let the summer pass well along before making any effort to get coal. With soft coal consumers taking the same stand one of the worst freight congestions in years is forecast. Meanwhile, dealers are interested to see what action producers will take on the public complaint, made through the retail association by letter, concerning the class of preparation that has been the vogue since mid-war days. During the war poor preparation and over-standard amount of slate and rock was admitted, as was the mixing of sizes. The claim is that this continues.

PHILADELPHIA

Anthracite Stimulated by Cool Spell—Mines Working Full Time — Price Increase Likely May 1 — Bituminous Unchanged — Tide Trade Mostly for Bunkers.

Anthracite—With another unseasonable drop in the temperature recently the consumer was stirred to some activity and the retail trade experienced a little boost. However, the dealers are a unit in stating that the outlook is not particularly promising, as they have very few orders ahead, cleaning up the business as fast as it offers.

There has been a plentiful supply of coal of all sizes coming in, the only sign of scarcity being at times on stove.

All the companies are holding firm to their prices and it seems to be taken now without question that there will be an increase on May 1. In some quarters it is reported that the advance will not be more than 10c., while there is a persistent story out that one of the companies intends to put on 20c., if not 25c.

The trade has been much interested in the proposed 2 per cent tax on anthracite and for a time it looked as though it would go through. The opinion is general now that it will not be enacted into a law.

The small sizes are giving all operators much cause for anxiety. Pea is particularly weak and the companies have now begun to drop a surplus of this size in the storage yards. Independents are moving some around $5.25@$5.50. Steam coals are also in heavy over-supply and all companies are storing heavily. Individual buckwheat can be had around $2.75@$3.25.

The company prices per gross ton for line shipment and f.o.b. Port Richmond for Tide are as follows:

	Line	Tide
Broken	$7.25	$ 9.95
Egg	7.25	9.95
Stove	7.55	10.20
Nut	7.55	10.20
Pea	5.90	8.30
Buckwheat	3.50	6.00
Rice	2.50	5.00
Boiler	2.00	4.40
Barley	1.50	3.90

Bituminous—If anything, less coal has been coming in lately. The consumer is just as cautious as ever in buying anything but the most meager tonnage. The big users still have very large stocks on hand and are doing little work. The iron industry locally does not improve and until it does there will be very light coal buying. The manufacture of cotton goods has improved considerably of late, and this trade, together with the utilities, has served to make what little business there is offering.

Recent prices have shown a tendency to remain firm, with occasional stiffening. Quotations are shown in the Weekly Review. Some shippers continue to try for contracts, but very little business is being concluded. There is an occasional report of some shading of contract prices, but most interests are still holding to their former figures.

The export trade remains quiet, with business mostly confined to bunkering. Effects of the British strike have now been well discounted and have not changed the local market, outside of the slight tendency to induce a little more buying by some domestic consumers.

BUFFALO

Dull Bituminous Market Continues—Business Is Waiting for Industrial Adjustments—Anthracite Lakes Loading Active.

Bituminous—Some active shippers, who have made friends with the consumers, are able to sell a fair amount of coal, but the office that is not making running expenses is common. The worst of it is that there is not the slightest sign of improvement. Shippers are given to saying that conditions are actually growing worse, or that if they are not it is because everything is at a standstill.

It is common, though, for people who find business dull to say that it is the worst they ever knew it to be, so that some allowance must be made for that sort of pessimism.

There is no improvement in the manufacturing trade. It is the general idea that consumption of most articles is much greater than production and that the consumer has less stock in hand from day to day, so that manufacturing will be obliged to increase considerably before the end of the year. Another

difficulty is that the seller is never satisfied unless he can sell much more than is actually needed, thus making the consumer a speculator and a direct contributor to the fluctuations in trade.

Anthracite—Demand continues light and there is an unusual amount of competition. New and aggressive dealers have come in this season. Never before has any new concern been able to eat into the trade, which has long been mostly in the hands of four or five distributors, who look after the small retailers and at the same time do retailing on their own account.

Canadian demand is better than it is for bituminous, but it cannot be called good. Everywhere the idea prevails that a trade war is going to reduce prices still further. The cut of $1.40 in Toronto no doubt added to the impression. Instead of improving trade it is said to have hurt it, both in and out of that city.

In the Lakes trade the loading is brisk, about 300,000 tons now being afloat. So far only two cargoes have left and one of them tied up in Cleveland.

Coke—The trade is quite as dull as ever. Contracts are run out, but nothing is being done to make more and nothing is expected until iron ore begins to move. Distributors of gas from local ovens are getting so little that they are obliged to buy coal and make their own gas.

Northwest

MINNEAPOLIS

Revision of Rates Has Not Stimulated Demand—Trade Deaf to Shortage Talk.

The triumphant announcement which went forth with the decision of the Interstate Commission revising coal freight rates was by no means backed up by the decision itself. When it comes to the point of establishing a freight saving it is found that a portion of the rates are raised and some are lowered and many are uncertain until all angles are studied.

Regardless of the general effect, the present market demand is almost at a standstill. This announcement alone had the effect of holding back orders—if there were any to hold—until the outcome was noted on freights. But there is also the appeal to the railroad men for lower freights on coal. That, too, would have the effect of delaying orders until it was learned how it came out.

So, in the face of several undeniable signs of spring in the shape of admonitions to buy coal early lest the coal famine catch us, the trade in the Northwest is recklessly proceeding on its undisturbed way.

It seems that the transition from a pronounced sellers' market to an equally decided buyers' market has found original sellers unprepared to meet new conditions. They have been under the tender care of government control, where they had nothing to do but produce as much coal as a short supply of cars could handle, and let nature take its course. Now that they are up against a situation which calls for tact, diplomacy, salesmanship, and pertinacity, they fall back upon resources which would hardly deceive a kindergartner.

Locally there is a wide divergence in the prices available on hard coal. One or two companies are quoting at retail $17.30 for nut, $17.20 for stove, $17 for egg and $15.40 for pea. These prices are within 20 or 30c. of the wholesale price to dealers, named by one dock company. As long as buying is as quiet as it is now, it does not make a great deal of difference what is quoted, but this cannot endure indefinitely.

MILWAUKEE

Market Dull — Anticipation of Price Changes May 1—Coal Cargoes Arrive.

Business is confined strictly to immediate needs, as everybody is looking forward to a price adjustment May 1. Anthracite is expected to drop 50c., which amount will be replaced at the rate of 10c. per month. There is some talk of an additional reduction later on, when the supply increases, but this suggestion is not given much credence.

Soft coal may also be advanced. The situation is briefly explained by the president of the Milwaukee-Western Fuel Co., which handles over 80 per cent of Milwaukee's coal supply: "An over supply of soft coal, coupled with a light demand, has forced dealers to cut prices, in many instances below replacement cost. It is impossible to fix the probable increase, but it is certain to affect nearly all grades handled here." Pocahontas has been shaded 50c. Screened sizes now sell at $13, and mine run at $9.50.

Another cargo of 11,000 tons soft coal reached port April 8. There are other cargoes afloat at Lower Lakes shipping points, but these will not be forwarded until it is certain the vessels can secure return cargoes.

Inland West

MIDWEST REVIEW

Only Future Orders Being Placed — Operators Make Drive on Northwest Trade—Few Contract Renewals.

During the past few days there has been some unseasonably cold weather. It has not, however, been severe enough to stimulate domestic buying to any great extent. The coal market on both steam and domestic sizes is dormant, if not dead, and no improvement is expected until July or later.

The domestic situation is very unusual in that retail dealers especially in the Northwest are placing orders for liberal amounts, but this coal is for later shipments. Practically no business has been booked for prompt shipment. Orders have been pouring in for summer and fall deliveries.

There has been no improvement whatsoever in the steam market and this is just as well, because the mines will not be able to produce steam sizes in the cheaper grades until the domestic market picks up. Purchasing agents of both large and small manufacturing concerns are putting off the matter of contracting until a later date. This is going to lead to serious difficulty late in the fall. The contracting season is far behind normal and from present indications it can be judged that all our larger industries are putting off contracting at least for a month more.

Southern Illinois operators see a very bright future for their coal in this territory usually served by the docks at Ashland, Duluth, and Superior, and it is their aim to displace the less favored coals which are sold from the docks. Their anxiety to get new customers started on their coal is accentuated by the fact that there will be a reduction in freight rates on coal from the docks to various points in Minnesota, North and South Dakota and the Northwest in general, early in July. These operators feel that they have had such great success in competition with Ohio and some Pennsylvania coals that they want to strengthen themselves so that when the public begins to buy, they will have more than their share of the business. In short, it is safe to say that the dock operators are going to have to fight for the business they have enjoyed during the past years. Illinois operators do not believe that they can drive West Virginia and Kentucky coal out of the Northwest market, but they do believe that they can hold their own in competition with Hocking, Pittsburg No. 8, Youghiogheny, etc.

Production during the past week at Illinois and Indiana mines does not show any signs of improvement. Two or three weeks ago, a couple of days a week was the average running time but since a number of railroads have taken in their last shipments on contracts, mines that have been running on railroad fuel have been forced to discontinue operations.

DETROIT

Demand Unimproved — Receipts Are Light — Contract Interest Is Lacking.

Bituminous—While some jobbers say they are getting a few more inquiries for steam coal, sales do not reflect an increase in business. They are apparently becoming reconciled to continuance of a waiting policy. The change in industrial and manufacturing lines seems not sufficiently great to produce anything resembling a normal consumption of coal.

Owing to the curtailment of buying orders, shipments are unusually light and little coal is to be found on track. This is preventing coal being thrown on the market at forced prices.

Smokeless lump and egg are quoted at $5, mine run, $3.50, and slack, $1.25. Ohio large lump is $3.40, 2-in. lump, $3.25, ¾-in. lump, $3.05, mine run, $2.50, and nut, pea and slack about $2. West

Virginia and Kentucky quotations are on about the same level as Ohio. There is little or no interest in contracts. Consumption of domestic sizes has been almost discontinued with the coming of warmer weather and retailers are not buying.

Anthracite—Price reductions by the producers have not so far been reflected in similar reductions in the local retail trade.

CINCINNATI

No Contracting — Better Spot Market Forecast—Retail Prices Drop.

With the approach of the the opening of traffic so few contracts have been signed for Lakes business as to make them almost negligible. In fact, there has been no improvement in any contract market and little possibility of any immediate change. Many are inclined to view the situation as one of the public's own making and declare that when there does come a disposition to assure a coal supply the coal man may find it highly profitable to do nothing but a spot business.

Some of the mines, which had noted the short spurt of strength shown in lump demand for the past couple of weeks, over-produced these sizes. The result was a lowering in price to the extent that some of the offerings were sold as low as $2.60. On the other hand, there was an absence of steam coal in distress and a gradual advance both of slack and mine run. The former advanced from $1.75 to $2.25 for the better grades. Mine run, which had been selling around $2, advanced 25c.@50c. Contract prices, however, were not changed, slack being quoted $2.40@$2.75; mine run $3.25, minimum; and lump $3.75@$4 for May and June delivery.

The smokeless market has not varied much since the beginning of the month, though some mine run has been caught in distress. Circular prices are $5 for prepared, $3.50 for mine run and screenings. Of the latter there are scant spot offerings.

Retail prices took a drop last week. Local deliveries are quoted $10 for smokeless block and $8.50 for mine run; bituminous lump $7@$7.50, mine run $7, and nut and slack $6.50.

CLEVELAND

Demand for Slack Continues—Production Improves — Railroad and Lakes Buying Expands.

Bituminous—A growing demand for slack is due to the trend of wholesale and jobbing interests to buy more of it. The supply has been limited by the smaller demand and production of prepared sizes.

Production has taken a spurt. Increased operations are not due to greater industrial activity, although some lines such as tires, automobiles and parts, are improving. The real stimulus has come from the railroad demand and shipment of fuel to the Lower Lakes docks.

Developments are lacking in the efforts of coal operators to get action on freight rate reductions from mines in the eastern bituminous region to the Lower Lakes ports. Prices have changed little in the last week and are shown in the Weekly Review.

Receipts of bituminous coal at Cleveland for the week ended April 9 amounted to 815 cars; industrial 596 cars, retail 219 cars, as compared with 807 cars the previous week.

Pocahontas and Anthracite—With demand almost at a standstill, Cleveland dealers are starting a publicity campaign to induce users to obtain their requirements now. Prices are pictured as being at rock bottom and consumers are warned not to delay.

Lakes—The railroads have about 8,000 carloads of coal at the docks and because of the scarcity of tonnage, dumping is proceeding rather slowly. Many coal shippers must wait until boats from upper ports arrive. Owing to the late start of the ore season it is not believed that tonnage for coal shippers will be any more liberal than at present for some weeks. The grain movement is light also. Navigation through the "Soo" will soon be regular, it is hoped. Retail prices of coal delivered follow:

Anthracite—Egg and grate, $13.75; chestnut, $13.90 and stove, $13.95.
Pocahontas—Shoveled lump, $11.40; mine run, $9.50.
Domestic Bituminous — West Virginia splint, $10; No. 8 Pittsburgh, $8.15; cannel lump, $12.15.
Steam Coal—No. 6 and No. 8 slack, $5.75; No. 6 and No. 8 mine run, $6; No. 8 3-in. lump $6.

CHICAGO

Retail Demand Dead—Industrial Conditions Unchanged—Pocahontas in Good Call for Stocking at Yards.

Usually at this time of the year the retailers in and about Chicago are engaged in filling up some of their regular customers with coal. In fact, in ordinary years, quite a large per cent of householders, flat owners, etc., bought and put in their winter's coal during the month of April. This has not proved to be the case this year, as in common with everybody else, the consumers are putting off purchasing of their coal until the very last minute.

The steam market is no different here in Chicago than any other place and conditions are unsatisfactory and dull in the extreme. One or two small contracts were placed this week, but the tonnage purchased was very far below the amount normally contracted for at this time of the year.

Chicago retailers are beginning to wonder what effect the coal strike in England will have upon the Pocahontas mines in West Virginia. Last year when coal exporting was at its height, Chicago retailers were left high and dry, even if they were fortunate enough to have contracts with Pocahontas operators. This year, however, they have been getting some shipments on their contracts, but there is some very reasonable doubt in their minds as to whether they will continue receiving their usual amount of Pocahontas in proportion to the supply on hand, especially if a big order comes in from England. In one or two instances, requests have been made to operators to send shipments forward a little more rapidly.

ST. LOUIS

Scarcely Any Domestic Moving—Steam Call Barely Takes Available Supply—Immediate Future More Promising.

A quiet, easy market prevails on domestic. There has been a little demand on account of the few cool days, but it had only a temporary effect.

There is no domestic coal moving to country points in this territory. The opinion prevails that there will be a reduction in freight rates within the next 90 to 120 days and the dealers feel it is best to wait and buy on the new rate. Railroad officials discount this and say that even if there were a cut in rates, it would not materially affect conditions.

There is just enough steam call to take what is offered, as a rule. Some mines are still crushing coal to take care of contracts. Railroad tonnage is light, although some are buying on the open market.

Dealers are going slow on Eastern coals. Aside from the anthracite orders placed a few weeks ago for about 300 cars, nothing more has been ordered. No smokeless can compete unless the price gets down to about $4 at the mine for lump and egg.

There seems to be a good future for coke locally to replace hard coal and smokeless. It may also hit the Carterville tonnage. No change in prices since last week.

COLUMBUS

Slightly Increased Demand for Steam—Domestic Trade Still Slow—Production Is at Low Point—No Contracting.

Demand for steam sizes has increased. Reserves are gradually being depleted and purchasing agents are now in the market to a larger extent. Public utilities are still buying rather briskly although there is no disposition to contract for any length of time. But few large railroad contracts have been closed. Prices on steam grades are still rather low, with nut, pea and slack from all Ohio fields selling around $1.85@$2 and mine run $2.20@$2.45.

Domestic trade is quiet in every section. Householders are buying only in small lots. No stocking on the part of users is reported and little is expected for some time. Retail prices have reached the lowest point in months. Pocahontas lump sells $9.50; West Virginia splints $7.50@$8.25 for lump and $6.50 for mine run; Hocking lump $6.50@$7.25 and mine run around $5.

Lakes trade is showing little activity. Some vessels are still being loaded at the lower ports but this is not sufficient to stimulate trade. Only a few isolated contracts have been entered into and prices are still unsettled. The

Lakes trade is not expected to show any considerable activity until after the middle of May.

Production in Ohio fields is at the lowest point in years. During the week ended April 2 the southern Ohio field produced less than 100,000 tons out of a capacity of 517,000 tons.

West

DENVER

Production Gains Slightly—Retail Competition Grows.

Slight production increases for the week ended April 2 could be attributed to the opening of the summer storage season, but more properly can be laid to the fact that cold weather has delayed the spring. The output was 130,380 tons of a possible full time production of 257,748 tons.

The general mine price for bituminous in the southern Colorado field is $5.50, although some operators are maintaining the announced schedule of $5.65. The trade is unsteady for the reason that retailers, having figured on a $5.65 basis at the mine, are confronted with a gross margin reduced by 15c. as the only solution of doing any business and meeting the price of $10.50 of one of the largest operator-retailer companies.

Earlier in the year dealers had hoped for a retail price of $11 or possibly $11.50, based on a low storage figure of $5.50. They got the summer storage price, but find themselves facing a strong competitor in the Colorado Fuel & Iron Co., when the latter announced its price of $10.50 on April 1.

South

LOUISVILLE

Retailers Hustling for Business—Large Consumers Refuse to Contract — Prospects for Higher Prices.

While the movement is improving, it is shown that Lakes buyers, like retailers and large industrial consumers, are planning to put off their orders as long as possible, accordingly, their demands for coal may come at one time.

Operations continue on the basis of about two days a week, but are picking up a little. Industrial buying is also somewhat better. Demand for prepared sizes continue rather dull.

West Virginia and northeastern Kentucky quotations received this week show 4-in. block at $3; 2 x 4 egg, $2.75, 2-in. lump, $2.75; mine run, $2.25; nut and slack, $2. Other prices are shown in the Weekly Review.

It is reported that some operators are not at all anxious to take on contract business, as they would not be able to hold the buyers, in many instances, if the market should drop, whereas with an advance almost certain, the spot market offers the best outlet. Some operators are holding contract screenings for $2.75, mine run, $3.50; egg, $3.75, and accepting no contracts on block or lump.

BIRMINGHAM

Steam Market Dull and Listless — Domestic in Fair Demand for Storage— Quotations Without Change.

There is no sign of improvement in the demand for commercial coal as yet, and business is confined to spot channels and to orders for a few cars at a time. Industrial conditions are still in an unfavorable status and consumption of fuel is comparatively light, as is also the railroad call and the demand for bunkerage coal at Southern ports.

Contracting for domestic coal for stocking is progressing fairly well under existing conditions, sales being practically limited to the output of domestic operations, the tonnage to be obtained through the summer from commercial mines, which supply about 50 per cent of the lump coal, being problematical and dependent entirely on the recovery of the steam trade and resumption of operations at such plants. Prices are substantially without change, quotations being shown in the Weekly Review.

Southwest

KANSAS CITY

Cool Weather Causes Slight Stimulation—Contracts Sluggish—Price Advance Seen.

Some improvement has been noticed during the past few days, no doubt due to recent cool weather which caught many dealers without any coal. There has been some buying of higher grades for storage, such as Arkansas smokeless and Pennsylvania anthracite but high freight rates from anthracite fields make the sale of this coal almost prohibitive.

It is expected that the market for steam grades will improve on account of plants resuming operations, but demand has not yet increased to any extent. Very few contracts of any magnitude have been closed. Large consuming plants may stay on the open market so long that operators will decline to make contracts, if not accepted very soon, as the price will be found inadequate and an advance will have to be made to cover the increased cost due to idle time. Little or no change in prices: Arkansas lump continues for April at $6, mine run $4.50, slack $3.50; Kansas lump and nut $5, mine run $4.25@$4.50, slack $3.75; North Missouri lump $4.50, mine run $4, washed slack $4.05.

Canada

TORONTO

Business Showing Improvement — Consumers Ordering Season's Supplies — Bituminous Quiet.

Business is beginning to show improvement as consumers are placing their orders for the season's supply and dealers are fairly busy. An active demand is anticipated, as householders are warned that unless orders are in early they may have difficulty in obtaining supplies later on.

Quotations are as follows:

	Retail
Anthracite, egg, stove, nut and grate	$15.50
Pea	14.00
Bituminous steam	11.25@11.75
Domestic lump	12.50
Cannel	16.00
Wholesale, f.o.b. cars at destination	
¾-lump	8.00@9.00
Slack	6.50@7.00

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Improvement in Demand—Independents Push Sales.

All of the large companies in the upper fields are operating their mines practically full time, with plenty of orders on hand. Many independents are hard hit, as it is impossible to sell their coal at an advance over the line companies price. It is hardly necessary to say that practically all washeries are shut down and those mines that have been operating culm banks and mixing their coal with fresh-mined fuel have temporarily ceased to do so.

Some stimulation is felt by a better buying of spring coal by consumers. Many independent operations, which are now closed, contemplate reopening early in May if this demand continues.

PITTSBURGH

Market Remains Sluggish — Scarcely Any Lakes Business — Byproduct Unsalable.

The market is drifting along without any material change. Even the expiration of the coal contract year has not made any great difference. There is little additional spot demand from the failure to execute new contracts. Consumption is extremely light and in most cases it appears the buyers do not need to renew, while some shipments are carried along with fixing of prices at intervals, until conditions become clear enough to permit the negotiation of prices for the remainder of the year.

There has been some realignment in prices in the past few weeks as between grades. Gas coal is the only

one that shows any strength, steam being weak. Byproduct is practically unsalable and is said to be offered at $2 without finding any takers.

Scarcely anything has been done in Lakes coal and doubts are entertained whether much will be done this season unless freight rates are revised. The present alignment of rates throws the business easily to more Western fields, except sometimes in gas coal, for which buyers will pay 25c. or 50c. more to get the Pittsburgh district's product.

Production remains at well under 40 per cent. The spot market is quoted in the Weekly Review.

CONNELLSVILLE

Market Price Well Established — Some Wage Difficulties — Sales at Minimum.

More furnaces are out of blast than for many years, with no signs of their coming in again, and the few that are operating are well taken care of by contract shipments, except that one purchase of about 1,000 tons of spot coke has been made, probably because contract shipments were interrupted by labor trouble, there being two or three works at which the reduction of April 1 was not willingly accepted.

Foundries have undoubtedly consumed much of the stock coke they had Jan. 1, but are not buying even as freely as formerly. Evidently their operations have undergone a further decrease, even within the past few weeks.

The prompt sale just mentioned was at $3.50, and it develops that the recent sale to a Portsmouth, Ohio, furnace, of 500 tons a day for five or six weeks was at $3.50 instead of at the originally reported price of $3.75. This is evidently the quotable market for spot or prompt furnace coke, though on a contract to July 1 operators might possibly be able to obtain $3.75. We quote foundry $5@$5.50, spot or contract.

The *Courier* reports production in the week ended April 9 at 23,785 tons by the furnace ovens, and 10,980 tons by the merchant ovens, a total of 34,765 tons, a decrease of 15,310 tons. The decrease in merchant oven production was probably due chiefly to difficulties over the wage reduction of April 1.

UNIONTOWN

Export Inquiries Developing—Volume of Spot Offerings Declines, Forecasting Stronger Market.

Export inquiries last week as yet have produced no sales. A 60,000-ton contract has been placed by the Lehigh Valley R.R. at an unannounced figure and deliveries have already commenced. The order is the first railroad contract to be placed in this region this year.

While there are several instances of renewed activity in various sections, there is no indication of any general improvement.

One jobber is securing bids on an inquiry for 30,000 tons of coal on a year's contract, delivery to be made at the rate of two cars a day. Because of the long period of the contract, considering the tonnage involved, he has been unable to secure a bid approaching the present market, the lowest so far being $3, to which would be added handling charges before the tonnage reached the consumer.

The fact that operators have completed heading driving and are now ready for either normal operations or an indefinite suspension is expected to show a reflection in the spot coal market. Distress tonnage is becoming scarce, and while the demand is very light, jobbers are finding difficulty in rounding up a few cars for spot delivery. The same quotations prevail as heretofore.

CENTRAL PENNSYLVANIA

Improvement in Demand Seen — Many Applicants Take Miner's Examinations.

Material improvement in the coal business, which is looked forward to, is confidently expected about July 1. Work is picking up in some sections and last week, for the first time in three months, the Berwind-White Co. kept the big operations at Windber going six days. Demand for coal is largely decreased by the number of freighters lying idle in the eastern ports and these are expected to be placed in service during mid-summer.

Interest in mining has been shown by the large number of men taking examinations for mine foremen, assistants, and fire bosses. At the examination held at Cresson for the Thirteenth Bituminous District, 82 men presented themselves. This was the first examination held in this district, it having just been created last June.

EASTERN OHIO

Production Slightly Increased—Lakes Movement Slow—Contract Negotiations Lag—Slack in Good Demand.

Production continues at a low ebb, output for the week ended April 9 amounting to 283,000 tons or 44 per cent of rated capacity. Total production since Jan. 1 is 4,037,850 tons or about 46 per cent total rated capacity, which results in a production loss for year to date of 4,000,000 tons, due principally to "no markets." Production for railroad fuel account dropped below 50 per cent for the first time in many weeks. Expiring contracts have also contributed to this.

Figures given out by the Pittsburgh Vein Operators' Association indicate that their mines worked 39 per cent of possible time during the week while production was 45 per cent of rated capacity. This means that eastern Ohio mines are getting out at least 50 per cent of their normal production.

Output is bolstered somewhat by shipments to Lakes and railroad fuel. However, movement to Lakes is diminishing because all the tonnage lined up has been loaded. As sailings are at the option of vessel owners and there continues to be a dearth of down cargoes offering, there is expected to be a considerable slowing of the already light movement of coal to Lower Lakes docks.

Contract negotiations are negligible. The feature of the week has been a further stiffening in the price of slack and considerable quantities are reported sold at $2.25. Range of spot prices are shown in the Weekly Review.

To indicate the extent to which some consumers' stocks are depleted during the cold snap of the past few days it was necessary for several schools in this section to close down for a day because of no fuel.

UPPER POTOMAC

Low Spot Prices Cause Lower Production—Sales Not Being Urged.

Lack of demand precluded mines from working any more fully during the week ended April 9. Only those producers fortunate enough to have contracts renewed were able to keep going, hence most of the plants on the Western Maryland were still out of commission. Few producers cared to resume operations at current prices or to urge new contracts, believing that there would be a strong recurrence of demand in the near future.

FAIRMONT AND PANHANDLE

Mine Idleness More Pronounced — Spot and Contract Markets Inactive—Lakes Inquiries.

Fairmont

Idleness was even more pronounced during the week ended April 9, being the inevitable result of contract expirations. Toward the end of the week nearly 300 mines were shut down. Buyers were in no hurry to renew their contract agreements and there was a total lack of spot demand.

Railroad shipments were running light. Some Lakes movement was observed during the week but in very limited volume. There was little or no demand at Tidewater.

Northern Panhandle

Complete stagnation prevailed during the week, except for a limited volume of railroad coal. Spot demand was as dead as ever, and although a small amount of coal was being accepted on contracts, the large number expiring were not being renewed. Desultory inquiries for Lakes tonnage were being received but were not resulting in any business closed.

Middle West

WESTERN KENTUCKY

Contract Inquiries Fail to Produce Business—Demand Quiet but Outlook Improves.

Things are promising, but there is not much actual improvement in business. Inquiries are more numerous than they have been for contract prices, but after getting quotations many

operators are finding that the buyers hold back, believing that prices are too high.

However, operators are realizing more and more every day that buying is only being delayed, and that it will come late this year, with the result that mines will be asked to produce as much coal in three or four months as they can handle in five or six. A mid-summer rush is expected, which will result in better prices.

Averages for the field last week show: Prepared, $3.05, range, $2.55@$3.75; mine run, $2.25, range, $2@$2.50; screenings, $1.85, range, $1.50@$2.50.

The labor situation has been adjusted satisfactorily in western Kentucky, and mines are running with no trouble reported. A few mines that have not been unionized have been reducing labor costs, resulting in a few scattered strikes.

SOUTHERN ILLINOIS

Summer Domestic Trade Being Cultivated—Steam Demand Weak—Production at Low Figures.

Carterville mines that are working are getting about two days a week. Right now steam sizes are moving just a trifle better than that and some coal is being crushed. The campaign for the early storage of domestic is about to bring results and if this demand means from three to four days a week throughout the field steam sizes will be overproduced. There is nothing to indicate that business calling for steam coal will resume sufficiently to take anywhere near the available tonnage for at least several months.

If this early storing advertising gets a good start it may get away from the coal trade, because failure to move steam sizes will cause the shipper to accept a limited tonnage. When buyers' orders are whittled down by the seller something is going to happen. There is no real rosy future for the operator as the lines are laid today.

Association mines are getting $3.65 on domestic, $2.85 on screenings, and mine run $3.25@$3.50, with little moving. Independent domestic sizes are $3@$3.50, mine run $2.75@$3, and screenings $2.50@$2.75. Railroad tonnage is light. All mines idle are doing heavy repairs.

The Duquoin district is faring poorly. With a few exceptions the prices are at or below cost and many mines are idle indefinitely. Independent prices are about the same as in the Carterville field and sometimes lower.

Production is at low tide in the Mt. Olive field. Domestic for St. Louis is slow. Early storage will not help this district for some months yet, unless unforeseen things happen. Domestic sizes for St. Louis $2.75, country $3, screenings $2.25@$2.50, and mine run $2.25.

The Standard field is at its worst period. Every week sees an additional mine added to the idle list. One and two days a week is the average. Prices are shown in the Weekly Review.

Middle Appalachian

HIGH-VOLATILE FIELDS

Contract Market Is Sluggish — Prices Weak with No Spot Demand.

KANAWHA

Production was down to 11,000 tons daily during the week ended April 9. New business has not accumulated in sufficient volume to compensate for any losses, either in the spot or contract market. Although buyers were showing more interest but few orders were being placed and spot prices reflected this sluggish condition; slack $1.85; mine run $2 and prepared sizes $3.

LOGAN AND THACKER

Slightly better production in the Logan region could be traced to the storing of coal for the most part, although some additional movement was being made to the Lakes. Demand was at a very low ebb and but few contract renewals have been made.

Serious and renewed outbreaks of lawlessness on the part of miners in the Thacker region were noted during the week. Mines did not work more than two days at a maximum. Negotiations on new contracts were not proceeding at a very rapid gait, only a small portion of the yearly output being under contract.

NORTHEASTERN KENTUCKY

A slightly increased demand enabled production to increase to 26 per cent, the output being 59,485 tons. Domestic business was temporarily strengthened by a sudden cold spell. Although contract negotiations were far below normal, there was a little more activity in that direction than has recently been observed.

VIRGINIA

Production averaged about 45 per cent of potential capacity, the slump being due to failure of old customers to renew expiring contracts. There has been no stimulation in demand as a result of the British strike.

LOW-VOLATILE FIELDS

New River Output Continues to Gain—Tide Market Slightly Stronger — No Contract Activity.

NEW RIVER AND THE GULF

Further gain in New River output during the week ended April 9 reflects a gradual improvement in market conditions. Production averaged 20,000 tons daily and was growing stronger as the week progressed. A growing need of bunker coal and a slight increase in export business, not connected with the British strike, caused a slight strengthening. However, should that strike be of long duration, it is thought that it would very much stimulate the home demand.

Winding Gulf conditions were unimproved and in striking contrast to those prevailing in the New River field. Lack of markets prevented mines from working more than two days and held production down to about 30 per cent. Contract negotiations were conspicuous by their absence.

POCAHONTAS AND TUG RIVER

Pocahontas loadings, although slightly increased, were not much in excess of 150,000 tons with "no-market" losses running around 300,000 tons. There was little opportunity to sell spot coal and but few contracts for the new coal year have been signed. The N. & W. are still refraining from much contract activity.

Tug River mines were not operated more than two days and were engaged almost exclusively in filling such contracts as remained in force. Demand was such that little coal could be moved on a spot basis.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Operating Losses Continue — Contract Offers Rejected—Spot Market Quiet.

The new coal year is anything but pleasing to operators, for while the future may seem rosy yet the cold fact remains that they have not been able to run except at a loss for some time, and the immediate future does not hold anything of an encouraging nature.

Many buyers are inclined to demand still lower prices, and some of them simply scoff at the new contracts offered. Those who do not buy now will in all probability learn through bitter experience, that all coal men are not given to misstatements, and that their advice to buy now is founded upon a very sincere desire to avoid any runaway markets similar to those of last year. About the only coal that is moving, for future use, is a little high-grade block. Quotations for all grades are around $3.75 for block for immediate delivery and $4@$4.25 for May or June; $2.75 for mine run and $2 for slack.

West

UTAH

Temporary Domestic Spurt—Steam Trade Poor as Industrial Situation Lags.

Colder weather the past week has caused some stimulation of retail buying. Operators are urging the sale of the smaller domestic sizes, as large lump coal only is moving readily and a continuation of this will embarrass the producers.

The industrial situation is even worse. Smelters are idle and things are at a standstill. Railroads are the best customers, except for the temporary domestic demand caused by the cold weather.

MINE And COMPANY NEWS

ALASKA

Robertson S. Donaldson, who came to Nenana more than a year ago to take charge of the Nenen store of the Alaskan Engineering Commission, and who left the employ of the govenment on Feb. 1, has become general manager for the **Healy River Coal Corporation.** At the annual election of officers he will be formally installed in his new position. Under the present management the Healy mine has been opened in a thorough manner.

COLORADO

In furtherance of a policy to keep the organization intact during the dull period, the **Colorado Fuel & Iron Co.** has a betterments program calling for expenditure of $400,000, as follows: Forty-five houses for miners at the Morley, Kebler, Emerald and Sunrise (Iron mine, Wyo.); cost, $225,000; installation of five stokers (one new) at the Pueblo steel mill, along with Sterling boilers at a cost of $100,000; installing a boiler plant at the Morley mine, two 500-hp. boilers with Reiley stokers, at a cost of $25,000; repairing miners' houses, sanitary sewage systems for plants, putting down lawns and fencing in the yards of miners' homes and otherwise beautifying camps, $50,000. The 15,000 men employed in the coal and iron mines and at the steel plants of the company are kept on a part-time basis through a distribution of orders. The new miners' cottages, costing $5,000, are of hollow tile and brick construction and have bath rooms and other modern conveniences.

Improvements aggregating $30,000 are in progress at the Monarch and Puritan mines of the **National Fuel Co.**, in northern Colorado, and at the Royal mine in the Aguilar district. New entries are being driven in the Puritan, where a new electric hoist capable of handling 1,500 tons a day, is being installed; also eight overcasts for ventilation at the rate of 150,000 cubic feet a minute with a Jeffrey fan.

ILLINOIS

A company has been organized at Mount Olive to open a mine scutheast of the town on the L. & N. The company is composed of business men of Mount Olive. Some of the miners have subscribed for stock. At a public meeting $25,000 was subscribed and subscriptions have been coming in steadily since the company was organized. The capital is $400,000 and the company now owns 1,000 acres of coal rights.

Announcement is made of a deal now under consideration between the **Old Ben Coal Corporation**, now operating seven of the largest collieries in the state, and the **W. P. Rend Coal Co.**, both of Chicago. According to the terms of the deal the Old Ben will become owners of the W. P. Rend mine at Rend and also one at Rendville, both in Williamson County. Both mines are of large capacity and with the large acreage in the consideration a sum of over $1,900,000 will be expended. With the acquisition of these two large mines the Old Ben concern enters the Williamson County field for the first time, all of their other properties being located in Franklin County.

Lewis Steele, sales manager for the Consumers Co., Chicago, has after seventeen years of continuous service with that company, organized a concern known as the **L. B. Steele Coal Co.**, of Chicago.

During the slack working time which is now causing all mines to operate from two to three days per week, the Middlefork mine at Benton is getting a new $25,000 plant for reclaiming and washing the fine coal. The mine is operated by the **United States Fuel Co.**, which is a subsidiary of the U. S. Steel Co., and a large portion of the output is shipped directly to some of the largest steel plants in the country.

A fire which resulted in several thousands of dollars damage and for a time threatened a much greater loss recently destroyed the blacksmith shop of the **Taylor Coal Co.**, No. 1 mine near Herrin. The only men on duty at the time were the engineer, firemen and night watchman.

INDIANA

Directors of the **Indiana Coke & Gas Co.** have declared the usual quarterly dividend of 1¾ per cent on the preferred stock outstanding. The dividend was payable on April 1.

William Moore, administrator of the estate of Jesse Moore, deceased, was awarded damages in the sum of $3,700 aganist the **Lower Vein Coal Co.** at Terre Haute recently, in Superior Court. The deceased was struck on the head by a piece of coal falling from the loading chute at the mine and suffered concussion of the brain. Although he lived about two years after the accident the finding was that the injuries received from the falling coal resulted in his death.

The Winslow Mining Co., Huntington, has filed notice showing an increase in its capital stock from $10,000 to $40,000.

KENTUCKY

The Coal Bureau, of the Louisville Board of Trade, held its April dinner at the Louisville Old Inn Hotel on April 2. Bob Watson was toastmaster. Talks were heard from W. B. Gathright, of the St. Bernard Coal Mining Co., Charles Cush, Atlas Coal Co., Charles O'Connor, Pittsburgh Fuel Co., T. J. Morrow, Byrne & Speed Coal Co., and others. Views expressed were fairly optimistic, belief being that reduced prices arranged for April would be raised in May, and that there would be fair summer stocking.

Elkhorn Collieries Co., which has been operating a coal mine on Elkhorn Creek, has sold its entire interest to **J. H. Bentley & Son**, of Jenkins, for $20,000.

Among charter changes recently filed and new charters granted as announced by the Secretary of State are as follows: **Delaware Coal Co.**, Delaware, increasing capital from $15,000 to $30,000. **Clayborn-Elkhorn Coal Co.**, Paintsville, $120,000, E. M. Clay, E. M. Brown and W. C. Howes. **Castleman Brothers**, Louisville, changing name to **Bell-Harlan Coal Co. United Block Coal Co.**, Auxier, $100,000, J. C. Snyder, O. S. Massengill and William White.

The Imperial Elkhorn Coal Co. at Sergent will start at once making extensions and improvements in its plant. Additional coal lands will be opened for development by the construction of a short spur of railroad. Several new mines will be opened. A new tipple will be constructed.

Jacob L. Frankel, of New York City, sold 2,121 acres of coal land in Webster and Union counties to the **Webster & Union Coal Co.** for $127,000.

The Scanlon Coal Co., Louisville, one of the older and larger retail organizations, has passed into new control, T. V. Brown, J. C. Hanna and C. O. Brown having purchased controlling interest in the organization.

MINNESOTA

The Superior Coal & Dock Co., at Duluth, is about ready to let a contract for improving its dock. Plans for building new foundations, wrecking the old bridges and erecting a modern electric bridge are contemplated.

MISSOURI

The Raven Coal Co., six miles west of Glenwood, will run a transmission line to Glenwood, Lancaster and Downing and will supply those towns with electric current, which it can furnish to the three towns cheaper than Lancaster can provide from its own plant.

OHIO

John L. Lawler & Son, owner of four mines at Clarion, is making extensive improvement at mine No. 7. Complete electrical equipment is being installed, which includes a new power plant and drainage system. In all about $40,000 will be expended in the improvement which will be completed early in May. The electrical system includes both a collection and haulage system.

The announcement is made by **Assistant U. S. District Attorney Ford** that no Ohio coal men will be prosecuted before the coming Federal grand jury. After collecting a mass of data, which was to have been presented to the grand jury, the decision of the U. S. Supreme Court, declaring certain sections of the Lever law unconstitutional, will forestall prosecutions if any were warranted.

The Aden Valley Coal Co. has been chartered with a capital of $60,000 to mine coal in the Cambridge field. The incorporators are: W. A. Limbacker, H. E. Bickel, F. M. Hall, George W. Cassingham and W. L. Hart.

The Commercial Coal & Coke Co. has been incorporated with a capital of $25,000 to mine and sell coal. Incorporators are: O. Ruby, F. L. Leckie, Tracy H. Duncan, T. C. Robinson and Joseph A. Schultz.

The Elk Coal & Coke Co. has been chartered with a capital of $500,000 to mine and sell coal. It is announced that the company will handle and operate coal properties both in Ohio and West Virginia. The incorporators are: C. H. Bancroft, H. H. Pleasant, A. L. Wiswell, C. J. Mayer and L. S. Van Guns.

PENNSYLVANIA

The Navy Smokeless Coal Mining Co. of Ebensburg has elected the following board of directors: T. Stanton Davis, Ebensburg, John H. Cooney, Johnstown, F. B. Custer, Conemaugh, W. C. Shiffler, Ebensburg, Herman Widmann, Johnstown, I. E. Lewis, Ebensburg, William Barron, Johnstown, Ambrose Schettig, William C. Krug, H. J. VanDusen, Dr. Harry J. Bennett, Walter F. Jones and H. F. Dorr all of Ebensburg, Alfred Wildmann, Johnstown and Harry Davis, Conemaugh. W. C. Shiffler was elected secretary-treasurer. Richard Bland was re-elected superintendent and Charles Hauth mining engineer. The company is operating to capacity each day, employing 100 men. A number of new houses are planned this summer.

The H. C. Frick Coke Co., at the Alice mine on the Monongahela River, in Fayette County, has begun the construction of a large steel river tipple, preparatory to the installation of a five-mile underground conveyor system to bring the coal from several inland mines, now connected, to that point for river shipment instead of shipping by rail as is now being done.

The Diamond Coal & Coke Co., a subsidiary of the **Hillman Coal & Coke Co.**, of Pittsburgh, has begun sinking a large new shaft at Warwick, on the Monongahela River in Greene County, preparatory to developing a large tract of coal at that point. This mine will ship by river exclusively.

The Somerset Creek Coal Co., at Hooversville, Somerset County, expects to open operations June 1. This company has installed new machines for digging coal. Five new seven-room houses have just been completed and a contract for five more has been awarded.

UTAH

Schedules for tax valuations have been sent to the state board of equalization by the **Peerless Coal Co.** of Salt Lake City with properties in Carbon County, showing values at $133,189.52.

Mine rescue work is making great strides. Plans are under way to build a **first aid station** in the Spring Canyon district, the first station of its kind to be erected in the state. The move is being supported by all the companies operating there. The station is to be conducted along similar lines to the fire department of a large city, and it is hoped that any point in the district will be reached, when necessary, in twenty minutes.

WEST VIRGINIA

Business will be continued by a few companies operating under West Virginia charters following action taken by their stockholders, the following companies having given up their corporate existence: **Guyan Valley Coal Co.**, of Huntington; **Superior Thacker Coal & Coke Co.**, of Williamson; **R. G. Bailey Coal Co.**, of Williamson.

Organization of the **Tipple Ann Coal Co.**, of Morgantown, will be followed by the development of coal territory in Monongalia County on quite an extensive scale. This concern has a total capital stock of $100,000. Chiefly interested are: Asa M. Sterling and H. M. Conn, of Dilliner, Pa.; Robert H. Chrisman, H. M. VanVoorhis, Helen M. VanVoorhis, all of Morgantown.

A tract of 1,100 acres in the Coal River field, tapped by the C. & O., will be developed by **John L. Cochran**, of Denver, in association with others. Development work will be undertaken in the near future.

It is understood that development work will be pushed by the **Cameva Coal Co.** on its new plant at Maxine in the Boone County field by J. W. Vandergrift and others. This company will operate in the No. 2 Gas and Winifrede seams.

New electrical equipment is being installed by the **New River & Pocahontas Consolidated Coal Co.** on an extensive scale at its plant at Berwind. Such new equipment consists of the construction of a new substation and the installation of a new turbine and generators.

Production will be increased by the **Pera Coal Co.** through the driving of a new opening, work on which has already been started. Further provision is being made for handling more coal by the installation of additional siding.

Additional electrical and other equipment is being installed at the plant of the **Maxine Coal Co.** at Maxine. New mine cars have been received and a new 200-kw. generator set is being installed.

Preparations are being made by the Zinn-Richardson Coal Co. to develop coal lands in Preston County near Masontown, this corporation having just been organized with a capital stock of $25,000. Active in launching this concern were: Will S. Zinn, Masontown; W. M. Melton, Bretz; Ralph Richardson, H. H. Richardson, Reedsville; W. W. Mayfield, Morgantown, W. Va.

A deal has been closed by the **Mountaineer Coal Co.**, of Charleston, for the purchase of the mine and equipment of the **Blue Band Coal Co.**, in the Kanawha region. C. Counts, of Charleston, is the president of the Mountaineer Fuel Co.

At a time when there is little market for coal and when it is possible to make improvements and betterments, the **Delmar Coal Co.** is making plans to install a new conveyor system at its mines at Hildebrand in Monongalia County. This is one of the companies in which C. D. Robinson, of Fairmont, is largely interested.

The Huntington office of the **Old Dominion Coal Corporation** has been consolidated with the Charleston office of the same company and business formerly passing through the first-named branch office will hereafter be handled through Charleston. C. P. Christian, who has been in charge of the branch office, has been transferred to Charleston.

Huntington people have launched the **Superior Elkhorn Byproduct Coal Co.**, with headquarters at Huntington. This company has a capital stock of $100,000. Principally interested in the new concern are: J. W. Lawton, J. F. Ratcliff, H. B. Hagen, W. O. Wyatt and S. S. McNeer, all of Huntington.

The Acme Coal Auger Co. is a new Fairmont concern in which well-known coal men of northern West Virginia are largely interested, as follows: J. A. Clark, Jr., of the Clark interests; G. B. Hartley, H. G. Greer, Paul G. Armstrong, C. E. Bell, E. S McCullough, T. L. Burchinal, all of Fairmont; Everhart Bierer, of Morgantown; Daniel Howard, of Clarksburg.

A preliminary organization of the **Eldon Coal Mining Co.** was perfected the latter part of March, the new company being capitalized at $100,000. Headquarters will be at Wheeling, the concern expecting to operate in that vicinity. Among those largely interested in this concern are: R. J. Cotts. Ed. Burkhart, Thomas I. Thomas, all of Wheeling; R. L. Dowell, of Glendale, and Charles Abrams, of McMechen, W. Va.

Official information has been received as to the future plans of the **Parkersburg Dry Dock Transportation & Coal Co.**, which is evidently to become the river subsidiary of the **Ben Franklin Coal Co., of West Virginia**, the latter company owning about 3,000 acres of coal land in Marshall County. The new company, however, has taken over all the river equipment of the Ben Franklin company and will handle coal for delivery between Moundsville and Parkersburg.

Purchase by the **East Wheeling Coal Co.**, of more than 200 acres of coal land in Liberty district of Ohio County on Short Creek in the interior of Ohio County is the forerunner of development work.

The construction of a railroad up Glade Creek in Raleigh and Summers counties will make possible the development of additional car territory. **The Georges Creek Coal Co.** has secured from Harry E. Weber over 3,000 acres of coal land on Glade Creek, the sum involved in such a purchase being $105,137.

The Guyan Coal Co. will handle the output of coal companies in the Kanawha and adjacent regions, this concern having opened offices in Charleston. L. H. Hundley is the president of the company, C. H. Brown being secretary and treasurer

In the period of dullness, during which mines cannot be operated to any great extent, the **Carter Coal Co.**, which has a plant at Coalwood, is completely renewing its shaft and tipple equipment at what is known as the Olga shaft. The tipple is being rebuilt. The company is also putting in a concrete bottom in the shaft and renewing machinery in the mine.

A tramway has long been in use by the **Bradshaw Coal Co.** at its operations at Bradshaw in transporting coal from the mine to the tipple, but the company is discontinuing this and is installing an aërial rope tramway.

The growth of the mining industry in the state has made necessary another increase in the inspection force of the Department of Mines. This is being provided for in Senate Bill No. 197 introduced by Senator York of Mingo County, calling for a total of 22 inspectors. It has only been two years since the number of inspectors was increased from 16 to 19. If the pending bill should become a law it would mean that it has been found necessary to increase the force from 15 to 22 inspectors within a period of four years.

NOVA SCOTIA

The output of the mines of the **Dominion Coal Co.** for the month of March was 196,614 tons, showing some decrease compared with the output of the previous month, which was 227,030. The output for the month of March of last year was 245,437 tons.

Resumption of delivery of 1,000 tons per week to the Canadian National Rys. will enable the **Ineverness collieries** to reopen mine operations until navigation commences, when trade conditions are expected to improve. The Federal government is being urged to put the Canadian Government Merchant Marine into use as coal carriers between Nova Scotia and Quebec.

Traffic News

In the complaint of the **Chicago Springfield Coal Co.** an I. C. C. examiner recommends that the rate on bituminous pea coal from Springfield to Dixon, Ill., is unreasonable.

In the complaint of the **Consolidation Coal Co.** the Commission decides that the Millers Creek R.R. is a common carrier subject to the Interstate Commerce act and that rates on coal from points on that road resulting from cancellation by the C. & O. of the absorption of switching charges of the Millers Creek road is unreasonable to the extent that they exceed the rates applicable from Group 5 district of the C. & O.

The I. C. C. has authorized the Illinois Coal Traffic Bureau to intervene in the case of the **C. N. Dietz Lumber Co.**, involving rates on soft coal from points in Colorado, Illinois, Pennsylvania, West Virginia and Wyoming to destinations in Iowa, Wyoming and Nebraska.

The Mathieson Alkali Work, of Saltville, Va., in a complaint to the commission, attacks unreasonable rates on coal from Clinchfield and Trammel, Va., and from Calhoun Falls Branch and Heysi, Va., and Elkhorn City, Ky., and from Raven, Va., and Stone, Ky., from Chatteroy and Nolan, W. Va., to Marion, and Saltville, Va.

The I. C. C. has authorized the **Southern Ohio Coal Exchange** to intervene in the case of the **Michigan Manufacturers' Association**, involving rates on coal from points in Ohio, Pennsylvania, Maryland, Virginia, West Virginia, Kentucky and Tennessee to points in the lower peninsula of Michigan.

The commission has denied the application of railroads to continue rates on coal from **Oklahoma mines to Lubbock, Texas**, without observing the long and short haul clause.

The commission has assigned the complaint of the **Green Rock Coal Co.** for hearing at St. Louis April 16.

In a complaint to the I. C. C. the **Melcroft Coal Co.** of Pittsburgh attacks as unreasonable the rates on coal from Melcroft to Jersey City.

The Indiana Board & Filler Co., of Decatur, Ind., alleges unreasonable rates on bituminous coal from the Oliphant Johnson Coal Co's mine on the P C. C. & St. L. in Indiana and from Wheatland to Vincennes, Ind.

The Northern West Virginia Coal Operators' Association alleges that the Pittsburgh & Lake Erie R.R. fails to accord mines on the Monongahela Ry. and the Morgantown & Wheeling Ry. the same coal car supply on the average as is accorded on the average to mines on the Pennsylvania Central region and the P. and L. E.

The Lackawanna Steel Co., of New York, alleges unreasonable rates on coal from mines in Pennsylvania, Ohio and West Virginia to points in New York.

Personals

D. F. Hurd, secretary of the Pittsburgh Vein Operators' Association, Cleveland, was in Washington recently, attending the meeting of Railroad Relations Committee, National Coal Association, and also a meeting of various association secretaries.

Michael Gallagher, general manager of the Wheeling & Lake Erie Coal Mining Co., and other M. A. Hanna & Co. properties, has returned from a short visit to Washington.

Charles E. Maurer, who has been spending the winter in Florida, is now sojourning for a brief period in Hot Springs, Va., before returning to Cleveland. Mr. Maurer formerly operated coal properties in the eastern Ohio field.

J. W. Porter, who has been manager of sales for the Alabama Co. for several years past, has been promoted to a vice-presidency in the corporation. Mr. Porter is an adept in the sales end of the game and one of the best informed men in the district on pig iron, coal and coke markets. He will still retain general supervision over sales.

A group of Washington men—**William F. Thyson, Charles H. St. John, W. B. Phillips, Paul Dulaney, Wilbur La Roe, Jr., Charles C. Carlin, Thomas Ruffin, and Walter M. Ballard**—have organized a coal company in the Capital City, the Consumers Co., Inc., with $100,000 capital stock, having purchased the properties of the Phillips & Lynch Coal Co.

William McKell, head of the McKell Coal & Coke Co., was a visitor in Charleston for a day or so recently.

H. C. Owen, of the Morgantown Coal Co., with headquarters at Morgantown, W. Va., was in Pennsylvania recently, making an investigation of coal lands in that state.

J. H. Moran, of the Fort Dearborn Coal Co., Chicago, and formerly with the Ender Coal & Coke Co., Chicago, has resigned and is now with the newly formed coal company, the Central States Coal Co.

C. C. Potts, of Chicago, has been made superintendent of the new rescreening plant built at Mt. Vernon, by the Southern Gem Coal Co., of Chicago. The company has a large number of mines in the southern part of Illinois and practically the whole output of the mines is handled through the Mt. Vernon plant.

A. E. Lee, formerly with the Reliable Coal Mining Co., as vice-president and also at one time general freight agent for the Chicago & Alton, has been made general sales manager for the Union Fuel Co. of Chicago.

Harry F. King, secretary of the Buffalo Bituminous Coal Association, has taken a responsible position in the Tuttle Corporation, coal shippers and exporters of New York.

C. F. Reed, secretary of the Western Kentucky Coal Bureau, was in Washington, on April 5, for the meeting of the National Coal Association's Railroad Relations Committee, as representive of the Kentucky operators.

The resignation of **Howard C. Matlack** as vice-president of the Matlack Coal & Iron Corp., New York City, was accepted April 9. **W. E. Wallace**, manager of operations and assistant treasurer, was elected in his place. **J. P. Routh** was appointed assistant secretary.

Announcement is made of the appointment of **Harrison G. Ecker**, as manager of export and bunker sales for the Tuttle Corporation, New York City.

C. J. Neekamp has been appointed secretary of the Northeast Kentucky Coal Association, effective April 11. **F. E. Durham**, acting secretary, has been retained as statistician.

A. F. Kemps, formerly assistant manager of sales for W. J. Rainey, Inc., is now connected with the Eastern Fuel Co., New York City, in the capacity of eastern sales manager, in charge of line business. **J. W. Riefkin**, New York manager, will continue in charge of Tidewater business.

Viscount T. Inouye, of Japan, director of the Fushun Coal Mines of Manchuria, is in this country, and it is understood that he plans a conference with Judge Gary of the Steel Corporation.

Prof. Zimmerman, of Milliken University, has been engaged by the Bureau of Mines to investigate Northwestern fuel to determine whether carbonized lignite can find a market in that territory.

Charles S. Keith, of Kansas City, president of the Central Coal & Coke Co., has been appointed by the U. S. Chamber of Commerce as a member of a committee to study the forestry situation.

T. H. Huddy, general manager of the Williamson Coal & Coke Co., was in Charleston, W. Va., recently.

A recent visitor in the Pittsburgh market was **George Rodgers**, of the Mon-Scott Fuel Co., with headquarters at Morgantown.

After spending a few days in Eastern markets, **S. F. Elkins**, of the Elkins Fuel Co., has returned to his office at Morgantown.

The Southern Fuel Co., of Morgantown, was represented at Detroit during the last few days of March by **R. R. McFall.**

O. W. Gardner, of Lynchburg, Va., was a visitor at Huntington recently. Mr. Gardner is president of the Chesapeake & Virginian Coal Co.

C. M. Roehrig, formerly secretary of the Northeast Kentucky Operators' Association and now Huntington district manager of the Tuttle Corporation and of the Tuttle Coal Co., was a visitor in the Kanawha field recently.

A. R. Beisel, general manager of the Island Creek Coal Co., with headquarters at Huntington and Holden, spent a day or so in Charleston recently on business.

A. B. Rawn, of Huntington, general manager of the Solvay Collieries Co., was a visitor in the Kanawha field during the last week of March.

Colonel T. E. Houston, of Cincinnati, identified with many operations on the N. & W., was a visitor in Charleston, W. Va., during the latter part of last month.

E. E. White, president of the E. E. White Coal Co., has gone to his old home at Mt. Carmel, Pa., after spending a few days at his headquarters at Glen White, W. Va.

Harry Olmstead, chairman of the Labor Committee of the Williamson Operators' Association, was a visitor in West Virginia's capital city recently.

John Hart, of Charleston, president of the Hartland Collieries Co., was a visitor in New York recently.

A visitor in Ohio and Michigan markets was **George H. Ewald**, president of the Standard Tide & Inland Coal Sales Co., recently organized.

Paul K. Morris, of Uniontown, Pa., associated with the Bingamon Gas Coal Co. of that city, was a visitor in Fairmont, W. Va., late in March.

Harry Whyel, well known in Uniontown, Pa., coal circles, after spending a few days in Marion County, recently left for a trip to Florida.

W. E. Koepler, secretary of the Pocahontas Operators' Association, with headquarters at Bluefield, was a visitor at West Virginia's capital in March.

Louis J. Wolfberg, of New York and Chicago, has been elected vice-president and general sales manager of the Lake & Export Coal Corporation of Huntington as the first move on the part of the above-named company to expand its operations and to internationalize its organization with a view to securing more foreign trade.

Association Activities

Michigan-Ohio-Indiana Coal Association

The claim bureau of the association during the past four months has collected claims for its members against railroad companies amounting to approximately $96,000. This is a record according to B. F. Nigh, secretary, who has direct charge of the claim bureau. During the same period approximately 50 new members were received in the association.

The annual convention of the organization will likely be held at Cedar Point, Ohio, some time in June. The coming convention is expected to be one of the most important in its history.

Norfolk Coal Exchange

F. L. Stewart, president of the Stewart Coal Co., has been elected president of the exchange, composed of retail coal dealers. Other officers are: Aaron Levine, City Coal & Ice Co., vice-president; W. E. Hudgins, Hudgins Fuel Co., secretary and treasurer; John Stribling, Stribling Fuel Co., sergeant-at-arms.

Northern West Virginia Operators' Association

In securing a decision from the I. C. C. in connection with the claim made of discrimination on the part of the Pennsylvania and the Pittsburgh & Lake Erie in the distribution of cars to mines on the Monongahela and the Morgantown & Wheeling railways, the association has placed its members in a position to obtain redress for damages, and it is said that such damages will amount to the profit on 15,000 empty cars not furnished but to which the mines on the roads named were entitled. The decision of the commission is regarded as important inasmuch as it makes plain that members of associations will be entitled to damages when discriminated against in the distribution of cars. The decision of the commission also makes it mandatory upon the Pennsylvania and the Pittsburgh & Lake Erie to put the mines on the Monongahela and the Morgantown & Wheeling on an equality with mines on their own lines in the distribution of cars. It is thought that this decision will have an important bearing on the case now before the commission for an equalization of the car supply which the Pittsburgh & Lake Erie and the Pennsylvania failed to furnish between March 1, 1920, and Jan. 1, 1921.

Winding Gulf Operators' Association

Figures have been compiled by the association, giving a comparison of production in the various smokeless regions of West Virginia for the year 1920, it being shown for instance that the four smokeless fields produced a total of 32,370,335 tons. Production was largest in the Pocahontas field, aggregating 15,421,288 tons. The New River district came second having a production of 7,065,225 tons. In third place was the Winding Gulf region, with a total output for the year of 5,810,157 tons. Tug River production aggregated 4,073,665 tons.

Industrial News

Boston, Mass.—The Massachusetts Fuel Administration announces a change of headquarters from Exchange Street to Room 181, State House. Eugene Hultman, Fuel Administrator, and Edward F. O'Dowd, statistician.

Boston, Mass.—Ranger & Worden will conduct a business, handling anthracite and bituminous coals. Lynn M. Ranger is in charge of the Boston office, 141 Milk St., and Charles O. Worden will be at the branch office in Scranton, Pa.

Chicago, Ill.—The Grindle Fuel Equipment Co. hereafter will be the name of the Powdered Coal Co., formerly known as Combustion Economy Corporation. The company will manufacture powdered coal equipment.

Cleveland, Ohio—The Cleveland & Western Coal Co., operating in eastern Ohio, has removed its general office from the Leader-News Bldg. to the new Hanna Building on the thirteenth floor.

New York, N. Y.—Announcement is made of the removal of the Atlas Fuel Corporation to its new office, located at 808 National City Bldg., 17 E. 42nd St., effective April 20. Telephone Murray Hill 9960-1.

New York, N. Y.—The New England Coal & Coke Co., and the New England Fuel & Transportation Co., will move late in April from their present quarters in the Whitehall Bldg. to the fifth floor of the Cunard Bldg.

New York, N. Y.—The G. E. Engineering Co., Inc., has moved to 449 West 42nd St.. Phones: Longacre 2022-3. Mechanical and electrical installations.

Philadelphia, Pa.—The Atlantic Coal & Iron Co., announces the removal of its offices from 418-22 Real Estate Trust Building to 1506-7 Land Title Building.

Pittsburgh, Pa.—The Pittsburgh Mining Machinery Co., has changed offices from the First National Bank Bldg., to the Wabash Bldg., 410 Liberty Ave.

Publications Received

Analyses of Iowa Coals.—Bureau of Mines, Technical Paper 269; Pp. 27; 6 x 9 in.

Regulation of Explosives in the United States—Bureau of Mines, Bulletin 198. Pp. 45. Giving especial reference to the administration of the Explosives Act of Oct. 6, 1917.

The Analysis of Sulphur Forms in Coal—Bureau of Mines, Technical Paper 254. Describing and elaborating the method for the determination of the various form of sulphur in coal.

Gas Purification in the Medium-Size Gas Plants of Illinois—Bulletin 25, Co-Operative Mining Series, State of Illinois Department of Registration and Education, Division of the State Geological Survey. Pp. 71. charts and tables.

Chlorination of Natural Gas—Department of the Interior, Bureau of Mines, Technical Paper 255. Pp. 44; charts and tables.

Coming Meetings

Indiana Retail Coal Merchants Association will hold its convention at Indianapolis, Ind., May 4, 5 and 6. Secretary, R. R. Yeagley, Indianapolis, Ind.

American Society of Civil Engineers will meet at Houston, Tex., on April 27 to 30. Acting Secretary, H. S. Crocker, 33 West 39th St., New York City.

American Institute of Chemical Engineers will hold its spring meeting June 20 to 24 at Detroit Mich. Secretary, Dr. J. C. Olson, Polytechnic Institute, Brooklyn, N. Y.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7 and 8. Secretary, G. H. Cushing, Woodward Bldg., Washington, D. C.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill., May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The National Coal Association will hold its next annual convention at the Waldorf-Astoria Hotel, New York City, May 19 and 20. White Sulphur Springs hotel reservations have been cancelled. Secretary, W. B. Reed, Commercial National Bank Bldg., Washington, D. C.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

National Retail Coal Merchants Association will hold its annual meeting May 12, 13 and 14 at the Jefferson Hotel, Richmond, Va. Special rates on all railroads. Secretary, E. G. Gordon, Philadelphia, Pa.

The National Foreign Trade Council will hold its eighth annual convention May 4, 5, 6 and 7 at Cleveland, Ohio. Secretary, J. G. Hammond, 409 Park Bldg., Cleveland, Ohio.

Illinois Mining Institute will hold its spring outing the early part of June on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on June 2 and returning on June 4. Secretary, Martin Bolt, Springfield, Ill.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The 24th annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The Kentucky Retail Coal Dealers' Association will hold its annual meeting at Lexington, Ky., Phoenix Hotel, April 27. Secretary J. C. Crow Taylor.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 19 NEW YORK, THURSDAY, APRIL 28, 1921 Number 17

Small Sizes of Anthracite

CONTINUED increase in the use of bituminous slack and its steady relative advance in price as compared with lump and nut sizes shows what may be expected when fine sizes of anthracite are properly cleaned and when the public generally is instructed in the advantages of using them.

In the article which we publish today by William Strain entitled "Concentrating Tables Turn Incombustible Sludge from Pond Into Good Fuel" he declares that each coal-washing table cleans eight tons of sludge per hour, which is sixty-four tons per eight-hour day and 252 tons each twenty-four hours. This is a large production, and some there are who question whether it can be attained with anthracite, where the coal and its impurities are of much the same specific gravity, especially if care is taken to get a product of the best quality.

If, however, this purity is attained there is no doubt that the sale of small sizes will be stimulated. As about twenty tables can be tended by one man and can be run with little power it does not seem that there is any reason why good results could not be attained at reasonable cost. A big run for a breaker for sizes below pea would be 1,600 tons per day. Estimating only four tons of coal per hour per table, the services of only fifty tables would be required. This is not so many as to suggest a departure from the practice of running such machinery eight hours in the day.

Big copper mills have two or three hundred tables in operation. In some of these all the ore brought out of the mines passes over the tables; at others flotation is first provided and only flotation tailings are tabled. In breaker concentrators only a small percentage of the coal would go to the tables. The largest sizes of coal would be washed in jigs, as in the past, so the tabling operations in breakers will never be as large as those in copper plants.

The extremely fine coal could be profitably used for powdered fuel. Anthracite is especially suited for such uses, as it does not explode. Much trouble has been experienced from the spontaneous combustion of bituminous coal when reduced to powder. With anthracite risk of explosions in the mill and in the storage would be non-existent.

It seems remarkable that the anthracite companies have not done more to promote the use of buckwheat No. 1 in domestic furnaces. With the proper equipment it can be so burned, and the results are fully as good as those obtained with larger sizes of coal. If more were burning this smaller size it would in large measure tend to moderate the price of the larger sizes, which has to be increased to compensate for the low prices at which smaller sizes have to be sold. Investigation and experiment might develop that clean rice or even barley is not too small for use in properly-constructed domestic furnaces.

An engineer reports having seen last winter an installation in an apartment house in Lancaster, Pa., which was burning screenings from a local yard, apparently about the size of No. 3 buckwheat and smaller. This coal was being successfully burned on a perforated grate, low blast being supplied by a small fan operated by electric motor under thermostatic control. The inertia of the domestic consumer is one of the chief causes for the high price of "domestic" sizes and the low rate for fine coal. The sale of the fine sizes can be increased through wholesale education of the public by the anthracite companies.

Hoover and the Coal Industry

SECRETARY HOOVER is making it plain that he would aid industry, not regulate it. The Department of Justice may continue to hunt out the culprits and the Federal Trade Commission and Interstate Commerce Commission haul up short those who transgress with unfair practice, but the Department of Commerce will render aid. Aid not only that industry can increase profits, but aid in making business better for itself and for the people of the country. Extension of trade abroad is one of the big features of his program, but the "domestic" in the Bureau of Foreign and Domestic Commerce is not to be overlooked.

The steps Mr. Hoover will take to aid the coal industry are matters of interest to us. Possibly a move will be made to collect under the Commerce Department all work of the federal government having to do with fact finding, work now scattered between the Geological Survey and the Bureau of Mines in the Interior Department, the Interstate Commerce Commission, Tariff Commission, the Bureau of Labor Statistics of the Department of Labor and sundry others, including parts of the present Department of Commerce. It is difficult to foresee how the Department of Commerce can become a factor in the coal industry unless some such realignment of work is effected. It is not at all impossible that some part of the changes indicated above will result from the proposed reorganization of the government bureaus, now under consideration by Congress in the form of the McCormick Reorganization bill.

But however the job be done, Mr. Hoover is going to find necessary the rejuvenation of his own department, and for this he will need and deserves the support of Congress, more money, and the backing of the coal and other business men of the country. The men of the coal industry should take particular interest in what Mr. Hoover is planning to do in their aid and assist him by taking their troubles to him. As a business man and an engineer he cannot have other than sympathetic understanding of the coal man's problems, and what the coal industry needs above all else now is help from high places. A revised "Statement of Facts" might well be put before the new Secretary of Commerce with the

expressed desire that he aid in the rehabilitation of public confidence in the coal industry.

In this issue we publish the address of Secretary Hoover recently made to the American Engineering Council at Philadelphia. The closing paragraph of his talk is so clearly a statement of platform that we repeat it here for emphasis. An industry in this country that cannot see its way clear to get behind such a program is lacking in vision. In the course of his address Mr. Hoover said:

"We want no paternalism in government. We do need in government aids to business in a collective sense. In a department we do not want either to engage in business or to regulate business. We need a department that can give prompt and accurate diagnosis from both a foreign and domestic point of view of economic events, of economic tendencies, of economic ills; that can promptly and accurately survey economic opportunity, economic discrimination and opposition; that can give scientific advice and assistance and stability to industry in furnishing it with prompt and accurate data upon production, supplies and consumption; that can co-operate with it in finding standards and simplifications; that can by broad study promote national conservation in industry and the elimination of waste; that can study and ventilate the commercial side of our power possibilities; that can study and advise national policies in development of rail, water and overseas transportation; that in fact covers, so far as government functions can cover, the broad commercial problems of trade, industry and transportation. This can be accomplished more by co-ordination of existing governmental facilities than by increased expenditures."

Are Association Price Reports Good or Bad?

ATTENTION in a national way has been drawn to the so-called "open-price" reports of associations of business men, by the reference to them in the President's message to the Congress and by the report of the Federal Trade Commission, subsequently made public. First let us say that the statement of the Trade Commission, which has been widely printed in the newspapers, is a sound document as an interpretation of general business conditions. It must not be considered as addressed to coal alone, and many of the statements made do not apply with truth to this industry.

One of the principal causes of delay in the return of normal market and price conditions is stated to be "open-price associations, in many cases not yet challenged by the law, yet tending to bring about and maintain unduly high prices." So far as we are aware there are no such reports now being assembled in the coal trade—such as there were in 1919, which were abandoned at the veiled suggestion of the Department of Justice early in 1920, when the hardwood lumber case first came to light. It cannot be charged, therefore, that any such agency is influencing the prices of coal.

The coal industry, however, believes in this type of association activity and it is not unprofitable to inquire into the trend of opinion with regard thereto. In an interview given out last week in New York, Samuel Untermyer assailed "open-competition" associations, saying that whoever gave "the President any such foolish advice [that these associations are within the law] has done incalculable harm." He charges that such activities are "neither more nor less than covert price-fixing agreements, and are none too subtle at that." He recognizes that the idea back of the scheme is that competitors by daily exchanges among themselves of information in regard to contracts, costs, sales prices and the like are saved the temptation of "cutting under" one another and says that the "endless arguments and pretexts that are used to justify the various devices thus employed are infantile in their simplicity and deceive no one. . . . . They furnish no useful or legitimate purpose and they are a cover for all forms of interference with the economic laws of supply and demand."

Beyond question Mr. Untermyer, in his investigations of the building industry in New York, came in contact with such associations in their worst form. We appreciate that he has found in those trades sufficient to arouse him to strong language, but we believe that Mr. Harding has been better advised as to the legality of this type of association effort than Mr. Untermyer appreciates. Specifically it is the abuse of the plan that is to be condemned and not the plan itself. It is such abuse that has brought this plan of business aid into disrepute, and if the liability to misuse is inherent in the working of the scheme, then in the public interest it must go. Business wants no regulation and the public wants no combination in restraint of trade. Modification of the Sherman law, when it comes, will take the form of permitting regulated combination in aid of business.

If "open-price" reporting is to survive it must take on more of the spirit of public information. There is no denying that the incentive to the coal operator to participate in such association activities is solely that of assisting in increasing profits. Reasonable profits to industry and good trade practices are not incompatible with public interest. In the bituminous coal industry, where the trade associations have been developed, the problem in the past has been to obtain from large industrial and public utility buyers of coal, prices that afforded proper remuneration on capital invested. Trade associations in coal have been in defense of the producer as against the combinations of large coal-buying interests. Where, as in Colorado, commercial coal is largely sold for domestic use, the producers have wisely refrained at all times from reporting prices to a common agent.

Where the coal operators' trade associations have erred in the past has been in holding too closely from public view the figures of costs, contracts and sales realizations they have collected. It is pointed out that the reports of stock market transactions are "open-price" information, that the grain industry enjoys the privilege of knowing what is going on as regards transactions and prices, but it must be observed that every transaction is recorded and made public. The public enjoys the data as well as the operator. It has not been so in the past with regard to the reports of the coal associations. There was a semblance of publicity given the market reports of coal in 1919 by publication of certain totals in the "Digest" of the National Coal Association, but access to the mass of data collected by local operators' associations has been as a closed book to the consumer and the public in general. To meet the public conception of what is fair, better provision must be made for any future efforts by the coal industry along this line to inspire the public with a greater degree of confidence that something is not being done to "rig" the price against it.

Concentrating Tables Turn Incombustible Sludge from Pond Into Good Fuel

Elevator and a Sluice Broke Up Lumps of Clay and Coal Enabling Concentrating Tables to Remove Two-Thirds of the Ash, Thus Making a Good Fuel Out of Material Which Others Had Condemned and Sought to Remove by Firing

By William Strain
Renton, Wash.

For nearly twenty years the Renton Coal Co. has been sluicing all coal of the size commonly known as buckwheat into a field some 300 ft. from the tipple. This field has an area of about six acres. The sludge pond, as it is called, attained a height of 30 ft. and contained, in round numbers by the time is was decided to utilize it, 200,000 tons of material. The small material thus stored was a good grade of subbituminous coal but it contained much fine sand, particles of bone, shale and, in places, sediment consisting chiefly of clay. All this made the material difficult to burn under ordinary conditions because of its high ash content and consequent low heating value.

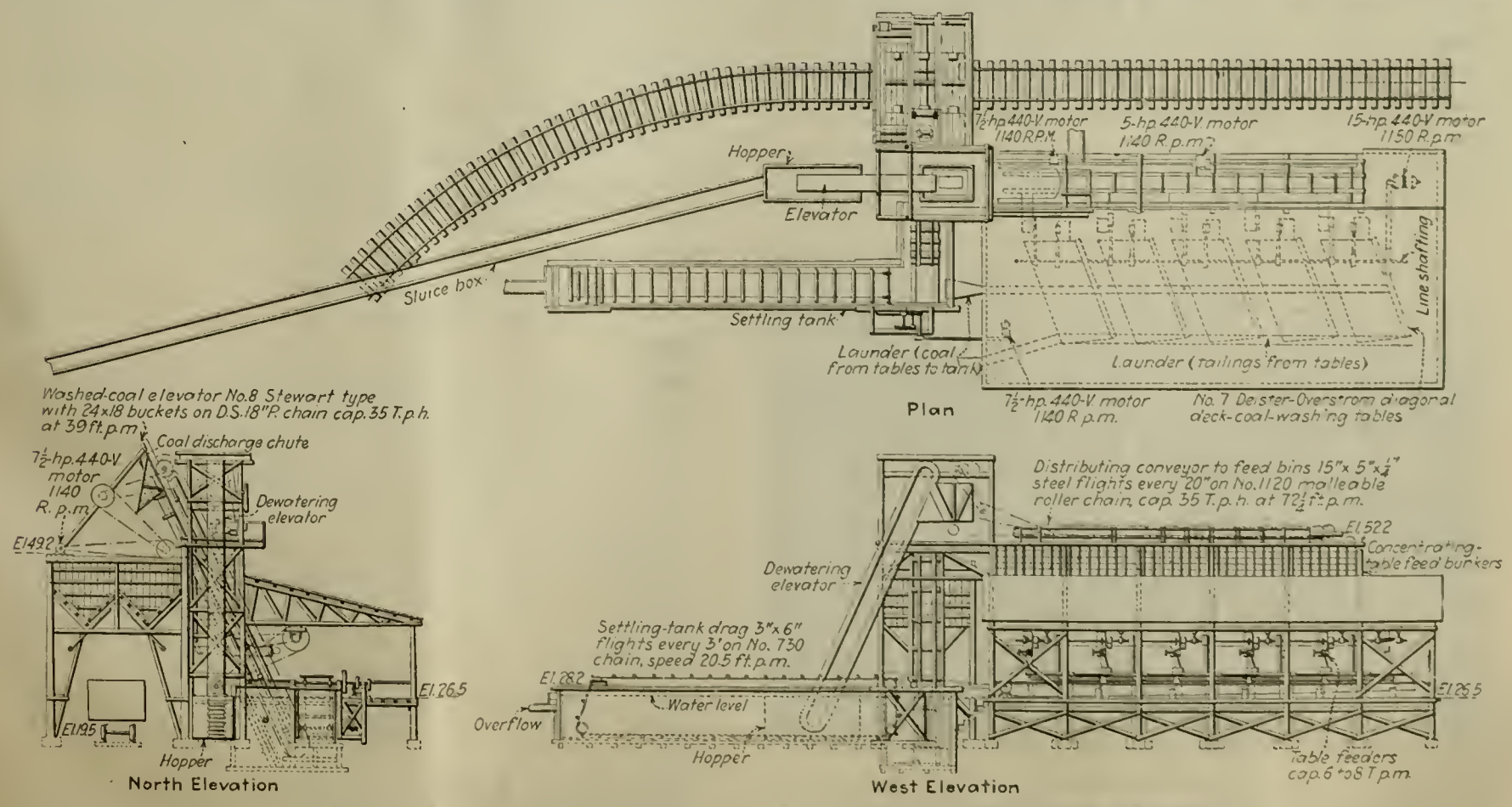
It has been common practice at some mines producing this grade of fine coal to allow it to be carried off in water discharged from the screens or jigs. This would undoubtedly have been done in this instance also if the turning of this material into the streams had not threatened serious damage to a large area of valuable farming land in the vicinity of the mine.

Recently, during the work of reclamation, a 30-ft. length of smokestack was unearthed. Inquiries among the "old timers" elicited the information that an attempt had been made to burn the pile a few years ago. A short tunnel had been driven into the dry end of the "pond" and raised through to the surface. The exhumed section of smokestack had been carefully mounted in this raise in order to increase the draft. The tunnel had been filled with oil barrels and dried wood. Upon igniting, however, the wood failed to set fire to the coal, for which we now are duly thankful.

Upon the failure of this scheme it was necessary to install a small centrifugal pump to elevate the sludge, for the pond, by that time, had reached a point where sluicing was no longer possible. It probably was to obviate this expense that the burning was attempted.

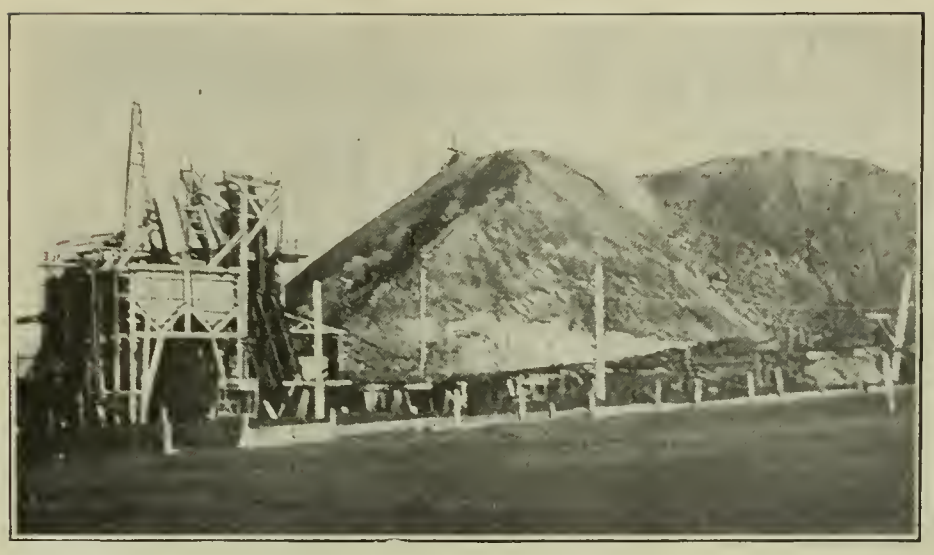
The Puget Sound Power & Light Co., of which the Renton Coal Co. is a subsidiary, has through much effort and expense been able to develop a highly efficient powdered-fuel plant in Seattle. This plant generates steam which heats the greater part of the downtown business district during the winter months. It consumes more than two hundred tons of powdered coal per day.

It was to supply fuel for this plant that consideration was given to the preparation of the coal contained in the Renton Coal Co.'s sludge pond. An attempt was



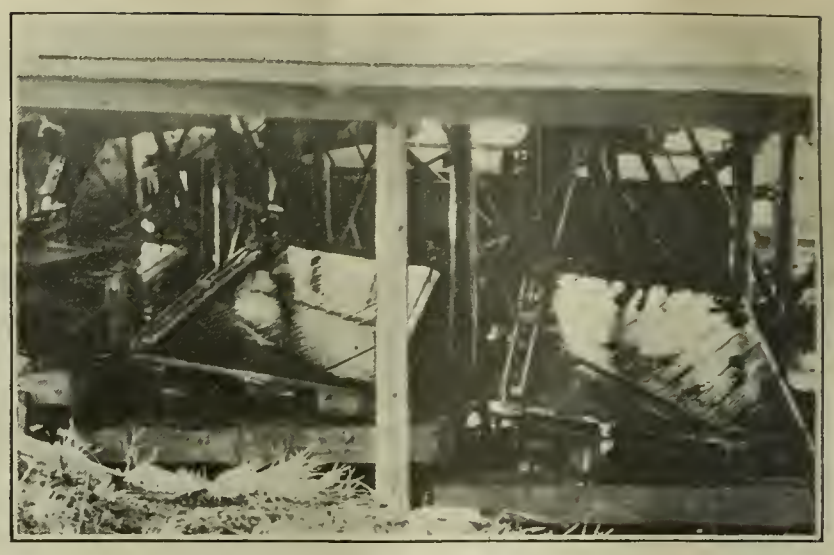
SMALL PLANT TO PREPARE 200,000 TONS OF SLUDGE FOR THE MARKET

No appreciable amount of the coal is over ⅜-in. diameter and consequently the concentrating table is well suited to the work of preparation. The installation is not elaborate, for with 250 tons of clean coal delivered every eight hours the pond can be worked over in about eighteen months. The tables will then be available for the preparation of the product from the washer, which will comprise not only the fine coal resulting from the preparation but the crushed refuse from jigs and picking tables.



RECLAIMING PLANT FROM SLUDGE POND

The smooth surface in the foreground of the illustration, which looks like an asphalted area, is the sludge pond. Note the scaffold for the aerial tram above the washer. This is no longer used, as flushing is found to assist in preparing the material for treatment.



CONCENTRATING TABLES FOR CLEANING SLUDGE

These tables have no difficulty in removing fine sand, clay and bone from the coal. The ash may be reduced to one-third of its proportion, as received, and yet no coal values of importance will be lost in making this preparation.

made to burn the raw sludge under boilers, but this was unsuccessful because of the high percentage of incombustible and the gummy nature of the material.

Upon examination the following conditions were found to exist in the pond. At the end where the sluice box from the tipple had discharged, the sand and larger pieces of bone and shale had settled. From this point toward the discharge or overflow end of the pond the material had been deposited according to its various sizes and specific gravities.

At the overflow end some 30,000 tons of sticky mud consisting of fine coal and finely divided clay was found. In this mud were interstratified streaks of clean coal from $\frac{3}{16}$ in. downward in diameter. These had been carried over to this point by heavy rains or sudden inrushes of water.

Tests on composite samples of the sludge, excluding, of course, the mud, were made on various kinds of coal-cleaning equipment, and it was soon found that maximum recovery was yielded by concentrating tables. Preference in installation was shown to the Deister-Overstrom coal-washing table, and five of these machines were installed, having a combined capacity of approximately forty tons per hour.

The tables were placed on a level with the main floor of the washing plant. They stand upon concrete columns reaching through the floor to the ground. Each table is belted to a line shaft which runs the entire length of the building, and power is furnished by a 15-hp. motor. This line shaft also drives five screw feeders, one leading to each table. These conveyors insure a uniform feed to each machine. Such regularity in the feed is highly essential for the efficient recovery of good coal. Above each screw feeder is a bin of one table-hour capacity. These bins are in turn fed by a distributing drag conveyor extending the length of the plant.

APPEARANCE OF SLUDGE DEPOSIT AFTER SLUICING

By sluicing the coal the effect of segregations which took place in its deposition is overcome and a nearly uniform product finds its way to the tables. Consequently, they can be adjusted for at least long periods at such an angle as will give the most satisfactory result.

It was at first thought that the most efficient way of handling the sludge from the pond to the plant would be by means of an aerial tramway delivering through a rotary screen. Accordingly a short span of track cable was erected. It was found, however, that any kind of grab bucket would deliver the mud and clay to the plant in such condition that it would clog the feeding mechanism and cause large pieces of clay containing much fine coal to be discharged over the screen as refuse. Also the smaller pieces of mud and clay which passed through the screen ($\frac{3}{4}$-in. mesh) would interfere with the separating effect of the table riffles.

Refuse Is "Dissolved" and Sluiced

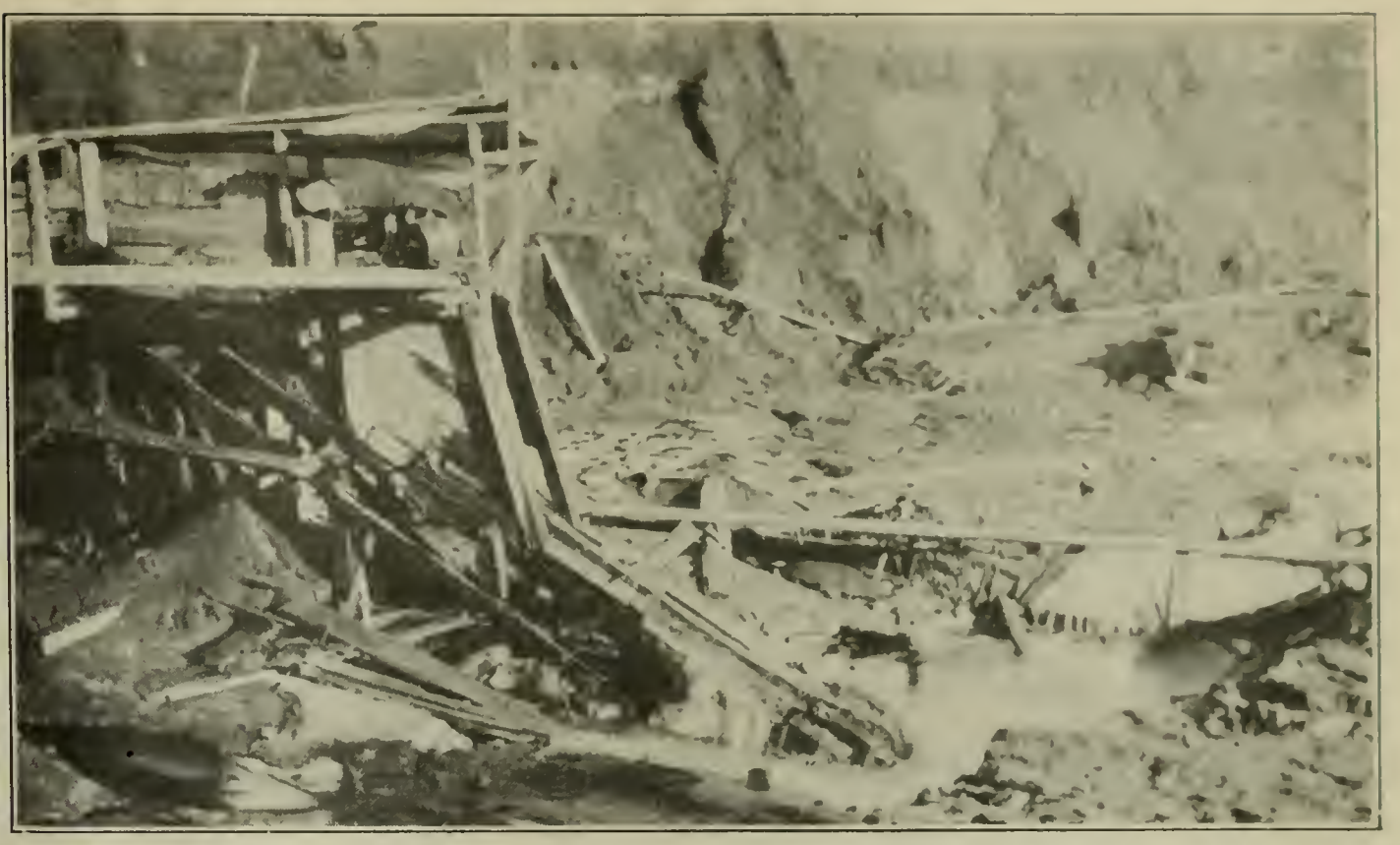
By experiment it was found that the only shape in which the material could be presented to the tables for efficient treatment was by breaking it up—"dissolving," so to speak—and sluicing it by water under pressure. This sluicing plan was adopted and has proved highly satisfactory. An additional advantage possessed by it is that the water, by passing over the entire pond, delivers coal, bone, shale and fine-divided clay to the tables in uniform proportions, thus obviating the necessity for closely watching these machines once they are set.

Part of the pile lies some 20 ft. below the level at which sluicing to the plant by gravity is possible and it became necessary to raise this material through this distance. After trying various schemes the machine shown in one of the accompanying illustrations, which is locally known as the "paddler" or "spanker," was adopted. This device consists of an endless chain running in a sheet-iron lined box 18 in. wide and 6 in. deep.

To the chain are attached at 24-in intervals wooden paddles made of 2 x 6-in. material. The trough is inclined on an angle of about 40 deg. and the chain is driven by the top sprocket at a lineal speed of about

Paddling Machine

A dragline conveyor running in a trough runs at an angle of about 40 deg. and lifts the product of the sludge pond into a hopper from which it is elevated to a distributing conveyor.



400 ft. per min. The device handles a mixture of about 400 gal. of water and coal per min.

From the paddler the sludge is sluiced into a hopper, from which it is elevated to the distributing drag conveyor mentioned above. Owing to water shortage the overflow from the hopper is pumped back into the sludge pond together with the overflow from the tables. Clean water, however, is used on the table feed.

Actual cleaning of the coal is accomplished without difficulty, as the tables allow a wide range of recovery. The raw feed contains 28 to 30 per cent ash-forming material. Owing to the high efficiency of the steam plant, a fuel containing 16 to 18 per cent is acceptable provided it is free from sand, clay or shale. This degree of preparation the tables can readily afford. It is possible, however, to reduce the ash content of the product to 10 per cent without losing an appreciable amount of clean coal in the refuse.

Occasional pieces of coal ¼ in. in size or over are discharged with the reject material. It would be advisable, therefore, in the washing of fines containing an appreciable amount of coal of more than $\frac{3}{16}$ in. in diameter, to pass the raw material over a screen of $\frac{3}{8}$ in. mesh and wash the two sizes on separate tables. This would insure a minimum loss of coal in the refuse.

The cleaned coal is collected in a sluice box under the tables and delivered to a settling tank of the usual design. Thence it is delivered, by means of a dewatering elevator, to a loading bin over the tracks.

The plant is capable of delivering 250 tons of clean coal in eight hours and probably will work out the sludge pond in about eighteen months. After this has been accomplished the sludge direct from the mine tipple can be run through the plant together with the crushed refuse from the jigs and picking tables, so as to recover all material of fuel value.

The initial cost and operating expense of a plant of this type compare favorably with the common methods of cleaning and preparing coal. If no immediate market for the cleaned-product exists, however, it would be advisable to allow the sludge to collect in a pond, as it is less liable to spontaneous combustion in that state than if piled in a high and dry location cleaned of all incombustible material.

Drove Coal Tunnel 2,000 Ft. in One Month

SOME time in February last the officials of the Alma Thacker Fuel Co. decided to drive a single entry to connect the No. 2 mine workings with those of No. 5. The idea was to eliminate a two-mile haul on a 2½ per cent grade, over which the coal from No. 2 mine had to be hauled to reach the tipple. The No. 5 mine workings are located high upon the mountain directly above the tipple, the coal being dumped into a large chute which conveys it down to the level of the Alma Bed, at which is located the headhouse of the long cable conveyor which transports the coal down a 33-deg. grade 600 ft. long to the screening and loading plant.

The shortest distance separating the No. 2 and No. 5 mines was 1,926 ft. and it was decided to drive the connecting tunnel at this point. Accordingly on the morning of March 1 work was started.

A 5-ft. booster fan was placed behind a curtain of brattice cloth, which was kept within 10 ft. of the face. This enabled the men to work in plenty of fresh air, while the smoke cleared away quickly after shooting. Everything went well with the project for about a week, then the hoist for hauling supplies up to the mines burned down. This left no way to get supplies to the workings. Next the gathering locomotive "went bad," and another had to be hoisted by hand to take its place. These accidents caused the loss of two days' time, and four days were lost on account of heavy slate falls.

The tunnel was driven from both ends, and on April 1 shots when fired could be heard through the coal by the opposite crews. They were then more than 200 ft. apart. On April 9 a Jeffrey shortwall machine on the No. 5 side cut through to the No. 2 side, thus in 29 days completing a tunnel 1,926 ft. long, making an average driving speed of more than 66 ft. per day, or 11 yd. per day on each end of the tunnel.

Three eight-hour shifts were worked on each end of this tunnel, with five men to each crew. Each shift loaded out two machine cuts. This record probably has been equalled, but not in the Williamson coal field, comprising Mingo County, W. Va., and Pike County, Ky.

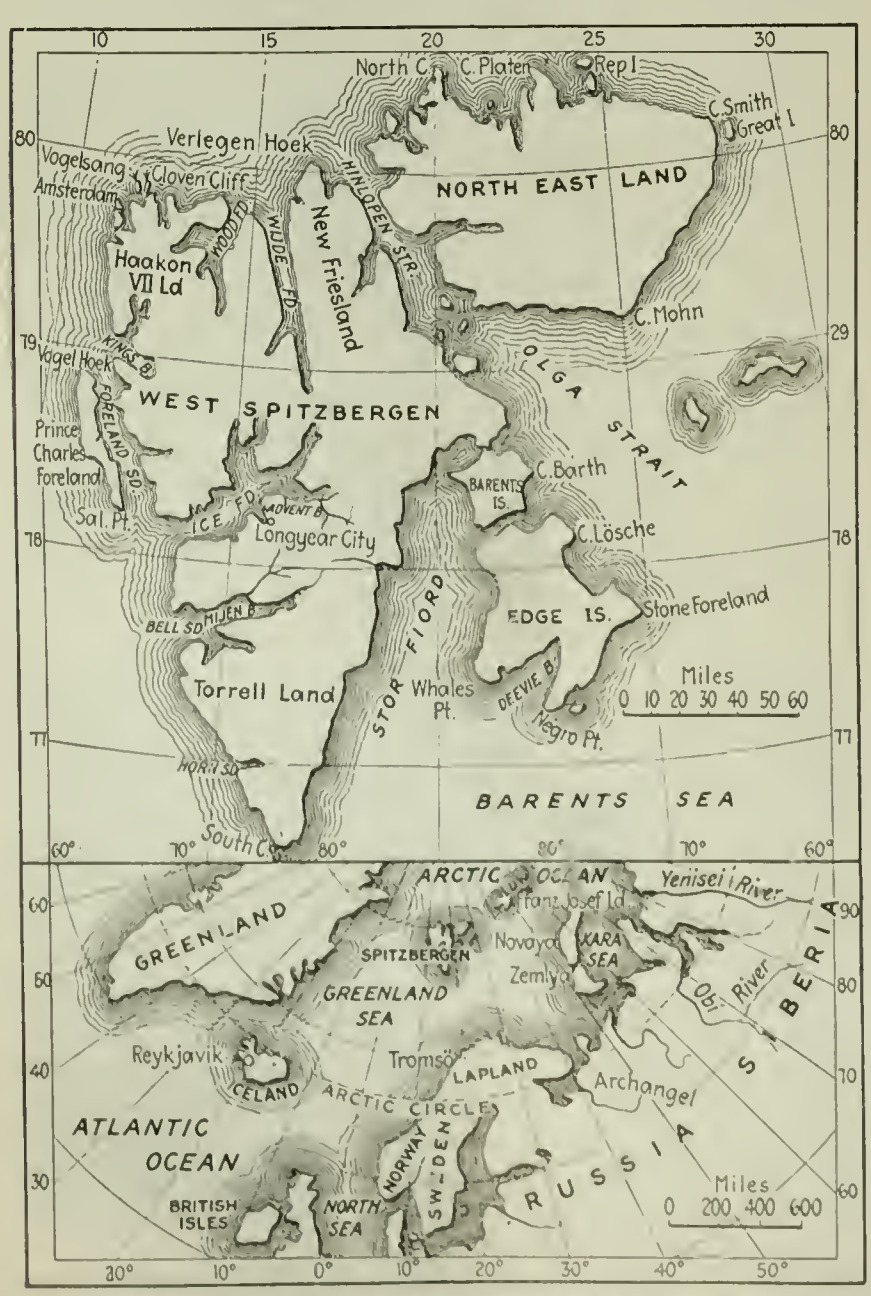
Spitzbergen's Coal Is Always Found Frozen But It Explodes as Readily as Ours

First Opening Transferred in 1904 to an American Capitalist —Island and Mine Owned by Norway and Norwegians Respectively—Explosion of Coal Dust Occurs Apparently from a Shot Fired When Lifting Bottom and Kills Twenty-six Men

AS LARGE as Scotland, the Spitzenbergen islands have a great future as a coal-producing area. Out of the 25,000 square miles, how much will ultimately be proved to be underlaid with coal is still a matter of as much uncertainty as was its ownership until 1920. Only in that year was this "no man's land" ceded to Norway.

"The de facto rights of existing claim owners," says H. M. Cadell in his address on "Coal Mining in Spitzbergen" to the Mining Institute of Scotland, from which these and other remarks are taken, "will be investigated, and if found valid will be legalized and ratified by an international commission to be held in Copenhagen."

At one time, now about three hundred years distant, the islands were considered a part of the British Empire, but the claim was allowed to lapse, for the land did not appear worth acquiring. Coal was discovered in 1610, but not until the beginning of the present century was mining seriously considered. At that time a company of capitalists of Trondjem, Norway, opened up the beds exposed in Advent Bay, a branch of Ice Fiord.



SPITZBERGEN ARCHIPELAGO WITH MAP SHOWING ITS RELATION TO EUROPE AND ASIA

Coal field, as so far discovered, is on the island of West Spitzbergen adjacent to Ice Fiord. Note how far Spitzbergen is above the Arctic Circle, Iceland and southern Greenland.

Norwegian Company Sells Mine to Longyear

But the expense was more than its slender purse could afford, so in 1904 J. M. Longyear, an enterprising American, bought the property for £1,000 ($4,870) and developed the coal under the title of the Arctic Coal Co., of Boston. In 1916 he sold his rights for a large sum in cash and shares to its present owners, the Store Norske Kulfelter, of Christiania. When the war broke out some Swedish capitalists had already pegged off claims, as had also two British companies, the Northern Exploration Co., of London, and the Scottish Spitsbergen Syndicate, of Edinburgh.

The islands constitute a plateau, mostly more than 2,000 ft. in height, of stratified rocks resting on Archean gneiss and granite. In the northern part there are a few recent but extinct volcanoes and some hot springs. The coal measures so far discovered lie on the western part on the main island. The analyses of these coals given by Mr. Cadell should not be accepted as typical, for the samples he took, to judge by the wording of his paper, were none of them of the whole seam and in many cases were from surface showings:

ANALYSES MADE OF CHUNKS OF SPITZBERGEN'S COAL

Measure	Mine	Fixed Carbon	Volatile Matter	Sulphur	Ash	Moisture	B.t.u.
Kulm*		66.30	28 52	0 36	3.40	1 42	14,373
Tertiary	Longyear	57.15	37.21	0.73	3.20	1.71	14,130
Tertiary or top of Cretaceous	Anglo-Russian Co.	64.55	31.11	1.07	1.85	1.42	14,328
Tertiary or top of Cretaceous	Braganza	69.88	26.19	0.72	1.62	1.59	14,616

* Kulm is a series of beds found below the Carboniferous limestone resting unconformably on Devonian or possibly Archean measures.

As against this showing the author says that B. Högbom, an eminent Swedish geologist, in Vol. III of the "Coal Resources of the World," says that the kulm contains on an average 10 per cent of ash and is in general inferior to the coals of more recent date. He adds, however, that one seam 6½ ft. thick had only 7 per cent of ash.

The Longyear property has two seams 65½ ft. apart. The lower, which is 3½ to 4 ft. thick and free of bands of stone, is that seam of the two which is found workable. The coal is reached by two planes which rise at a grade of 30 to 40 deg. from an elevation of 200 ft. above sea level to one of 900 ft. These are operated by two electrically-driven haulage engines.

The coal forms a coke whic'. is soft and bulky. There

are two mines. No. 1 was worked on the pillar-and-stall system, but that method of operation has now been replaced by longwall. Sullivan coal cutters are used and belt conveyors. To permit the cars to run under the end of the conveyor, 2 or 3 ft. of the mine floor is lifted in the roadways.

The ground is frozen to a depth of several hundred feet. In discussing the paper J. B. Atkinson, who has visited the field, estimated that unfrozen ground would not be found at less than 1,500 ft. below the surface. The roof, being frozen, partakes of the character of ice. It bends freely without breaking, and no timber is required at the face. The mines are uniformly at a temperature of 7 deg. F., and the roof, like a fairy crystal grotto, is coated with hoar frost.

In a diamond-drill hole at Klass Billen Bay in Ice Fiord, after stopping for a short time, the borers found that the tools had frozen to the measures, so that the rods could not be withdrawn, and to prevent trouble subsequent boreholes had to be fed with a stream of water from a specially devised heater. As the mines are so completely frozen they do not need pumping, and shafts should be sunk without difficulty, as no water would be encountered.

There is no firedamp in the mine, and open lights have always been used. (Mr. Atkinson in his remarks said that in August, 1913, he had found the mines dry and dusty. Mr. Scott Turner, then manager, took precautions as to the explosives used and he had the dust tested at the experimental station of the U. S. Bureau of Mines, where it was found to be dangerous.)

Twenty-Six Men Killed in Mine Explosion

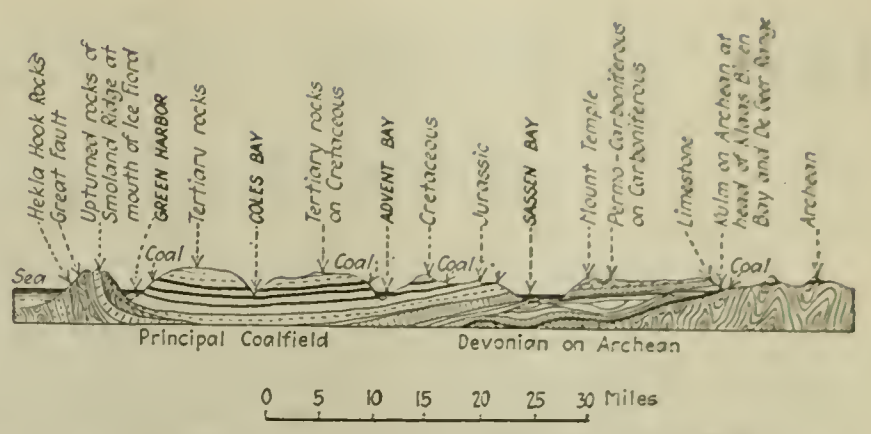
The mine is worked in 8-hour shifts, and during one of these the bottom of the roadways is lifted. On Jan. 3, 1920, twenty-six "oncostmen" were at work, when a terrible explosion occurred that killed every man in the mine and set part of the workings near the mine mouth on fire. It was more than seven months before the fire could be extinguished with water from the melting snows of the hillside above.

All the workmen are Norwegians. Between 200 and 300 are employed. They live in warm wooden houses and work forty-eight hours a week and dine at a community table. Their wages are from $6.08 to $7.29 a day, from which is deducted about 48c. a day for board and lodging.

They produce from two to three tons of coal per shift, the temperature being so low that they are not tempted to relax their efforts. Some have brought their wives and families with them to this land of the midnight sun. About a thousand men in Norway have placed their names on the waiting lists, as there is a great desire to be employed on such favorable terms.

As far as operated the field is free from faults and dykes. The dip is everywhere gentle, that at the Longyear mine being between 3 and 5 deg. Unfortunately the Arctic winter lasts from the middle of November to the middle of February. For that entire period the sun is below the horizon and it is more or less dark. For three to five months the coast is accessible to ships.

Stocks of coal are prepared against that short season. Unfortunately the coal thus stocked is somewhat disintegrated by the severities of the cold weather. Another difficulty is that everything, including timber, has to be imported. Most of the vessels must come light or in ballast, and the danger from ice makes insurance heavy. In the winter water for the boilers is hard to obtain. A loading plant has been installed at Hotel Ness, in Advent Bay, where 5,000 tons can be loaded per day. An annual output of 200,000 tons is expected.



CROSS-SECTION OF SPITZBERGEN COAL FIELD

Most of the coals are Tertiary, but somehow they have at some time received enough heat to make them into high-grade fuels with calorific values of more than 14,000 B.t.u., this despite the rigors of the climate as judged from present conditions and in spite of the fact that the measures are fairly free from folding.

Stone Used for Dusting Coal Mines Should Be Chosen with Care

DURING a visit of the members of the Lancashire branch of the National Association of Colliery Managers to the laboratories of the Lancashire and Cheshire Research Association at Bolton, England, March 12, James Lomax said that though no orders had been given by the Home Office as to the quality of the stone dust to be used in the mines it must be borne in mind that not all dust could be described as innocuous to health.

If silica was in the dust distributed through the mine it would undoubtedly bring the lives of the men to an earlier end. For this reason the character of the dust to be used should be given careful inquiry. Fuller's earth has been proposed and some were using the refuse of the mine works. However, fuller's earth, when examined under the microscope, is shown to contain particles of quartz, and when ground these will form a bad dust. Flue dust, which has been used for mine sprinkling, is as bad as that made from siliceous rock.

The dust for sprinkling should be not merely harmless to the lungs of the men who work around it but of such a character that any sort of detonation will set it into suspension with the coal dust it is intended to guard. A sample of dust from a ledge three feet above the floor in a roadway that had been sprinkled with stone dust was tested by giving the surface on which it was placed a thump from below. In many cases the coal dust rose, leaving the stone dust behind, showing that in the event of an explosion the stone and coal dust would be separated and the dusting useless.

Mr. Lomax showed specimens of coal dust taken in a roadway 6 ft. high, one from the floor, one at a height of 3 ft. and one from the roof. They differed from one another, the coal dust on the floor being a large percentage "fusain" ("mother of coal"; see *Coal Age*, page 384, issue of Aug. 19, 1920). These particles were large and would not spread, so that, as compared with the other dust, they did not travel far but gravitated to the floor. In the second sample the particles were fewer and more regular and the proportion of fusain was smaller. The third was the dust from the roof. Seen under the microscope it consisted of very thin flakes and particles of coal dust. That material was always in suspension and was exceedingly inflammable.

How to Protect Pulverized-Coal Plants From Dust Explosions and Fires

Vacuum System Should Remove Dust From Air in Building—Avoid Excessive Heat in Drier, Which Causes Fires in Storage Bins and Predisposes Coal to Oxidation and Heating—Keep Air Supplied for Burning Coal From Forcing Its Way Into Coal Supply Line, Taking Sparks with It

AT THE REGULAR bimonthly meeting of the mechanical section of the Engineers' Society of Western Pennsylvania, held Tuesday evening, April 5, in the William Penn Hotel, Pittsburgh, L. D. Tracey, coal-mining engineer of the Pittsburgh experiment station of the U. S. Bureau of Mines, read a paper entitled "Explosion Hazards in Industrial Plants Due to the Use of Pulverized Coal."

Pulverizing plant should be in separate building. Man in charge of drier should be counselled against use of excessive heat. It is asserted that high temperature is not as effective as one that is moderate, and it is, of course, more dangerous. Stoppage of fan or of the transport pipe may cause backfires.

At its experimental operation at Bruceton the Bureau of Mines has made, as is well known, an exhaustive study and many tests on the explosibility of bituminous coal dust in mines. It has recently entered the industrial field, investigating a number of fires and explosions that have resulted in loss of life and property damage at plants which had substituted pulverized coal for natural gas in the operation of their heating furnaces.

Mr. Tracey may be quoted as follows: "Generally speaking, two distinct methods are now in use for firing pulverized fuel which may, for convenience, be termed the direct and indirect. The two methods prepare the coal for the furnace in a manner which differs only in detail, the real difference between them lying in the way in which the pulverized fuel is transported to the furnace.

Coal May Be Fed by Air or Screw Conveyors

"In the direct method, after the coal has been pulverized, it is fed in regulated quantities to a fan, by which it is forced in a cloud through pipe lines ranging from 8 or 10 in. up to 16 in. in diameter. Branch lines leading from this main to the furnaces convey the coal as may be needed. The surplus coal which has not been drawn from the main lines returns to the line near the starting point, where a separator removes the coal dust from the air and returns it to a storage bin to be blown again through the line.

In other words, a continuous circulation of coal dust is maintained, the system being somewhat analogous to that obtaining with a gas line, from which the fuel is drawn off as required. Secondary air lines, independent of the main coal-feed pipes, provide the additional air needed at the burners for proper combustion.

"In the indirect method the coal is transported either by means of compressed air, under perhaps 50-lb. pressure, or by screw conveyors to bins at the furnaces. From these bins, the pulverized fuel is fed, generally by screw conveyors, to an air blast which carries it into the burner.

"As a rule the building which houses the crushing, drying and pulverizing machinery is separate from the industrial portion of the plant. It is believed that this is highly desirable from a safety standpoint. Explosions and fires have been known to occur in coal-pulverizing plants which might have been more disastrous if they had happened in buildings containing both the pulverizing equipment and the plant in which the power generated from the fuel is used.

"Adequate ventilation is absolutely necessary in a pulverizing plant. It is unwise, however, to depend entirely on ventilation to overcome the coal-dust hazard, for in any building there are many angles and corners into which the air currents never reach and where the suspended dust is free to settle. A small amount of coal dust per cubic foot of air suffices to cause an explosive mixture. In tests conducted by the Bureau of Mines, 0.032 oz. of such dust per cu.ft. of air was found sufficient to cause an explosion when brought into contact with a flame.

"It is believed that it is practicable to install a vacuum-cleaner system in a coal pulverizing plant, by means of which all parts of the building in which dust is liable to settle may be reached and cleaned. This has been done in some of the coal-crushing plants in France and Germany, and in a few instances in our own country. Dust should never be brushed or swept up without first being thoroughly wetted down. This applies not only to the pulverizing plant but also to the industrial portion of the operation.

Accidents From Coal in Industrial Plants

"There are on record with the bureau two actual instances in which accumulated dust has been the direct cause of accident, although, fortunately, no one was seriously injured. One of these was caused by the short-circuiting of a starting switch in one of the motors of a steel mill. Coal dust had gradually accumulated between the poles, and, absorbing moisture, became a good conductor, thereby causing the current to short-circuit and burn out one of the switchboard panels in the power house. The second instance arose from an accumulation of dust being accidentally blown by air from a compressed-air tank toward a furnace. The cloud ignited, and the room was immediately filled with a sheet of flame.

"It would seem advisable from a safety standpoint for the management of all industrial plants in which pulverized coal is used for fuel, and especially in those

establishments in which heating and annealing furnaces are installed, to impress upon their employees the fact that clouds of fine coal dust are quite as dangerous as bodies of unconfined natural gas. If such dust is liberated in close proximity to an open flame or mass of hot metal, trouble is likely to follow.

"I investigated an explosion in a steel mill which undoubtedly arose from coal dust, and, although one man was killed and two badly burned, the superintendent of the mill profanely insisted that coal dust would not explode.

Oxidation of Overheated Coal Causes Fires

"One of the most serious difficulties with which the users of pulverized coal have had to contend has been the number of fires which have occurred in the dried-coal and pulverized-storage bins. It has been somewhat difficult to determine the exact cause of these fires, but there can be no doubt that spontaneous combustion has played an important part in some of them.

"Unfortunately, as far as I can learn, no work has been done to determine the rate of oxidation of coal under the conditions which govern its use in pulverized-fuel systems. However, fairly extensive investigation has been made into its spontaneous combustion under somewhat different circumstances, and some of the results of these tests can be utilized in the study of fires in pulverized-coal and dried-coal bins.

"It is obvious that coal in a fine state of division presents a much larger surface and so brings a greater quantity of the reacting substances into contact with oxygen than when in solid mass." In tests by Parr and Kressman, described in an article on "The Spontaneous Combustion of Coal," published in the University of Illinois Bulletin No. 46, it was learned that the rate of absorption of oxygen increases so greatly with the rise of temperature that the warming of coal by a steam pipe or boiler may enormously shorten the time necessary for spontaneous combustion or render self-ignition of the coal possible in cases where it would not otherwise happen.

In experiments made by the Bureau of Mines and described in Technical Paper No. 65, by Horace C. Porter and A. C. Ralston, entitled "A Study of the Oxidation of Coal," it has been determined that the rate of oxidation of coal increases markedly as the temperature rises and that above 150 deg. F. the rate is quite rapid.

"As the amount of heat generated is in direct proportion to the quality of oxygen absorbed, it is reasonable to assume, from results already mentioned, that pulverized coal when delivered to storage bins at a fairly high temperature will in a short time approach the ignition point. From what I have been able to ascertain, companies manufacturing and installing coal-pulverizing systems advocate a drying temperature of from 100 to 150 deg. F., at which temperature the coal is delivered to the storage bins.

Lowest Temperature in This Drier 320 Deg. F.

"Unfortunately, however, the human element plays an important part in the operation of a drier. For instance, one cold night not long ago a man operating such a device must have built up an exceedingly hot fire in the drier furnace, for at the time an explosion occurred the pyrometer near the stack registered 320 deg. F. Inasmuch as the drier coal was delivered at the furnace end of the drier, it is probable that the temperature of the coal was actually considerably greater than was recorded by the pyrometer at the stack.

"At another plant in which a fatal explosion occurred, and which I investigated, it was learned that the pulverized coal was delivered to the bin at a temperature of 230 deg. F. Some of the workmen in the mill stated that at times the sides of this bin became red hot.

"At this point I want to digress a moment and speak of the effect of high drying temperatures as a matter of efficiency. I have heard complaints that even though the coal is dried at high temperatures there is still moisture in the bins. Paradoxical as it may seem, coal dried at an abnormally high heat will contain more moisture than when dried at a temperature of from 100 to 150 deg. F. The reason for this, as given by the fuel section of the Bureau of Mines, is that extremely hot coal carries with it as it travels from the drier a certain amount of vapor, arising from the evaporation of moisture in the surrounding air with which the hot coal is brought into contact. This accompanies the coal and is condensed by the comparatively cold sides of the bins and conveyors.

"It is possible that better results would be obtained if the coal was dried at a stack temperature of from 100 to 150 deg. F. This might give a coal surrounded by a drier atmosphere and obviate the condensation on the sides of the bins.

Coal May Be Kept Too Long in Hot Drier

"Returning to the subject of abnormally hot coal in the bins, it is reasonable to suppose from the data available on spontaneous combustion that any coal that is delivered to the storage bins at a temperature of 150 deg. F. or above, if allowed to remain for a comparatively short time, will attain such a temperature that when mixed with air it will quickly reach the ignition point.

"Coal may be overheated in a drier not only by the building of an abnormally hot fire but by allowing the coal to remain in the drier drum when the machine itself is not in operation, and this overheating may occur if only a normal fire is being maintained in the drier furnace.

"It is believed that fires in pulverized-coal storage bins, oftentimes arising no doubt from spontaneous combustion, have been responsible for some of the fires in the coal-conveyor lines through which the pulverized fuel is blown in a dense cloud to the furnace. A number of fires have been investigated by the Bureau of Mines in which almost without warning flames have burst from the coal-conveying lines. As far as could be ascertained, these pipes were free from any obstruction, the fans were operating normally, and the burners at the furnaces had been giving no trouble.

"It seems perfectly logical, therefore, to assume that the pulverized coal in the bins had been heated by spontaneous combustion almost to the ignition point, and when conveyed to the coal-transport line the air current induced by the fan supplied enough additional oxygen to produce incandescence in certain particles of coal which in turn ignited the dust cloud as it passed through the line.

"Whenever a plant has been shut down for a few days, before any pulverized coal is delivered through the transport lines to the place of consumption an examination should be made to ascertain whether it has become heated to such a point that it might cause

ignition when brought into contact with a current of air. This can be done by pushing iron rods into the interior of the stored coal and leaving them for a short time. When they are withdrawn the temperature of each rod will indicate whether the coal in the bin thus tested is burning.

Fan Stops or Pipe Clogs, Backfire Results

"Some of the fires occurring in plants having the direct system of feed have undoubtedly originated from the coal backfiring from the heated furnaces. These backfires probably have been caused by the air pressure in the distribution lines suddenly dropping below that afforded by the blowers or other devices, the function of which is to furnish sufficient oxygen for the proper combustion of the coal in the furnaces.

"The average pressure used in such a system is about 9 oz. in the main distribution lines and about 4 oz. in the lines delivering air for combustion. The air for the distribution line generally is delivered by a blower fan which is operated independently of the one on the other air line.

"A stoppage of the fan or an obstruction in the air line may cause the pressure in the main distribution line to drop. On the other hand, so many furnaces may be placed on one line that the last one or two to receive fuel may be fed at a pressure so low that it is less than that of the air supplied for combustion.

"When this happens there is a tendency for the secondary air to 'short-circuit' and travel up the coal-feed line into the main distribution pipe, carrying with it hot gases and incandescent particles from the burner, and thus igniting the fine coal therein. It may happen, if the air in the distribution line is temporarily shut off, that there will not be enough oxygen in the line to support rapid combustion and the mass will simply smolder until the current again becomes normal, when the smoldering coal will be fanned into a flame. Wherever booster fans are used in the system it is extremely important that the pressure on their intake sides shall be kept positive, otherwise air will be drawn from the furnace and the result will be the same as if there were a backfire.

Coke on the Burners Causes Much Trouble

More or less trouble comes also from the tendency of the coal to coke on the burners. Experience seems to show that from any one or more of several causes the burner becomes red hot at its extreme end. Among the possible reasons may be enumerated too much coal for the amount of air or slowing down of the secondary blower from fluctuations in the power line, either of which may cause the coal to adhere to the burner. As the accumulation increases the area of the burner decreases, with the result that sometimes the orifice actually becomes plugged.

In cases of this kind as the air supplied for combustion has no other outlet, the current will tend to be deflected into the coal supply line and it will take red-hot dust with it and eventually cause a fire or explosion in the main distribution line. To avoid these mishaps the burners should be frequently inspected, and if any coke is found on them they should be immediately cleaned. Some of the steel mills employ a man whose sole duty it is to inspect and clean burners.

Some of the mills when shutting down at the end of the day's work leave a small quantity of coal in the bottom of the coal transport line, the reason given being that the furnace then can be started much more quickly than when the line has been blown clean the night before. This is rather a dangerous practice, as the mixture of dust and air is, of necessity, a lean one, perhaps at its most explosive combination, and if through any chance hot coal is received into the line an explosion is bound to occur.

"In the interests of safety, when the plant closes down at night all furnaces should be cut off from the supply line; the main pulverized bin also should be cut off from the main transport line and that pipe thoroughly cleaned by allowing the fan to force a current of air through it until all the pulverized coal is blown out.

"In all coal-pulverizing plants electricity plays a large part. It is extremely important, therefore, that the electrical equipment be of such a type and installed in such a manner that danger of coal ignition is reduced to a minimum.

Use "Permissible Motors" in Dusty Plants

"In the work the Bureau of Mines has done to lessen the number of fatalities in coal mines it has developed a schedule of requirements for the construction of electric motors employed in coal-mining equipment which enables them to operate safely in gaseous and dusty mines. When such motors have passed this schedule and have satisfied the tests involved they are classed as 'permissible motors.'

"It would be possible to build similar machines for use in all plants in which dust may be an explosion hazard, and this suggestion is offered to those who may be interested in the manufacture of electrical equipment.

"I would summarize this paper by giving regulations that should be observed in the operation of pulverized fuel plants: Absolute cleanliness is essential, as well as freedom from any accumulations of dust, both in the pulverizing plant and in the buildings in which powdered coal is being used as a fuel. Never brush or sweep up the dust on the floor or brush it from the machinery without either first wetting the dust down or thoroughly mixing it with an excess amount of fine incombustible material. Adequately ventilate and light all coal-pulverizing plants, and, when practicable, install some vacuum method of cleaning.

"All open lights in and around the plant should be prohibited, and employees should not be allowed to smoke while in the building. This rule should also apply to superintendents and other officials who casually visit the premises. The drier and its furnace should be separated by a fireproof partition from the pulverizing mills, conveying machinery and storage bins. All pulverized-coal bins should be tightly closed and never opened if there is any possibility of ignition from an open flame. Bins should be equipped with automatic indicators to show the amount of coal they contain.

"Only men of known reliability should be entrusted with the direct operation of a drier. It may be more economical in the long run to pay a high wage to a trustworthy man than a smaller wage to an unreliable man or boy. Especial care should be exercised in order not to overheat the coal in the drier. Recording pyrometers should be installed to enable the officials of the plant to check the operation of this piece of apparatus. The drier should never be stopped while it contains a charge of coal. Fire in the drier furnace should never be started with paper, shavings or any light combustible material.

"Fine coal at a temperature of above 150 deg. F. should never be stored in a bin because of its liability to spontaneous combustion. For the same reason, pulverized-coal storage bins should never be placed in close proximity to furnaces, boilers, steam pipes or flues. Whenever a plant is to be shut down for a few days, if possible all storage bins should be emptied. Where it is not possible to empty the bins they should be thoroughly inspected for hot coal before the plant is again placed in operation.

"In the direct system of using pulverized coal the pressure of the distributing air should always be maintained well above that of the air supplied for combustion purposes. If a coal-transport line becomes plugged, the furnaces should be immediately cut off and the flow of secondary air stopped. After the line has been cleaned it is essential that no smoldering particles of coal be left in it, and before starting the fan the line should be thoroughly examined. Burners should be frequently inspected and any coke burned onto them should be removed. Transport lines should be blown clean when shutting down at the end of the day's run in order that coal may remain in them.

"Never ignite the mixture of air and coal in the furnace by reaching in or opening the doors. All conveyors and elevators should be tightly inclosed and should never be opened while running. The machinery should be stopped and the dust allowed to settle before the devices are opened. Never open a coal line, compressed-air tank or storage bin in the vicinity of a flame or open light.

"As far as possible, enclose all electric wires and cables in conduits. All switches should be placed outside the plant or else housed in dust-proof casings. Non-sparking motors or those encased in dust-proof housings should be used. By thoroughly grounding, guard against sparks from static electricity in all rapidly moving machinery.

Light Bulbs Should Be Kept Free of Dust

"All electric-light bulbs should be kept free from accumulations of dust and all portable lights should have the bulbs protected by heavy wire guards. Care should be taken to prevent arcing from loose socket connections or imperfectly insulated cords. Stop all leaks in pulverized-coal transport lines or storage bins as quickly as you would leaks in a gas line. Prohibit smoking, open lights or torches around the plant. Educate all men employed as to the dangers of pulverized coal dust.

"Doubtless as the supply of gas decreases pulverized coal will be increasingly used in industrial plants as a substitute fuel. Especially will this be so in those using heating furnaces of various types for the manufacture of steel products. This increase probably will develop more efficient and safer methods for the preparation and distribution of this fuel."

Harvey Allen, efficiency engineer of the Pressed Steel Car Co., led the discussion at the conclusion of the reading of the paper by Mr. Tracey. He corroborated many of the findings reached by the author and stated that a vacuum system similar to those utilized in large hotels had been installed by his company at its McKees Rocks plant, and had given general satisfaction. The interior of a pulverized-coal plant must be designed with considerable forethought if the vacuum system is to be given an opportunity to operate efficiently. All unnecessary ledges and shelving whereon the dust may accumulate should be dispensed with. Mr. Allen also believed that a coat of white paint should be applied over the walls and ceilings in order that a dusty atmosphere the more easily might be detected. Stucco and plaster walls are thought to be the best type of interior construction for buildings of this character.

Advises Use of Small Distribution Lines

W. Greenwood, safety engineer of the Youngstown works of the Carnegie Steel Co., was of the opinion that spontaneous combustion might occur in a distribution pipe of large diameter more easily than if a line of smaller size was employed. He contended that the dust particles would adhere to the sides of the large-diameter pipe, and that this condition would not obtain in a smaller pipe by reason of the increased velocity that would necessarily be used. The men employed around the plant should be carefully instructed as to the dangers surrounding them.

Mr. Greenwood stated that it was a wise practice to provide that each pulverizing plant supply fuel for a variety of uses. In this manner it would never be necessary to close down the entire works. When this is done storage is necessary and spontaneous combustion in the storage bins is likely.

Mr. Greenwood then mentioned a number of regulations that should be enforced in addition to those pointed out by Mr. Tracey. Short-radii pipe bends should not be used in the distribution line. All electric control boards, if possible, should be located outside the building. Alternating current is preferable to direct for the driving of the machinery, and the burners should be of such a type as to preclude the possibility of coke being formed on them.

A member then inquired whether driers could not be dispensed with in the operation of a pulverized-fuel system and how long the coal in the storage bins could stand without being liable to spontaneous combustion after the plant had been shut down. In reply it was stated that some believe that driers can be dispensed with. However, the fuel burns best when containing 1 per cent of moisture, and the driers permit the fuel to retain this amount. If this equipment is not installed the pulverized coal cannot be burned to best advantage and worth-while economies cannot be effected.

Puts Limit of Time in Bins at Five Hours

Mr. Tracey replied to the second half of the question. He was of the opinion that after four or five hours had elapsed the coal in the bins would be in danger of igniting. In this connection the time interval is gaged by the kind of coal used and the percentage of volatile matter that it contains. Certain qualities of coal dust may be permitted to stand in the bins with perfect safety, whereas others have to be removed shortly after the plant ceases operations.

L. W. Marso, sales engineer of the Quigley Furnace Specialties Co., then remarked that the Industrial Commission of the State of Ohio had studied the subject of coal-pulverizing installations, and would soon issue a code to govern such installations in that state. He hoped that the standards adopted by this commission would be used as a basis for similar state organizations elsewhere. He trusted that the Bureau of Mines would co-operate to the end that national standards might be adopted at an early date, whereby coal-pulverizing plants might be able to operate most efficiently with a minimum of danger.

Watchman Sole Attendant at Filtered-Water Plant Supplying People of Langeloth

Filtration Plant Located at Eleven-Acre Reservoir Four Miles From Mining Town—Water Is Automatically Decolorized, Sterilized and Filtered Before Being Pumped to the Town-Supply Reservoir—Clarified Water Is Used Even for Fire Fighting

By Donald J. Baker
Wilkinsburg, Pa.

In its healthfulness of location and in the care taken to prevent the spread of disease germs—ever present where humanity congregates—few industrial communities of western Pennsylvania can compare with Langeloth. This village, located near Burgettstown, in Washington County, houses the mine and mill workers of the American Zinc & Chemical Co. Though the town has a population of only about 2,500 it guards and maintains the health of its inhabitants better than do most small cities. The influenza epidemic of 1918 and 1919 proved conclusively that the average coal-mining community was an ideal home and breeding ground for the germs of, at least, that disease, if not of many others.

Langeloth, however, is a town of which the builders may well be proud, for its living conditions are excellent. Its houses, of the bungalow type, are erected upon wide and carefully-planned streets and, being built upon a side hill, overlook a wide expanse of country. So much for its creature comforts and its scenic attractions, but more important is the fact that it is for many reasons more than ordinarily healthful. It is located at some distance from its nearest neighbor and so has the advantage that isolation always gives when disease is rife. An effective sewage-disposal plant has been provided. Few indeed are the mining towns of a size comparable to Langeloth that can report such sanitary provisions as that town is favored with.

Water for the town is taken from a dam four miles distant and located near Dinsmore, on the Panhandle division of the Pennsylvania R.R. This water is decolorized, clarified and sterilized before being used, and even that employed for the fighting of fires first passes through all the degrees of purification just enumerated. The water is systematically filtered, even though the reservoir from which it is drawn is fed by mountain streams and springs.

Reservoir When Full Holds 3,000,000 Gallons

The water thus impounded covers an area of eleven acres, the pond when full containing about 3,000,000 gallons. It is not so situated, however, that its failure would endanger the existence of any town if, through time and inattention, this dam were to give way as did the one in the Conemaugh Valley above Johnstown, the failure of which resulted in the memorable innundation of that city.

No human habitations are located on the banks of the streams that are tributary to this small lake. Most of them have their origin in springs. When the water reaches the dam it is a fairly clean and healthful product although during rainy seasons, particularly during open winters such as the one just past it, like all impounded waters, is liable to discolorization. At such times, of course, the water is apt to carry undesirable bacteria. The reservoir has, however, been stocked with fish, and fish in any open water tend to reduce its active or harmful bacteria content, thereby increasing its purity.

The location selected for the dam was one that had been utilized for a similar purpose years ago. When the company took over the property a small dam was already in place. The old structure had been built in the main around a concrete wall with a face appropriately

Filtration House

Built at such a level that the casing of the 5-hp. pumps used to deliver the water to the tanks is always filled and does not require priming. From this building water is pumped to the village of Langeloth.

Inside the Filtration House

Portions of two filter beds may be seen in the left foreground. By the action of plates which control valves in the entrance pipes, water is not permitted to rise above a given point. In the rear are the sedimentation tanks and on the right center with the "No Smoking" sign are the automatic mixing tanks which supply the coagulant and sterilizing fluids in appropriate volume.

battered. This was laid on the bed rock of the basin. Its foot was 6 ft. below the surface of the ground and its top only 10 ft. above it. The capacity of the pond thus formed was, therefore, somewhat limited. Consequently the company resolved to increase the volume of impounded water, but it did not seem advisable to employ the old concrete wall as a core for the new structure.

Old Dam Helps Strengthen Construction

Accordingly a new concrete wall was built 30 ft. down stream from the old one, to serve as a core for the new dam. This when completed was 31 ft. in over-all height, including in this figure the 3 ft. which the wall is sunk into the bed rock. The wall is 3 ft. thick at the bottom and decreases upward till at the top it is 18 in. thick. It is somewhat more than 300 ft. in length. Earth was used as a fill between this wall and the older one, and an additional fill of the same material was made on the downstream side of the wall, this latter fill lying at a slope of 45 deg. and its toe being 44 ft. horizontally from the foot of the core wall at the ground line. A slope such as this is well within the angle of repose for loose earth. The dam therefore consists of two concrete walls and ample earth filling, assuring a rigidity not often found in constructions of this nature.

A spillway 60 ft. wide, its bed being 5 ft. below the top of the new core wall, has been built at one side of the dam—not in the middle, as is common practice. The filtration house is located at the foot of the core wall, and the spillway curves along the side and around to the rear of it. It was desirable to locate the filtration plant as near as possible to its water supply in order to introduce the water to the building with a minimum of complication. Near this house the concrete wall has been given additional reinforcement to compensate for the absence of the earth fill at this point.

Constructed of concrete and brick and provided with a slate roof, the filtration house is of a highly permanent character. The apparatus installed in it is entirely mechanical in its operation. A man, of course, is detailed to the building, but he acts largely in the capacity of a watchman. He makes periodic tests of the filtered product, however, a daily report being demanded by the state health department.

Raw water is brought into the building through a 3-in. pipe which leads to a small centrifugal pump driven by a 5-hp. motor. The casing of this pump always is filled with water because it lies below the intake level of the pipe in the dam. Consequently it is unnecessary to prime the machine when beginning operation. This unit together with two others employed in forcing the water to the town is situated on the ground floor of the building.

By this small pump the water is delivered to the second floor of the filtration house, where the various clarification processes take place. These processes are well described by M. F. Newman, manager of the water-purifying department of the Wm. B. Scaife & Sons Co., which firm designed and installed the equipment.

Sedimentation Period Is Three Hours

The filtration system consists essentially of a concrete sedimentation basin 30 ft. long, 20 ft. wide and 13 ft. 6 in. deep, provided with a vertical baffle partition, a weir inlet and a weir outlet. The basin is so ample that it is the general practice to allow the water to stand in it for a period of three hours. It is divided by the baffle into two compartments, so that either may be emptied and washed while the other remains in operation. Two rectangular concrete filter units are provided, each 10 ft. long, 7 ft. 6 in. wide and 8 ft. deep. These are equipped with a manifold strainer-pipe system and a special type of brass strainer, so designed that during the regular

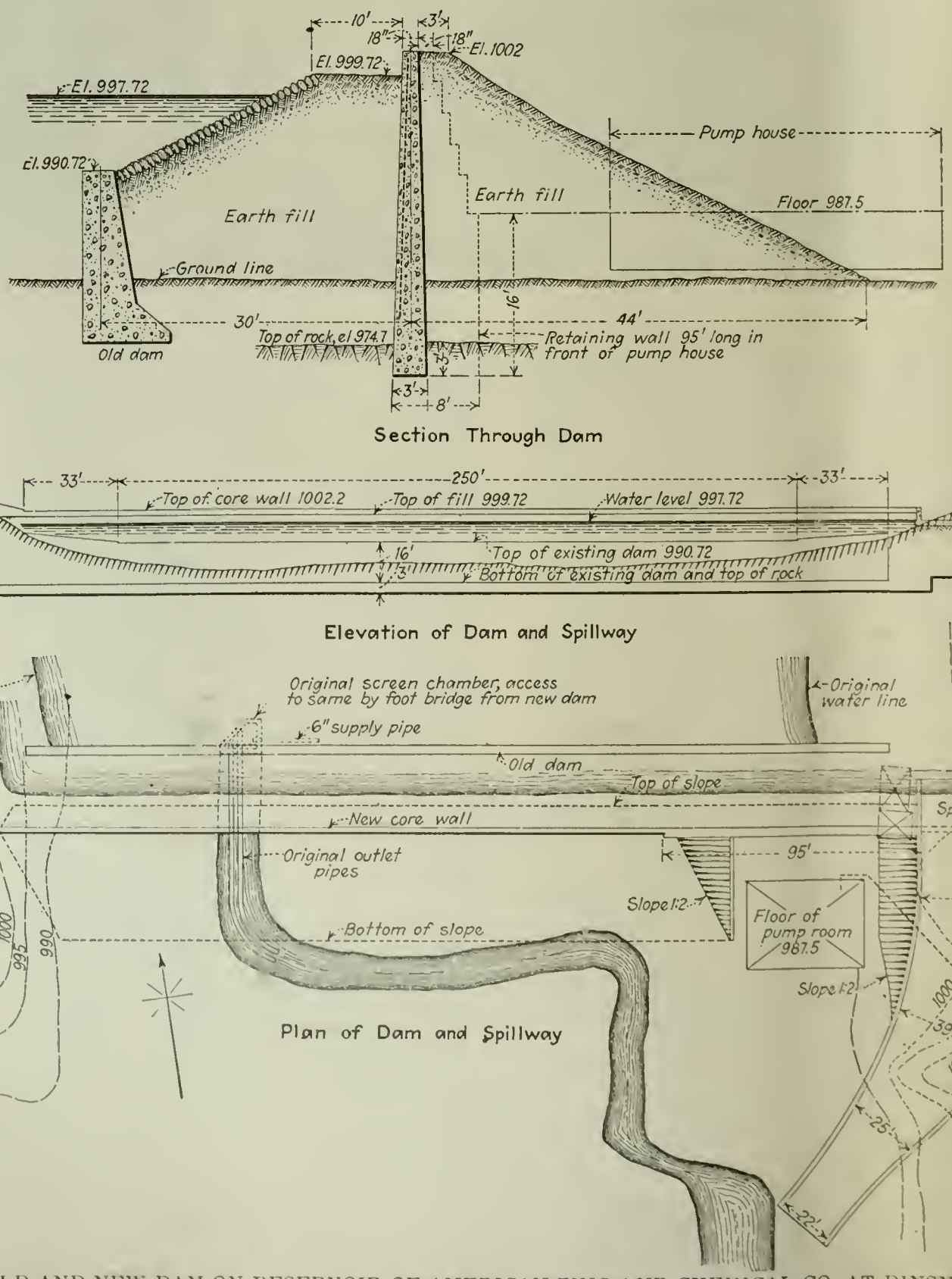
operation of the filter all its openings are carrying water from the filter.

During the washing process, because of the pressure of the wash water, some of the openings in the strainer are closed, so that the total discharge of the water through those remaining open equals the discharge of the wash water through the main to the filter. This insures a uniform distribution of the wash water to all parts of the filter, a proper liquefying of the entire sand bed thus producing an efficient wash over the whole area of the filter, with a minimum consumption of water.

The filter units also are provided with brass air-wash pipes which pass compressed air through the sand during the washing period, thus keeping it in agitation. The compressor furnishing the air is located in the pumproom and is operated by a motor having a capacity of 3 hp. Each filter is equipped with a rate controller to prevent filtration at a greater speed than two gallons per square foot per minute and is also provided with a loss-of-head gage which indicates the condition of the filtration bed.

Introduction of a coagulant and of a sterilizing solution is made by patented equipment operated directly by the flow of water to the system. The accompanying illustration shows the details of the apparatus. The raw water enters the weir tank, in which it is divided into two streams. The main flow goes over a large fixed weir, a proportioned quantity being diverted through a similar but smaller weir. This smaller stream is delivered to a compartment containing a siphon.

When the water in this compartment reaches a certain height it starts the siphon into operation. This discharges the water into the mixing trough in the sedimentation basin, where it mingles with the stream flowing over the main weir. Connected to this main siphon is another auxiliary to it, which introduces the sterilizing reagent during the period occupied by the flow of the main siphon.

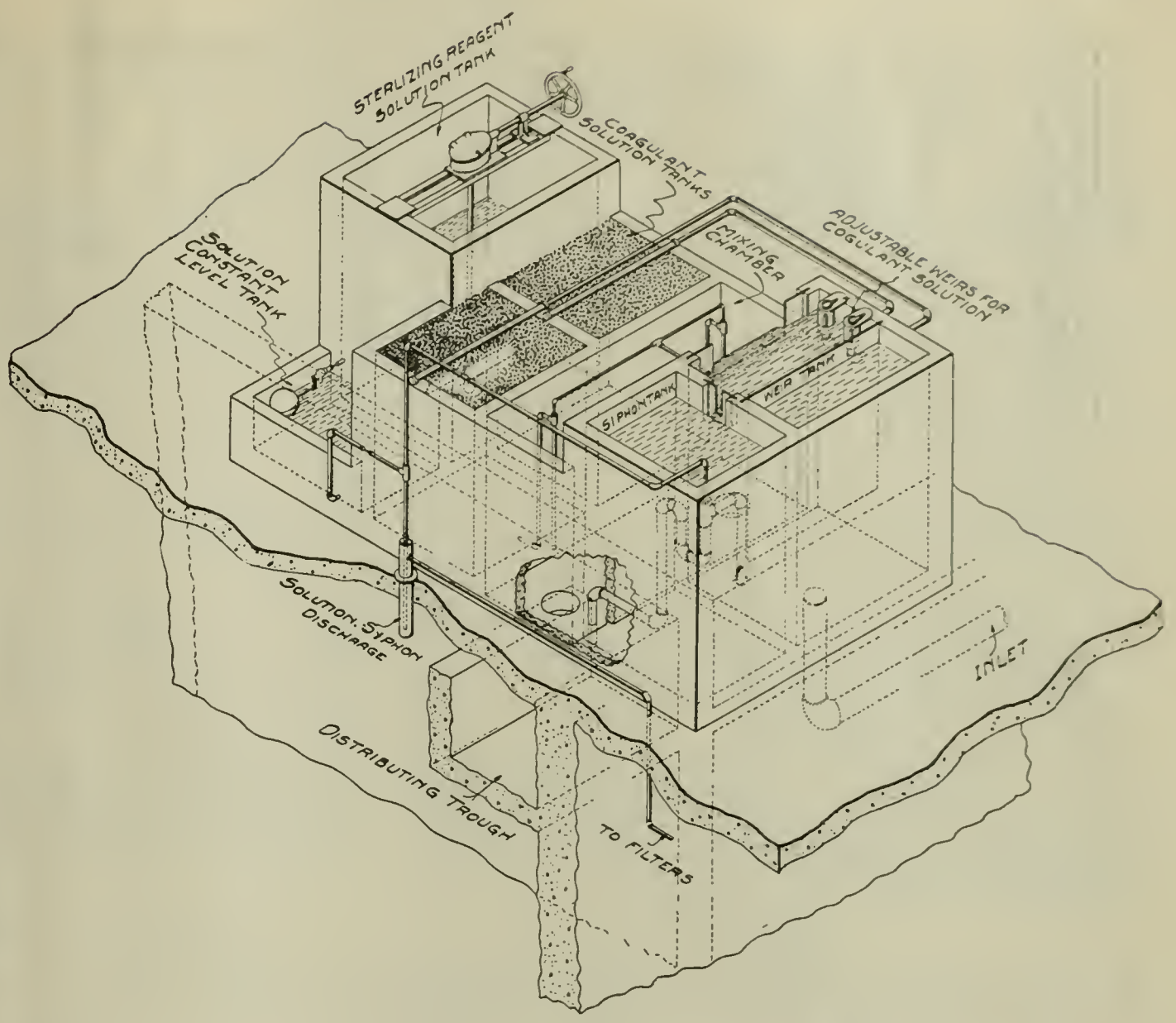


OLD AND NEW DAM ON RESERVOIR OF AMERICAN ZINC AND CHEMICAL CO. AT DINSMORE, PA.

In order to raise the level of the impounded water 10 ft. a new wall was built outside the old one but so close that advantage is obtained from both these structures. The old dam was of the retaining-wall type, but the new one is only a core giving not so much strength as resistance to seepage, the earth filling affording the necessary resistance to the pressure of the water.

Chemical Treating Tank

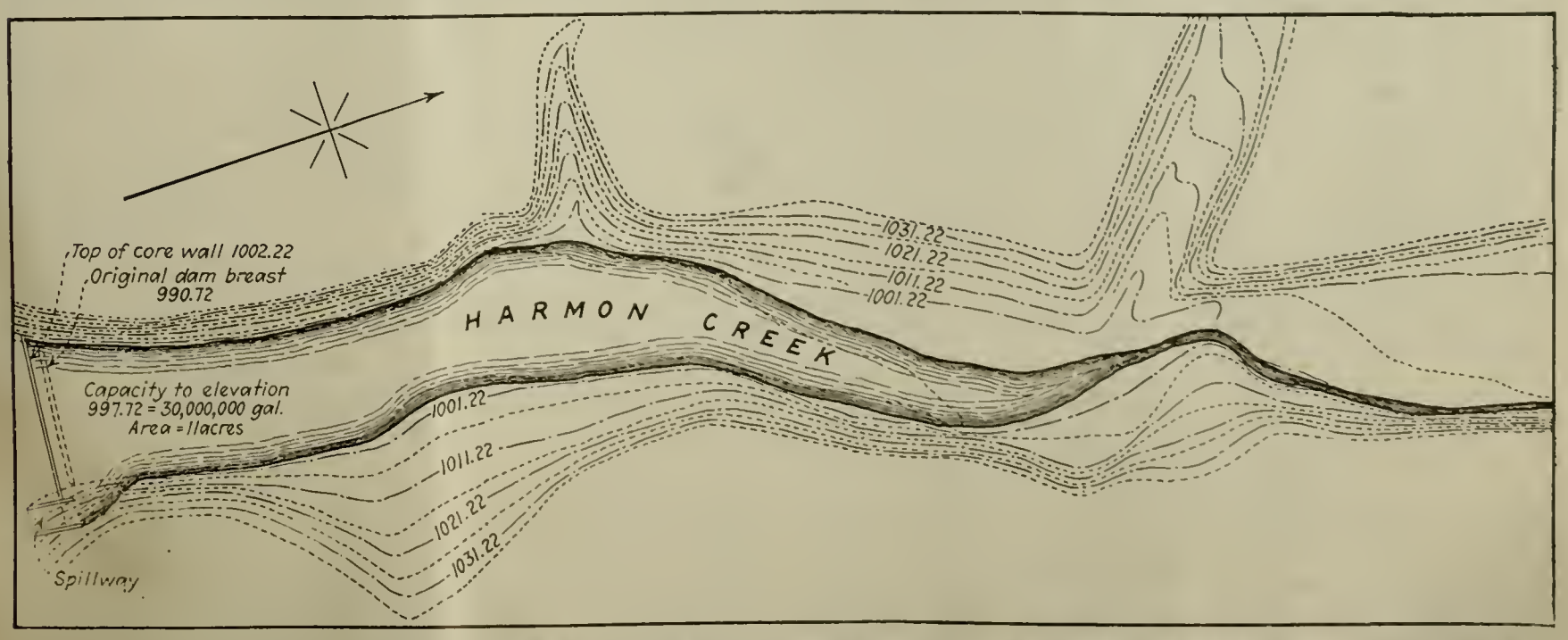
This plant automatically delivers an amount of chemicals to accord with the quantity of water passing at any time. All the water flows into a weir tank where it is divided into two streams both of equal depth but extremely different width. The smaller stream being always proportional to the larger can regulate to a nicety the delivery of the solutions by which the main body of water is sterilized and its impurities coagulated.



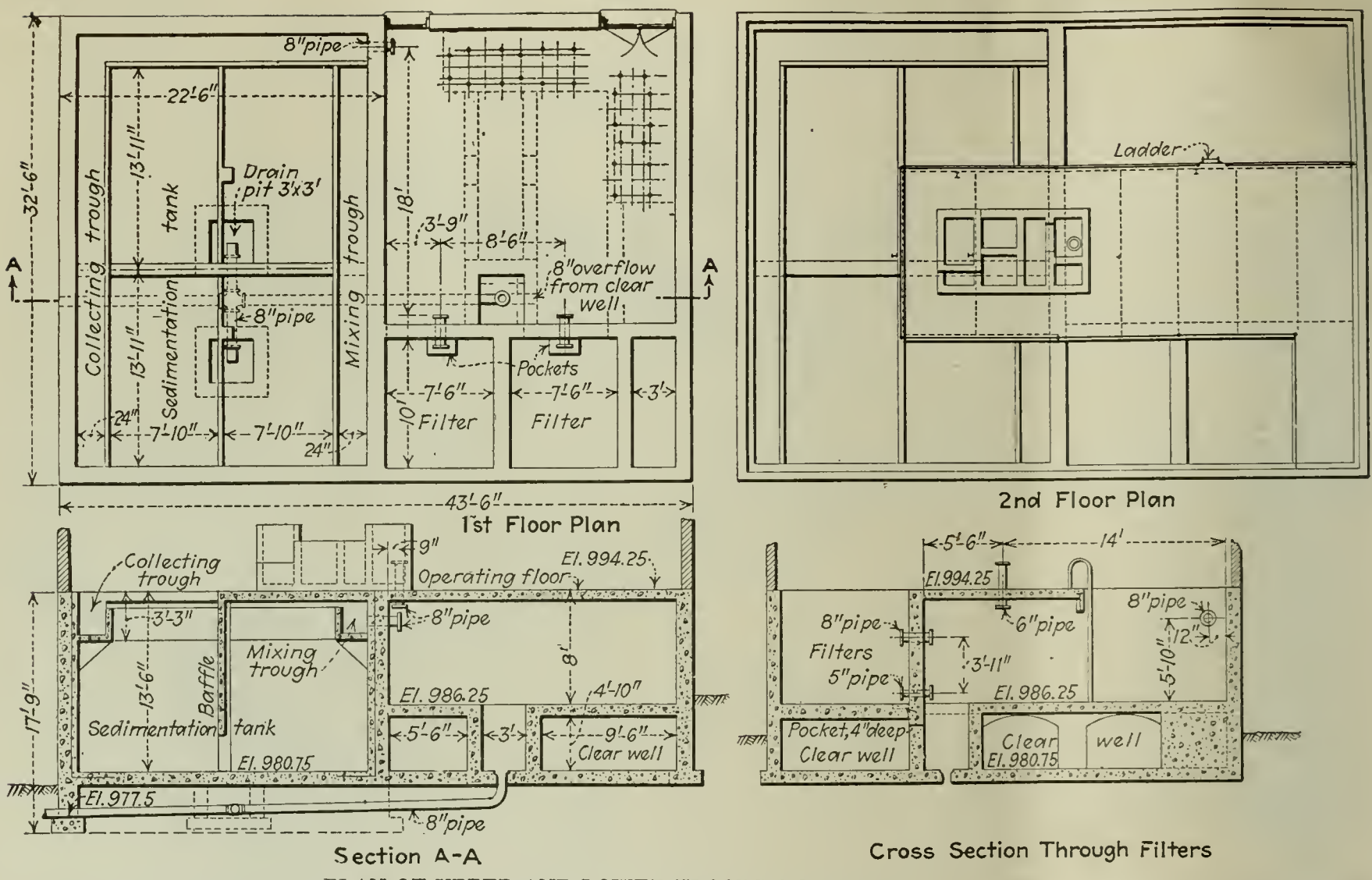
The tank in which the sterilizing reagent is dissolved is connected to a constant-level tank from which the auxiliary siphon is fed. As soon as the compartment from which the main siphon operates is emptied the auxiliary siphon ceases to flow until the compartment is refilled to a point where the main siphon begins to operate. The harmonious action of these two siphons depends upon the periodic rise of the water to the same height in the main siphon compartment. The filling of this compartment is in direct proportion to the rate of flow over the main weir.

This establishes a fixed relation between the flow of water and the introduction of the sterilizing solution, thereby removing the uncertainties of the human element in the operation of this device. The discharges occur with sufficient frequency tc insure a uniform mixture of the solution introduced. The solution of the sterilizing reagent is delivered into the filtered water as it is discharged into the clear well which is located beneath the floor of the filter room.

The coagulant used is a saturated solution of alum (aluminum sulphate). This substance is fed into two dissolving tanks to which water is fed through individual adjustable weirs placed in the main weir tank.



RESERVOIR IN THE VALLEY OF HARMON CREEK AFFORDS WATER FOR MINES AND MILLS AT LANGELOTH, PA.
New reservoir holds about 3,000,000 gal. of water which is derived from mountain streams and springs. The sheet of water when the reservoir is full occupies eleven acres.



PLAN OF UPPER AND LOWER FLOORS OF FILTRATION PLANT

At the top of Section A-A can be seen the tanks in which the sterilizing reagents and the coagulants are dissolved and automatically fed to the water. The same tank can be seen in the second-floor plan near the center. These tanks appear in greater detail in another and isometric illustration. The sedimentation tank will hold a three-hour supply of water.

These weirs are of the same shape and are placed at the same elevations as the fixed weirs previously mentioned, so that the volume of water passing through them is exactly proportioned to that flowing over the main weir. The tanks for the saturation of the coagulant are so constructed that the alum is partly submerged and the water from the adjustable weirs flows over the unsubmerged portion, then down through the tank and thence through a wood-fiber filter into a storage chamber in the bottom of the tank.

"A discharge pipe from this storage chamber is carcied upward to the height required for keeping a portion of the coagulant in submergence. The height of the discharge pipe fixes the level of the solution in the tank, and the inflowing water from the adjustable weir displaces an equal volume of saturated solution. The coagulant solution is delivered into the main stream of water flowing from the main weir. To prevent this solution from crystallizing and depositing itself in the piping when exposed to the air it is diluted with a small stream of water from the weir tank which constantly flows into the discharge pipe that delivers the saturated solution.

"From the foregoing it will be noted that an exact ratio is maintained between the water being delivered to the sedimentation tank and the volume of the sterilizing and coagulant solutions, that this proportion is evenly maintained for varying rates of flow into the system without resort to the utilization of valves needing manipulation by hand. When the flow of water to the system ceases the introduction of both coagulant and sterilizing solutions is automatically stopped and the proper flow of both these reagents begins again automatically only with the flow of water to the system when the supply pump is again put into operation."

From the clear wells located beneath the pumproom floor the filtered water is removed by one of two 8½ x 10-in. Dean pumps, the second machine being utilized as a spare. By this pump delivery is made to an elevated reservoir situated on a hilltop above the town. Each pump is driven by a 50-hp. induction motor. From the reservoir the water passes through mains by gravity to the town. The filtration plant has a capacity of approximately one-half million gallons of water per day. The dam and filtration house were constructed by the firm of Baton and Elliott, mining engineers, of Pittsburgh, Pa.

Filtration systems, like sewage-disposal plants, are necessary at many, if not most, coal-mining towns. In the past, however, they have not been installed to the extent that expediency warrants, apparently because only broad-visioned operators have realized that this form of sanitation is as necessary to the health and morale of the operating forces as are playgrounds, amusement buildings and the like. Any community and welfare program should be basically sound and sensible. This it can only be when the health and physical well-being of the mine workers and their families are given first consideration.

COAL BIDS RECEIVED by the Board of Education of Cincinnati recently showed only a small spread in prices considering the wide divergence of hauls that deliveries entail. There were thirteen firms who bid for the whole contract or parts of it. The business was divided up into five districts to allow it to be taken in whole or in part. The bids for smokeless run-of-mine were from $7.44 to $7.22 a ton and on bituminous the bids were: For run-of-mine, $7.25 to $6.98; for slack $6.25 to $5.7?

Problems of Operating Men

Edited by James T. Beard

Handicapped Mine Foremen

Mine Foremen Handicapped By Having to Serve Under Superintendents Having No Practical Knowledge of Underground Conditions and Requirements—A Plea for Certification of Mine Superintendents.

WHEN a mine foreman is compelled to work under the direction of a superintendent who has but a limited acquaintance and knowledge of underground conditions he is helpless to produce results that will do him credit. I was pleased to see attention drawn to this matter in the letter of John H. Wiley, *Coal Age*, Feb. 17, p. 321.

Every word in Mr. Wiley's letter will be freely endorsed by foremen who know what it is when they have to carry out the orders of a superintendent who has had little, if any, actual mining experience. Perhaps the superintendent never saw a mine until he gained his present position.

Superintendent's Lack of Practical Knowledge a Hindrance

Through his inability to assume the responsibility that rests upon him by reason of his official capacity, an inexperienced superintendent often interferes seriously with operations underground. If the man realized his own failing in this respect he would leave all matters relating to work in the mine wholly in the charge of the foreman and make him responsible for putting the coal on the tipple at a reasonable cost.

Without possessing a practical knowledge of the conditions that must be met below ground, a superintendent is too apt to insist on reducing the necessary expenditures for both labor and supplies. His continual cry is that, "the men are not doing enough work for the pay they are getting." The result is the foreman loses some of his best men who become discouraged and quit.

Men Quit and Foreman Is Blamed

For this the poor foreman gets the blame. He is charged with not being able to hold his men. His requisitions for supplies are cut down and every day he is called into the office to explain why certain work was necessary to be done at this time. It is not strange that many a good foreman becomes discouraged when compelled to work against such odds.

It frequently happens that the mine owner or the superintendent himself has a relative who has been a failure in everything he has undertaken. To help him out the poor fellow is given the position of superintendent in the hope and belief that he will make good; but here again he proves a failure and the mine foreman must stand the blame for his mistakes.

The mine law of Pennsylvania requires that the mine foreman shall have had five years' experience in the mine and pass an examination before an examining board or otherwise prove his competency to fill that position. Why should not the superintendent of a mine be compelled by law to have the same qualifications?

In point of fact, a superintendent should know more about the inside of a mine and what is required on the surface than the mine foreman. Only when he has that knowledge and experience can he successfully instruct a foreman and give orders for carrying on the work below ground.

In closing let me say there should certainly be some way to correct these mistakes and improve the conditions in our mines. I have spent 47 years in the mines and, in that time, have seen many a good foreman get in wrong by having to obey the orders of a superintendent who did not understand the mining game. Let us hope that these conditions will be improved before long.

Armbrust, Pa. EXPERIENCE.

Efficiency in Ventilation

Importance of planning the ventilation in a mine so as to permit of the highest efficiency in operation. Need of studying closely conditions and requirements underground.

ONLY a few days ago the papers reported another explosion that occurred in one of the largest and best equipped mines in the southern part of this state. Fortunately, there were but a few men in the mine at the time and all of these were said to have escaped.

Of the many problems the coal-mining industry is facing at the present time, probably none are more important than those relating to the efficient ventilation of mines, with a view to controlling the gas generated in the workings. To do this requires skill in the arrangement of the ventilating system throughout the mine.

It is of great interest to know that thoughtful mine operators are giving attention to this matter. In that respect, I was deeply impressed with the practical value of the excellent article of R. A. Walter, which appeared in *Coal Age*, Nov. 4, p. 945.

The article shows a remarkably close study of all the problems connected with practical mining. The writer deals with these in a fair and square manner, and one cannot but feel that, besides the economical advantage resulting from these considerations, the health and social welfare of the workers are promoted.

Advantage Gained by Efficient Plan of Ventilation

The efficient ventilation of a mine requires a ventilating engineer, as much

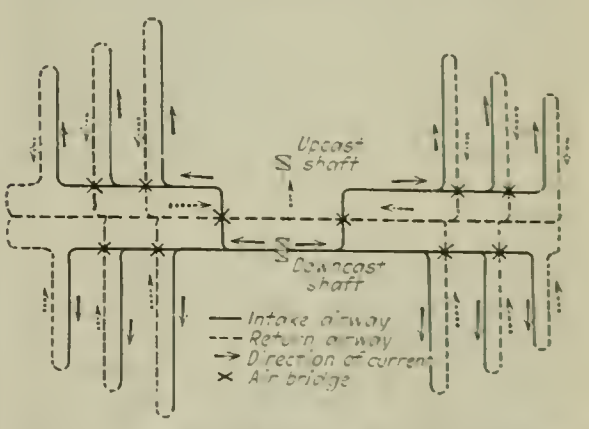


FIG. 1. DIAGRAM SHOWING AIR SPLITS

as the safe installation of electricity requires the service of a mine electrician. In order to make my meaning more clear, I have prepared two diagrams showing the circulation of the

FIG. 2. SHOWING DISTRIBUTION OF AIR AND MEN

air in several splits. In each case, the main current is divided at the foot of the downcast shaft.

In the first diagram (Fig. 1), there are six or seven separate splits or currents on either side of the shaft. In the second diagram, (Fig. 2), I have attempted to show the distribution of air, according to the number of men working in each section of the mine.

I have assumed, here, that the mine is generating gas in large quantities, requiring 200 cu.ft. of air per minute for each man employed in the mine.

In my 24 years of practice, I have observed a far greater waste of money expended by reason of an inefficient system of ventilation, than even that to which Mr. Walker has alluded. The disastrous explosions that have occurred in many mines known to generate large quantities of gas might have been avoided, in many instances, by a due regard for the proper ventilation of those mines.

Danger of Explosion Less in Mines Generating Carbon Dioxide

In Illinois, there are many mines generating gas; but the danger, here, is often less than might be supposed, owing to the production of large quantities of carbon dioxide. But this creates another trouble. I have seen places where whole sections of a mine had to be closed for lack of fresh air.

In one instance, the company had decided to double-shift a certain section of the mine that needed a more rapid development. The air in that section was bad and, in reply to the protestations of the local committee, the mine examiner (fireboss) acknowleged that, for weeks, he had not been able to get a reading with the anemometer, as little or no air was moving in the section.

The examiner had reported the matter of the bad air in that section to the manager, at different times, and the condition was well known.

Notwithstanding the promise of the company to improve the condition, it gradually grew worse and, in the wind-up, charges were preferred by the local union against the district inspector for alleged neglect of duty in not compelling the company to furnish more air. By making this statement, I am not discrediting the mine manager (foreman), who did all he could to improve the ventilation of the section, but his efforts were in vain.

First Rule of Ventilation Most Important to Observe

One of the most difficult problems in coal mining is to carry out the first rule of ventilation; namely, to supply a quantity of air at the working face that will dilute, render harmless and sweep away the gases that accumulate and make the place healthful and safe for work. As Mr. Walter has stated, this requires skill and scientific knowledge greater than that possessed by the average mine foreman or fireboss.

But, even assuming that these two officials have the necessary knowledge, it is generally the case that they have neither the time nor the means at their disposal to do what is necessary in the ventilation of a large mine generating gas. To make the ventilation efficient, the mine must be planned with a view to its adequate ventilation. The air current must be divided into a number of splits and carried anywhere from 1,000 ft. to a mile to reach the face.

Henry Bock.

Staunton, Ill.

Does the Uncertified Man Escape Penalty Under the Law

Reference is here made to two articles of the Bituminous Mine Law of Pennsylvania, under which the uncertified man is subject to penalty for any violation of his duties as a mine official.

REFERRING to a question raised by an inquirer in *Coal Age*, Feb. 3, p. 234, as to whether uncertified mine officials are subject to the same penalties as the law imposes on certified men, permit me to express the opinion that the penalties prescribed in the law for violation of duties apply alike to all mine officials, without respect to their certification.

Because of the seeming absence of any direct reference in the law to the penalization of *uncertified* officials for violation of the law, this inquirer seems to think that an uncertified official is immune from punishment, and that the worst that can befall him is the loss of his position.

Law Provides for Punishment of All Offenders

Careful consideration of the law and a study of the annual reports of the Chief of the Department of Mines, in Pennsylvania, convinces me that no offender against the law can go scot-free if his offense is reported to the proper authorities and he is hailed before a court and proven guilty of violating the statute.

While our mining reports show the prosecution of mine officials, for neglect of duty in and about mines, it is not possible to ascertain from these records whether the persons held certificates of competency or were uncertified, serving in their capacity as being "equally competent" with certified men. To my mind this is unimportant, however, as I believe the law makes no distinction between a certified and an uncertified mine official.

That the bituminous law is specific in respect to providing stated penalties for violation of its requirements, whether committed by officials or by workmen, appears to be plainly indicated by the several sections of the law quoted by the inquirer to whom I have referred.

Further References Quoted

After quoting the three references in the law that permit the employment of uncertified men as mine foremen, assistant foremen or firebosses, provided the employer regards them as "equally competent" with certified men, the inquirer quotes Art. 3, Sec. 7, which provides for the withdrawal of a man's certificate when he is found guilty of violating the law through neglect of his duties in the mine.

Now, in addition to these references, I desire to draw his attention to Art. 5, Sec. 6 of the law, which reads as follows:

> Any fireboss who neglects to comply with the provisions of this article relating to his duties . . . shall be deemed guilty of a misdemeanor and shall be suspended by the mine foreman and his name shall be given to the inspector for prosecution. If he is found guilty he shall return his certificate and qualification as fireboss to the Department of Mines.

While it is clear that this section, like Sec. 7 of Art. 3, applies only to a certified fireboss who is found guilty of violating the law in the performance of his duties in the mine, there is yet another section of the law that is still broader and imposes a penalty on any person who is found guilty of violating the law's requirements. I believe it reaches all violators, regardless of whether they are certified or uncertified, and whether or not they are acting in an official capacity. For instance, Art. 26, Sec. 2, reads as follows:

> Any person who neglects or refuses to perform the duties required of him by this act, or who violates any of the provisions or requirements thereof, shall be deemed guilty of a misdemeanor and shall, upon conviction thereof, in the Court of Quarter Sessions of the County in which the misdemeanor was committed, be punished by a fine not exceeding two hundred dollars, or imprisonment in the county jail for a period not exceeding three months, or both, at the discretion of the court. Any violation of this act which has been declared to be a misdemeanor by any part thereof shall be punished in like manner.

It is true that this section of the law gives the court a fairly wide latitude in determining the degree of the offense and the extent of the penalty to be imposed. At the same time, it cannot be denied that, notwithstanding this flexibility, it does provide a penalty regardless of the violator being a certified or an uncertified official, or merely a mine worker acting in no official capacity.

Many Records of Penalties Imposed for Violations of Law

The fact that all mine workers are subject to penalty for neglect of duty or other violations of the law's requirements can be readily verified by reference to the annual reports of the Department of Mines. In them will be found records of the violations of law and the penalties imposed, ranging from a severe reprimand to the payment of costs and fines and possible imprisonment, including the loss of the certificate held by the transgressor.

It is interesting to note that the list of violators' names, in these reports, includes operators, superintendents, mine foremen, assistant foremen, firebosses, shotfirers, pumpmen, shiftbanks and miners. The record shows that no individual in the mine is exempt from punishment when the misdemeanor with which he is charged is proven before the proper authorities.

The inference to be drawn from the penalty, prescribed in the law, of the withdrawal of the certificate of a man found guilty of any violation, is that such certified men no longer come under the category of competent mine foremen who are capable of efficient service in promoting the health and safety of employees and protecting mine property.

It is further implied that the violator no longer possesses those qualifica-

of character that the law requires and which are demanded by the general public as a guarantee of their fitness to hold positions of trust and responsibility. The recall of the certificate by the court reduces the certified man to the level of an ordinary workman.

The certified man naturally becomes the greater loser, by the forfeit of this certificate; but both are liable to the same penalty for their offense, depending wholly on the degree to which they have violated the law in the determination of the court. If awarded the maximum penalty it is highly improbable that either of these men would be permitted to appear before an examining board, later, without being able to give satisfactory evidence that they had reformed. ALEXANDER WAUGH.

Finleyville, Pa.

Engine Plane Haulage

Correcting a previous misstatement regarding the load on the haulage rope when a four-car trip has reached the steep incline at the head of an engine plane.

KINDLY permit me to draw attention to an error in the last paragraph of the reply to my inquiry on haulage, *Coal Age*, Mar. 31, p. 586. It is quite evident that when the 4-car trip has reached the steep incline having a grade of 36 per cent, assuming a track resistance of 30 lb. per ton and the grade resistance being 20 lb. per ton for each per cent of grade, the total resistance per ton for that grade is $36 \times 20 + 30 = 750$ lb instead of 370 lb. per ton, which was the estimate for the 17 per cent grade.

This would make the total load on the rope on the steep grade when hauling a four-car trip of 40,000 lb., or 20 tons, $(20 \times 750) \div 2{,}000 = 7.5$ tons. While this is below the allowable working stress of a 1⅛-in. cast-steel, haulage rope, previously estimated as 8 tons, it appears that the load on the coupling between the first and second cars is greater than the estimated strength of the ⅝-in. wrought-iron coupling, estimated to have a working stress of 4.4 tons.

For example, the weight of the three cars supported by this coupling is $3 \times 5 = 15$ tons; and the load on the coupling is therefore $(15 \times 750) \div 2{,}000 = 5.6$ tons. It will be necessary, therefore, in that case to use 1-in. wrought-iron couplings having a working stress of 6 tons, if I am correct.

Plains, Pa. RICHARD BOWEN.

[We are glad Mr. Bowen has drawn attention to this inadvertence in respect to the steep grade at the head of the incline. In this connection it should be stated that track and grade resistances estimated in pounds per ton refer to the normal pressure of the load on the track, which varies with the cosine of the grade angle. The angle corresponding to a 36 per cent grade is that whose tangent is 0.36, or 19° 48′; and its cosine is 0.94088.

In this case, therefore, the normal pressure of a four-car trip, weighing $4 \times 5 = 20$ tons, on the steep grade is $20 \times 0.94 = 18.8$ tons. The load on the rope is then $(18.8 \times 750) \div 2{,}000 = 7$ tons. This is less than the safe working stress of a 1⅛-in. rope which was previously estimated and is given in rope tables as 8 tons.

But the load on the first coupling supporting three cars weighing $3 \times 5 = 15$ tons, is $(15 \times 0.94 \times 750) \div 2{,}000 = 5.3$ tons and the safe working stress of ⅝-in. wrought-iron coupling is only $6(\frac{5}{8})^2 = 4.59$ tons. It will, therefore, be necessary to use 1-in. couplings having a safe working stress of $6 \times 1^2 = 6$ tons.—EDITOR]

Inquiries Of General Interest

Robbing Pillars with Machines

To Insure Greater Safety of the Men and a More Complete Extraction of the Coal in the Retreating Plan of Mining Should the Pillars Be Cut on the Inby or the Outby Rib?

LOOKING over the back numbers of *Coal Age* a short time since, I came upon an examination question that asked for the best method of extracting pillars by machine, under ordinary conditions of roof and floor. (Vol. 1, p. 981.) Kindly permit me to offer a few comments in criticism of the method suggested in answer to this question.

In that reply, as shown in Fig. 1, the butt headings are driven to the boundary line and the extraction of the coal is on the retreating plan, which is, of course, correct. The rooms however, are shown as widened on the inby side or to the left, while the track and straight rib are on the right. The machine cut is then started in the straight rib at the side of the track, which is the inby rib of the pillar.

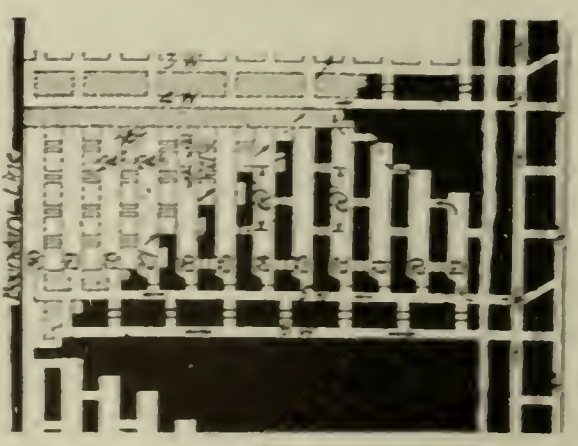


FIG. 1. MACHINE STARTS TO CUT ON INBY RIB OF PILLAR

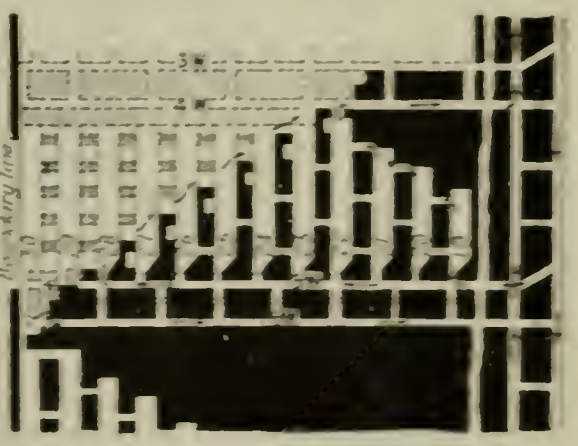


FIG. 2. MACHINE CUT STARTED ON OUTBY RIB OF PILLAR

This, it seems to me, is contrary to the usual method of procedure. My suggestion is that the rooms should be widened outby or to the right, leaving the straight rib and track on the inby side of the room to the left. The machine cut will then be made in the outby rib of the pillar, in which position the men will be fully protected.

To make my meaning more clear and for the sake of comparison I have prepared a duplicate sketch (Fig. 2), showing the rooms widened outby and the track and straight rib on the left, which I believe is the more common practice. Then, when the work of drawing the pillars is started and the fracture line established about as shown in both Figs. 1 and 2, the machinemen will be protected by the solid coal behind them.

In comparing these two methods, it will be seen that the plan shown in Fig. 1 necessitates the cut being made on the inby side of the pillar where the men are exposed to the falling roof behind them. This, I believe, is wrong, as their only protection would be the timbers behind them and the stump of coal 9 or 10 ft. thick, in the end of the pillar, beyond the cut made by the machine.

It is possible that I do not understand the conditions fully; but, as this method of drawing the pillars does not accord with our practice here, I would like to see the two methods discussed in *Coal Age*, keeping in view both the safety of the men and the complete extraction of the coal.

It is understood, of course, that as each room reaches the limit it is driven through the chain pillar to the aircourse above, which provides for the circulation of the air around the pillar. The work of drawing back the pillars is then started, say 3 or 4 yards back, by cutting though the pillar with machines a width of 6 or 7 yards.

After cutting through the pillar with the machine, the stub of coal remaining is removed by the pick. I may say that

we are working under a 1,200-ft. cover and it is very often that all of the stumps butted off by the crosscut is recovered with the pick, notwithstanding this heavy roof pressure. In my opinion, it would be impossible to adopt the method shown in Fig. 1 and I shall be glad to hear from others.

J. D. ROGERS,
Chief Engineer,
Stonega Coke & Coal Co.
Big Stone Gap, Va.

We are glad to see this proposition brought forward for discussion. The question assumes ordinary conditions of mining with respect to roof and floor, and it may be taken as referring to seams having little or no inclination.

Assuming that the retreating plan is adopted and the butt headings driven to the boundary line before any rooms are turned, the question is, which is the better plan to adopt, keeping in mind the safety of the men and the complete extraction of the coal? Should the rooms be widened inby and the cut started on the inby rib of the pillar, as shown in Fig. 1, or should the work proceed as shown in Fig. 2?

Proceeding as in Fig. 1, it is true that the machine men have the gob behind them and are protected only by the timbers or posts set behind them and the entry stub on their left. This, however, is far better protection than is often possible in the work of drawing back the pillars when cutting the end of the pillars with machines or with the pick.

On the other hand, by adopting the method shown in Fig. 2 while the men are afforded somewhat better protection while cutting through the pillar, it is a serious question whether they will be as well protected in taking out the stump of coal with the pick, as in the first method. It is also doubtful if the second method will afford as complete an extraction of the remaining stump as is possible in the first method. This is a good question for discussion and we hope will receive the attention from *Coal Age* readers it demands.

Examination Questions Answered

Miscellaneous Questions Asked at Anthracite Examinations

(Answered by Request)

QUESTION—*What mechanical equipment in and about the mines is entirely under the charge and care of the mine foreman?*

ANSWER—The Anthracite Mine Law, Art. 12, Rule 3, gives the mine foreman the entire charge of all matters pertaining to the ventilation of the mine. This places all equipment used in producing, conducting and distributing the air currents in the mine, wholly under the control of the foreman, and includes all ventilators of every description, doors, air bridges, regulators, brattices, etc.

QUESTION—*What is the rubbing surface of a road 8 ft. 6 in. wide, by 6 ft. 9 in. high and 3,000 ft. long?*

ANSWER—The perimeter of this road is $2(8.5 + 6.75) = 30.5$ ft. Then, the rubbing surface of the airway is $3{,}000 \times 30.5 = 91{,}500$ sq.ft.

QUESTION—*What are safety blocks? Where are they required and how are they to be maintained? When shall traffic be suspended on a gravity plane?*

ANSWER — A safety block is a block used to obstruct a road, so as to prevent the passage of a car on the track. They are required at the head of a shaft, slope or incline plane. Care must be taken to keep such blocks in good working order. The anthracite law provides that all traffic must cease on any slope or plane, whenever ten persons have arrived at the head or the bottom of the incline, and it is necessary for them to pass up or down the plane on their way out or into the mine.

QUESTION—*What percentage of gas (CH_4) in a mine atmosphere makes it explosive; and what percentage of carbonic acid gas (CO_2) makes an explosive mixture non-explosive?*

ANSWER — The percentage of pure methane (CH_4) that will render pure air explosive is commonly taken as 7.14 per cent, or when the proportion of gas to air is 1:13, which is called the lower explosive limit of the gas. This answer refers only to pure air and the absence of other gases. With a less percentage of gas in air the mixture is inflammable but not explosive.

When a firedamp mixture is at its maximum explosive point it is estimated that one-seventh of its volume of carbonic acid gas (carbon dioxide, CO_2) will render the mixture non-explosive.

QUESTION — *A breast is driven up a distance of 362 ft. on a pitch of 58 deg.; what is the vertical height at the face of the breast, and what distance will it show on the map or mine tracing plotted according to law?*

ANSWER—The vertical height or rise at the face of this breast is $362 \times \sin 58° = 362 \times 0.848 =$ say 307 ft.

The horizontal distance corresponding to a measurement of 362 ft. on a pitch of 58 deg. is $362 \times \cos 58° = 362 \times 0.53 = 191.86$ ft. The anthracite law requires a mine map to be drawn to scale of 100 ft. to the inch, which would make the length of this breast, say 1.92 in., on the mine map.

QUESTION — *What method would you adopt for obtaining a large amount of air with but a small water gage?*

ANSWER—To obtain a large volume of air under a small water gage or unit pressure, in a given mine or airway, it is necessary to increase the area of passage of the ventilating current through the mine, and thereby reduce the velocity of the current to a minimum. This is accomplished by splitting the air current one or more times.

QUESTION—*An airway 12 ft. wide at the bottom, 10 ft. wide at the top and 6 ft. high has a velocity of 340 ft. per min.; what is the sectional area of the airway and the quantity of air passing per minute?*

ANSWER—The average width of this airway is $\frac{1}{2}(10 + 12) = 11$ ft.; and its sectional area $6 \times 11 = 66$ sq.ft. Assuming the velocity given is an average for the entire cross-section of the airway, the volume of air passing is $340 \times 66 = 22{,}440$ cu.ft. per min.

QUESTION—*A pump at the bottom of a slope 450 ft. long, on an angle of 35 deg., throws the water to the surface through a column pipe 8 in. in diameter; what is the pressure per square inch on the pump?*

ANSWER—The vertical rise of this slope is $450 \times \sin 35° = 450 \times 0.57358 = 258+$ ft.; and allowing, say 7 ft. for suction, the discharge head is 265 ft. and the static pressure $265 \times 0.434 = 115$ lb. per sq.in.

When the pump is in operation, however, it is necessary to add to the static the sum of the friction and velocity heads. Estimating on a velocity of 400 ft. per min. in the discharge pipe, which is customary in mining practice, the friction head is equal to the length of the discharge pipe, in feet, divided by three times its diameter, in inches; or in this case, $450 \div 3 \times 8 = 18\frac{3}{4}$ ft. The velocity head is $V^2/2g = (400/60)^2 \div 64.32 = 0.69$, say $\frac{3}{4}$ ft.; and the sum of these is $18\frac{3}{4} + \frac{3}{4} = 19\frac{1}{2}$, say 20 ft.

The total effective head on the pump, therefore, when it is in operation is $265 + 20 = 285$ ft. The pressure due to this effective is $285 \times 0.434 = 123.69$ lb. per sq.in.

QUESTION—*A train of cars with its load weighs 8,570 lb., what is the load on the rope when hoisting on a slope pitching 32 deg?*

ANSWER—The load on the hoisting rope is the sum of the track and grade resistances estimated on the normal pressure of the load on the incline, which is $8{,}570 \times \cos 32° = 8{,}570 \times 0.848 = 7{,}267+$ lb., say 3.6 tons.

Assuming a track resistance of, say, 25 lb. per ton, the grade resistance per ton, for this grade, being $20 \times 32 = 640$ lb., the total resistance is $640 + 25 = 665$ lb. per ton of normal pressure. The load on the rope is, therefore, $3.6 \times 665 = 2{,}394$, say 2,400 lb.

Regrouping of Administrative Units Prescribed for Elimination of Waste in Government

Inefficiency, Palpable to American Engineers for Many Years, Brought Glaringly to Light by the War — Reorganization Must Be Directed to Averting Overlapping of Functions — Support of Public Opinion Indispensable to Results

By Herbert Hoover*

THERE is one problem of the new administration that has received the attention and thought of the organized engineers of America for many years past. This is the problem of the reorganization of the federal government. The inadequacy, the wastefulness, and the inefficiency of our federal organization was evident enough under pre-war conditions. These inadequacies, these inefficiencies, these wastes were exhibited to the country during the war at the cost of millions.

Congress has placed the problem in the hands of a very able congressional joint committee. But if this joint committee succeeds in securing the imminently necessary results it will only be by full insistent support to it by public opinion. Many attempts have been made at reorganization before, but all of them have gone to the same crematory—the interminable differences in opinion among the executive and legislative officials over details.

To any student of federal organization one sweeping and fundamental necessity stands out above all others, and that is that the administrative units of the government must be regrouped so as to give each of the great departments more nearly a single purpose. The hodge-podge of aims in certain administrative branches is scarcely believable when we consider our national pride and skill in organization. Such functions as public domain, public works, assistance to veterans, public health functions, aids to navigation, to industry, to trade, purchasing of major supplies, are each and every one scattered over from four to eight departments, most of which are devoted to some other major purpose.

Economy Possible by Unification of Effort

Economies can be accomplished from a public point of view by an elimination of the overlap in these different units of administration through unification into groups of similar purpose. The real economy to the nation, however, does not lie here, however great this may be, but it lies in their more effective functioning in their daily relation to the public. The extra cost imposed upon business in general in the determination of the relation of any particular business to the different functions of the government, with the unnecessarily duplicating interferences and demands, is a real charge on national wealth, probably as great in some directions as the actual costs of the administrations themselves.

Of equal importance with economy is to secure effective concentration of government effort into service to the community. No constructive vision or policies can be built around a national service directed by from two to ten Cabinet members, more especially when this particular purpose is a side issue to all of them. No better example of this exists than the deplorable handling of our relations to our veterans.

There are other reasons that render reorganization imperative. The changed economic situation of the world demands that the functions of the government in aid to commerce and industry be given more concentration and wider scope.

The enlarged activities of the government as a result of the war greatly affect certain departments. The Treasury today as the fiscal office of the government must handle an annual budget of $5,000,000,000 as compared with $1,000,000,000 pre-war. Activities of the army have increased from a budget of $200,000,000 to $400,000,000; activities of the navy have increased from a budget of $125,000,000 to $425,000,000. Thus the burden and responsibilities for the major purposes of these departments have been enormously increased. I believe it is the consensus of opinion of the gentlemen conducting these departments that in the interests of efficiency they should not be called to responsibility for the administration of at least some of the matters not pertinent to their major functions which clutter their departments.

Advisory Bodies Assume Executive Functions

We have also some confusion between executive, advisory, and semi-judicial functions. One of the tendencies of government, both local and national, during the last twenty years has been to add executive functions to commissions and boards created primarily for advisory or regulatory purposes. It requires no argument with our business public that the executive functions cannot rise to high efficiency in the hands of government boards where from the very nature of things each member has a separate responsibility to the public and is primarily engaged in a semi-judicial function.

Furthermore, during the last few years there has been a great growth of independent agencies in the government reporting directly to the President until his office is overburdened almost beyond the point of endurance. The original and sound conception was that the executive functions should be reported up to the President directly through his Cabinet officials. Not only do these outside functions today overburden the President but they render co-ordination with executive departments extremely difficult. It is neither possible nor advisable to place all these outside organizations into the departments, but much could be done to mitigate the situation.

One of the great steps in federal reorganization is the erection of a budget system, with its necessary reorganization of the congressional committees. There can be no doubt as to the early accomplishment of this great reform, but it will not serve its real purpose until the departments have been reorganized so that they represent a common purpose. Without this Congress will never have before it budgets showing the expenditure of the government in its relation to any particular function.

Hardy Mariner Subjected to Sore Trial

I have daily evidence in the Department of Commerce of all these forces. The question of governmental aids to navigation is not by any means one of the principal functions of our government, but it must be a sore trial to the hardy mariner. He must obtain his domestic charts from the Department of Commerce, his foreign charts from the Navy Department, and his nautical almanac from the Naval Observatory—and he will in some circumstances get sailing directions from the army. In a fog he may get radio signals from both the Navy and Commerce and listen to foghorns and look for lights and buoys provided him by Commerce; if he sinks his life is saved by the Treasury. He will anchor at the direction of the army, who rely upon the Treasury to enforce their will. His boilers and life-boats are inspected by the Department of Commerce; his crew is

*Address delivered before Philadelphia Engineering Club, April 16, 1921.

certificated by one bureau in Commerce, signed off in the presence of another, and inspected at sailing by the Treasury, and on arrival by the Department of Labor.

It is possible to relate the same sort of story in our governmental relations to industry and to our domestic and foreign commerce.

The moral of all this is that economy could be made by placing most of these functions under one head, not only economy to the government but to the mariner. Congress would know what it spends in aid to navigation and the government could develop definite policies in giving proper assistance, and lastly could remove from the hardy mariner's mind his well-founded contempt for the government as a business organization.

The economic changes in the world growing out of the war and their reflex upon our trade and industry make it vital, if we are to maintain our standards of living against increasing ferocity of competition, that we shall concentrate and enlarge our national effort in the aid, protection, stimulation and perfection of our industrial and commercial life. There can be no real Department of Commerce or commercial policies to these broad purposes so long as the instrumentalities of the government bearing on these questions lie in half a dozen departments.

We want no paternalism in government. We do need in government aids to business in a collective sense. In a department we do not want either to engage in business or to regulate business. We need a department that can give prompt and accurate diagnosis from both a foreign and domestic point of view of economic events, of economic tendencies, of economic ills; that can promptly and accurately survey economic opportunity, economic discrimination and opposition; that can give scientific advice and assistance and stability to industry in furnishing it with prompt and accurate data upon production, supplies and consumption; that can co-operate with it in finding standards and simplifications; that can by broad study promote national conservation in industry and the elimination of waste; that can study and ventilate the commercial side of our power possibilities; that can study and advise national policies in development of rail, water, and overseas transportation; that, in fact, covers, so far as government functions can cover, the broad commercial problems of trade, industry, and transportation. This can be accomplished more by co-ordination of existing governmental facilities than by increased expenditures.

Herbert Hoover Resigns Engineering Presidency; Industrial Waste Report in June

HERBERT HOOVER has resigned as president of American Engineering Council of the Federated American Engineering Societies. His resignation was submitted and accepted as the closing action of the sessions of the council held April 16 at the Engineers Club of Philadelphia.

Mr. Hoover gave as his reason the fact that American Engineering Council by its constitution was necessarily engaged in furthering national activities which involve legislation; and that he as a member of the executive branch of the government could not consistently direct such activity as an officer of American Engineering Council.

The council, in a resolution of regret at Mr. Hoover's retirement, voted its appreciation of Mr. Hoover's leadership during the organization period of the council and his initiation of policies and effort.

The meeting of the council was one of the most important yet held.

One of the most important matters before the council was the report of the Committee on Elimination of Waste in Industry, of which J. Parke Channing is chairman and L. W. Wallace, executive secretary of the council, vice chairman. The committee has been conducting an assay of waste in principal industries for more than three months under the direction of Mr. Wallace. The work has been conducted from the temporary headquarters in New York. The first reports of the assay will be ready in June. These reports are being put into final form at the permanent offices of the council in Washington, 719 Fifteenth Street.

The next meeting of the Council will be held in St. Louis June 3. This meeting probably will be the most important yet held by the society. It will synchronize with the report on the waste assay and will mark another progressive stage in the work of organization. For the intervening period Mr. Wallace and his associates have mapped out a vigorous campaign of constructive effort.

American Engineers Will Confer John Fritz Medal on Sir Robert Hadfield in London

TO EXPRESS the obligation which the world owes to the engineers of Great Britain for the part they played in winning the war the organized engineers of America will send a mission to London this summer. This mission, consisting of nationally known engineers and representing the so-called Founder Societies of the Federated American Engineering Societies, will make the award of the John Fritz medal to Sir Robert Hadfield at the opening meeting of the British Institution of Civil Engineers on June 29. The inability of Sir Robert to come to the United States to receive the medal moved the trustees of the board to make the ceremony of presentation in England the occasion for an international expression of appreciation by the engineers of the United States to the engineers of Great Britain.

The deputation to England will consist of a representative of each of the four Founder Societies represented on the John Fritz Medal Board of Award, as follows: Charles T. Main, of Boston, the American Society of Civil Engineers; Colonel Arthur S. Dwight, of New York, the American Institute of Mining and Metallurgical Engineers; Ambrose Swasey, of Cleveland, the John Fritz Medal Board of Award and the American Society of Mechanical Engineers; Dr. F. B. Jewett, of New York, the American Institute of Electrical Engineers. Dr. Ira N. Hollis, president of Worcester Polytechnic Institute and past president of the American Society of Mechanical Engineers, will accompany the deputation and bear the message from the American engineers.

The John Fritz medal is a gold medal presented for achievement in applied science as a memorial to the engineer whose name it bears. Previous recipients of the medal have been John Fritz, Lord Kelvin, George Westinghouse, Alexander Graham Bell, Thomas Alva Edison, Charles Talbot Porter, Alfred Nobel, Sir William Henry White, Robert Woolston Hunt, John Edson Sweet, James Douglas, Elihu Thomson and Henry Marion Howe.

The medal is awarded to Sir Robert Hadfield this year because of his invention of manganese steel. The medal was established by the professional associates and friends of John Fritz, of Bethlehem, Pa., on Aug. 21, 1902, his eightieth birthday, to perpetuate the memory of his achievements in industrial progress. There are no restrictions on account of nationality or sex. The trust funds supporting the medal are held and administered by a board of sixteen directors, consisting of four from each of the four national engineering societies represented on the mission to England.

Idle Freight Cars Continue to Increase; Unused Coal Cars Most Numerous

PREVIOUS records for the number of surplus or idle freight cars on the railroads of the United States were again broken during the week ending April 8, according to reports compiled by the car service division of the American Railway Association. The number of cars for which there was no freight averaged 507,427, or approximately 21 per cent of the total freight cars owned by the railroads of the United States. This is an increase of over 11,000 cars as compared with the previous week and an increase of 210,000 cars since the first of the year. Of the total number of idle cars 261,294 were coal cars, an increase of about 6,000 cars in a week, while there were 176,916 surplus box cars, an increase in a week of 5,000.

At the time of the business depression in 1919, following the armistice, the number of surplus freight cars reached 451,739 for one week of March.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

AN INDICATION that business conditions throughout the country are getting better is found in the fact that the volume of distribution by jobbers and retailers showed a distinct gain in March over February, says Archer Wall Douglas, chairman of the Committee on Statistics and Standards of the Chamber of Commerce of the United States. Mr. Douglas reports at length on the business situation in the May number of *The Nation's Business*. The whole tone of the report is optimistic. He points out many signs as indicative of an improvement in the situation and as tending to foreshadow a return to more settled and stable conditions. Some of the most striking points in Mr. Douglas' report are:

"The most significant, and possibly most cheering feature of the situation is that the automobile business seems to have been not dead but sleeping. There is a resumption of operations in a modest way by some factories which were shut down.

"There is a better demand for lumber and prepared roofing and paint because of somewhat more building and construction. There is more building going on in the cities than in the country, and there will not be much construction of any description on the farms until another harvest has shown the farmer where he stands.

"Manufacturing is running mostly on short time. In the shoe trade the demand for women's shoes is much better proportionately than for men's footwear.

"Excessively high railroad rates are one of the serious handicaps of the situation, while they likewise fail in their original purpose of providing adequate revenue for the roads. They are prohibitory in their effects. In some cases, especially those of early fruits and vegetables from the far South to Northern and Western markets, the cost of transportation is from four to five times the price received by the producer.

"Winter wheat is in unusually fine condition. There will be much less cotton acreage planted this year than last. The crop will receive less fertilizer than last season, but much greater intensive cultivation. There will be more of a diversified crop in the South this year. The farmer is economizing as he has never done before. He is making greater use of the horse, and leaving the automobile in the barn. But while he is economizing on some things he is also buying somewhat more freely, especially the farmer in the grain regions. This is a healthy sign, for the genuine beginning of better times is likely to come from agricultural rather than industrial life."

Velvet Weavers End Strike

A weavers' strike at the American Velvet Co.'s mill, Stonington, Conn., which has made 500 persons who received $37,000 a month idle since Dec. 28, ended April 15. The grievance was over operating looms and a conference on the latter date found a basis for compromise.

$4,000,000 Glass Company Formed

Incorporated with a capitalization of $4,000,000 under Ohio laws, the United States Sheet & Window Glass Co. proposes building extensive additions to its manufacturing plant at Morgantown, W. Va. The new organization has another plant at Shreveport, La. It operates its works under the patents of the Libby-Owen interests.

Boston & Albany Shops Reopen

The West Springfield (Mass.) locomotive shops of the Boston & Albany Railroad, employing 435 men, reopened April 25 after a month shutdown.

Ford Plant Nearing Normal

By May 1 the Ford Motor Car Co. plant at Highland Park, near Detroit, will be running at normal capacity, an official stated April 20. Approximately 37,000 men are now at work, according to payroll figures. Hundreds more will be added daily until the full quota is reached, it is stated. Monday and Tuesday, April 18 and 19, six hundred men were added and 500 more went to work April 20. The plant is producing about 4,000 cars a day, this official said, and expects to reach the former high mark of 5,000 daily within a few weeks. More than 100,000 unfilled orders are on hand.

Bigelow Carpet Mills Resume

Officials of the Bigelow-Hartford Carpet Co. reported that the mills at Thompsonville, Conn., were working April 19 with nearly full forces in all departments. The plant had been closed since Feb. 28 as a result of a strike of the organized employes in three departments of the factory. The company's unorganized employes number about 1,300, and the organized men number about 1,200.

Farr Alpaca Co. on Full Time

Announcement was made Monday, April 18, that the Farr Alpaca Co., Holyoke, Mass., employing 2,700 operatives, had resumed full-time operation in all mills. One mill had been running full time for two weeks and the other two had been running four days a week. The concern is one of the largest in Holyoke.

Rubber Co. Will Reopen on May 9

The Alice Mill of the Woonsocket Rubber Co., a branch of the United States Rubber Co.'s footwear division, at Woonsocket, R. I., will reopen in part on May 9, after having been closed nearly three months, officials announced April 18. A five-day week with 1,200 of the normal force of 1,800 persons employed is planned.

Tire Fabric Plant Hums Again

The New Bedford Spinning Co., closed for the last six months, resumed operations Wednesday morning, April 20, on a weekly schedule of forty-eight hours. The plant has 25,000 spindles and employs 300 hands, engaged chiefly in the manufacture of tire yarns.

Sixteen Hot Mills to Start

Sixteen hot mills of the Farrell works of the American Sheet & Tin Plate Co., at Sharon, Pa., will be put in operation May 2, Superintendent Thomas O'Brien has announced. More than 1,000 men are employed at the plants, which are half the mills of the Farrell works.

Cleveland Municipal Light Plant, Receiving Coal Bids, Insists on 100 Per Cent Delivery

BIDS were opened April 14 for supplying the city of Cleveland municipal light plant with the following amounts of coal: (1) For a period of one year, 108,000 net tons; (2) for a period of nine months, 81,000 net tons; (3) for a period of six months, 54,000 net tons.

Specifications provided for a 100 per cent performance of contract, regardless of strikes, walkouts or any other interruptions, the city to bill contractor with the difference between prices paid and contract figures, should failure of the seller to deliver make it necessary that any purchases be made in the open market. The bids submitted were as follows:

	— Item No. 1 — (1 Year)			— Item No. 2 — (9 Mos.)			—Item No. 3— (6 Mos.)						
Company	F.o.b. Mines	Frt.	Del'd	F.o.b. Mines	Frt.	Del'd	F.o.b. Mines	Frt.	Del'd	Kind of Coal	Mine or Mines	Location	Per Cent
A. F. Baier Coal Co..	...	....	....	327	161	488	320	161	481	N.&S. or	Grant M.	Salineville, O.....	100
	...	....	....	234	253½	487½	227	253½	480½	Cr. R.M.	Barren Fork	Barren Fork, Ky.	...
Verner Coal & Coke Co.	274	205½	479½	270	205½	475½	260	205½	465½	N.&S.	Verner M.	Bulger, Pa.	50-100
	310	205½	515½	298	205½	503½	290	205½	495½	Cr.R.M.	Ferguson	Cliftonville, W. Va.	50-100
	250	189	439	245	189	434	240	189	429	Cr.R.M.	Tasa Mine	Hurford, O.	100
Myers Coal & Coke Co.	322	161	483	312	161	473	292	161	453	N.&S. or Cr.R.M.	Kird Mine	Salineville, O.	
Maher Collieries Co..	...	....	....	...	....	....	225	189	414	N.&S. or Cr.R.M.	Nos. 1-2-3	Glencoe, O.	100
	...	....	....	...	....	....	225	189	414	N.&S. or Cr.R.M.	No. 5	Stewartsville, O.	
	...	....	....	...	....	....	225	189	414	N.&S. or Cr.R.M.	No. 6	Neffs, O.	
	...	....	....	...	....	....	225	189	414	N.&S. or Cr.R.M.	Nos. 7-9-10	Willow Grove, O.	
	...	....	....	...	....	....	225	189	414	N.&S. or Cr.R.M.	No. 12	Maynard, O.	
A. Geo. Enos Coal Co.	...	....	....	314	161	475	300	161	461	N.&S. or Cr.R.M.	Strabley No. 1	Salineville, O.	
	...	....	....	314	161	475	300	161	461	Cr.R.M.	Mullens No. 2	New Phila., O.	
Valley Camp Coal Co.	275	189	464	275	189	464	275	189	464	N.&S. or Cr.R.M.	Oce Mine	Lafferty, O.	As required
	275	189	464	275	189	464	275	189	464	N.&S. or Cr.R.M.	Lucy Mine	Stewartsville, O.	
	275	274	549	275	274	549	275	274	549	N.&S. or Cr.R.M.	Kelly Crk.	Ward, W. Va.	
	275	203	478	275	203	478	275	203	478	N.&S. or Cr.R.M.	Elm Grove	Elm Grove, W. Va.	

150 privately owned cars in conjunction with waterworks contract.

Tax Provided by Anthracite Bill Reduced; Measure Passes Lower House

FOLLOWING a hearing on Governor Sproul's bill to tax anthracite at the mine, held before the House Ways and Means Committee in Harrisburg, Pa., Wednesday, April 11, Representative Dawson, of Lackawanna, chairman of the committee, obtained the Governor's assent to the introduction of several amendments to remove some of the objections raised.

As altered, the bill cuts the tax from 2½ per cent to 1½ per cent and permits passing this tax to the consumer. There has been no charge regarding exemption of coal used at the mines, but it is held that this coal is exempt under the original language of the bill.

Speakers for the operators at the hearing, held Wednesday, April 13, were W. S. Jenney, of the Delaware, Lackawanna & Western R.R. Co., and W. H. Williams, vice-president of the Hudson Coal Co. They were supported by Wellington Bertolet, representing state and national retailers, and Mark K. Edgar, secretary of the Scranton Board of Trade.

Mr. Jenney said the tax would cost his company $1,000,000 a year and the bill would open the way for further legislation to tax the anthracite companies out of existence. He referred to Governor Sproul's suggestion of taxing both bituminous coal and anthracite, because any other plan would be unconstitutional, and he contended this was evidence the proposed bill was unconstitutional. Mr. Willliams said that his company is now paying taxes of about $1,400,000 a year and the annual profit does not average more than 8 per cent.

On Wednesday, April 20, the bill passed the lower house of the Pennsylvania Legislature by a vote of 125 to 63.

The measure was opposed by Assemblymen from the anthracite coal regions, who declared it would impose an unjust tax on one of the chief industries of the commonwealth.

Mr. Williams, Tioga, sponsor of the bill, said it was time the state was getting a return in revenue from its natural resources. He emphasized the fact that but 25 per cent of the tax proposed would fall upon citizens of Pennsylvania, inasmuch as the greater amount of the output is shipped outside the State, and the burden of the tax would fall upon non-residents.

Railroads' Coal Cost $641,224,469 in 1920, Compared with $390,036,556 in 1919

CHARGES of profiteering in coal do not seem to be borne out by a report of the Interstate Commerce Commission to the Senate giving cost of fuel to railroads in 1920, compared with 1919. The report shows that the delivered cost of bituminous coal for the country as a whole was $3.15 in 1919 per net ton and $4.13 in 1920, an increase of 98c. a ton. There was an increase of 66c. per ton for contract coal and $1.70 for spot coal at the mines. The increases were greater in New England than any other region, being $2.92 per ton for bituminous delivered and $1.27 for contract and $3.79 for spot coal at the mines. Anthracite coal delivered cost the railroads 73c. per net ton more than in 1919.

The report shows that in 1920 the roads purchased 125,486,545 tons of bituminous by contract, as against 107,526,005 tons in 1919. They purchased 29,857,090 tons of bituminous in the spot market in 1920, as against 16,381,503 tons in 1919. The cost of the coal in 1920 was $641,224,469 as against $390,036,556 in 1919.

For bituminous the highest delivered price in 1920 was $8.09 per ton in New England, as against $5.17 in 1919. The lowest delivered price was $3.52 in the Central West. The highest price on contract at mines for bituminous was $3.79, in New England, and the lowest was $3.08, in Southern territory. The highest spot price at the mine was $6.25, in New England, the lowest $3.38, in the Central West.

The commission says that for anthracite the highest delivered price was $12.79, in Southern territory, and the lowest $4.05, in the Great Lages region. At the mines the highest price was $11.92, for the Northwest, and the lowest $4.10, for Ohio, Indiana and the Allegheny regions. The roads purchased in 1920 a total of 5,779,819 tons of anthracite at an average of $4.20 delivered and $4.17 at the mines. For 1919 the purchases of anthracite totaled 4,796,353 tons at $3.47 delivered and $3.25 at the mines.

What Has Happened to Lake Cargo Rates and Why They Should Be Revised Downward

By Wayne P. Ellis*

BECAUSE of the present abnormally high level of freight rates applying on Lake cargo coal, shippers of this class of traffic are given real reason to be gravely concerned over their business via the Lakes during the coming season, particularly on such coal destined to consuming points in Michigan, Minnesota, Wisconsin, North Dakota. South Dakota and Iowa. The enormous advances in freight rates which have taken place since Jan. 1, 1917, have placed such a heavy burden on the Lake coal traffic that the coal-dock operators in Minnesota and Wisconsin are finding it increasingly difficult this season to locate a market for their coal in the above-named states.

During the years 1917 to 1920, inclusive, freight rates did not enter largely into the calculations of the coal seller or buyer. During that period the coal consumer generally found himself in one of three positions: either without enough coal to keep his plant running regularly on account of increased demand, as in the first half of 1917 and in 1920; with coal rationed to him during government control of fuel prices and distribution, as in the latter half of 1917 and in 1918; or with coal in storage and his plant shut down or on short running time, as in 1919. In none of these conditions was it necessary to pay close attention to freight charges, and the result in the majority of cases was the unprotested payment of all that was asked by the railroads. Likewise, during this period the coal shipper was not seriously concerned about freight rates, his time being directed to the operation of his mines to the fullest capacity or to making ends meet during the 1919 period, when his mines were closed down for approximately half of the year.

The coal business, however, is drifting back to normal, when competition between producing districts will enter into the sale of the product. The Lake cargo market has become one of the most keenly competitive with which the coal shipper has to deal. The only coal produced in the so-called Northwest dock states is lignite from North Dakota mines, a product that because of its character cannot be shipped with profit long distances. They are, therefore, for the most part dependent on coals produced in other territories, receiving their fuel supply from Canada, Wyoming, Montana, Illinois, Iowa and Indiana and from Eastern mines over the coal docks at the Head of the Lakes.

Transportation Charges on Coal Compared

For the purpose of this article, attention will be directed solely to the past and present transportation charges on Lake cargo coal to destinations in the Northwestern States, in which it is most largly distributed, with a few comparisons with rates on competitive coals.

Tables I and II, showing the tonnage of Lake cargo coal shipped from each originating district and by each originating railroad for each year during the period 1910 to 1920, inclusive, are included principally for the purpose of directing attention to the large amount of such coal moved during the Lake season and the shifting of tonnage from one district to another. It should be remembered that about 70 per cent of the total Lake cargo tonnage reaches upper Lake docks and about 50 per cent is reshipped from those docks for general commercial use.

The question of Lake cargo rates was first brought to the attention of the Interstate Commerce Commission in 1911. In the so-called Boileau case, involving the Lake rate from the Pittsburgh district to Ashtabula Harbor, the commission decided on March 11, 1912, that the attacked rate of 88c. per ton was unjust and unreasonable to the extent that it exceeded 78c. On the same date it decided in "I. & S. Docket 26, proposed increases in Lake cargo," that rates from the originating districts served by the Baltimore & Ohio, Kanawha & Michigan and Chesapeake & Ohio Rys. had not been justified, but that those from the Norfolk & Western districts had been.

As a result of the decision in the Boileau case the rates from the Ohio districts and the Pittsburgh district were decreased 10c. per ton and those from the Fairmont district on the B. & O. by 6⅔c. per ton, but from the C. & O., K. & M. and N. & W. districts in West Virginia the rates remained the same. The Boileau case decision nullified the decision in "I. & S. 26," as the N. & W. could not advance rates from its districts in view of reductions from all competing districts on other lines.

The rates put into effect at that time—April, 1912—continued in effect until the 15 per cent advanced rate case was decided in March, 1917.

In view of the continued level of rates in effect during the five-year period from 1912 to 1917 this article will deal with the advances which have been put into effect since Jan. 1, 1917, and to clarify the explanation will use the rate in effect from the Pittsburgh district as representative.

Since Jan. 1, 1917, there have been three general advances in all bituminous coal freight rates in Eastern territory: First, the 15 per cent advanced rate case decided by the Interstate Commerce Commission on June 27, 1917, but advanced rates on bituminous coal were permitted to become effective prior to this date; second, the 25 per cent advance in rates commonly known as advances under General Order 28, authorized by the Director General of Railroads, effective June 25, 1918; and third, the 1920 advanced rate case, commonly known as Ex Parte 74, increasing rates in Eastern territory 40 per cent, decided by the Interstate Commerce Commission on July 29, 1920. All three of these advances affected Lake cargo coal, but no disturbance in differentials as between origin districts was made.

Some Rates Advanced, Others Reduced

In addition there has been an advance in the Lake cargo rates from a part of the originating districts decided by the Interstate Commerce Commission on July 13, 1917, in Docket No. 8725, "Lake Cargo Coal Rates." In this case the differentials as between the Pittsburgh and Ohio districts, on the one hand, and all other districts on the other, were changed, some being advanced and others reduced.

In Table III is shown the rates in effect from each district on Jan. 1, 1917, and the advanced rates as a result of each of the foregoing cases.

In Tables IV and V are shown the advances made in the rail rates on Lake cargo coal from representative originating districts and from the Upper Lake docks at Duluth to the Twin Cities, giving the amount of each advance, the subsequent advanced rate and the total percentage advance from Jan. 1, 1917, to date.

Fifteen Per Cent Rate Advance.—In this case, decided June 27, 1917, the Interstate Commerce Commission permitted rail carriers to advance all rates on bituminous coal 15 per cent, with a maximum of 15c. per ton. The carriers, however, in applying this advance added 30c. per ton on Lake cargo coal destined to rail points in Northwestern States, 15c. to the rail rates from originating districts to Lower Lake Erie ports and 15c. to the rail rates from Upper Lake docks to destination, as shown in Table V, on page 766. This method of application the Upper Lake dock operators, Northwest consumers and Lake cargo shippers considered to be an iniquity placed upon such coal and later vigorously protested against it, taking the case to the Railroad Administration. This procedure is detailed under the section referring to the 25 per cent Rate Advance under General Order No. 28.

Table I to V show that the advance of 15c. per ton was applied uniformly from each of the originating districts to lower Lake ports, differentials being maintained.

*Davis Coal & Coke Co., Baltimore, Md.

TABLE I. ANNUAL SHIPMENTS OF LAKE CARGO COAL FROM PRODUCING DISTRICTS TO LOWER LAKE ERIE PORTS, 1910 TO 1920, INCLUSIVE

(In net tons)

	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	Percentage of Lake Cargo Coal Originating Each District 1910	1915	1920
Pittsburgh	10,197,127	10,071,930	9,893,870	12,261,334	12,216,126	9,350,166	8,672,829	6,659,447	7,371,448	6,512,051	6,203,444	50.31	43.48	27.71
Pennsylvania outside	245,116	155,877	158,719	301,179	423,609	269,535	94,709	889,369	778,285	567,784	1,066,989	01.21	01.25	04.77
Northern Ohio	2,303,278	2,739,069	3,094,388	4,248,309	512,123	2,168,481	4,474,067	4,913,771	6,320,513	4,767,380	5,031,628	11.37	10.08	22.47
Southern Ohio	1,464,684	1,370,925	1,223,249	1,397,718	734,456	315,846	827,906	2,907,625	3,216,221	1,072,424	2,575,086	07.23	01.47	11.50
Fairmont	1,611,005	1,784,279	1,686,729	2,161,523	2,214,672	2,030,408	1,617,945	1,029,201	1,317,284	828,383	1,284,041	07.95	09.44	05.73
C. & O. Kanawha	1,343,148	1,799,956	1,160,736	1,570,477	2,202,076	2,181,668	2,930,765	3,674,768	4,008,262	2,479,531	2,272,731	06.63	10.15	10.15
K. & M. Kanawha	1,272,169	1,307,576	1,053,320	1,385,844	1,263,866	1,321,172	1,272,618	1,421,561	1,192,501	914,318	748,215	06.27	6.14	03.34
Kenova Thacker	320,317	380,619	366,140	587,648	627,167	628,348	884,871	977,854	625,621	314,026	143,645	01.58	02.92	00.64
Cumberland Piedmont	102,219	43,545	34,750	32,741	35,961	26,229	11,250	6,307	.....	8,642	21,459	00.50	00.12	00.10
New River	410,031	639,217	988,985	488,338	414,474	338,671	505,396	578,314	361,450	537,436	233,633	02.02	01.57	01.04
Pocahontas	987,124	1,324,192	1,622,467	1,998,116	1,880,260	2,175,676	2,480,822	2,575,956	1,650,265	2,313,728	1,434,183	04.87	10.12	06.41
Northeastern Kentucky	.....	6,075	20,487	386,396	842,466	633,566	745,137	651,397	649,162	757,948	771,693	.....	02.95	03.45
Southeastern Kentucky	11,031	3,743	6,164	10,724	16,361	67,608	174,621	537,369	665,392	667,518	603,630	00.06	00.31	02.69
Virginia	.....	.....	.....	.....	.....	.....	.....	990	.....	1,591	92	....	....	00.00
Tennessee	.....	.....	.....	.....	.....	.....	.....	4,827	97	13,109	185	.....	....	00.00
Totals	20,267,249	21,627,003	21,310,004	26,830,347	21,383,617	21,507,374	24,692,936	26,828,756	28,156,501	21,755,869	22,390,654	100.00	100.00	100.00
Canadian Docks									6,425,730	4,533,062	5,931,418			
American Docks, Lakes Erie and Huron									1,596,935	1,116,857	1,669,430			
American Docks, Lakes Superior and Michigan									20,133,836	16,105,950	14,789,806			

TABLE II. ANNUAL SHIPMENTS OF LAKE CARGO COAL BY ORIGINATING RAILROADS 1910, TO 1920, INCLUSIVE

(In net tons)

	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	Percentage of Total Originating on Each Line 1910	1915	1918	1920
Penna. Lines	6,231,801	6,833,032	6,770,237	8,650,710	6,863,372	5,752,869	5,682,701	4,498,695	5,540,974	4,904,616	3,959,845	30.75	26.75	19.68	17.69
N. & W. Ry	1,307,441	1,704,811	1,988,607	2,585,764	2,507,427	2,804,024	3,365,693	3,553,810	2,275,886	2,627,754	1,577,828	06.45	13.04	08.08	07.05
Lehigh Valley Rd	.....	.....	.....	.....	.....	.....	.....	703	.....	.....	6,918	.....	.....	.....	00.03
B. & O. R.R	2,518,334	2,643,406	2,555,981	3,501,925	2,877,316	2,763,365	2,739,954	2,107,768	2,444,970	1,537,500	2,439,515	12.43	12.85	08.68	10.90
C. L. & W. R.R	661,734	962,476	889,921	1,174,212	10,261	602,961	1,182,014	1,014,348	1,274,199	1,209,478	921,935	03.26	02.80	04.53	04.12
B. & O. R.R. (O.D.)	.....	361	1,205	1,389	1,865	1,712	1,780	11,002	.....	.....	.....	.....	00.01	.....	.....
B. & O. R.R., T. D	7,464	3,760	3,654	87	103	.....	.....	48,278	37,786	4,679	50,262	00.04	.....	00.13	00.22
S. V. & E. Ry	.....	.....	.....	172,732	485,443	212,501	389,649	182,484	123,894	268,986	201,854	.....	00.99	00.44	00.90
Long Fork Ry	.....	.....	.....	.....	.....	.....	.....	.....	141,943	154,406	253,232	.....	.....	00.51	00.13
Miller's Creek R.R	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	85,173	.....	.....	.....	00.38
C. & C. Ry	44,170	37,057	46,027	86,903	113,314	110,131	70,964	44,269	96,547	18,833	14,800	00.22	00.51	00.34	00.07
P. & L. E. R.R	3,405,798	3,073,079	2,653,668	2,846,575	2,565,741	2,788,722	2,467,383	1,100,632	1,434,725	1,083,125	903,197	16.80	12.97	05.10	04.03
N. Y. C. R.R., West	121,337	150,786	52,673	241,355	16,343	176,802	166,485	233,850	434,300	146,652	283,992	00.60	00.82	01.54	01.27
Monon Ry., B.& N. R.R	.....	.....	.....	.....	.....	17,509	.....	43,318	321,541	191,411	373,559	.....	00.08	01.14	01.67
Monongahela & Wheeling Ry	.....	.....	.....	.....	.....	.....	.....	.....	17,552	40,662	55,515	.....	.....	00.06	00.25
Z. & W. Ry	214,800	205,488	153,881	224,383	67,372	1,854	74,531	266,852	483,260	95,327	401,114	01.06	00.01	01.72	01.79
Tr. & C. Ry	518,565	491,290	413,585	385,313	265,317	7,073	191,624	757,642	839,068	255,848	499,427	02.56	00.01	02.98	02.23
K. & M. Ry	1,197,033	1,267,415	1,045,984	1,314,413	1,170,275	1,139,860	1,146,832	1,617,759	1,329,135	1,008,769	884,817	05.90	05.30	04.72	03.95
K. & W. V. R.R	40,172	3,104	5,402	5,681	1,360	31,915	52,168	.....	.....	.....	.....	00.20	00.15	.....	.....
Campbell's Creek R.R	.....	.....	.....	.....	.....	39,266	53,127	.....	.....	.....	.....	.....	00.18	.....	.....
Y. & O. R.R	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	88	.....	.....	.....	.....
C. & O. Ry	1,753,179	2,445,448	2,170,208	2,272,479	2,973,573	2,941,404	3,791,649	4,721,995	4,750,212	3,332,690	2,722,998	08.65	13.68	16.87	12.16
Hocking Valley Ry	672,947	670,026	644,087	755,210	388,191	310,207	509,203	1,580,298	1,543,492	616,524	1,405,023	03.32	01.44	05.48	06.27
A. C. & I. Ry	.....	.....	.....	.....	.....	.....	.....	.....	2,825	.....	.....	.....	.....	00.01	.....
P. & W. V. and W. S. B	286,279	256,513	459,277	827,025	643,583	189,252	989,096	1,633,610	1,131,318	522,406	770,070	01.41	00.88	04.02	03.44
W. & L. E. Ry	676,010	730,871	999,700	914,712	21,403	311,982	683,616	1,042,624	1,431,059	1,365,742	1,433,104	03.34	01 45	05.08	06.36
L. & L. E. Ry	599,154	142,466	449,472	858,755	394,997	1,233,883	959,846	1,176,601	826,518	565,909	1,523,507	02.96	05.74	02.94	06.80
Montana R.R	.....	.....	.....	.....	.....	.....	.....	579,962	923,339	1,033,106	985,692	.....	.....	03.28	04.40
P. C. & Y. Ry	.....	.....	.....	.....	.....	.....	.....	72,070	86,469	83,712	42,841	.....	.....	00.31	00.19
B. R. & P. Ry	.....	.....	.....	.....	.....	7,474	.....	.....	.....	.....	.....	.....	00 03	.....	.....
Erie R.R	.....	2,071	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
M. C. & C. R.R., F. V. R.R	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,018	.....	.....	.....	.....	.....
D. T. & I. R.R	.....	.....	271	.....	.....	.....	.....	.....	.....	.....	299	.....	.....	.....	.....
W. M. R.R	.....	.....	.....	.....	.....	.....	.....	.....	.....	498	42	.....	.....	.....	.....
L. & N. R. R	11,031	3,743	6,164	10,724	13,456	67,608	174,621	539,599	665,271	682,218	603,907	00.05	00.31	02.36	02.70
C. N. O. & T. P. Ry	.....	.....	.....	.....	2,905	.....	.....	3,587	218	.....	.....	.....	.....	.....	.....
Total	20,267,249	21,627,003	21,310,004	26,830,347	21,383,617	21,507,374	24,692,936	26,828,756	28,156,501	21,755,869	22,390,654	100.00	100.00	100.00	100.00
Pennsylvania Lines												37.20	39.79	27.76	24.77
B. & O. Lines												15.95	17 16	14 63	16 72
N. Y. C. Lines												27.12	19.52	17.26	15.19
C. & O. Lines												11.97	15.12	22.36	18.43
Other Lines												7.76	8.41	17.99	24.89

TABLE III. CHANGES IN LAKE CARGO RATES BY DISTRICTS, JAN., 1917, TO AUG., 1920

District	State	Originating R.R.	Rates in Cents per Net Ton in Effect on Jan. 1, 1917	Apr. 16, 1917	Aug. 13, 1917	June 25, 1918	Aug. 16, 1920
Butler-Mercer	Pa.	B. & L. E.	55	70	70	107	163
Massillon	Ohio	B. & O.	60	75	75	112	168
Middle	Ohio	B. & O.	60	75	75	112	168
		W. & L. E.	60	75	75	112	168
		N. Y. C. to Ashta.	60	75	75	112	168
Northern Ohio	Ohio	Pa. and Erie	60	75	75	112	168
Northern Pa	Pa.	B. & L. E.	63	78	78	115	171
Middle	Ohio	N.Y.C. to Lorain.	65	80	80	117	173
Northern Pa	Pa.	Pa.	68	83	83	120	176
Massillon	Ohio	W. & L. E.	70	85	85	122	178
Ohio No. 8	Ohio	All roads	75	90	90	127	183
Cambridge	Ohio	Pa. and B. & O.	75	90	90	127	183
Hocking	Ohio	H. V., T. & O. C., B. & O.	75	90	90	127	183
Pomeroy	Ohio	K. & M. and Z. & W.					
Pittsburgh	Pa.	All roads	78	93	93	130	186
Latrobe	Pa.	Penna	83	98	98	135	191
Hocking	Ohio	B. & O., S. W. and C. H. & D.	85	100	100	137	193
Blairsville	Pa.	Penna	88	103	103	140	196
Connellsville	Pa.	All roads	90	105	99	136	192
Fairmont	W. Va.	All roads	90	105	108	145	201
Johnstown & Indiana	Pa.	Penna	93	108	111	148	204
Belington	W. Va.	B. & O. and C. & C.	96¾	111¾	117¾	154¾	210¾
Kanawha	W. Va.	C. & O. and K.&M.	97	112	118	155	211
Kenova-Thacker	W. Va.	N. & W.	97	112	118	155	211
Eastern Ky.	Ky.	C.& O. and S.V.&E.	97	112	118	155	211
Hazard	Ky.	L. & N. (a)	....	....	....	155	211
S.En. Ky.	Ky.	L. & N. (a)	....	....	....	155	211
Ganley	W. Va.	B. & O. and C.&C.	112	127	120	157	213
Meyersdale	Pa.	B. & O.	112	127	115	152	208
Altoona	Pa.	Penna	112	127	115	152	208
Cumb.-Piedmont	W. Va.	B. & O. and W. Md.	112	127	120	157	213
New River	W. Va.	C. & O.	112	127	133	170	226
Pocahontas	W. Va.	N. & W.	112	127	133	170	226
Clinch Valley	Va.	N. & W.	112	127	133	170	226

(a) Lake Cargo Rates first established on coal from mines on the Louisville & Nasville R.R. in eastern Kentucky during the first part of 1918. Prior to that time joint through rates to the proper port on Lake Erie applied.

Lake Cargo Coal Rates. — The decision of the Interstate Commerce Commission so entitled was rendered July 13, 1917, and changed the differentials between Lake coal originating districts in the manner shown in Tables IV and V. This change was made after a full hearing before the commission as a result of a general investigation entered into by it as to the propriety of Lake cargo rates.

General Order No. 28.—On June 25, 1918, advances in all rates of approximately 25 per cent became effective under authorization of the U. S. Railroad Administration in what is known as its General Order No. 28. Lake cargo coal rates were advanced unifomly 37c. per ton, the figure being arrived at by advancing the highest rated group, which carried a $1.12 rate, 25 per cent, or 28c., plus 9c. which was the difference between the advance of 6c. per ton in that group ordered by the Interstate Commerce Commission in Docket No. 8725, "Lake Cargo Coal Rates," and 15c. per ton which was covered by a provision in General Order No. 28 permitting all rates which had not been advanced 15c. per ton subsequent to June 1, 1917, to be so increased. Both of these factors were arrived at in accordance with the provisions of General Order No. 28.

At the same time rail rates from the Head of the Lakes to destinations in the Northwest also were advanced 25 per cent, which advance amounted to 29c. per ton in the case of coal moving from Duluth to the Twin Cities. These double advances on Lake coal were protested by the dock operators, Northwest consumers and Lake cargo shippers, who alleged that the methods employed in applying the advances authorized resulted in an advance in the rail factors on Lake cargo coal of 47c. more than the advances made on Illinois and Indiana coal to the same Northwestern destinations, the Twin Cities, with similar discrepancies at all other points in the Northwest territory.

As a result of a meeting held in Washington, D. C., on April 17, 1919, by representatives of the three interests named above a committee representing each group was appointed which met with a representative of the Railroad Administration on the succeeding day. A committee of three was then appointed to work with the Railroad Administration in figuring out an adjustment. A meeting between this committee and the Railroad Administration representatives was held on April 29, at which time the railroads proposed that the Illinois-Indiana rates to competitive Lake cargo territory in the Northwest be advanced 30c. per ton to take care of this adjustment, stating that it was not possible to make a reduction in rates, because revenue was required to meet railroad expenses.

The committee representing coal and dock operators was not satisfied with this method of adjustment, alleging that while it was an assistance it fell far short of being an adequate remedy, which could only be accomplished by an abrogation of the double advance. The Illinois-Indiana operators also protested against an advance in the rates on their coal, contending that there was no relationship between the rates on Lake coal from mine to destination and Illinois and Indiana coal to the same point.

Is There Relationship in All-Rail and Other Rates?

As a result of this difference in opinion the Railroad Administration took advantage of the provisions of Section 8 of the Federal Control Act and requested the Interstate Commerce Commission to advise it on the specific question of whether there was any relationship between the rail-lake-and-rail rates on Lake cargo coal and the all-rail rates from Illinois and Indiana, and if so, to suggest some remedy to restore such relationship. Hearing was had before the commission and decision rendered on July 5, 1919, in Ex Parte 68.

The Interstate Commerce Commission found that while there was a close existing relationship between the rail rates on Lake cargo coal from the Northwest docks to destination and Illinois-Indiana coal to the same point, there was no recognized relationship existing between the rail-lake-and-rail rates on Lake cargo coal from mine to destinations in the Northwest and Illinois and Indiana all-rail coal to the same territory, "and therefore, there is none to be restored." The Interstate Commerce Commission also found that "Neither the increase in the rates from the Ohio and West Virginia mines to the Lake Erie ports nor that [increase] in the rates from the western Lake ports could be withdrawn without disregarding recognized and established relationships of rates."

As a result of these findings no further formal action before the commission has been taken by the parties at interest.

1920 *Advanced Rates.*—On Aug. 16, 1920, with the approval of the Interstate Commerce Commission under Ex Parte 74, a further advance of 56c. per ton was put into effect on the Lake cargo rate from the mines to the Lake Erie ports, there being also an advance of 49c. per ton in the rail rate from the Northwest docks to destination. The 56c. advance was a weighted average result based upon the movement under each rate to Lake Erie ports. These

TABLE IV. ADVANCES IN RAIL RATES ON LAKE CARGO COAL FROM REPRESENTATIVE ORIGINATING DISTRICTS AND FROM UPPER LAKE DOCKS AT DULUTH TO MINNEAPOLIS AND ST. PAUL

(In Cents per Net Ton)

Date	Ohio No. 8 Adv.	Ohio No. 8 Rate	Pittsburgh Adv.	Pittsburgh Rate	Fairmont Adv.	Fairmont Rate	Connellsville Adv.	Connellsville Rate	Meyersdale Adv.	Meyersdale Rate	Kanawha Adv.	Kanawha Rate	Pocahontas Adv.	Pocahontas Rate	Lake Docks at Duluth to Twin Cities Adv.	Lake Docks at Duluth to Twin Cities Rate
Rates in effect Jan. 1, 1917	.....	75	.....	78	.....	90	.....	90	....	112	.....	97	.....	112	....	96
Rates advanced effective Apr. 16, 1917	15	90	15	93	15	105	15	105	15	127	15	112	15	127	....	96
Rates advanced effective July, 1, 1917	.....	90	.....	93	.....	105	.....	105	....	127	.....	112	.....	127	15	111
Rates advanced effective Aug. 13, 1917	.....	90	.....	93	3	108	R 6	99	R 12	115	6	118	6	133	....	111
Rates advanced effective June 25, 1918	37	127	37	130	37	145	37	136	37	152	37	155	37	170	29	140
Rates advanced effective Aug. 26, 1920	56	183	56	186	56	201	56	192	56	208	56	211	56	226	49	189
Total advances	108	...	108	...	111	...	102	...	96	...	114	...	114	...	93	...
Per cent advance	144%	...	138%	...	124%	...	114%	...	86%	...	118%	...	102%	...	97%	...

R.—Reduction.

advances raised the level of rates on Lake cargo coal to such an extent that Lake shippers and handlers feel that they are more than the traffic will bear.

In Table V all the transportation charges on Lake cargo coal from the Pittsburgh district to destination at Twin Cities, Minnesota, are shown, as well as the comparative all-rail rates from southern Illinois mines to the same points. It will be noted that in addition to the advances in rail factors, including the double advance, there has been a steady increase in the handling charges at the dock. The amounts shown for these charges are largely estimated but are based on reliable information and are conservative.

TABLE V. ADVANCE IN FREIGHT RATES AFFECTING THE TRANSPORTATION OF LAKE CARGO COAL SINCE JAN. 1, 1917,* USING THE PITTSBURGH DISTRICT AND THE TWIN CITIES AS REPRESENTATIVE OF ORIGIN AND DESTINATION GROUPS, RESPECTIVELY

(In Cents per Net Ton)

Item of Transportation Cost	Rates in Effect Jan. 1, 1917	Advance Made Apr. 16, 1917, by Order of I. C. C. in 15% Advance Rate Case	Advance Made Aug. 13, 1917, by Order of I. C. C. in Lake Cargo Case, I. C. C. Docket No. 8725. (5)	Advance Made June 25, 1918, by Order of U. S. R. R. Adm.	Advance Made Aug. 16, 1920, by Order of I. C. C. in 40% Adv. Rate Case.
Rail rates from mines to Lower Lake Erie port	78	93	93	130	186
Transferring coal from car to vessel at Lower Lake Erie port	5	5	6	6	8½
Lake transportation (1)	30	42½	42½	48	50
Marine insurance (2)	...	....	....	...	....
Handling the coal from vessel to dock at Upper Lake Ports. (3) Handling the coal from dock to car at Upper Lake Port (3) Degradation of coal from handling, etc (4)	65	75	75	100	115
Rail rate from Duluth to Twin Cities, Minn	96	111	111	140	189
Total transportation cost	274	326½	327½	424	548½
Southern Illinois all rail rates to Twin Cities	230	245	245	285	385

(1) Average of daily boat rates on bituminous coal.
(2) No average figures available. Amount negligible in cents per ton of coal.
(3) Estimated amounts based on testimony given in Lake Cargo Rate Case before Interstate Commerce Commission and approximate costs since.
(4) Breaking up of coal in transit and the amount included here is the estimated difference in price between screened lump and run-of-pile coal on the docks at the head of the lakes.
(5) Advanced rates made as result of Interstate Commerce Commission decision in Lake Cargo Case did not apply to coal originating in the Pittsburgh district but did apply to coal originating in the Fairmont, Kanawha and other districts taking equal or higher rates.

Measure of Lake Cargo Rates.—To illustrate the comparative level of the Lake cargo rates, the following deals with those in effect from the Pittsburgh district as compared with other rates applying on bituminous coal moving in the same general direction. Table VI is self explanatory:

TABLE VI. THE MEASURE OF INCREASES MADE IN COAL RATES FROM PITTSBURGH DISTRICT TO REPRESENTATIVE POINTS SINCE JAN. 1, 1917, AS COMPARED WITH THE MEASURE OF INCREASE IN THE LAKE CARGO COAL RATE

Station	Rate Jan. 1, 1917	Rate Aug. 26, 1920	Inc. in Cents	Inc. in per Cent
Youngstown	70	150.0	80	114.0
Alliance	85	177 5	92 5	109.0
Canton	95	177.5	82 5	87.0
Akron	95	197 5	102 5	108.0
Cleveland	100	205 5	105 5	105.5
Mansfield	115	226 5	111.5	97.0
Toledo	125	266 0	141 0	113.0
Detroit	140	287 0	147 0	105.0
Erie	100	205 5	105 5	105.5
Buffalo	125	251 0	126 0	101.0
Rochester	140	266 0	126 0	83 0
Chicago	190	343 0	153 0	81.0
Average	115 0	229 42	114 42	99 49
Lake cargo rate	78 0	186 00	108 00	138 00

It will be noted that while the Lake cargo rate from the Pittsburgh district has been advanced 138 per cent from Jan. 1. 1917, to date, the rates on bituminous coal from the same district to twenty-five all-rail destinations has been advanced on the average about 99½ per cent, showing forcibly the abnormally high increase in Lake cargo rates. During the same period the rate per ton per mile on this coal from the Pittsburgh district to the Lakes rose from 4.78 mills to 11.41 mills, using the average weighted distance of 163 miles as found by the Interstate Commerce Commission in Docket No. 8725.

It has long been recognized that coal traffic on Eastern railroads is one of the best paying of any handled. It is for the most part hauled in solid trains from classification yards to central breaking-up points near destination; it is not susceptible to the risks of much other higher class freight; and it loads heavily into cars. The only large factor entering into increasing cost is the empty return haul of open-top cars to the mines, which factor in the case of a larger part of the coal movement amounts to 100 per cent.

This latter factor, however, is present in but small degree in the case of Lake cargo coal movement from the western Pennsylvania, Ohio and other districts. The movement of coal from mines in those territories to Lake Erie ports provides a loaded return of open-top cars which have in the first instance carried ore from the Lower Lake docks to furnaces in territory contiguous to the mines. The delay of unloading cars at the ports also is less than in the case of cars moving to general commercial channels, which decreased delay permits such cars to be returned quickly to revenue paying business for the carriers. It also is true that the movement of coal off the Upper Lake docks is practically all handled in box cars which have carried grain from territory which also consumes the coal shipped from the docks.

All these factors, affecting directly the cost of handling Lake cargo coal, should be taken into account in making rates on that traffic. With them in mind together with the rate comparisons and the effect of the present level of such rates on the movement of Lake coal, it can be stated without fear of successful refutation that the present transportation charges on Lake cargo coal destined to Northwestern points are too high and should be decreased at the earliest possible date.

Opening of Bids for New York City Coal Needs Reveals Only Two Bidders

FOR furnishing and delivering alongside the dock of the City Asphalt plant, 90th Street and East River, New York City, 6,000,000 lb. of buckwheat No. 2 and 1,500,000 lb. of egg coal only two bids were received by the President of the Borough of Manhattan on April 20. The specifications called for bids in 1,000 lb. units. The bids received follow:

	Inter City Fuel Co.	Gavin Rowe
Buckwheat No. 2	$2.92	$3.12
Egg	5.55	5.55

At the same time the Inter City Fuel Co. was the lone bidder for furnishing, delivering, storing and trimming coal for the use of the various public buildings, courts, etc., in the Borough of Manhattan. Prices submitted were for 1,000 lb. units. The amounts and prices follow:

2,650,000 lb. buckwheat No. 1	$4 39
45,160,000 lb. buckwheat No. 2	3 95
2,300,000 lb. egg, stove, broken or chestnut	6.78
4,600,000 lb. semi-bituminous	4 77

Another bid, that of William Farrell & Son, which, according to those in charge of the opening of bids, was not presented until after the time fixed for receiving bids, was received but not opened, after a protest had been made by the firm's representative.

CONTRACTS FOR COAL to supply Indiana state institutions for a year will be let May 2. Fred B. Robinson, secretary of the State Joint Purchasing Committee, announced recently. The contracts will be for more than 200,000 tons. Mr. Robinson has asked that all bids be submitted before 10 a.m. of the day contracts are to be let. The contracts for state coal were originally to have been let April 1, but at the request of Governor Warren T. McCray all bids were rejected. Since that time Maurice Shelton, who was then secretary of the committee, has been supplanted by Mr. Robinson.

Retail Anthracite Prices Drop with Mine Prices; Bituminous Decline Is More Gradual

RETURN to normal is said to be retarded by the reluctance of retail merchants to lower their prices to accord with the drop in producers' prices. To what extent, if any, is this true with regard to coal? Retail coal merchants in fourteen cities have co-operated with *Coal Age* correspondents in giving strictly comparable prices for each important kind of household coal sold locally by months from December to April. The drop in these retail prices—that is, the prices paid by the householder at his curb—in the past five months is compared with *Coal Age* quotations on these same coals at the mines on the same dates.

The outstanding fact is that retail prices of anthracite have on the average declined in conformity with mine prices, while retail prices on soft coal have not, save with a few striking exceptions, declined to meet the drop in spot prices of bituminous coal.

Retailers in the East last winter based their price increases on the spectacularly high prices for domestic sizes of hard coal charged by the so-called "independent" producers—whose output is but 25 to 30 per cent of the total. Mine prices of this independent coal have dropped $4.70 a gross ton ($4.20 per net ton) since December on egg, stove and nut sizes. In the same period company prices—that is, prices by the large railroad companies producing the remaining 70 per cent of the total—have declined but 30c. per gross ton (27c. a net ton). Since the independent coal is one-fourth the total and the company coal is three-fourths, the average reduction of both has been $1.40 per gross ton ($1.25 per net ton), which is almost exactly equal to the simple average of reductions in retail prices on these same coals.

Largest Reductions on Inflated Prices

There are notable exceptions to this general statement, but that coal merchants in the East, where anthracite is the principal household fuel, have generally followed the drops in mine price since last December there is no doubt. It is equally true that those dealers who have made the largest price reductions are those who added on the most last fall. The range in New York City is typical, one class of dealers showing as much as $2.25 per ton off December figures, but with this reduction their prices are now no lower than those who have come down but 75c. Dealers in Columbus and Cincinnati have reduced prices on Pocahontas lump from $1.35 to $1.50 per ton, whereas mine prices have gone down $2.75 in the same period. In Cleveland the retail price shows a decrease of but 35c. on the same coal. Pocahontas mine-run, on the contrary, has been reduced from $4 to $4.30 per ton in Detroit and Chicago, while the mine price dropped but $1.50. Such instances as this confirm the suspicion that some retailers were not overmodest in their charges last winter.

It is manifestly unfair to compare the recessions in retail prices with corresponding mine prices in percentages, because mine price makes up from one-third to one-half the delivered price, and freight and actual delivery costs represent such a large portion of the total out of pocket expense to the retail dealer over which he has no control.

Retail coal merchants in the cities farther West, where soft coal is the principal household fuel, have not reduced their prices as much as the spot prices charged at the mines have been reduced but this is in part explained by the fact that these dealers did not have to pay high spot prices for all the coal purchased last winter; what they got on contract or from old reliable mine connections was not so expensive. For instance, the freight and war tax on a ton of 2,000 lb. of chestnut anthracite to Chicago is $5.79 and the lowest mine price is now $6.60, a total of $12.39, which leaves the Chicago coal merchant but $2.46 to cover delivery and yard costs, overhead and profit.

Retail coal merchants cannot, because of the large bulk, carry such a large portion of their year's business in storage as can merchants in some other commodities. During the winter the coal merchant turns his stock over very rapidly, and last winter he seldom had accumulations of any size. Today, with the advent of warm weather, retail yards are stocked to overflowing in nearly every city, and dealers are seriously endeavoring to move their coal by getting their prices down, in some instances by amounts greater than the reduction offered them by the producer.

Whether in any particular locality retail prices are now at rock-bottom can be determined locally by adding to the following mine prices, which are representative for the present, the freight rate from the mines to that city and around $2 as the minimum to cover the retailer's costs and profit:

SPOT PRICES AT THE MINES OF BITUMINOUS COAL IN NET TONS AND ANTHRACITE IN GROSS TONS

Anthracite:	Dec.	Jan.	Feb.	Mar.	Apr.	Decrease Dec. to April
Company	$7.70	$7.85	$7.90	$7 90	$7 40	$0 30
Independent	12.30	11.00	10.00	8.50	7.60	4 70
Bituminous:						
Ohio No. 8 lump	6.00	4.60	3.75	3.60	3.60	2 40
Hocking lump	5 75	4.50	3.85	3.50	3.25	2 50
Pocahontas lump	6 75	5.25	5.00	5 75	5 00	2 75
Pocahontas mine-run	5.25	4 50	4.00	3.75	3.75	1 50
Clearfield mine-run	5 00	3.25	2.75	2 60	2.45	2 55
Kanawha lump	6 00	4 60	4.80	3.75	3.25	2 75
So. Illinois lump	5 85	4 25	3.80	3.60	3.55	2 30
Kansas lump	6 00	6 00	5.75	5.50	5.00	1 00
Arkansas lump	6 75	6.75	6.75	6.00	6.00	75
Colorado lignite lump	6.00	5.75	5.75	5.25	....	
Colorado Routt County lump	6.35	6.50	6.35	6.50	5.50	.85

RETAIL PRICES OF COAL, DECEMBER, 1920, TO APRIL, 1921

NEW YORK CITY

(Net Tons—2,000 Lbs.)

Price per ton, delivered at consumer's curb

Kind of Coal Anthracite	Dec.	Jan.	Feb.	Mar.	Apr.	Decrease. Dec. to Apr.
Broken	$13.50@14.85	$13.40@14.75	$13.40	$13.40	$12.75	$0.75@2 10
Egg	13.50@15.00	13.40@14.75	13.40	13 40	12.75	.75@2 25
Stove	13.85@15.25	13.75@14.75	13.75	13.75	13.00	.85@2 25
Chestnut	13.85@15.25	13.75@14.75	13.75	13.75	13.00	.85@2 25
Pea	11.50@12.70	11.50@12.50	11.50	11.50	10.75	.75@1.95
Buck No. 1	8.90@ 9.75	8.70@ 8 90	8.70	8.70	8.10	.80@1 65
Buck No. 2	7.90@ 8.60	7.70@ 8.15	7.70	7.70	7.10	.80@1.50
Buck No. 3	6.90@ 6.45	6.70@ 6.50	6.70	6.70	6 10	.80@ .35
Bituminous	9.10@12.00	9.00@10.75	9.00	9.00	9.00	.10@3 00

BOSTON

(Net tons—2,000 lbs.)

Anthracite	Dec.	Jan.	Feb.	Mar.	Apr.	Decrease
Broken and egg	$16.00	$16.00	$16.00	$16.00	$14.75	$1.25
Stove and nut	16.00	16.00	16.00	16.00	15.00	1.00
Pea	14.25	14.25	14.25	14.25	13 00	1.25
Bituminous:						
Mine-run	14.00	12.50	12.00	10.75	9.75	2.75

PHILADELPHIA

(Gross tons—2,240 lbs.)

Anthracite:	Dec.	Jan.	Feb.	Mar.	Apr.	Decrease
Egg	14.50	14.50	14.50	13.50	12.75	1.75
Stove	15.00	15.00	15.00	14.00	13.00	2.00
Nut	15 00	15.00	15.00	14.00	13.00	2 00
Pea	12.00	12.00	12.00	10.50	10.25	1 75

BALTIMORE

(Gross tons)

Anthracite:	Dec.	Jan.	Feb.	Mar.	Apr.	Decrease
Egg	15.50	15.50	15.50	15.50	14.50	1.00
Stove and nut	15 75	15.75	15.75	15.75	14.75	1.00
Pea	12 00	12.00	12.00	12.00	12.00	.....

WASHINGTON, D. C.

(Gross tons)

Anthracite	Dec.	Jan.	Feb.	Mar.	Apr.	Decrease
Stove	$16 20	$16.20	$15.40	$14.95	$14.05	$2.15
Nut	15.90	15.90	15.40	14.95	14.05	1.85
Pea	12.95	12.95	12.40	12.15	11.60	1.35

CHICAGO

(Net tons *a*)

	Dec.	Jan.	Feb.	Mar.	Apr.	Decrease
Bituminous:						
Franklin Co.:						
Nut, egg, and lump	9 90	8.75	8.50	8.50	7.90	2.00
Pocahontas:						
Mine-run	12.25	11 00	10.00	10.00	7.95	4.30
Anthracite:						
Small egg	16 40	15.70	15.00	15 00	14.50	1.90
Range	16.40	15.70	15.00	15.00	14.60	1.80
Nut	16.50	15.80	15.40	15.40	14.85	1 65
Pea	14.60	13.50	12.80	12 80	12.60	2 00

a In wagonloads of four to five tons. Single ton deliveries 40c. higher.

CLEVELAND
(Net tons)

Kind of Coal	Dec.	Jan.	Feb.	Mar.	Apr.	Decrease Dec. to Apr.
Bituminous:						
Pocahontas lump.	$11.75	$12.35	$11.90	$11.60	$11.40	$0.35
W. Va. lump.....	11.75	11.50	11.15	10.00	10.00	1.75
Ohio No. 8 lump..	9.65	9.15	9.30	8.15	8.15	1.50
Anthracite:						
Stove, egg, nut...	15.10	15.45	14.90	14.90	13.85*b*	1.25

b Average for April of stove, $13.95; egg, $13.75; nut, $13.90.

COLUMBUS
(Net tons)

Bituminous:						
Pocahontas lump	11.00	10.50	10.50	10.50	9.50	1.50
W. Va. lump.....	10.00	8.50	9.00	8.85	7.85	2.15
Hocking lump....	8.60	8.15	7.85	7.75	6.65	1.95

CINCINNATI
(Net tons)

Bituminous:						
W. Va. and E. Ky. lump.....	9.85	9.85	9.40	9.65	7.25	2.60
Pocahontas lump.	11.35	11.25	10.75	10.75	10.00	1.35
Anthracite:						
Egg and nut.....	15.65	15.65	15.65	15.65	.....	....

DETROIT
(Net Tons)

Anthracite:						
Egg.....	16.50	16.00	15.50	15.50	14.50	2.00
Stove and nut....	16.50	16.00	15.75	15.75	14.75	1.75
Bituminous:						
Pocahontas mine-run.....	14.00	12.50	11.00	11.00	10.00	4.00
Ohio lump.....	12.00	12.50	11.00	11.00	10.00	2.00
W. Va. mine-run.	15.00	.....	.....	.....	7.50	7.50

BUFFALO
(Net tons)

Anthracite:						
Stove and nut....	13.25	13.25	13.15	12.90	12.40	0.85
Egg.....	13.00	13.00	12.90	12.65	12.15	0.85
Pea.....	11.00	11.00	11.00	11.00	10.30	0.70

PITTSBURGH, PA.
(Net tons)

Bituminous:						
Pittsburgh lump.	7.75@8.50	.....	.....	.....	7.50	0.25@1.00

KANSAS CITY, MO.
(Net tons)

Bituminous:						
Kansas lump.....	12.00	11.50	11.00	10.50	10.00	2.00
Kansas nut.....	11.75	11.00	10.00	9.50	9.50	2.25
Arkansas smokeless lump.....	16.50	15.00	14.00	14.00	13.50	3.00

DENVER
(Net tons)

Lignite lump.....	10.15	9.90	9.90	9.25	8.50	1.65
Bituminous:						
Routt Co. lump..	12.50	12.25	12.25	12.25	11.50	1.00

TORONTO, CANADA
(Net tons)

Anthracite:						
Egg, stove and nut	16.90	16.90	16.90	16.90	15.50	1.40
Bituminous lump..	17.00	13.25	13.25	13.25	12.50	4.50

Freight-Car Loading Gains; Coal Movement 44,000 Cars Less Than a Year Ago

THE number of cars loaded with revenue freight on the railroads of the United States showed a considerable gain during the week ended April 9, according to reports compiled by the car service division of the American Railway Association. The total for the week was 693,719 cars, an increase as compared with the previous week of 27,077 cars, although it was 107,000 cars less than for the corresponding week of 1920 and 17,000 cars less than for the corresponding week of 1919. The loading for the week of April 9 also was greater than in the previous three weeks.

There was a gain in the loading as compared with the previous week in all districts except the Central Western and the Southwestern, although the reports show a decrease as compared with 1920 in all districts. Increases as compared with the previous week were shown in the loading of grain and grain products, livestock, coal, forest products, and merchandise and miscellaneous freight combined, and an increase as compared with 1920 was shown in the loading of grain and grain products. The coal loading was about 44,000 cars less than for the corresponding week of 1920. The loading of merchandise and miscellaneous freight, 449,493 cars, was greater than that for any previous week this year but was still about 34,000 cars less than the total for the corresponding week of 1920.

The total car loading since Jan. 1 this year has been 9,706,514 cars, as compared with 11,484,467 in 1920.

Northwestern Dock Workers May Tie Up Docks Because of 20 Per Cent Wage Cut

GENERAL tie-up of coal docks in Duluth, Superior and Ashland is threatened as the result of a mass meeting in Duluth April 25 of 1,000 dock workers representing 3,500 employees of coal dock operators in the three cities. The meeting was called to discuss action in protest of a 20 per cent reduction in wages to become effective May 1, and a general strike was considered as a method of making operators restore the former rate of wages. Operators say that a general strike will tie up the harbor at Duluth at least temporarily and agree now that a strike is imminent, although they said when the wage cut was offered that the men would undoubtedly accept the new wage. Officials of the union admitted that the idea of the men was for a strike although they denied any official plans had been made to carry on the fight for higher wages.

Navy Asks Appropriation of $6,600,000 for Coal Requirements to June 30

THE Navy Department has requested Congress to appropriate $6,600,000 for fuel for the balance of the fiscal year, ending June 30 next. Last year's estimate called for $37,438,000 for fuel but Congress appropriated $30,000,000. To March 1 of this year the navy has spent $24,937,000 for fuel. To continue operation of the fleet, with such savings in fuel as can be made through reduced steaming in May and June, will require for the balance of the year $11,600,000, of which $5,063,000 is available.

Secretary Denby advises Congress that the deficiency act passed March 1 last carrying fuel appropriations was enacted at a time when it was not practicable to change the steaming program of the fleets necessary to finish prescribed maneuvers and target practice in March and April so that the only reduction in expenditures from the average consumption will be due to the vessels of both fleets being at navy yards for docking and overhauling in May and June.

Minnesota Legislature Considers Coal Probe Bill; No Price Control Provision

THE Legislature of Minnesota has been considering a bill giving the State Railroad and Warehouse Commission power to investigate coal market conditions, costs and expenses generally, and to go into coal history for five years back, giving to the public the information so obtained. The commission is to procure estimates of fuel needs of the various communities of the state, and to work to obtain an adequate supply of fuel. The bill does not attempt to regulate prices, except through the indirect method of giving to the public the margins shown between costs and retail prices. Opposition has been raised by coal men, who assert that the bill belongs in Congress, where it might have some weight, but that it is worthless in Minnesota. Such opposition, in the public view, comes from those in the trade who have a mercenary object, and as a result the bill has received a great deal of undeserved support. There is no doubt that it will impose some burdensome responsibilities upon the retail coal trade, who will be hit the hardest, while the ultimate effect is likely to be negligible. But anything that savors of a hit at the coal man is popular, hence the public support.

The creation of a Government Bureau of Supply, with a director at $10,000 a year, to purchase and distribute all supplies for the government service except real estate and printed or engraved matter, which would take over the Government Fuel Yard, now operated by the Bureau of Mines, is proposed in bills introduced by Senator Frelinghuysen, of New Jersey, and Representative Wood, of Indiana.

Coal Commissioner's Powers May Be Given Secretary of Interior; Chairman Clark Favors Seasonal Rating

By Paul Wooton
Washington Correspondent

THE powers conferred in the Frelinghuysen coal commissioner bill probably will be vested in the Secretary of the Interior. Both the coal commissioner bill and the seasonal freight rate bill were considered April 22 by the full Committee on Interstate Commerce. Senator Frelinghuysen submitted at the committee meeting a revised draft of his coal commissioner bill. In that draft all the powers provided by the bill were conferred upon the director of the U. S. Geological Survey. It was brought out that Dr. George Otis Smith, director of the Survey, is strongly of the opinion that the powers should be vested in the Secretary of the Interior. His opinion had added weight from the fact that Senator Frelinghuysen's proposal carried with it an addition of $5,000 to Dr. Smith's salary.

After some discussion in the committee it was agreed that it would be better to place authority in the Secretary of the Interior, as he could apportion the duties among several agencies. For instance, the Bureau of Mines, which already has made extensive investigations of the storage problem, could be assigned to undertake the duties in that connection which the bill requires. More important, however, is the fact that the recommendations which will be made as the result of the facts gathered can be made by an agency entirely apart from the bureaus which gather the data on which such conclusions are based. The members of the committee recognize that when conclusions and recommendations are made by the agency which gathers data it is subject to the charge that the data have been perverted to square with preconceived conclusions.

Legislation Leans to Fact Finding

Evidently it is the policy of the majority party in the Senate to go no further in coal legislation than to require facts. Senator Frelinghuysen maintains stoutly that his bill is a fact-finding measure and nothing more. In other quarters, however, the feeling is that the exacting and comprehensive types of investigations provided by the bill, as well as the power to compel appearances anywhere in the United States, make the measure in effect a regulatory one. It is admitted that much will depend upon the way in which the measure is administered, but the opinion seems to be that in its present form the coal commissioner would have little difficulty in exercising regulatory powers.

While the rewriting of the bill is left to the sub-committee of which Mr. Frelinghuysen is chairman it is regarded as significant that the full committee should specify that the bill is to be rewritten. If the bill can be revised so as to eliminate fines and prison sentences and so as to specify under what conditions one engaged in the coal trade may be served with a subpoena to appear in Washington or at any other point in the United States, some are of the opinion that the results desired can be accomplished with much less resentment on the part of business. Dr. Smith, who has been consulted frequently in regard to this proposed legislation, is of the opinion that publicity probably will be the only recourse necessary to obtain compliance with the provisions of the statute. At any rate he believes the attempt should be made to see if publicity will not accomplish the ends sought by those advocating regulation.

The committee also considered Senator Frelinghuysen's seasonal coal freight rate bill. Chairman Clark, of the Interstate Commerce Commission, reiterated the opinion which he had expressed to the committee previously to the effect that great economy of transportation could be effected by seasonal rating and that the effect of the proposal would be to add materially to the stability of the coal industry.

The sub-committee which will perfect the bill consists of the same members who conducted the hearings during the preceding Congress. They are Senators Frelinghuysen, of New Jersey; Townsend, of Michigan; Elkins, of West Virginia; Walcott, of Delaware, and Myers of Montana. The hope was expressed that the bills could be reported out without public hearings. It is believed, however, that there will be such demand for hearings that they will be granted. The seasonal freight rate bill was the subject of extended hearings a year ago, but it is contended that conditions have changed and that more mature thought on the matter now is available. The coal commissioner bill was taken up only incidentally during the seasonal rate hearings. For that reason, it is argued, an opportunity should be granted those concerned to be heard.

The Farmers' Union at a meeting in Washington during the week ending April 14 asked President Harding to call an industrial conference to consider measures to improve the present situation. They requested that representatives of the coal and other basic industries be invited to this conference. Senator Calder, of New York, author of coal regulation legislation, speaking before the farmers' meeting, gave reasons why the farmers should support coal regulation.

Dr. H. A. Garfield, former Fuel Administrator, in a recent call on the President discussed the coal situation, which led to reports that coal-price reductions would be sought through passage of the Frelinghuysen coal freight rate bill, which would permit reduced coal freight rates during the summer.

It is understood that tests of bituminous coal offered by contractors at the recent reception of bids for supplying the Government Fuel Yard have shown the coal to be of poor quality. Because of continued protests by Government departments in Washington as to poor quality of coal, it is believed that the Bureau of Mines will reject the bids.

The Department of Justice is undecided whether to appeal to the Circuit Court of Appeals or the U. S. Supreme Court the coal commandeering cases being brought by coal companies, who are winning in the lower courts in their claim for greater compensation than was paid by the navy under commandeering orders. Decision by the Supreme Court in a test case, though not applying to coal, will guide the department in the matter of appeals.

Deadlock in British Strike Causes Much Suffering; Public Cold to Strikers

ANOTHER week has passed without any notable change in the British strike. After the mine workers left London to get in touch with their constituents the Board of Trade called in the mine owners and brought pressure to bear on them to modify their proposals and wage scales, some of which the government regarded as indefensible and in need of amendment, according to the statement of Lloyd George in Parliament on April 18.

In consequence on April 19 the mine operators made nine proposals: (1) Establishment of a National Wage Board, (2) application of national principles to wages in each district based on the financial condition of the industry in that district, (3) national settlement of the periods chosen for ascertainment of district results, (4) national determination of point below which wages shall not be automatically reduced, (5) return as wages to workers, in addition to wage rates, of the whole surplus revenue available in each district during existing abnormal period, (6) satisfaction of the workers' representatives in each district that the district is proposing to pay all the wages it can bear, (7) conference with the workers' representatives with a view to dealing with the wages of lower-paid men, (8) national agreement with the workers regarding the future relation between wages and profits, (9) joint audit of mine owners' books.

Mine Owners Propose Three Months' Truce

The mine workers having declared by a large majority vote that they wished to continue the strike, these concessions did not win the support of their leaders. They seem revolutionary enough to suit anyone, but to the mine workers' leaders they were too vague to afford a basis for negotiation. On April 25 the mine owners submitted a proposition for a three-month truce, to be followed by a permanent settlement embracing a standard wage and a standard profit. The country would be divided into five districts and for three months reductions in wages in each area should be uniform and not exceed an amount set by the government, the owners and men. Surplus revenues in any area are to be divided between operators and mine workers, and if wages were likely to be reduced the owners would not share in the surplus or take standard profits.

Meantime both mine workers and the public are daily suffering more acutely than before. The allowance of coal to individuals is 56 lb. weekly. This is an extremely meager allowance, as snow has fallen in some sections. Many small businesses have closed down. It is thought that some of the large public schools also may have to suspend sessions. The potteries are closing, train schedules are reduced between 50 and 75 per cent of normal, factory closings are frequent, fishing fleets are idle. In Birmingham, home of the steel trade, only three blast furnaces are running. In Sheffield 40,000 persons are without work. In Glasgow 59,000. The government is trying to correct the necessity for "fuel lines." At Chislehurst, in Kent, where no coal is obtainable, the Town Council has given the people permission to gather wood in the nearby forests.

Carlisle Railroad Men Favor a Strike

Here and there the sentiment that built the Triple Alliance still exists. The railroad men of Carlisle still favor a railroad strike, and the transport workers refuse to unload coal from Germany, Belgium and the United States and even to unload for the railroads 10,000 tons of Welsh coal mined before the strike. Recruiting still continues. Some have questioned the necessity for the volunteers, seeing that the strike is no longer expected to be general. The new force is costing about five millions of dollars a week, almost as much as the subsidy formerly paid to the coal industry. On April 18 the question was raised as to the advisability of disbanding, but Lloyd George declared that he favored over-insurance, rather than under-insurance, against disorder and revolution.

The public for the most part, angered at the decision to drown out the mines and the attempt to ruin them by actual violence, is still unfriendly to the strikers, but several of the leading Bishops and Nonconformist clergy have urged a more dispassionate consideration of the mine workers' demands. The pumpmen at eighty mines have left their work for the second time. At forty-five other mines soldiers and sailors are protecting and even manning the pumps.

Government Files Answer to National Coal Suit; Dismissal of Injunction Asked

ATTORNEY GENERAL DAUGHTERY and the other officials named in the National Coal Association's injunction suit to prevent service on the coal association under the Indianapolis conspiracy indictment, have filed their answer to the association's bill in the District of Columbia Supreme Court. The court is asked to dismiss the injunction on the ground that the local court lacks jurisdiction, and the further ground that if granted the injunction would operate against the government.

Questions of jurisdiction consumed the entire day April 25, when L. Ert Slack, special assistant to the Attorney General, appeared in the Supreme Court of the District of Columbia contending that the court did not have jurisdiction which would permit the issuance of an injunction restraining the U. S. District Court in Indiana from compelling the appearance in Indianapolis of the National Coal Association and certain of its officers. Mr. Slack based his case on the following arguments:

"(1) This action is a civil suit in equity wherein plaintiffs seek to enjoin defendants, as officers of the United States of America, sworn and charged, from further performing their several duties in the prosecution of a criminal action, to wit: an indictment found and returned, and now pending in the District Court of the United States for the District of Indiana, in which indictment these plaintiffs and others are defendants; and this Court is without jurisdiction as a court of equity to entertain, hear or determine any of the matters and things set forth in the bill of complaint filed herein.

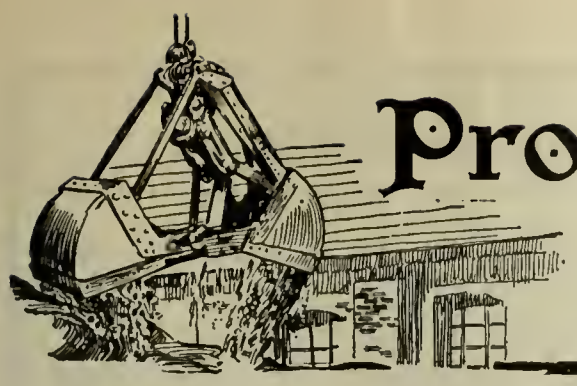
"(2) This action is a civil suit in equity wherein plaintiffs seek to enjoin defendants, as officers of the United States of America, sworn and charged, from further performing their several duties in the prosecution of a criminal action, to wit: an indictment found and returned, and now pending in the District Court of the United States, for the District of Indiana, in which indictment these plaintiffs and others are defendants; and this Court is without equitable power to grant the relief prayed for in said bill of complaint filed herein.

"(3) This action is a civil suit in equity against officers of the United States of America to enjoin such officers from proceeding to prosecute an indictment against the individual and corporate defendants who are plaintiffs in this action, and who are charged in said indictment now pending in the U. S. District Court for the District of Indiana, with having violated certain federal statutes, and which District Court for the District of Indiana now obtains and has jurisdiction of such prosecution, and although the United States of America is not named in the bill of complaint filed herein, and is not a party to the record herein, it is the real party in interest, and the only party against which alone, in fact, the relief prayed for in this bill of complaint is asked, and against which the judgment and decree prayed for would operate, and plaintiffs have not, by plea or otherwise, shown that the United States of American has directly or indirectly consented to the prosecution of this action or to be sued by either of the plaintiffs herein, and has not consented to be sued in this action.

"(4) The pleas contained in the bill of complaint filed herein do not entitle plaintiffs, or either of them, separately or severally, to equitable relief and should be dismissed for want of equity.

"(5) The plaintiffs herein, and each of them, separately and severally, have a full, adequate and complete remedy at law."

Judge Foster, of counsel for the National Coal Association, cited numerous cases to disprove the contentions of the assistant to the Attorney General, but Justice William Hitz gave no intimation as to the finding he will make.



Production and the Market

Weekly Review

WHAT the future may hold for the industry is the question that is today uppermost in the minds of producers and shippers. Many profess to see a fall rush for coal which will be intensified in proportion as consumers delay their purchases.

Purchasing agents do not dispute the fact that coal can now be secured at ridiculously low prices at the mines, but they are not to be pushed into the market for more than their current needs. One reason for this is their hope and belief that freight rates are bound to come down and their idea is a respite from purchasing more than they need until this reduction may have been accomplished, at which time they hope that the lower carrying charges will offset any increase in the mine price.

Were any material reductions in existing freight rates to be made, they could hardly go into effect until late summer or early fall. When the present unsatisfactory transportation conditions are considered, it is plain that with scarcely any improvement in industry and manufacturing, a car shortage is almost inevitable. How much or how little this will affect the price of coal will depend largely on the reserve stocks of buyers. If heavier than is now conceded, they will stave off in a measure, the entrance of too many orders for prompt delivery, fulfillment of which would then be impossible.

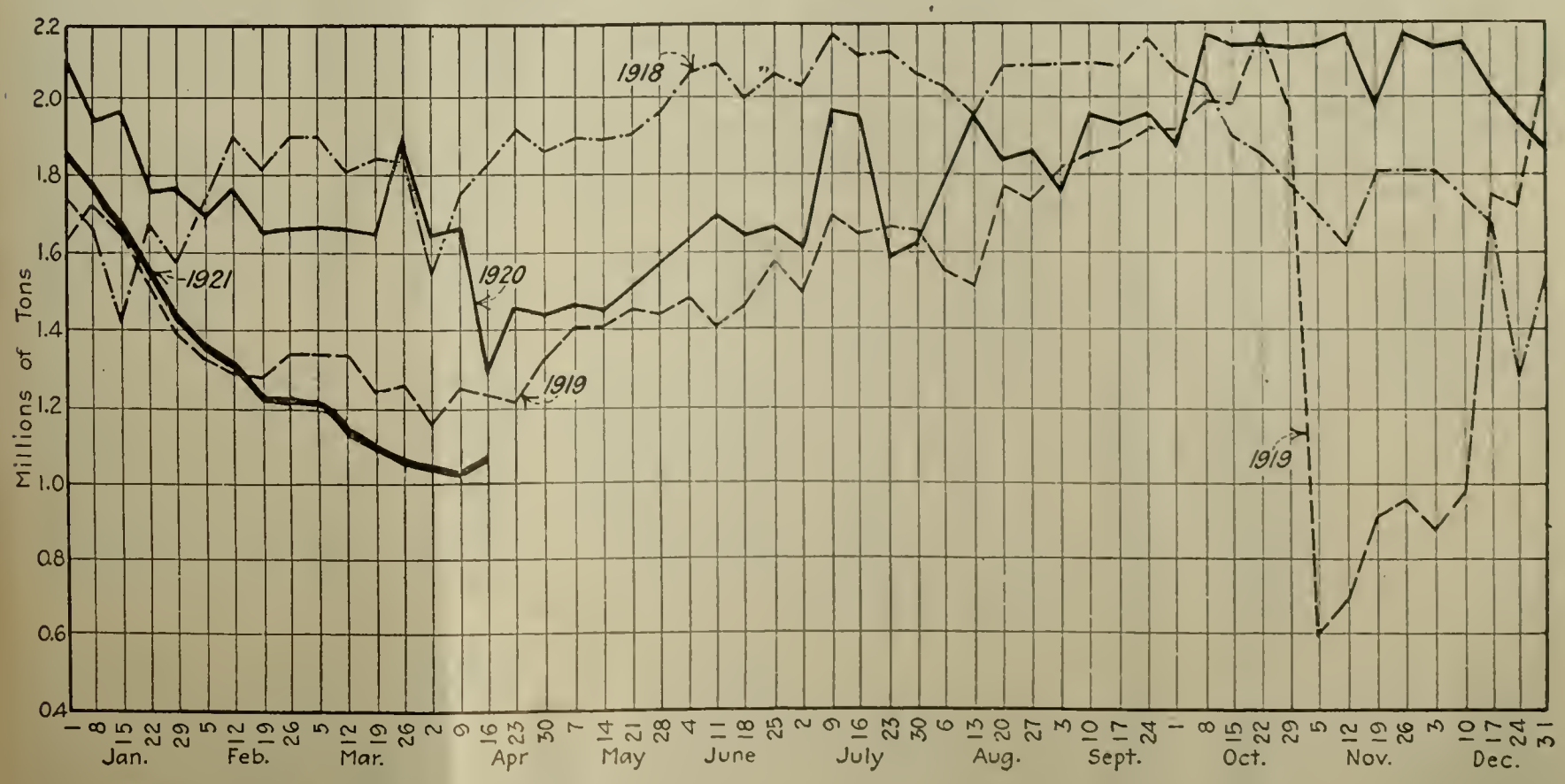
For the first time in months, production has taken an upturn. This is the usual recovery from the period immediately following the close of a coal year and it is believed that the low point has now been passed. Production in the Middle West has not improved, although a better market tone has developed in that section in the past few days. Contracting is progressing past the inquiry stage and it is evident that buyers are aware of the impending shortage and are taking steps to cover. This is true of at least one large railroad in the Central States, which is making ample provision for its needs.

Consumer Delays Stocking by Retailers

Retailers are coming into the market in larger numbers, but many of their orders are for delivery sixty or ninety days hence, as yards are still heavy with coal. The domestic consumer of soft coal is taking hold very slowly and until he overcomes this tendency, retail stocking cannot commence in earnest.

Anthracite production is progressing satisfactorily. Domestic sizes are in good call as the consumer is becoming convinced that he is in for no more price cuts such as have featured the retail markets recently. More independent mines are being put in operation, at small

Daily Average Production of Bituminous Coal*

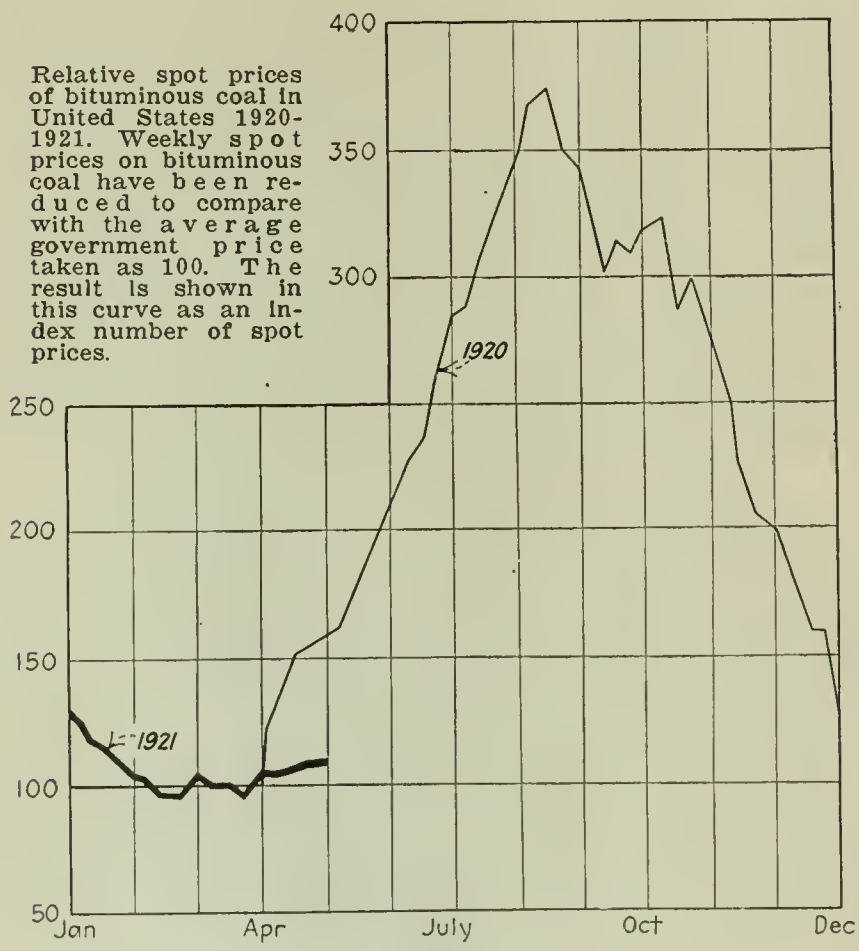


*From weekly report of Geological Survey.

premiums over the company schedules. Independent pea coal, however, is often sacrificed to clear the tracks, as this size is sluggish. Steam coals are also in poor call and are being stored in large quantities.

BITUMINOUS

Better production marked the week ended April 16, the output reaching 6,525,000 net tons, as compared with 6,109,000 tons for the last preceding week, according to the Geological Survey. This is the first upturn in the rate of daily production since early in December, 1920, when the steady decline commenced. Loadings improved slightly on Monday, April 18.



Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.

Spot prices are on a somewhat wider range in the East. *Coal Age* index remains unchanged at 103, probably due to better bunkerage call and sales of special grades in the Midwest. Spot buying has increased because of a tendency to await any possible freight reductions, which consumers hope may be made, before entering into any seasonal contracts.

Conditions are not improved much on the Eastern seaboard, although bunkering coal is in more active demand. The New England market is dragging and has failed to respond to the strenuous efforts of operators to obtain orders for May tonnage, even at considerable price cuts. In the Middle West there are unmistakeable signs of improvement, although this has not been productive of any additional tonnage moved. Contract making has picked up somewhat and a better line of inquiry is daily being noticed.

Lake demand is slow and is not expected to pick up much before May 15 at the earliest. The movement of ore down the Lakes is being delayed by poor markets and the scarcity of boats is holding more than 600,000 tons of coal at the lower ports awaiting available tonnage. Running time was actually lost on the Wheeling & Lake Erie R.R. in the eastern Ohio field during the week ended April 16, due to car shortage caused by so many loads at the lower docks. Other factors in delaying Lake buying are hopes for an

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date *a*
April 2*b*	5,822,000	102,623,000	9,715,000	136,300,000
Daily average	1,059,000	1,311,000	1,619,000	1,741,000
April 9*b*	6,109,000	108,732,000	9,690,000	145,990,000
Daily average	1,018,000	1,290,000	1,615,000	1,732,000
April 16*c*	6,525,000	115,258,000	7,563,000	153,553,000
Daily average	1,088,000	1,276,000	1,261,000	1,700,000

(*a*) Less one day's production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date *a*
April 2*b*	1,157,000	22,747,000	1,314,000	21,923,000
April 9	1,865,000	24,612,000	1,538,000	23,461,000
April 16 *c*	1,885,000	26,497,000	1,249,000	24,710,000

(*a*) Less two days' production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

BEEHIVE COKE

Week Ended Apr. 16*a* 1921	Week Ended Apr. 9*b* 1921	Week Ended Apr. 17 1920	1921 to Date	1920*c* to Date
74,000	78,000	246,000	2,700,000	6,674,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

	Market Quoted	Mar. 1920	Mar. 29 1921	Apr. 19 1921	Apr. 26 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$3.25	$3.25	**$3.35**
Pocahontas lump	Columbus	2.60	5.50	5.50	*5.25*
Pocahontas mine run	Chicago	2.35	4.15	4.00	3.50@ 4.50
Pocahontas lump	Chicago	2.60	5.15	5.00	4.50@ 5.50
*Smokeless mine run	Boston	....	5.85	5.85	*5.50@ 6.00*
Clearfield mine run	Boston	2.95	2.50	2.35	*1.85@ 2.50*
Somerset mine run	Boston	2.95	3.00	3.05	*2.25@ 3.35*
Pool 1	New York	2.95	3.30	3.50	3.25@ 3.75
Pool 1	Philadelphia	2.95	3.50	3.50	*3.35@ 3.50*
Pool 1	Baltimore	2.95	3.15	3.25	*3.10*
Pool 9	New York	2.95	2.75	2.80	*2.60@ 2.85*
Pool 9	Philadelphia	2.95	3.15	3.00	**3.00@ 3.15**
Pool 9	Baltimore	2.95	2.90	3.05	*2.90@ 3.00*
Pool 10	New York	2.95	2.65	2.55	2.35@ 2.75
Pool 10	Philadelphia	2.95	2.75	2.80	*2.65@ 2.80*
Pool 10	Baltimore	2.95	2.50	2.50	*2.40@ 2.50*
Pool 11	New York	2.95	2.20	2.15	**2.10@ 2.25**
Pool 11	Philadelphia	2.95	2.00	2.30	**2.40@ 2.50**
Pool 11	Baltimore	2.95	2.30	2.25	**2.25@ 2.35**
Pool 71	New York	2.95	3.00	2.95	2.70@ 3.25
Pool 71	Philadelphia	2.95	3.00	3.25	**3.25@ 3.35**
Pool 71	Baltimore	2.95	3.00	3.10	*3.00*
High-Volatile, Eastern					
Pool 34	New York	2.50	2.00	1.95	**1.75@ 2.25**
Pool 34	Philadelphia	2.50	2.15	1.95	**2.00@ 2.25**
Pool 34	Baltimore	2.50	2.05	2.05	**2.05@ 2.25**
Pittsburgh mine run	Pittsburgh	2.35	2.25	2.25	2.00@ 2.50
Pittsburgh sc'd gas	Pittsburgh	2.35	2.85	2.85	2.75@ 3.00
Kanawha mine run	Columbus	2.70	2.35	2.00	**2.25**
Kanawha lump	Columbus	$2.95	$3.25	$3.25	**$3.50**
Hocking mine run	Columbus	2.50	2.25	2.15	**2.20**
Hocking lump	Columbus	2.75	3.40	3.25	**3.35**
Pitts. No. 8 mine run	Cleveland	2.35	2.25	2.25	*2.15@ 2.80*
Pitts. No. 8 lump	Cleveland	2.60	3.50	3.65	*3.25@ 3.50*
Midwest					
Franklin, Ill., mine run	Chicago	2.35	3.40	3.40	3.25@ 3.50
Franklin, Ill., lump	Chicago	2.55	3.55	3.55	3.45@ 3.65
Central Ill., mine run	Chicago	2.35	2.25	2.50	**2.50@ 3.00**
Central Ill., lump	Chicago	2.55	2.85	3.00	2.75@ 3.25
Ind. 4th Vein mine run	Chicago	2.35	2.65	2.75	2.50@ 3.00
Ind. 4th Vein lump	Chicago	2.55	3.15	3.25	3.00@ 3.50
Ind. 5th Vein mine run	Chicago	2.35	2.50	2.75	2.50@ 3.00
Ind. 5th Vein lump	Chicago	2.55	2.75	3.00	2.75@ 3.25
Standard mine run	St. Louis	2.35	1.85	1.95	*1.75@ 1.85*
Standard lump	St. Louis	2.55	2.45	2.25	**2.25@ 2.50**
West Ky. mine run	Louisville	2.35	2.50	2.25	*1.85@ 2.60*
West Ky. lump	Louisville	2.60	3.00	3.00	2.50@ 3.50
South and Southwest					
Big Seam mine run	Birmingham	2.45	2.85	3.05	*2.70@ 3.25*
Big Seam lump	Birmingham	2.75	3.15	3.60	3.25@ 4.00
S.E. Ky. mine run	Louisville	3.00	2.65	2.75	2.65@ 2.85
S.E. Ky. lump	Louisville	3.25	3.55	3.75	3.50@ 4.00
Kansas mine run	Kansas City	3.50	4.50	4.40	4.25@ 4.50
Kansas lump	Kansas City	4.00	5.50	5.00	5.00

* Gross tons, f.o.b. vessel, Hampton Roads. Quotations on Pocahontas mine run, Boston market, heretofore quoted included both Pocahontas and New River and will henceforth be quoted as West Virginia "Smokeless."

† Advance over previous week shown in heavy type, declines in *italics*.

adjustment of freight rates from mines to the lower docks on cargo coal and unwillingness of the upper docks to take on new coal until they see a disposition on the part of inland customers to place a few orders.

Central Pennsylvania producers are interested in a hearing for increased rates for New England roads, which would hurt their trade in competition with the water route, the latter being already attractively low because of the abundance of vessels available for coastwise trade. The all-rail movement to New England shows no recovery, 2,219 cars going forward in the week ended April 16, compared with 2,274 the week before.

Tidewater accumulations are increasing. Hampton Roads dumpings for the 7-day period ended April 21 were 376,985 tons. The British strike has so far caused the movement of only a few additional cargoes.

ANTHRACITE

Production continues at a satisfactory rate. The output for the week ended April 16 was 1,885,000 net tons, a slight increase when compared with the preceding week. Independent operations are being resumed at prices slightly in excess of company schedules. Demand on the retail dealers is growing in an encouraging manner and points to a fairly active season. In New England, where consumers had been awaiting still further price cuts, the fact that bids for municipal buildings, schools, etc., showed prices well up to the established retail figure, evidently dispelled this idea, and demand is much improved. Philadelphia retailers are openly cutting their price schedules in an effort to stimulate trade, which has been very sluggish, except for a temporary spurt caused by a cool spell.

COKE

Beehive production continued to show the effect of the severe industrial depression during the week ended April 16, when only 74,000 net tons were produced—even less than the low record touched earlier in April. Spot Connellsville furnace has declined to $3.30@$3.50; contract furnace is nominal, $3.75@$4 and spot or contract foundry, $5@$5.50, but all buying is confined to very small lots.

Reports From the Market Centers

New England

BOSTON

Strong Efforts to Move Spot Coal—Receipts Diminish—Prices Depressed in Certain Directions — Anthracite Movement Slightly Better—Retail Demand Improves.

Bituminous—It is still a dragging market. For the most part buyers are keeping aloof, and there is next to no interest in current quotations. Here and there are manufacturers who have a slight spurt in their special lines and for that reason are beginning to inquire for contracts, but in many cases the spread between spot prices and those for extended delivery is so great that the buyer decides to wait.

Several of the largest operating interests in central Pennsylvania are making a determined drive to place May output, but except in rare instances they have not been quite willing to go the lengths necessary to induce purchases.

Figures show a steady decline in all-rail tonnages via the Hudson River gateways. Clearances coastwise show a similar drop, and it is hard to see where there can be any material gain in May. It is said that but four cargoes have been shipped offshore because of any direct reaction from the British coal situation, and these were to British coaling stations in ports like Teneriffe and Port Said. It remains for the smokeless shippers, therefore, to pound the New England market all the harder in their strenuous efforts to move accumulated coal at the piers.

At certain of the Tidewater rehandling piers, such as at Providence and Boston, there have been extremely low prices made for the purpose of capturing tonnage that of late years has been delivered all-rail. The 40 per cent advance in railroad rates last August and the great surplus of bottoms have made a new opening for water coal, especially from Hampton Roads, and so long as the Pocahontas and New River shippers are disposed to make sacrifices in order to keep in operation, it will be very hard for the higher grade Pennsylvania coals to retain their footing. This situation is realized and in more than one quarter there have been depressed prices both all-rail and by water. Mine prices are shown in the Weekly Review.

At Hampton Roads $6 f.o.b. vessel is freely quoted, and even $5.50 has again been rumored. The higher of these prices would figure less than $2.80 net at the mines. Current quotations on the best grades are very spotty, a few "market" cargoes having contributed further to this result. The agencies do not know where to turn to place coal. On cars for inland delivery Pocahontas and New River have been quoted this week down to $8, and in certain cases $7.75.

Anthracite—Shipments of domestic sizes have improved slightly. Several producing companies have put a proportion of broken size back through the rolls and this has meant a gain for egg and stove, the sizes in shortest supply. Unfavorable weather is again interfering with the movement of tows, and on the other hand Tidewater dealers are showing much more interest in shipments than a fortnight ago.

Retail trade here continues to show steady gain. The fact that bids for municipal buildings, schools, etc., showed prices well up to the established retail figure has had a favorable effect upon householders in general.

Tidewater—East

PHILADELPHIA

Anthracite in Moderate Demand—Pea and Steam Sizes Show Further Weakness—Bituminous Little Changed—Strong Efforts Made for Sales.

Anthracite—Moderately cool weather is still helping the demand, but that the inquiry for fuel is tapering off is generally in evidence. The trade has worked hard to get storing orders and so far the dealers have been about able to keep their equipment going at an ordinary rate, but it is almost a day-to-day business.

The moderate demand is also having its effect on retail prices, for while the general standard is ostensibly $13.25 for egg, $13.75 for stove and nut, and $11 for pea, dealers almost without exception are shading these figures. The price cutters, and they are not among the smallest dealers either, are openly advertising egg at $12.75, stove and nut $13 and pea $10.25, and this latter size occasionally shaved 25c. less. On pea size they can easily do this, as there is a considerable amount of independent offering at $5.50.

Shipments of all sizes are coming into the city freely and dealers are gaining the impression that the distant markets are not taking coal with the same eagerness as a year ago. Some of the independents who are endeavoring to conduct their business on the allotment basis are having difficulty to keep their trade taking all that is due them.

The anthracite tax bill seems entirely likely to become a law, as it is a favorite measure of the Governor. The rate has been reduced to one and one-half per cent, and the clause making it illegal for dealers to add it to the retail price has been eliminated.

Steam coals are dull and there is a surplus of every size that is going into storage. The independents have almost exhausted their limited storage room and small sizes are at times offered at a bargain, with $3 being the

favorite price for occasional cars of buckwheat.

Company prices per gross ton for line shipment and f.o.b. Port Richmond for Tide are as follows:

	Line	Tide
Broken	$7.25	$ 9.95
Egg	7.25	9.95
Stove	7.55	10.20
Nut	7.55	10.20
Pea	5.90	8.30
Buckwheat	3.50	6.00
Rice	2.50	5.00
Boiler	2.00	4.40
Barley	1.50	3.90

Bituminous—There actually seems to be a little more activity, but we feel certain it is due more to the almost frantic efforts of sales departments to get business rather than any real improvement in demand. Most of the buying is at the market, as there are few contracts, proportionately, in existence. Outside of the textile trade, and only that business in certain lines, there is little increased activity industrially.

Spot prices are but little changed, but the different pools seem to cover a wider range. Quotations are shown in the Weekly Review.

There have recently been some instances where blocks of coal of 1,000 tons or so have been sold for considerably less than the regular spot quotation, and we have heard of 25 cars of Pool 10 closed at $2.25. There is probably quite a little of this kind of trading by concerns, who having gotten a few orders at the market, take on a little more tonnage at a concession to keep their plants going.

NEW YORK

Anthracite Demand Grows — Domestic Coals Scarcer—Independent Operators Sold Ahead—Steam Coals Stronger—Bituminous Outlook Improves—Production Too Low.

Anthracite—There is an active market for domestic coals. All company fuels move readily and independent is becoming scarcer, due to limited production because of the idleness of many collieries. The demand for stove and egg has become so strong that many of the smaller operators are sold ahead for three or four weeks.

No official announcement has come out regarding the usual monthly increase of 10c. per ton. Dealers are rushed with orders but are getting just enough coal to keep them busy. Complaints of dirty coal are heard and in some instances consumers are holding back payments until the coal is screened and an allowance made.

Current quotations for company coals, per gross ton, at mine and f.o.b. Tidewater, lower ports, are as follows:

Broken	$7.10@$7.75	$ 9.71@$10.36
Egg	7.10@ 7.75	9.71@ 10.36
Stove	7.35@ 8.10	9.96@ 10.71
Chestnut	7.40@ 8.10	10.01@ 10.71
Pea	5.65@ 6.00	8.12@ 8.47
Buckwheat No. 1	3.50	5.97
Rice	2.50	4.97
Barley	1.50	3.97
Birdseye	2.50	5.02

Quotations for independent stove and chestnut range $7.75@$8. Pea moves slowly and good grades of independent are quoted $5@$5.50.

Steam coals are picking up. The companies are obtaining circular for all they can move and good independent grades of buckwheat No. 1 were at 10c. above company circular. Rice is going strong at full company prices of $2.50 and barley at $1.50.

Bituminous—It is thought that there will soon be a wave of concerted buying. Buyers are keeping close watch on production and realize that unless there is a tremendous increase in mining there will not be sufficient coal produced to meet requirements.

The continuation of the trouble in the British mines resulted in increased inquiries here and the placing of some orders. At the end of the week, press dispatches told of the arrival in Liverpool of the first cargo of American coal sent abroad since the inauguration of the present trouble.

The stronger tone to the market is attributed to the lack of coal more than to any increased demand. Large consumers who have been reluctant to receive new tonnage unless it could be obtained at the lowest figures and because of the good grades of coal available at low prices, would not think about contracts.

Some operators have practically withdrawn their contract quotations and will depend upon the spot market. Cheaper coals are almost out of the market, as there is no call for them when it is possible to get good grades at present figures.

Quotations at this Tidewater range about as follows: Pool 9, $6.25@$6.35; Pool 10, $5.95@$6.10; Pool 71, $6.25@$6.35, and Pool 11, $5.40@$5.50. Mine quotations are reported in the Weekly Review.

BUFFALO

Consumers Indifferent—No Contracting—Spot Demands Are Small—Anthracite Market Quiet—Complaint on Prices—Lakes Tonnage Is Short.

Bituminous—"Indifference on the part of consumers is something terrible," reports a local shipper. "I sent out 1,200 circulars lately to the consuming trade and I sold exactly one car on the venture. As it was coal of my own mining I lost money on it." This is typical of conditions in the Buffalo coal trade. As yet the consumer is thinking only of the time when coal sold high. If something had not been saved then the coal trade would be bankrupt now. As it is, the trade generally agrees that conditions may be unimproved for some months yet. Prices do not really decline as they are already at the bottom.

Possibility of lower freight rates is holding up all branches of the market and whether anything is done or not the agitation will keep back all buying except that for immediate needs. Prices are unsteady at former figures, $3.50 for Youghiogheny gas lump, $3 for Pittsburgh and No. 8 steam lump, $2.60 for all mine run and $2 for slack, to which add $2.36 to Allegheny Valley and $2.51 to other coals, to cover freight.

Anthracite—With coal in good supply, the trade is rather quiet. Complaint is heard everywhere of the high prices when everything else is coming down. People are forgetting that this coal did not go up as most other things did and are making unfavorable comparisons with present bituminous prices.

The independent premium is gone and some of the mines are shut down. Lakes loading continues brisk, although tonnage is short. No rates for freight have been made although they are likely to be on last season's level. Upward of 300,000 tons have been loaded but only a few cargoes have cleared, these amounting to 80,544 tons, of which 27,400 tons are for Chicago, 26,068 for Duluth and Superior, 14,300 for Fort William, 10,000 for Sheboygan and 2,776 for the Soo.

Coke—Demand continues light and local jobbers are making few sales.

HAMPTON ROADS

Accumulations Increase—British Strike No Bolster—Prices Unchanged.

Continued dullness featured the week ended April 21 expectations of stimulated trade on account of the British coal strike having proved vain. Only a few extra cargoes were shipped during the week to ports formerly served by the mines of Great Britain.

Pools 1 and 2 remained at $6.25@$6.50, with other pools approximately $1 lower. There were few inquiries, and little demand. Accumulations at Tide increased somewhat, while vessel tonnage awaiting cargo remained steady. Two cargoes were shipped to Canada, the first to the Dominion for many months.

The Virginia Ry. piers have resumed the two-shift plan of operations, which was abandoned several weeks ago as an experiment. All the local piers now are running with two shifts per day.

Figures for the three piers for the week ended April 21, are as follows:

C. & O. piers, Newport News—	
Cars on hand	2,559
Tons on hand	127,610
Cars dumped, April 1 to date	3,694
Tons dumped, same period	191,845
Tonnage waiting	1,680
Virginian Ry. piers, Sewalls Point—	
Cars on hand	1,357
Tons on hand and in transit	80,000
Cars dumped, April 1 to date	3,667
Tons dumped, same period	183,355
Tonnage waiting	6,900
N. & W. piers, Lamberts Point—	
Cars on hand	1,953
Tons on hand	123,558
Cars dumped, April 1 to date	3,707
Tons dumped, same period	363,929
Tonnage waiting	26,500

BALTIMORE

Market Dictated by Needs of Seller—Range on Spot and Contract Offerings—Hard Coal Producers Deny Poor Preparation.

Bituminous—The needs of the seller rather than those of the consumer are dictating the market here as yet. The line of foreign inquiry that came following the outbreak of the British strike gave hope that a strong line of contract closings would follow at once. This failed to materialize, however, and selling has to be urged in the face of a liberal supply.

Talk that the New York and Philadelphia situation is tightening has so far failed to create any effect here. Prices for both steam and gas coals on contract are today nearer spot prices than for several weeks past. Best gas coals, for instance, are today commanding from $2.90@$3 for lump, and around $2.40 for mine run. Best lump over the year, while holding around $3.50@$3.75, has been offered in fairly large quantities as low as $3.15. The best steam coals are around $3, with some shading off 10c., in the spot market, while the contract range is $3.35@$3.75 for the most part. Export business is light, the movement to April 16 being only 16,832 tons cargo and 2,403 tons bunker.

Anthracite—Dealers report a very light demand, and at the same time note rather poor deliveries from the mines on the little business being placed. The shipments North at this season, however, nearly always makes for light delivery here.

The Baltimore Coal Exchange is receiving replies from mines to the general complaint that poorly prepared coal is being shipped in. The replies so far received for the most part deny that the particular operation has sent out poorly prepared coal, and in some cases invitations are given for inspection of the actual operations at a time "when the stage is not set."

Northwest

DULUTH

First Cargo Arrives — Docks and Domestic Trade Very Light—Employees Refuse New Work Schedule.

Cargoes started arriving last week, the first boat to dock being the Str. *Price McKinney* for the Great Lakes Coal & Dock Co. at Superior. Repair crews are busy on the docks getting ready for the season of navigation.

Shipments continue very light, most of the bituminous moving being the usual sale of screenings each spring to large consumers. Anthracite price dropped recently 30@60c.

Weather for the past week has been very favorable for this time of the year and the domestic trade is very light on this account. Coal dock employees refused to sign the schedule of wages and working conditions for the coming year. This schedule was presented to the men some time ago and was to have been either rejected or accepted by April 15. The men have met this proposed schedule with a strike threat which if put into effect May 1 will tie up the docks and seriously hamper the already slow movement of cargoes.

MILWAUKEE

Buyers Holding Off Until May Prices Are Fixed—Cargoes of Soft Coal Continue to Arrive.

Price announcements on May 1 will open the way for a reasonable renewal of business, as many consumers of both hard and soft coal have been holding off in order to reap the benefit of any reduction that may be made.

This disposition to dodge purchasing was exemplified during a recent two-day blizzard. When a snow blockade became apparent, dealers were showered with orders for immediate delivery. However, when the first burst of sunshine came, there was an equal urgent rush of cancellations, which left the coal office slates clean.

Dock men are preparing to promote a vigorous campaign for early delivery to supply the coming season in order to avoid the complications which were met at the close of the last season, when priority shipments were necessary to insure a proper supply. Thus far in April five cargoes of soft coal have reached port. No hard coal has been received as yet.

MINNEAPOLIS

Consumers Refuse to Heed Warnings of Coming Shortage—Business at Standstill—Lakes Program Drags.

One might suspect that the members of the coal trade were engaged in a gigantic poker game, from the situation which now prevails in the Northwest. For there is what might be deemed "bluffing" to a finish on the subject of whether the fall will see a coal shortage again as did last year. To continue the simile, all concerned seem inclined to "stand pat" and wait for a showdown.

Dire predictions are being published in the Northwest that the trades must get in their orders early, and stock as far as possible, or they will be left without fuel in the fall. Jobber and retailer are perfectly willing to do their part only when the succeeding member of the trio, the ultimate buyer, does his. But the consumer seems to think that at the close of one season, it is altogether too soon to take up preparation for the next.

So buying is desperately slow. There is almost no contracting for future needs. Railroads have sufficient left on old contracts so they need not come into the market for some time. Steam users are well supplied and see no occasion for hurrying into a contract. Such buyers are not convinced that present prices are at the bottom.

In the dock situation things are abnormal now. There is less coal moving forward than common for the reason that no one seems anxious to take on coal at the docks. There are fewer vessels available, because of the dullness of the iron ore market. No one wants ore at the Lower Lakes ports, and many vessels are tied up for lack of business.

Despite this explanation of the causes, it will avail little if winter finds the Northwest with a limited and inadequate supply. The serious question whether it is assuming a reckless hazard not to stock coal early, is one which cannot be answered. The unknown quantity enters into the situation too largely. Some claim that the coal trade has set up the shortage cry so often that they have no business to do so again, and that they will not receive nor deserve credence if they do.

Anthracite is hardly moving to the docks and soft coal is but little better. All-rail fuel is not coming to this territory in any tonnage, as the mines are running on very short production. All-rail southern Illinois coal is selling at the mine at $3.65 for the month and is to advance 20c. on May 1 and 15c. or more on June 1. But the selling in this district is very light, and shows no sign of improvement, despite a more active situation elsewhere. Contracting at a standstill.

Inland West

CLEVELAND

Output Rises As Inquiries Improve—Slack Market Weakens—Rail Lakes Rates a Factor.

Bituminous—The gradually rising level of industrial activity, led by the improvement in the automobile, tire and accessory industries, evidently is being reflected in a perceptible increase in the demand for steam coal. Lakes shipments are only partially responsible for the betterment. Inquiries are distinctly more frequent and an increase in contracts with smaller consumers is reported.

The recent show of strength of the slack spot market is subsiding. The firmness was occasioned by the lack of demand for prepared sizes which made the slack supply less than the demand. Greater production has mended this shortage and the price range is now $1.85@$2.10. Other steam spot prices remain unchanged.

Pocahontas and Anthracite—Wholesalers, jobbers and retailers are signing contracts for the year's supply of Pocahontas at $3.50 mines. Last year's contract prices were $4.25@4.50. Retail Pocahontas has been lowered, as the demand continues to taper. The April circular of anthracite shows the mine prices for egg $7.10@$7.35.

Receipts of bituminous coal during the week ended April 16 amounted to 585 cars, industrial, retail 274 cars, total 859 cars, as compared with 815 cars during the previous week.

Lake—Coal men here believe that activity in the northern Ohio soft coal market in the next few weeks depends in considerable measure on the result of appeals for freight rate reductions from the mines to Lower Lakes. A committee of eight eastern roads have submitted a proposal to the commerce commission with respect to adjustment of these rates. At the present time coal is being sent to the ports at a fair rate of speed and is arriving more rapidly than it is being loaded because of lack of tonnage. Only the opening of the ore season will supply coal shippers with a normal amount of vessels. Ore shipments have begun but

only on a small scale and the depression in the blast furnace industry offers no prospect of an early or large ore movement. More than 600,000 tons of coal have been dumped at the Lower Lakes ports.

COLUMBUS

Prices Are Still Unchanged — Production Is Small—Lakes Trade Slow to Open—Steam Business Is Quiet.

With production at a low point, trade is at a standstill, and everyone is playing a waiting game. The feeling in coal circles has improved slightly and there is now more optimism shown on all sides.

Steam trade is quiet in every particular. Plants which have resumed operations are placing only an occasional order. Reserves are fairly good. This is especially true of the larger consumers, some of which have resumed operations within the past two weeks.

Domestic is also quiet as dealers are laying off the market. Householders are waiting until later to lay in their winter stocks. Pocahontas is the only strong point. Retail prices are fairly steady. Hocking lump is $6.75, West Virginia splints, lump $7.50@$7.75, Pocahontas lump $9.50 and egg anthracite sells $14.50 with chestnut at $14.75.

The Southern Ohio Coal Exchange reports the output for the week ended April 9 at 103,692 tons out of a capacity of 623,614 tons from the 392 mines reporting. No market was the cause for a loss of 494,518 tons.

Lakes trade is showing no activity outside of the loading of a few vessels in the lower ports. With the ore trade dull, it is believed there will be very little activity before May 15.

CHICAGO

Steady Improvement Predicted—Contracts Are Being Signed — Smokeless Strengthened.

One or two large industrial concerns have placed contracts during the past week. The average contract does not call for full requirements. Purchasing agents of these companies have planned to contract for one-half to three-quarters of their ordinary requirements and to buy the balance on the open market. In view of the present outlook on the coal situation, it is not expected that this plan will work out with much success as there is bound to be a decided coal shortage immediately upon the resumption of manufacturing.

The domestic market continues to be in the doldrums. Dealers find it almost impossible to prevail upon their customers to buy coal. Numbers of the smaller concerns have their bins nearly empty of bituminous. Anthracite is moving in large volume as is always the case at this time of the year.

There has been some stiffening in Pocahontas as well as eastern Kentucky. The former coals are strengthened purely on account of the strike in England. Retailers are afraid that if they do not get their coal now, it will move forward to the seaboard, consequently those who have not already closed contracts are buying on the open market in volume enough to make spot quotations on Pocahontas mine run firm from $3.50@$3.75. Kentucky block, which is growing in favor in the Chicago market, has been very weak until now, but the situation has strengthened because of the opening of the Lakes season, when practically all operators producing the better grades of Kentucky block will have an unlimited outlet for their coal in the Northwest.

The whole coal fraternity in Chicago, taking in retailers, operators and wholesalers, believe that the worst is over so far as market conditions are concerned and that a steady improvement will develop from now on.

ST. LOUIS

Cool Weather Stimulates Domestic—Steam Sizes Heavy—Early Shortage Appears a Certainty.

Cool weather has materially helped the domestic market. Orders have been small, but have enabled operators to get better working time. In addition, results of advocating early storage are beginning to be felt.

Retailers have made announcements that there will be an increase in the price of Carterville of 25c. on May 1, occasioned by a mine advance of 20c. per ton. This has helped the St. Louis condition considerably. The present price is $7.25. There is a fairly good movement of Mt. Olive for local domestic immediate use and a little going in storage. The present price on this is $6.

The Standard situation is a bad one. There is very little moving for domestic locally, but a little is moving out into the country. Steam business is not good and there is nothing to indicate that it will show much improvement. Just the normal tonnage that has been used in the past 4 or 5 months seems to be in the market, and steam sizes are beginning to get heavy.

Anthracite continues to come in in small lots. Orders for something like 50 cars of West Virginia smokeless were placed this week, but there is nothing to indicate that the demand will be very heavy. Coke seems to be growing in demand, both gas-house and byproduct.

CINCINNATI

Market Shows Signs of Firming Up—Spot Demands Increase as Reserves Are Picked Up—Contracting Inactive.

A somewhat stronger undercurrent was noted in the coal trade here last week, though there was not much price change. Some of the wholesalers were inclined to give credit to the general and generous distribution of the warning sent out by the National Coal Association which showed that the weekly average output was falling behind and what may be expected in the future. Each week shows more spot buyers coming into the market, which is taken as a good indication that stock piles are getting near the point of exhaustion. Yet there is almost a total lack of contract taking or inquiry along that line.

Bituminous lump is still draggy, with spot sales as low as $2.75 and up to $3.25; contract, $3.75@$4; mine run spot, $2.10@$2.35, contract, $3 and up; nut and slack, $2@$2.25 for spot, and contract $2.75 and up. Smokeless lump and screenings are practically off the market. Smaller companies have been offering mine run as low as $3, but the average price is being maintained about $3.50.

Though there has been no change in retail prices since the reduction of ten days ago on bituminous and smokeless mine run, retailers say that they have noted no quickening of demand.

DETROIT

Bituminous Selling Very Slowly—Little Interest in Market—Receipts Much Below Normal.

Bituminous—Buyers are still holding off on purchase of steam or domestic. Wholesalers and jobbers are meeting with little success in the effort to stimulate business and are showing a disposition to wait for the demand to broaden, rather than to attempt forcing coal on reluctant or indifferent buyers. Receipts fall far short of the normal volume at this season of the year. Little coal is arriving except such stock as has been sold before it leaves the mines. In consequence, free coal on tracks in or around the city is scarce.

Operating at a greatly reduced production basis, many factories and industrial plants are reported to be consuming reserves without replacing them. Later when the storage piles are gone, jobbers look for a buying demand which, they fear, some difficulty will be experienced in satisfying, particularly if the improvement in business, meantime, develops to a point where there is anything like a normal use of transportation facilities.

Smokeless lump and egg is quoted at the mines at $5, mine run is $3.50 and nut and slack $2.25. Three-inch lump from Ohio, Kentucky and West Virginia holds around $3.40, 2-in. lump is $3.25, 1¼-in. is $3.15, ¾-in. is $3.05, mine run $2.50 and slack about $2.

Anthracite—Demand of household consumers for prepared sizes continues slow, despite a brief stretch of colder weather early in the week.

South

BIRMINGHAM

Domestic Demand Fair — Steam Weak and Uninteresting — No Contract Demand — Operations About One-Third Normal.

There is a fairly good demand for lump and nut, in fact there is sufficient business offered to take care of all the better grades being mined at this time and the anticipated output pending the resumption of commercial operations..

Contracting for medium grades has progressed satisfactorily in view of the uncertainty attending the operation of commercial mines.

Coal men do not offer any predictions of a definite nature as to when there will be a revival in the steam coal market, which is now painfully quiet. The whole situation is dependent upon a general resumption in industrial lines and an increase in the business of railroad and shipping interests. However, it is the conviction of well-informed men in the trade here that the demand for commercial coal will not closely approach normal this year.

Mining operations continue on a basis in line with trade requirements and there is little coal being mined for which there are not orders in hand. Labor supply is good, and there is little disposition on the part of employees to leave, as there is no more favorable field of action. In most camps the mine workers are exempted from the payment of house rents and charges for water and lights, and many other concessions are granted to lighten the cost of living as much as possible.

LOUISVILLE

Optimism Shown Concerning Future Developments—Higher Prices in View —Demand Slightly Improved.

Several operators are refusing to accept long contracts, feeling sure that delayed buying will result in higher prices later on, with a strain on traffic facilities in handling rush coal.

Lakes movement is increasing, and this along with better industrial demand, and some little stocking on the part of domestic consumers, is causing the general feeling in the coal trade to be better. However, industrial conditions are such that wage earners are not in position to do much stocking right now, as many are out of work, or working part time.

Average prices in the eastern Kentucky fields show lump around $3.50@$4 for the best gas grades; mine run, $2.65@$2.85; screenings, $1.90@$2.15. Elkhorn prices are about 20@25c. lower, that field taking West Virginia prices, as most of its production moves out to the East and North.

Southwest

KANSAS CITY

Demand Has Again Slackened—May Schedules to Be Higher—Anthracite Available.

What little improvement was reported last week seems to have died out and the demand has slackened off materially on all grades. Steam plants who put in storage coal last summer and fall have started picking it up and demand for domestic is almost at zero.

Retail yards in Kansas City are doing practically nothing. There is some smokeless being delivered, but aside from this there is no demand. For the first time in four years dealers are able to get prompt shipments of Pennsylvania anthracite, but on account of the high freight rate and poor preparation we have had for the past two or three years, dealers are unable to place much of this.

Arkansas smokeless advances 25c. on May 1 and it is expected that other grades will increase soon. For April shipment, Arkansas smokeless lump is $6, mine run $4.50, slack $3.50, Kansas lump and nut $5, mine run $4.25@$4.50, mill $4, slack $3.75; North Missouri lump $4.50, mine run $4, washed slack $4.05.

West

DENVER

Production Increasing — Lignite in Sharp Competition—Bituminous Outlook Improves.

Production is gradually mounting to a point where operators believe they will have less serious obstacles to overcome in keeping their organizations intact this summer than was anticipated a month ago. The output for the week ended April 9 was 145,000 tons of a possible 315,609 tons. A month ago production was down to 120,000 tons.

Bituminous lump is selling $5.50 at the mine, against $5.65 asked by one or two companies. Buying is a little better and indications are that a firmer market will come along in May.

The lignite field is showing an actual output of about half of its capacity. Competition of an inferior grade at a price below the recognized figure is tending to upset the small trade of this kind during the storage season.

Routt County, cut off temporarily by a heavy snow, is mining but little coal. Efforts to have the road opened are being urged, although the line is in the hands of a receiver. Ordinarily, it will require another two or three weeks before production, which averages 25,000 or 30,000 tons a week, can be resumed on the old scale.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Production Remains About 35 Per Cent —Hope of Lakes Rate Adjustment— Market Is Narrow.

Operations average approximately 35 per cent of rated capacity, there having been no change of any consequence for a month past. A number of mines have been closed continuously, but the majority are operating part time.

Some hope is still entertained that before the middle of the season some action will be taken by the Interstate Commerce Commission in the matter of adjusting rates on Lakes coal from the various districts to an equitable basis. The Pittsburgh district feels that its rate is too high to give it the share of the business to which it is logically entitled. Very little has been done in Lakes buying in any district, buyers being apathetic while transportation companies are indisposed to get their boats into commission since there is no prospect of much ore movement in the fore part of the season.

Labor conditions do not seem to be altered materially by the reduction made in the Connellsville field April 1, that field being non-union. It is pointed out that the Frick interest represents fully half the Connellsville operations, and it has not reduced wages.

The market remains very narrow and sales are hardly sufficient to define prices. In general sales are below the full cost of production. Prices are shown in the Weekly Review.

CENTRAL PENNSYLVANIA

More Mines Working, but Production Falls—Interest in Rates Hearing.

Reports indicate that a greater number of mines were in operation during the second week of April than during the month of March but the output has fallen, amounting to 13,193 cars.

Operators are much interested in the hearing to be held in New York on April 28. The New England railroads, which compete with the water carriers from the West Virginia fields, are seeking increased rates for hauling coal. If the increase is recommended, it will go to the Interstate Commerce Commission for ratification. The coal from West Virginia is shipped from Baltimore and other ports by water and the central Pennsylvania field is the principal competitor.

CONNELLSVILLE

Spot Furnace Coke Lower — Light Demand All Around—Resumptions After Temporary Closing.

The indisposition of men at three or four plants to accept the wage reduction made by practically all independent operators April 1 has disappeared and the works that have orders are running as formerly. One large plant closed to make a change in equipment and when it was ready to resume the men were also ready.

Some small lots of spot furnace coke have been sold at $3.30, against the recently reduced price of $3.50. Competition for the very small amount of business going is between very few operators, the majority not considering it worth while to try to do business.

Conditions in foundry coke are disappointing. Demand for spot lots has dwindled to small proportions, and this indicates extremely light consumption, for stocks the foundries had Jan. 1 are believed to be pretty well exhausted and shipments on contract are very light. The price, however, has not yielded, favorite brands commanding $5.50 while ordinary selected 72-hour foundry brings $5. Coke at below that is regarded as not strictly standard.

We quote spot furnace coke $3.30@$3.50, contract furnace nominal at $3.75@$4, and spot and contract foundry $5@$5.50.

The *Courier* reports production in the week ended April 16 at 23,260 tons by the furnace ovens, and 23,960 tons by the merchant ovens, making a total of 47,220 tons, an increase of 12,455 tons.

UNIONTOWN

New Low Price Spots Develop—Lakes Buyers Favoring Other Fields—Coke Inactive.

Inquiries for coal continue to show a slight increase but no substantial number of sales have resulted. On the other hand there has developed a tendency on the part of some operators to enter into a bidding contest for the little business available. This situation prevails largely in the coke trade but also has found a reflection in the coal market, steam being quoted down to $1.60, the lowest figure yet reached. Other operators, however, are quoting up to $2. Byproduct has a low quotation of $2.25 and up to $2.75.

Furnace coke quotations by some independents have reached $3.50, also the lowest figure touched for that fuel. Quite a number of operators have held to a $4 minimum for furnace and have steadfastly refused business at a smaller figure. The break, however, has been made. Foundry has a low quotation among the price shading element of $4.50, with others holding for business up to $5.50.

Railroads are continuing to bid for all available shipping business. Extensive arrangements are being made by the Pennsylvania to handle coal and coke traffic with the return of normal conditions.

A little activity is being noted in the Lakes trade. Some reports indicate a tendency on the part of buyers to make their purchases from other fields, principally Indiana, Illinois and Ohio, on the promise that freight rates make a decided difference in cost at the piers.

EASTERN OHIO

Production Increases—More Industrial Activity—Negotiations for Freight Reductions Retard Buying.

During the week ended April 16 production was the greatest since the middle of January, notwithstanding the development of some car shortage on the Wheeling & Lake Erie during the latter half of the week because of accumulated loads for Lakes. Production amounted to 296,600 tons, 47 per cent of the rated capacity, and an increase of 15,000 tons over the preceding week. Railroad fuel declined sharply and shipments to Lakes diminished because of tonnage scarcity. The increase is therefore attributed to a slight improvement in the general industrial situation.

Association mines worked 39 per cent of possible time but produced 48 per cent of rated potential capacity. Based upon the foregoing, it may be asserted that the mines are producing at least 50 per cent of normal.

Some hesitancy has developed on the part of shippers, pending the outcome of present negotiations for reductions in the rail rates on Lakes cargo coal. Furthermore, retail dealers, domestic consumers—in fact most all buyers of coal—are staying out of the market until they are certain that prices have reached bottom, and this procrastination is no doubt augmented by the hope and belief that freight rates generally will be reduced, making possible lower delivered prices.

While inquiries are a little more active, major buying continues to be in the spot market. The stiffening in slack prices has eased off somewhat and the range is now $1.85@$2.10. Other quotations appear in the Weekly Review.

UPPER POTOMAC

Operating Conditions Unchanged — Contract Market Sluggish—Better Inquiry Developing.

Only a small percentage of the mines were at work through the week ended April 16. No new contracts have yet been made to amount to anything and the spot demand is unimproved. Pool 11 is $2.50, Pool 9 $3 and Pool 1 $3.25; however, such prices are merely nominal as but little is moving. A better inquiry is gradually developing, although prices offered are yet too low for producers to accept.

FAIRMONT AND PANHANDLE

Export and Lakes Inquiries Appear—Little Business Being Done — Spot Prices are Still Too Low for Consideration.

Fairmont

During the latter part of the week ended April 16 production picked up slightly. However, the region has not recovered much from the loss of business following the end of the contract year. Inquiries are appearing from export and Lakes markets, but few contracts have been made so far. Spot prices are so low that little business is being accepted.

Northern Panhandle

Some contracts have been placed in the Northern Panhandle region although the volume of coal mined on them has not been sufficient to increase the output. Inquiries appeared to be more plentiful for Lakes coal, but few contracts were being made on any business. Labor troubles were disturbing conditions in a part of the region.

Middle West

MIDWEST REVIEW

Steam Market Shows Signs of Awakening—Retail Trade Still Quiet—Production Low—Better Contract Interest.

While the coal market has shown absolutely no signs of improvement, there has been a very decided betterment in the morale of the average coal man. This paradoxical situation has arisen from the belief that production has slumped to such an alarming degree that soon the mines will have to work 100 per cent of capacity in order to begin to take care of the demand which is heading toward us. It is an actual fact that an improvement in business conditions is under way. For instance, two months ago woolen goods were a drug on the market, whereas, today, we are very reliably informed, practically every woolen mill in the country is oversold. This situation has developed because the woolen industry was among the first affected by the busines slump. If this is true of woolen goods, it will be equally true in regard to coal, because the trouble with the woolen goods people was pretty largely a buyers' strike.

The retail trade is still content to worry along with small stocks on hand and practically no orders booked for immediate shipment, although the ordinary operator owning mines in the country, has plenty of orders placed for shipments to move forward in July or later. Retailers report that it is impossible to interest the public in any degree in coal.

The steam trade, while it is still in very poor shape indeed, has shown some signs of awakening. During the past week a number of contracts were reported closed at prices which were fairly satisfactory. Paper mills in this territory appear to be running on an improved basis, operating around 50 to 70 per cent, and the cement manufacturing industry has shown signs of still greater improvement as some of these companies are running full time.

While the railroads have not closed any contracts during the past week, they are fully aware of the true state of affairs and it is expected that a number of important agreements will be closed this week. An operating vice-president of one of the largest roads serving the Midwest admitted this week, that in his opinion, there would be a serious car shortage by September, and consequently a coal shortage, and that his road for one, was going to see to it that it was amply protected by contract.

While it is true there have been some slight improvements in the market, these have only affected directly, a few of the operators which produce the best coal that can be had. A great many of the less favored coal properties are still idle and will continue to be idle until they have succeeded in getting the railroads and public util-

ities to sign contracts for their output. Coal tonnage in Indiana and Illinois, it is commonly expected, will not reach normal figures until July.

WESTERN KENTUCKY

Situation Shows Very Little Change—Slightly Better Domestic Demand—Operators Optimistic.

Contract inquiries are becoming more numerous, and some business is being closed. There has been a slightly better demand for prepared sizes this April than last, due to cold weather, which has caused exhaustion of some consumers' supplies.

Industrial operations are a little better, and railroads are hauling slightly more tonnage, with the result that demand is slightly increased.

The field is getting in approximately two days a week. Operators feel that late stocking demand is going to force a rush, with higher prices and probable car shortage.

It is claimed that the only thing that would improve conditions would be for the railroads to reduce rates for the dull shipping period, as has been frequently suggested. Coal prices cannot come down much further, if any, and at the present time there is not much prospect of any lower freight rates.

Prices show prepared average, $2.80 —range, $2.50@$3.50; mine run, $2.25 —range, $1.85@$2.60; screenings, $1.85—range, $1.50@$2.35.

SOUTHERN ILLINOIS

Steam Demand Falling Behind Domestic Program—Standard Field Hard Hit—No Contracting.

While steam demand is just about equal to the supply in Southern Illinois, everything indicates that the tonnage of domestic being booked is going to swamp operators in the next 60 days, unless a better steam outlet can be secured. Association mines are getting circular prices but independents are selling 50@75c. lower. Working time averages two or three days throughout the Williamson and Franklin county fields. Screenings are in good demand.

Duquoin field conditions show little improvement. Mt. Olive output was better during the past week on account of the cold spell which stimulated retail buying. A good tonnage of steam and domestic has been moving to Chicago and the Northwest. It appears a certainty that by July 1 domestic sizes will be at a premium on account of the lagging steam market.

There are idle mines everywhere in the Standard district and the few that are working have a hard time moving any sizes. The railroad tonnage is rather light. It will be some time before much price improvement can be expected for domestic sizes. Spot prices are shown in the Weekly Review.

Railroad fuel is giving some concern to large domestic buyers and steam users, inasmuch as but few roads have signed any contracts. It will be remembered that the Frisco R.R. was the only road which had the foresight to contract for a sufficient supply last year. Other roads were caught napping and had to enter the high market or confiscate coal, to the discomfiture of commercial buyers.

Middle Appalachian

HIGH-VOLATILE FIELDS

Inquiries Increasing — Production Slightly Larger — Better Tone to Market.

KANAWHA

During the latter part of the week ended April 16, production was down to about 8,500 tons daily, reflecting to what extent contract expirations had affected mine operations. It was stated that the B. & M. had placed a large contract at $2.40 but producers asserted this was below the cost of production. As a result of the slim demand most of the mines remained closed.

LOGAN AND THACKER

Larger production in the Logan region was deceiving as there was no real improvement in market conditions. Lake shipments were a trifle larger as one or two companies had picked up some of this business. Few contracts have yet been closed.

There was a gain in the output in the Thacker region, although "no market" losses were still in excess of 140,000 tons. A few contract renewals were noted during the week.

NORTHEASTERN KENTUCKY

Production is gradually increasing; 56,200 tons representing the week's output, or just about 27 per cent of potential capacity. This is probably due to a heavier movement to the Lakes although there was only a fair demand in evidence.

VIRGINIA

Conditions underwent little change during the week, production remaining at less than 50 per cent. There was virtually no spot demand although inquiries were more numerous and the outlook is improving daily.

LOW-VOLATILE FIELDS

New River Output Gains—Better Tide Demands—Conditions Show Encouraging Signs of Improvement.

NEW RIVER AND THE GULF

Growing production in the New River field during the week ended April 16 was an index to improved market conditions. The output averaged about 25,000 tons daily, with many mines resuming operation. The new business is not in the shape of contracts but is due to a better spot demand. The greater part of the increased production is going to Tidewater for bunkerage. Producers are now averse to selling on contract as all hands are sure of an early strengthening of the spot market.

Although there was no marked increase in production in the Winding Gulf region, conditions were undergoing improvement. There was a better spot demand for Tidewater at prices ranging $3.50@$4. Producers are generally of the same opinion as New River operators in regard to the contract market.

POCAHONTAS AND TUG RIVER

Pocahontas mines were still limited to a fractional part of the week by a slim demand and production was much less than half of normal, although a larger stream of inquiries was a sign of awakening market activity Some producers have closed contracts on a basis of $350 although the improvement is rather of a spot nature.

The market outlook for Tug River mines is still very limited. Plenty of inquiries are coming in, although few orders are actually being placed. Tidewater shipments were somewhat heavier than usual but Lakes shipments were insignificant in volume.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Spot Demand Unimproved—Operators Cut Prices to Secure Running Time.

The new coal year continues to drag along with nothing yet in sight that might be construed to mean an immediate renewal of operations upon anything like a reasonable amount of running time, or at a price that will permit operators to more than break even.

While the continued absence of orders may be taken to mean better prices in the latter part of the year, yet operators are making every effort to shave costs to a point where they can move enough coal to enable them to run one or two days per week. There has been no general effort to cut wages, but some of the smaller mines whose wage scale is more or less in line with the general tone of the market are not paying anything like the union scale for the field.

West

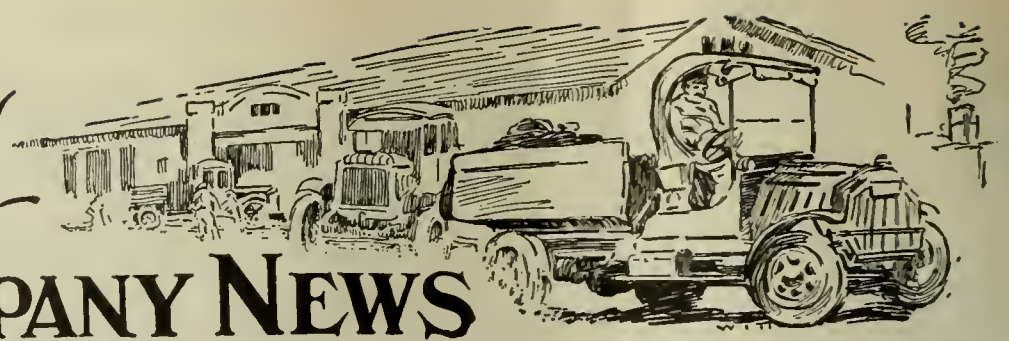
UTAH

Domestic Demand Increases — Steam Sizes Hard to Move—Industrial Conditions Unchanged.

Business appears to be picking up slightly and is reflected in better worktime at the mines. Consumers are apparently beginning to realize that there is no immediate possiblity of a further price decline. However, the industrial situation has not improved.

With a better lump demand, some operators are in difficulty in the disposition of their slack, owing to the closing down of smelters. Mine prices are, lump $5, mine run $4 and slack $2.75.

MINE And COMPANY NEWS



ALABAMA

A report from Gadsden announces that a Polish syndicate headed by Joseph Mierzynski, of Chicago, has purchased the holdings of the **Appalachian Coal & Iron Co.**, such properties including 12,000 acres of coal lands on Lookout Mountain, Etowah County. The same interests have also purchased large holdings of iron ore and are negotiating for other extensive mineral interests. It is stated that these interests plan immediate development of the properties which they have taken over.

ALASKA

Development of the coal and other resources of Alaska will be the object of the visit of President Harding and Secretary of Interior Fall to Alaska this summer, probably in August. The Interior Department has issued regulations governing the granting of coal prospecting permits in Alaska under the act passed by Congress last session, authorizing four-year permits of 2,560 acres each. Permits will be issued to prospect unclaimed, undeveloped areas where prospecting or exploratory work is necessary to determine the existence or workability of the coal deposits. The department has granted the following coal permits: **Seattle District:** Harvey V. Rohrer, 2,176 acres; Earl V. Martin, 3,410 acres; Thomas P. Appleton, 2,560 acres; John P. L. Tilton, 2,480 acres, and Charles L. Harrison, 2,560 acres. **Yakima District:** Ernest T. Barden, 640 acres. **Lander District:** James R. Heagy, 2,560 acres, and Chicago & Northwestern R.R., 2,560 acres. **Douglas District:** Joseph H. Sharpe, 2,000 acres.

COLORADO

According to reports, the mines of the **Victor-American Fuel Co.** at Pyrolite and Chandler are planning to start up shortly and continue in operation for several months at nearly full time.

ILLINOIS

A verdict of death from fire of undetermined origin was returned April 14 at a coroner's inquest into the **Kathleen mine** fire Feb. 23, when seven men lost their lives. Operations at the mine have been resumed.

A train carrying representatives of the coal consuming industries of Chicago and various suburban points and northern Indiana was recently operated over the Chicago & Alton under the personal direction of S. G. Lutz, vice-president and traffic manager of the railroad. An inspection was made of all coal mines along the C. & A. from Selbytown to Carlinville. A number of coal operators were included in the party. The plan was to give the large consumers a better idea of the part which the railroad plays in moving the coal to market.

In addition to the Star mine which was purchased by the **Lake & Export Coal Corporation**, as previously announced, two other mines in the vicinity of Freeburg, have also been purchased by the West Virginia concern. The mines are known as the West Belleville and the Highland mines and are located between Belleville and Freeburg. The Star mine has a vein of the unusual thickness in that district of twelve feet, while the other two mines range about nine feet. The transaction including the three mines and a consideration of $1,500,000, was negotiated by Harris P. Wolfberg, formerly of St. Louis and now vice-president of the corporation.

The E. J. Scott Coal Co., strip mine at Duquoin, is again making preparations to resume operations after being idle some time for repairs and general improvements. **The Boehmer Coal Co.**, at that place, has also resumed activities after being down for about two weeks with labor troubles.

The Chicago, Wilmington & Franklin Coal Co., of Chicago, has broken ground for its new mine to be known as Orient No. 2 and is located adjoining the present Orient mine No. 1. The company now operates nine large mines in Illinois and is one of the foremost companies in the state. An expenditure of over $2,000,000 will be made in the sinking and equipping of this new and modern colliery.

The Watson mine of the **Watson Coal Co.**, of Chicago, located in Williamson County, has been purchased by the **McElvain-Hoy Coal Co.**, also of Chicago. This property, with the Sincerity and Ward mines, will give the company a tonnage of 3,500 tons daily.

While operating only three days per week the mine of the **Franklin County Mining Co.**, at Benton, will undergo several improvements. A new rescreening plant will be built. A new and modern washhouse will also be constructed at this time.

J. P. Schneider, well-known coal man and connected with the Old Ben Coal Co., of Chicago, for several years, has opened up offices in Chicago under the name of the **J. P. Schneider Coal & Coke Co.**

INDIANA

Damages aggregating $197,000 are asked of the **Rowland Power Consolidated Collieries Co.** of Terre Haute by **Harry S. Frank**, of Cleveland, Ohio, in a suit filed in Federal Court at Indianapolis. The complaint alleges that the plaintiff has been damaged to that amount by alleged breach of contract for the sale of bonds in the defendant company. It is charged that two contracts were entered into between the parties by which Frank was to have charge of the sale of a bond issue of $600,000 for the defendant company. For this he was to receive $23,500 when the bonds were sold and was to be given three promissory notes aggregating $16,500, payable in from one to three years. In addition he was to be permitted to place the liability insurance on the property for such time as the bonds ran, he says. This, he claims, would have paid him a commission of about $12,500 a year. He claims he fulfilled all his part of the contracts and that the defendant company has refused to pay him any part of the money due under the contracts.

The Ft. Branch Coal Mining Co. has filed suit in superior court, Indianapolis, asking a judgment of $36,000 against the **J. R. Morris Coal Co.**, of Indianapolis, for breach of contract. The plaintiff says the defendant company failed to comply with its part of a contract for the purchase of a large quantity of coal from the plaintiff.

Buildings and mine machinery of the **Crawford Coal Mine No. 12**, northeast of Terre Haute, were destroyed by fire, April 4, with a loss estimated at $1,400. The mine had been closed for several weeks and the day engineer was the only person at the mine when the fire started.

KENTUCKY

The Banner-Elkhorn Coal Co., capital $25,000, has been chartered by I. N. Hall, Burley Hall and Melvin Hall.

Work has been started on a coal byproduct plant five miles east of Somerset by the **Kentucky Coal & Electro Chemical Co.**, a New York syndicate, which owns a large coal acreage that it has been working for some time. A pike will be built from Somerset to the plant and the output will be hauled to the railroad in trucks.

The Louisville & Nashville has a surveying party at work running a survey from the end of the line on the right fork of Straight Creek, on up Straight Creek to a point about even with Baxter, which is located on this line in Harlan County, thence over Pine Mountain to an intersection point with the line extending from Pineville up the Cumberland River to the Harlan coal fields. The conjecture is that the line will be extended up Straight Creek and coupled with the Harlan field by a tunnel through Pine Mountain at some point about even with the town of Harlan. Several large deals in coal lands are being closed on the strength of this survey. Such a line would save about 10 miles in going from Pineville to Harlan.

R. I. Cawthorn has sold his interest in the **Leyman-Calloway Coal Co.** to **W. A. Watson**, who was already largely interested in this mine.

J. J. Hume has purchased an interest in the **Wagner Coal Co.** and will become general manager of the company.

T. C. Hughes has purchased the mine of **R. L. Brown & Co.** in Harlan County, consideration reported to be around $80,000. Mr. Hughes is reported to be working on an extensive consolidation of his mining interests.

Property loss to the extent of $30,000 was done recently at the **Memphis Coal Co.'s** plant at Mannington. The fire destroyed a big warehouse and blacksmith shop.

Recent charter papers filed, including changes and increases in capital, are as follows: **Excelsior-Harlan Coal Co.**, Harlan, increased from $50,000 to $100,000; **Elkhorn Star Coal Co.**, Pikeville, increased from $100,000 to $125,000; **Commercial Coal Mining Co.**, Lexington, has been capitalized at $60,000. J. Henry Hall, W. H. Hoover and W. H. Courtney are the incorporators.

MONTANA

The Cottonwood Coal Co. is understood to be extending its operations toward Belt, since the recent closing of the Lehigh mine and the reopening of the mines at Stockett. It is understood that options for coal rights have been taken on lands near Belt and Wayne. Drilling operations are to begin at an early date.

NEW JERSEY

The new 600-ton coal silo belonging to **George Weeks & Co.**, Newark coal dealers, burst recently, after being filled for the first time. It is expected that the manufacturing company will replace it at once.

NEW YORK

The Bellmore Coal Co., of Bellmore, Long Island, has been incorporated with a capital of $25,000. F. L. White and A. C. S. Dowd are named as incorporators.

OHIO

The Chesapeake & Ohio R.R. has increased its Lakes dock facilities, handling coal to Toledo, Sandusky and Lorain. Heretofore the company has handled coal only to two docks.

The former plant of the **Marmet Coal Co.** at Cincinnati has been leased for a ten-year period to the **Reliance Coal Co.**, with privilege of purchase at $132,500.

The Jeffers Coal Co., Bellaire, has been chartered with a capital of $25,000 to mine and sell coal. Incorporators are A. D. Jeffers, H. A. Brown, S. J. Watterson, R. E. McKain and J. C. Jeffers.

The Western Fuel Co., of Columbus has about completed the installation of entire new equipment at its mine at Orbison. The equipment consists of a new tipple, power house and picking table as well as shaker screens. The work will be completed by May 1 according to Roy Brenholts of the company.

Retail demand has been so dull that the retail dealers board of the **Cleveland Chamber of Commerce** has adopted a "Buy Coal Early" slogan, and will conduct an adver-

tising campaign over a period of six weeks for the purpose of stimulating immediate purchasing and storage on the part of domestic and other consumers.

PENNSYLVANIA

The washery of the **Black Creek Coal Co.**, situated near Nanticoke, has been totally destroyed by fire, damage being estimated at more than $50,000. The washery was a comparatively new operation, having been erected only two years ago. It has been operated recently by the **Heker-Jermyn Co.**

The Sauers Coal Co., with mines at Mostollar, Somerset County, will resume operations May 1. The company has just let contracts for five new seven-room houses. The mine will be equipped with new machinery and will employ 150 men.

The Hill Crest Coal Mining Co., at Stoyestown, Somerset County, is about ready to resume operations. The mines have been equipped with modern electrically propelled machines and contracts are being prepared for the erection of a number of houses.

The Old Colony Coal Co., in Somerset County, has resumed operations since building a new tipple and installing new machinery.

The large tipple of the **Consolidated Coal Co.** at Althouse was burned by fire on April 3, entailing a loss of $15,000. Valuable machinery was damaged. The tipple will be rebuilt.

Three men were killed and one injured in the Briggs Mines of the **Scranton Coal Co.** recently as a result of a powder explosion.

The Center Coal Co. of Butler is in the hands of a receiver. Figures filed in the United States Court show liabilities of $47,265, and assets, $30,455. The company was engaged in the mining and selling of coal.

UTAH

The Denver & Rio Grande R.R. has filed suit against the Blue Seal Coal Co. to recover $3,439.86 said to be due on freight charges. The company recently opened a mine in the southern part of Utah and the amount is alleged to be due for shipments on lumber and machinery for this mine. The plaintiff furnished a bond fo $4,000 for the issuance of a writ of attachment.

Utah's coal mining companies are to receive a refund of 25 per cent on the premiums paid into the State Insurance Fund under Workmen's Compensation Act during the fiscal year ended June 30, 1918. It was found that the premiums charged during the first year had been unnecessarily high.

WASHINGTON

The Chinook Coal Co., operating on the Spokane Indian Reservation near Detillion bridge, under the management of H. J. Shepherd, of Spokane, has resumed work. The mine shaft has reached an incline depth of over 200 ft., cutting several veins of workable depth coal of good grade.

WEST VIRGINIA

A bill authorizing the **Borderland Coal Corp.** to build a bridge across the Tug Fork of the Big Sandy River in Mingo Co., W. Va., was introduced in the House by Rep. Langley of Kentucky.

Coal property on Dent's Run in Monongalia County has been purchased by **R. H. Jarvis, John W. Parker,** and **L. M. Parker,** all of Morgantown, from **Charles Martin,** there being 17 acres of Pittsburgh coal in the tract, the consideration being $25,000.

Organization of the **Three States Coal Co.** has just been perfected through the election of F. A. Bender as president and of Frank T. Beazley as vice-president. Mr. Bender was formerly connected with the Wyatt Coal Sales Co., while Mr. Beazley was formerly with the Matlack Coal & Iron Co. The new concern is planning to engage in the general coal sales business, with offices in the Kelley-Moyle Building at Bluefield.

Development of coal territory in the vicinity of Orgas will follow the organization of the **Splint Orgas Coal Co.**, this company having a capital stock of $20,000. Backing the new concern are: A. E. Moore, Walter R. Moore, Arlow C. Moore, James Kay and J. L. Mandt, all of Charleston.

The Canyon Coal Co. has secured a large acreage of Pittsburgh coal on Cheat River. There are 230 acres in the tract purchased. The company, however, purchased only a half interest in the tract, the consideration for such half interest being $32,124.50.

The legislature of West Virginia has passed the **State Police Bill,** increasing the size of the force of state police and in fact almost doubling it. Coal people of the state were very much committed to the bill, as the present force has proved inadequate to cope with industrial trouble. The bill was bitterly opposed by the labor element in the legislature but secured comfortable majorities in each House.

Authority has been granted to the **Tioga Coal Co.** to increase its capital stock from $25,000 to $100,000. Another company, however, the **Smokeless Fuel Co.** of Charleston, has reduced its capital stock from $1,000,000 to $400,000.

Charleston capitalists have launched the **Kanawha Pocahontas Coal Co.** with a view to engaging in mining operations in the Kanawha region. This company has a capitalization of $50,000.

In connection with numerous other improvements being made at the plants of the **Forest Coal Co.** and of the **Diamond Coal Co.**, both of which have mines on Scott's Run in the Monongalia field, bar screens and other equipment are being installed by both of these companies.

A. R. Hamilton & Co., of Pittsburgh, who have had branch offices in Clarksburg and Fairmont, have closed such offices for the time being at least because of poor market conditions.

Mining machinery will be manufactured by the **American Coal Loading Machine Corporation** of Huntington, which has just been organized with a capitalization of $225,000.

WYOMING

Poposia coal mine No. 1 will be operated about four days each week, for the present. No. 2 mine has been closed for the season and the men are seeking other locations. During the shutdown some changes and repairs will be made to the tipple.

Traffic News

Recent hearings before the I. C. C. affecting southeastern Kentucky operators include the request of the L. & N. for permission to raise rates on all grades of coal from the field to Louisville from $1.56½ on slack, $1.69 on mine run, and $1.81 on block to a flat rate of $1.90 for all grades. This increase is being stubbornly contested by the operators for it would be disastrous on steam grades, which must be sold in competition with western Kentucky coals. An adjustment has also been made on the recent increase in rates on coal coming from the Cumberland & Manchester R.R. and the rates now stand at the tariff rate from Barbourville, Ky., plus 10c. from Groups 1 and 2 and 15c. on Group 3

The U. S. Brick Co. and others of Tell City, Ind., complain against unreasonable rates on bituminous coal from Indiana mines to Tell City.

A disposition to keep down coal rates is manifest by recent action of the I. C. C. in denying the application of railroads to increase by 20c. a ton the joint rates on coal from mines on the Cumberland R.R. to points on the L. & N. and connections in Tennessee, Virginia, the Carolinas, Georgia, Florida and Alabama. The commission holds that the proposed increase is not justified and orders the schedules carrying the increases, which were recently suspended pending investigation, canceled.

In the case of the **Citizens Coal Mining Co.** an examiner of the I. C. C. recommends that the rates on soft coal from its mines to Springfield, Ill., were unreasonable.

In the complaint of the **Barnett Lumber Co.** an I. C. C. examiner recommends that the rate of $2 per ton applicable to the intrastate transportation of bituminous coal from Fort Branch to Frankton, Ind., in 1918 was unreasonable because it exceeded $1.32 per ton subsequently established.

In the complaint of the **Washington Steel and Ordnance Co.** an examiner recommends that the rates on bituminous coal from New River district group No. 1 of West Virginia to Uniontown (Anacostia) D. C., is unreasonable because it exceeds the joint through rate from the same points to Benning, D. C., Hyattsville, Md. and Washington, D. C., via. B. & O. delivery.

The I. C. C. has authorized railroads to establish **rates on coal briquettes** from Richmond, Norfolk, Pinners Point, Va., and points paying the same rates to points in Virginia and the Carolinas, the same as rates on coal between these points.

The I. C. C. has decided that the proposed cancellation of joint rates on coal from mines on the **Minneapolis & St. Louis R.R.** in Illinois to destinations in Ohio and Michigan is not justified.

The B. & O. has filed application with the I. C. C. for authority to assume rental payments to the amount of $675,000 under an equipment trust of June 1, 1920, between the New England Fuel and Transportation Co., the Bethlehem Steel Co., and the Bankers Trust Co., trustee, whereby it acquires 549 steel hopper cars.

In the complaint of the **Consolidated Coal Co.**, of St. Louis, an I. C. C. examiner recommends that the rate on fine coal from Mt. Olive and Staunton, Ill., to Kansas City, Mo., is not unreasonable.

The Riverside Coal Co., of Cincinnati, in a complaint to the I. C. C., attacks as unreasonable the rates on coal from its mines at Three Mile, Ky., to Cincinnati and other destinations in central freight association and western trunk line territories.

The Central New Jersey Coal Exchange, Inc., of Elizabeth, N. J., attacks unreasonable rates on anthracite coal from points in Pennsylvania to New Jersey.

The Walrath and Sherwood Lumber Co., of Omaha, in a complaint to the commission alleges unreasonable rates on coke and hard coal from points in Wisconsin, Missouri, Ohio and Alabama to points in Nebraska.

The War Department will again advertise for the sale of ten wooden coal barges on the New York State barge canal system, recent bids for the sale of which were unsatisfactory. The barges are of the type used on the Chesapeake & Ohio Canal.

Recent figures compiled by the **Bureau of Railway Economics** at Washington show that the freight rate on one ton of coal from Belleville, Ill., was 65c. on Jan. 1, 1917, and was $1.29½ on Jan. 1, 1921, for a 25-mile haul. This would show practically a 50 per cent increase in that given period. The increase on every other commodity is far below the increase on coal. Lumber increased from $6.65 to $11.20. The increase on gravel is from 62c. to $1.10 per ton. These commodities are those that are loaded in coal cars.

The Lexington Board of Commerce has taken up with the State Railroad Commission, rates on coal from eastern Kentucky mines to Lexington, which are declared to be higher than to Louisville or Cincinnati.

A public hearing was given on the realignment of rates on coke from Pittsburgh, Youngstown, Cleveland, Canton and Dover, Ohio, to Central Freight Association Territory. The meeting was held at Room 2527, Henry W. Oliver Bldg., Pittsburgh, April 21, 10 a.m.

In the complaint of the **Electric Coal Co.** the I. C. C. decides that the rates on bituminous during Federal control from Bronson to Chicago, Milford and Jamaica, Ill., as components of through rates from Missionfield, made by combination on Bronson were not unreasonable from Chicago to Milford but were unreasonable to Jamaica. The commission says the joint rate from Missionfield to Milford was unreasonable but does not pass on the separate rate of the electric line from Missionfield to Bronson as that road was not under Fedral control.

In a complaint to the commission **A. H. Traphagen and others,** of Waterloo, N. Y., attack as unreasonable the rates on anthracite coal since Nov. 5, 1920, from the Pennsylvania anthracite regions to Waterloo and Seneca Falls, N. Y.

In the complaint of the **Farmers Fuel Co.** the commission decides that the rates on coal from junctions with the Higginsville (Mo.) Switch Co. to desinations in Missouri and Kansas are not unreasonable, and denies a request for joint rates. The commission holds that the switch company is not a common carrier subject to the commerce act.

In the complaint of the **Central Illinois Light Co.** the commission has authorized the Illinois Coal Traffic Bureau to intervene in the case which relates to rates on coal from Virden, Girard, Springfield and Bissell, Ill., to Peoria. Similar action has been taken in the complaint of **W. L. Carney** involving rates on coal from mines in Illinois and Indiana to Chicago and the **Sharon Coal Co.'s** complaint involving rates on coal from mines in Illinois to Peoria. Similar action has also been taken in the **Corona Coal Co.** complaint involving coal rates from the Warrior coal field of Alabama to Louisiana destinations.

Personals

R. B. Isner, general sales manager of the Boone County Coal Corporation, is just recovering from an operation in which his tonsils were removed. Mr Isner's headquarters are at Sharples, W. Va.

W. M. Wylie, general manager of the Boone County Coal Corporation, left a short time ago for a trip to Colorado, where he was formerly located.

J. G. Bradley, president of the West Virginia Coal Association, was in Boston about the middle of the month on business.

W. D. Ord, president of the Red Jacket Consolidated Coal & Coke Co., with headquarters at Landgraf, W. Va., was in Charleston on April 19.

C. H. Jenkins, treasurer of the Hutchinson Coal Co., with headquarters at Fairmont, was a recent visitor in Cleveland, where he attended a traffic meeting.

A. R. Yarborough, traffic manager of the Kanawha Operators' Association, was a visitor in Cincinnati during the second week of April.

A recent visitor in the Columbus, Detroit and Toledo markets was **Thomas W. Arnett**, president of the Antler Coal Co. of Fairmont.

Charles F. Sutherland, president of the Sutherland Coal Co. of Morgantown, has been elected as mayor of Morgantown, W. Va. Mr. Sutherland, although a Republican, was nominated on the Democratic city ticket and defeated his opponent by more than a three to one majority.

John W. Meyer, well-known mining man in southern Illinois, has resigned his position with the Aladdin Coal Co., at Cutler, to accept a similar one with the Equitable Coal & Coke Co., operating at Johnston City and Duquoin.

W. T. McElroy, Cincinnati manager for the M. A. Hanna Co., who has been ill with pneumonia at the Hotel Gibson for some weeks, has returned to his office. His health has been so impaired, however, that he has decided to go away for a rest.

M. F. McDermott of the Tuttle Coal Corporation, who underwent an operation for appendicitis, has recovered. It will be some time, however, before he will be able to return to his duties.

J. P. Small, manager of the Harold Coal & Coke Co., of Harold, Ky., was in Cincinnati recently, as was **M. K. Marlow** of the Elkhorn-Jellico Co. of Whitesburg.

William Quinn, who was formerly with the Winifrede Coal Co. and other concerns in Cincinnati, but now the leading spirit in the General Coal Co. of Huntington, W. Va., spent a couple of days in Cincinnati recently.

E. E. Haller, president of the Indiana Coal Dealers' Association, and Secretary Yeagley, motored to Cincinnati recently with a special invitation to the trade to come in a body to the annual meeting of their organization.

Harry Phister of the Hager Coal Co. has left for Detroit where that concern recently opened an office in the Dime Bank Building under the direction of **W. S. Van Houten, Jr.**

Victor White, western manager for the Flat Top Fuel Co. of Bluefield, W. Va., whose headquarters are in Cincinnati, was away for a week's business trip to Chicago and other western points.

Robert S. Magee, manager of the Southeastern Coal Co. has been forced to go to an Indiana health resort. He is suffering from rheumatism.

R. H. Boykin recently was appointed manager of the Cincinnati branch of the Ft. Dearborn Coal Co. Mr. Boykin previously was in the New York trade. He succeeds **Roy Monarch** who recently went into business for himself.

Abel Mishler, who is well known to the New York coal trade, has joined the forces of the McCann-Camp Coal Co., at No. 90 West Street. He has been appointed manager of sales.

T. K. Maher, president of the Maher Collieries Co., Cleveland, was named by the National Coal Association as a delegate to the Ninth Annual Convention of the U. S. Chamber of Commerce, to be held in Atlantic City April 27-29.

W. R. Woodford, president of the Rail & River Coal Co., Cleveland, has been named by the Pittsburgh Vein Operators' Association of Ohio as a delegate to the Ninth Annual Convention of the U. S. Chamber of Commerce, to be held in Atlantic City April 27-29.

W. H. Groverman, secretary of the Northwestern Coal Dock Operators' Association made a short trip east recently.

J. R. Blackburn, who has been associated with W. H. Bradford & Co., Philadelphia, for some time, has been made general superintendent in charge of the operations of the Victor Coal Mining Co. and the Clarion Coal Mining Co.

Everett Drennen, of Elkins, president of the West Virginia Coal & Coke Co., was a business visitor in Charleston during the second week of April.

Association Activities

Northern West Virginia Coal Operators' Association

Directors of the association at a meeting held in Fairmont, launched a movement to have the transportation act so amended that hereafter it would not be possible to restore the assigned car order in connection with the loading of railroad fuel.

The assigned car question was the principle topic under discussion at the meeting and it was considered of so much importance that the directors selected a new committee to specially handle this question, consisting of: C. D. Robinson, Fairmont, chairman; J. M. Orr, Clarksburg; C. H. Jenkins, Fairmont; J. V. Gibson, Kingwood; Daniel Howard, Clarksburg.

The position taken by the directors is that it is entirely within th power of the commerce commission to again make effective the assigned car order whenever it is so desired on the ground that an emergency exists.. In order, therefore, to prevent any revival of the assigned car practice, it is proposed to have West Virginia Senators ask for an amendment to the transaction act. Should it be possible to have the act so amended, it would not then be necessary to await a decision from the Supreme Court on the assigned car question.

The directors also heard a report on recent conferences having to do with an adjustment of Lake freight rates. C. H. Jenkins, who attended the Cleveland conference and also conferred recently with President Willard of the B. & O. presented a report, stating that while the situation apeared to be favorable, yet there was nothing definite to indicate whether Lakes coal-carrying rates would be reduced or not. According to a report made to the meeting Ohio operators are seeking to offset the work of the western Pennsylvania and West Virginia operators by asking the I. C. C. to increase the rates from the states named.

Utah-Idaho Retail Coal Merchants' Association

The fourth annual meeting and banquet of the association was held at the Commercial Club, Salt Lake City, on April 7. L. H. Raines, president of the Carbon Fuel Co., discussed the present coal problems from the operators' standpoint. He could see no hope for lower prices, as wages could not come down yet as most of the mines averaged less than two days' work a week. He thought the railroad situation serious.

H. B. Smith, a Murray (Utah) dealer, lead the discussion in the matter of unfair competition from farmers' equity societies and others who are not regular coal dealers, and it was decided that the producers be asked to form an association so that the retailers could go to that association with their troubles instead of going to individuals.

H. E. Fernstrom, manager Bamberger Coal Co., suggested that a summer price for coal would cause people to stock up, whereas he felt they would otherwise defer this until fall and cause a congestion. He thought producer, railroad and dealer might all work on a lower margin temporarily.

L. H. Fernstrom was elected president for the ensuing year and S. L. Billings secretary, with a strong committee.

Industrial News

New York, N. Y.—The International Pulverized Fuel Corporation is now located in the National City Building, 17 East 42nd Street.

New York, N. Y.—General offices of The Franklin Railway Supply Co., Inc. are now located in the National City Building, 17 East 42nd Street.

New York, N. Y.—The Consolidated Steel Corp. announces its new location in the Cunard Building, 25 Broadway. Telephone, Bowling Green 3000.

New York, N. Y.—The Air Reduction Sales Co. has secured control of the National Carbide Corp. of Virginia and will direct the policy and control the operation and sales of the latter corporation.

New York, N. Y.—The Superheater Company will move its offices on May 1 from 30 Church St. to 17 East 42nd St.

New York, N. Y.—The Slattery Coal Co., W. H. Griffiths, sales agent, has removed its offices from the sixth floor of 143 Liberty St. to the second floor of the same building, giving increased space and facilities for a growing business.

Norfolk, Va.—Inglesby, Patterson & Co. has taken the agency for the Coalfield Corporations products in Hampton Roads.

Philadelphia, Pa.—The Majestic Coal Co. Inc. of New York has opened a Philadelphia office at 531 Land Title Building in charge of Robert F. Campbell. Telephone: Spruce 5709. On May 1 the head office of the company will move to larger quarters on the 19th floor of the Equitable Building, New York City.

Pittsburgh, Pa.—Murray Pump & Valve Mfg. Co., wood pumps and line valves, has appointed T. H. Edelblute Co., of the Wabash Bldg., Pittsburgh, Pa. as eastern sales agents.

Coming Meetings

Due to the impossibility of securing hotel accommodations for the annual meeting of the **Kentucky Retail Coal Dealers Association**, at Lexington, April 27, Secretary J. Crow Taylor, advises that the meeting has been postponed until May 11 and 12.

Mine Inspectors' Institute of America will hold its twelfth annual meeting at Charleston, W. Va., July 12 to 15. Secretary J. W. Paul, Bureau of Mines, Pittsburgh, Pa.

Illinois and Wisconsin Coal Dealers' Association will meet at Chicago, Ill., July 13 and 14.

Missouri State Retail Coal Merchants Association will hold its annual meeting at the Planters Hotel, St. Louis, Mo., May 24 and 25. Commissioner E. J. Wallace, Pierce Bldg., St. Louis, Mo.

American Society for Testing Materials will hold its annual meeting at the New Monterey Hotel, Asbury Park, N. J., June 20 to 24. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

Indiana Retail Coal Merchants Association will hold its convention at Indianapolis, Ind., May 4, 5 and 6. Secretary, R. R. Yeagley, Indianapolis, Ind.

American Institute of Chemical Engineers will hold its spring meeting June 20 to 24 at Detroit, Mich. Secretary, Dr. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7 and 8. Secretary, G. H. Cushing, Woodward Bldg., Washington, D. C.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill., May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The National Coal Association will hold its next annual convention at the Waldorf Astoria Hotel, New York City, May 19 and 20. White Sulphur Springs hotel reservations have been cancelled. Secretary, W. B. Reed, Commercial National Bank Bldg., Washington, D. C.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Retail Coal Merchants Association will hold its annual meeting May 12, 13 and 14 at the Jefferson Hotel, Richmond, Va. Special rates on all railroads. Secretary, E. G. Gordon, Philadelphia, Pa.

The National Foreign Trade Council will hold its eighth annual convention May 4, 5, 6 and 7 at Cleveland, Ohio. Secretary, J. G. Hammond, 409 Park Bldg., Cleveland, Ohio.

Illinois Mining Institute will hold its spring outing the early part of June on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on June 3 and returning on June 5. Secretary, Martin Bolt, Springfield, Ill.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The 24th annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Our Background in Mining

LONG persistence in any line of industry inevitably begets a background from which escape is difficult. Insensibly we fall to thinking that the way established is the only way. Vested interests, laws, labor rules and trade conditions gradually make it increasingly difficult for us to change.

In mining we have fallen heir to the room-and-pillar method. The land owner seeks to retain certain phases of it because with it and a due amount of waste of coal the land can be left intact for farming. The miner likes it because it preserves his individualism. He likes to work where he is not, and cannot be, bossed and controlled. The union questions any change whatsoever because it fears that the results might not be favorable to its interests.

In earlier days there were some advantages in letting every man have his own place, and so be rewarded for his own labors. As soon, however, as the machine came it became disadvantageous to have a working place so small that much of the time was wasted in moving from place to place and in sumping in for a first cut. Conditions were bad enough when we had but one class of machine, a coal cutter. Now we have three machines—cutters, drills and loaders—to make their visits to each place and pass on.

No one knows to what extent the industry has been retarded in its progress by the need for mobility in its machinery. Had the face been continuous, cutters doubtless would have been made larger and better fitted for their work. The same would be true of the loader. A simpler problem, devoid of unloading, loading and transferring difficulties, would have resulted in a more specialized machine with correspondingly greater accomplishments.

The room-and-pillar method has had the further disadvantage of intensifying ventilation and drainage problems. In regard to the latter we may compare open-pit mining with underground. In the surface work a single pump usually suffices; and sometimes not even one is needed. The water runs readily to a single sump or flows away by a natural waterway.

In the regular room-and-pillar method and in the ordinary longwall system we have become so used to the haulage disadvantages of single-car shuttle traffic into rooms that we accept it as being irremediable. So long as the miners provided the power it was not a great burden to the operator, though the making up of trips from cars at the room necks was not as easy as the taking of fully made trips from the coal face would be. When, however, it became necessary to place mine cars at the working face with a locomotive, leave them there to be filled and then go back and get them, the cost proved so great that the operator rebelled, but still he did not feel he could tear himself from his background—the room-and-pillar method.

To get the maximum out of modern equipment a long-wall retreating system is necessary. In thick coal, cars can be pulled in trips along the face and loaded as they pass. In thin beds machine loaders and face conveyors can be used, the latter delivering to cars in roads dug into the bottom or brushed into the top. Probably the best way to provide for car delivery would be to place two parallel tracks in each room, just as close as would provide for clearance, with a transfer table or other device at the end of the road on which cars could be moved sidewise from the empty track to the one on which loading is to take place, in this way removing the necessity for frequently moved switches or for great waste of time in switching. Many methods may be suggested but some better plan than has been so far provided unquestionably must be found.

Trend Discernible in Hoisting

IN THE next few years we may see less and less of mine cars on the surface at shafts and slopes, so general is the growth of underground dumping. The difficulty with skip hoisting is that the bottom landing should be lengthwise of the shaft and alongside of it, instead of at a right angle to its longer diameter and athwart the shaft, if the best possible results are to be achieved. This retards the introduction of the skip hoist in any but new plants. The equipment can be changed without excessive difficulty, but the layout of the shaft bottom cannot be easily and quickly turned half way round.

It is likely, therefore, that many operators will, like the Ayrshire Coal Co., adopt the gateless-car hoist, which discharges the car by overturning and possesses all the advantages of the skip except the saving in weight, and also has the advantage of being adapted to the lowering and raising of men and materials as well as to the hoisting of coal and rock.

Gateless-car skips come in at the moment when machine loading and face-conveyor loading seem likely to establish themselves. When coal is loaded by power the lift necessary to clear the car top will be a matter of small importance, and it will be easy to fill cars without raising the end gate. A further advantage will be found in the fact that in thick seams it will be possible to use large cars without an increase in gage, provided, of course, the degradation resulting from the drop into a deep car is not objectionable.

The difficulty resulting from the dust raised by underground dumping, even if this operation be performed in the intake air current, will be more than compensated by the cleanliness of the roadways, and it must be conceded that if the shaft bottom and the roadways adjacent thereto are the mouth of the cannon the workings are the breech where most of the explosions start. If the workings, and especially the roadways leading therefrom, are by use of the gateless car made less subject to explosions, conditions are improved, even

though there may be some dust in the neighborhood of the shaft. However, it would seem that the dust raised in underground dumping might well be drawn by an exhaust fan into a chamber where it could be dampened down, to be drawn off and hoisted at intervals.

Auxiliary Fans

UNTIL recent years auxiliary fans or boosters have been regarded with disapproval. Too often have they been used to churn air already loaded with powder smoke and expired and respired gases. So liable are they to neglect that they are particularly dangerous where gas is present. Moreover, if power fails at the surface they also fail, whereas above ground there is, or at least there should be, another method by which the fan can be driven.

It is true that in case of power failure, local or general, if there is a man in charge of the fan, he doubtless can take care of the situation in accord with instructions given long beforehand. The closing of a door may cause the main air current to make its way into the workings which the booster fan formerly supplied. But this puts a heavy burden on the main fan which it is not designed to meet. The fan installed should be of a size suited to the work it has to perform under normal conditions, and consequently it should be too small to take over successfully all the booster circuits that power failure may put upon it.

One big objection to auxiliaries is the fact that an explosion is likely to put most of them out of commission, even though the main fan may not be destroyed. In such a case that fan must be relied on to ventilate the mine during recovery, which again presupposes a bigger fan than the use of auxiliaries would make necessary.

These are the real reasons why the use of boosters is not advisable. It is probable that with reasonable care in layout and with anemometric readings as a check it would be possible to feel assurance that the air was not doing double duty and not baffling instead of aiding the main current. Assurance of this kind can especially be felt where the main current goes into the mine and returns to almost the same point. Much uncertainty may exist where the air enters by one shaft and leaves by another at a considerable distance with the booster taking and returning air at the two points near at hand in the same main current.

Pooling and Preparation

NOW that coal is being pooled, a careful inquiry is being made into the quality. This will ultimately end in all coal being analyzed or being perpetually subject to analysis—which is much the same thing. Those whose coal comes near the border line of the pool analysis, or which may so come, should the coal vary in quality or carry an inconvenient parting or draw slate, will have to go more deeply into preparation than heretofore has been their practice.

As the availablity of slack increases it is quite probable that before long coals will be crushed prior to preparation, so that, as far as may be, all slate and sulphur will be eliminated. It may not be long before there will be neither in anthracite nor bituminous coal any domestic sizes, and even railroads will be using crushed fuel, as a few are already doing.

A new era will then dawn. No longer will "all is coal that tips the scales" be even in a degree true. Attempts to work into higher-price pools will be made, although perhaps in some instances such an attempt would be accompanied by more loss than profit, for some coals cannot be washed to a low-ash or low-sulphur content. But preparation in any event will be more general, and when pulverized coal becomes widely used we may anticipate a time when high-ash coals will be excluded from cities by local ordinance because of the large amount of ash dust they scatter broadcast.

Almost everywhere the quantity of water available for washing coal is limited and consequently with increased use of water for preparation care will have to be taken to clear the water for re-use. A hard freeze will close off the water supply just when the market is briskest, and fortunate indeed then will be the plant that needs merely an occasionally sweetening admixture to the water that is being used and re-used for preparation purposes.

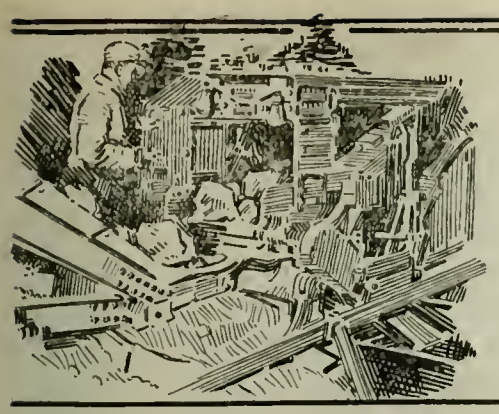
First Choice of Coal

AT MANY coal plants the first choice of a car of coal goes to the man that runs the steam locomotive and the second to the man who stokes the boilers. If there is a car of clean, glistening coal it is switched to one side for the use of these worthies, and the consumer gets the rest. Fortunately the rest contains a good deal of the cream of the coal, but part of that cream has been taken for the locomotive boiler, if there is one, and part for the stationary boilers, which should be burning bone coal or slack.

The cure for this untoward situation is readily found in equipment that will deliver slack or crushed bone in bunkers above the boilers, and boilers that will burn it satisfactorily. This will give the consumer the choice coal of which he stands greatly in need, for when it arrives at his bins freight rates and selling costs have been added to its price. In many cases the consumer has a smaller plant than the producer and he cannot use with advantage coal that the operator could well use.

In fact the mine operator is a big coal consumer. He himself uses twenty-two million tons out of about six hundred million—about one ton in thirty, or 4 per cent of the coal he produces. He is in a position to undertake to burn coal as economically as any manufacturer using an equal amount of fuel. Nevertheless he is slow to change his methods and contents himself with scolding when he finds his best coal burned below his own boilers and his less desirable going to the market.

Had the coal operator's methods been more modern he would not in so many instances have succumbed to the allurements of the electric power companies. It has been the fact that he used good coal in his boilers, used it wastefully, handled it with an excessive use of labor and then in many cases utilized it to small advantage in the engine room that made him see the argument of the man who urged him to use purchased power. Some of the larger companies did, at length, get competent power engineers, but with the machinery at hand little could be done. There then remained two courses, either to get better equipment or buy power, and the latter proposition in some cases won. It might not do so now with demand rates making the charge on a closed mine excessive, and it cannot win, of course, in the extremely large areas where power is not for purchase. At some places only local power plants generating voltage too low for extended distribution are found. These, moreover, are run with the same or more expensive methods than the plants at the coal mine.



Mining Equipment

Mining Machine Cuts Coal in Stratum That Offers Least Resistance to Cutter Bar

Will Cut Horizontally or Vertically—Makes Middle and Shearing Cut in Thirteen Minutes—Shearing Cut Affords Larger Coal and Coal That Mechanical Shovel More Readily Handles—Cuts from Track or Can Be Set on Tractor Wheels

By M. P. Martin
Huntington, W. Va.

IN THE accompanying illustrations is shown a mining machine comparatively new to most people interested in coal production. The design is the result of twenty years of exhaustive study of mining conditions and has been evolved with the idea that nature has provided a certain place in every coal bed where cutting can be done to the greatest advantage. That place is where the material to be cut is comparatively soft. The exact position of this stratum may vary widely.

It may not always be practical, however, to mine in the softest portion of the bed; hence a strict adherence to this rule is not in all cases advisable, but in a measure where the height will permit, the best results will be obtained by cutting where the coal offers least resistance, as this not only saves power but time also, as well as much wear and tear on the machinery.

In the mine of the Buffalo Eagle Colliery Co., Braeholm, W. Va., a 78-in. bed is found with a soft stratum so located as to be well suited for cutting. This soft streak of coal is surmounted by a parting of a hard and bony nature which is quite difficult to cut, but which separates readily from the coal when undermined. It is better to mine the soft portion of the bed than to attempt cutting out the parting with the machine, for the undesirable coal can be readily separated. In some coals, where the parting is soft, it frequently has been found advisable to cut directly in the dirt band, and thus dispose of the impurities at the outset. This particular parting, however, is

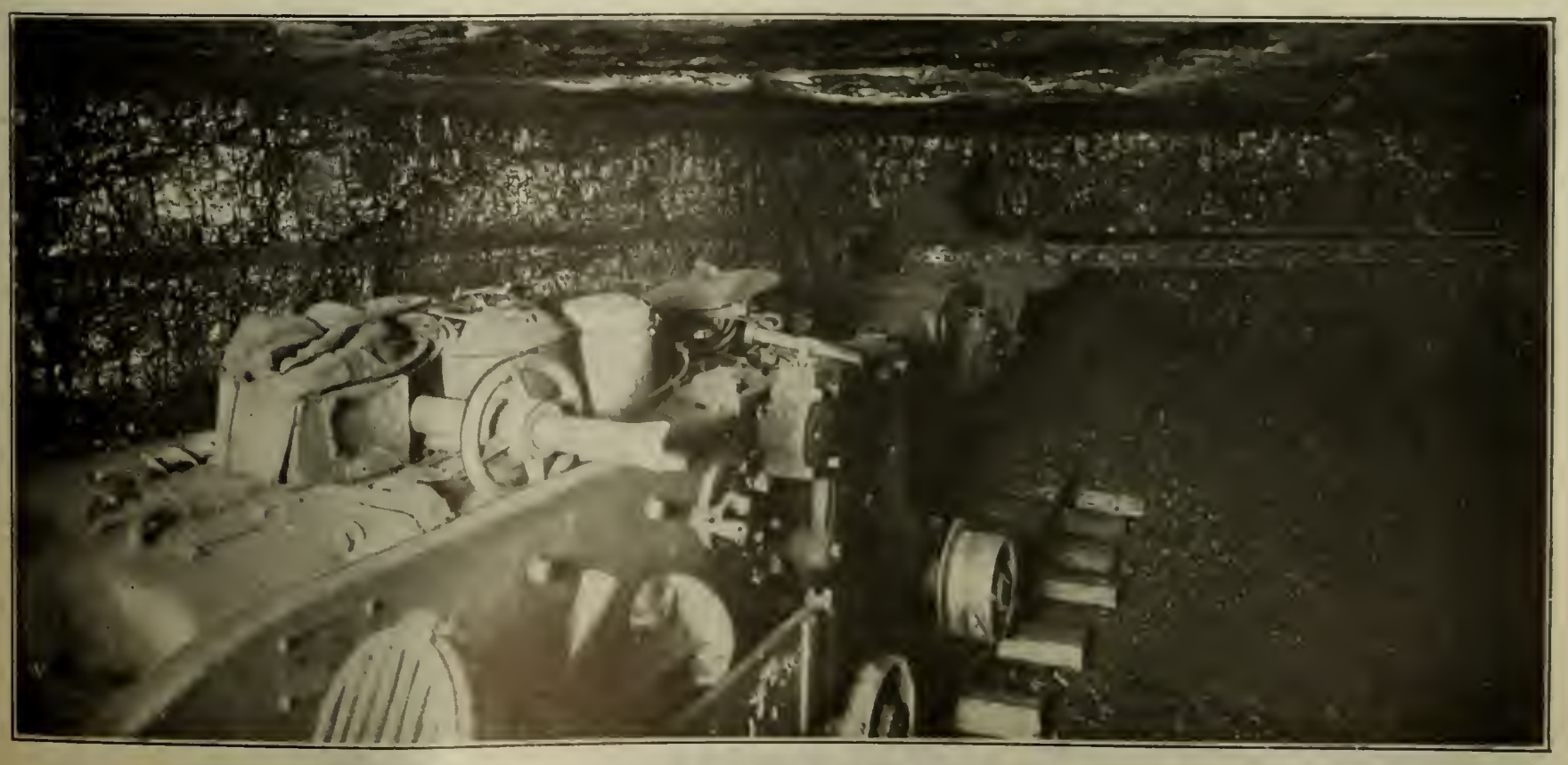


FIG. 1. MAKING A CUT UNDER A SLATE BAND IN MINE OF BUFFALO EAGLE COLLIERY CO., BRAEHOLM, W. VA.
A 78-in. bed has a band of slate immediately over a soft stratum peculiarly suitable for cutting; hence that place is chosen for the cut. The slate band separates quite readily from the coal and is stowed at one side by the loader when filling his cars

FIG. 2. A TOP CUT IS MADE JUST BELOW THE STREAK OF OILY BONE WHICH COVERS THE COAL
In less than two minutes a machine that has been cutting at or near the floor can be prepared to cut near the roof of the working place. Note that the machine cuts without alighting from its carriage. In this case the slate parting near the middle of the bed is missing.

hard in texture and varies from 3 to 6 in. in thickness. It is found in some parts of the mine and disappears in others. The process of mining just below this band is shown in Fig. 1.

Where this parting is lacking a "streak of bone" about 3 in. thick appears at the top immediately below the roof. It has recently been discovered that this bone contains a large amount of oil as well as much gas. Consequently it is desirable to separate it from the coal. To accomplish this a top cut is made, as shown in Fig. 2.

Changed to Top Cutter in Two Minutes

Since this machine was installed little bottom cutting has been done. Fig. 3, however, shows a bottom cut being made in a 22-ft. room, which well illustrates the adaptability of the machine. The change from a top cutter, operating 6½ ft. above the floor, to a bottom cutter can be made in less than two minutes, while the preparatory step to mine strata intermediate between top and bottom can be taken in much less time.

In Fig. 5 the cutter bar is shown in a vertically edgewise position, just finishing a center shear cut. To start such a cut as is shown in this picture the cutter bar is placed against the roof and sumped in to its full length of 9 ft. It is then fed down until the point of the cutter bar touches the bottom, when the machine is again put into sumping feed, this time in a reverse direction, and sumped out. The reverse of this operation, of course, can be accomplished with equal ease; this is necessary when the shear is made to the left of the center of the machine. A middle cut and a shearing cut were made in this coal bed in thirteen minutes.

Sheared Coal the More Readily Loaded

Where lump coal for domestic purposes is desired a shearing cut increases by from 20 to 25 per cent the amount of this grade obtained. The small amount of power, time and labor consumed in making this additional cut is favorably balanced by the additional amount of lump obtained and the decreased cost of shooting. The advantage of the shear cut is not necessarily confined to the results yielded in the shape of an increased amount of lump. Such cutting is of particular advantage in obtaining the best results from a mechanical loader.

The shear affords a loose end to shoot against, so that blasting down after a cut of this nature will result in the coal being thrown to the center of the room or entry, thus placing most of the material where the loader can reach it most efficiently. The shear cut can be made along any perpendicular at or within 2½ ft. from the outside of either rail. Such a vertical incision usually is made in conjunction with a top, bottom or middle cut.

Fig. 4 shows the machine in position to make a slabbing cut on the bottom. As in the room, the exact place where such a cut is to be made can be determined at the will of the operator. The machine works equally well slabbing upon either side and while moving either

FIG. 3

Making an Undercut

In this instance the kerf is made near the floor of the room, which is 22 ft. wide. A big advantage of this machine is that it is readily brought into action.

FIG. 4

Starting a Slabbing Cut

The machine adapts itself readily to the slabbing of the side of a room, which some believe is the way in which to obtain large and easy tonnage.

forward or backward. For longwall extraction this feature is highly desirable.

The operation of the machine is exceedingly simple. It cuts from the track at all times, unless provided with tractor wheels, which will permit it to operate upon the floor. The use of ropes and chains as propelling media has been entirely eliminated by direct mechanical drive. The runner may stand at the rear end of the machine and control all its movements, with the exception of feeding the cutter bar across the face of the coal.

Speed Ranges from 6 to 48 In. Per Minute

This operation is accomplished by manipulating the small lever, seen on the neck of the machine in Fig. 3. An important consideration in this connection is that this speed is variable, its range being from 6 to 48 in. per minute. The sumping feed is identical and is controlled in a like manner, although from the rear of the machine. It will be noticed that one of the men seen in Fig. 3 has his hand on this control. The tramming speed is from one to six miles per hour, the motor being geared direct to the truck, thus obtaining positive traction.

This machine, which is manufactured by the Oldroyd Mining Machine Co., of Cincinnati, Ohio, has a record of cutting twenty-three places in an 8-hour shift. It operates upon either direct or alternating current.

FIG. 5. MACHINE WILL ALSO SHEAR THE COAL

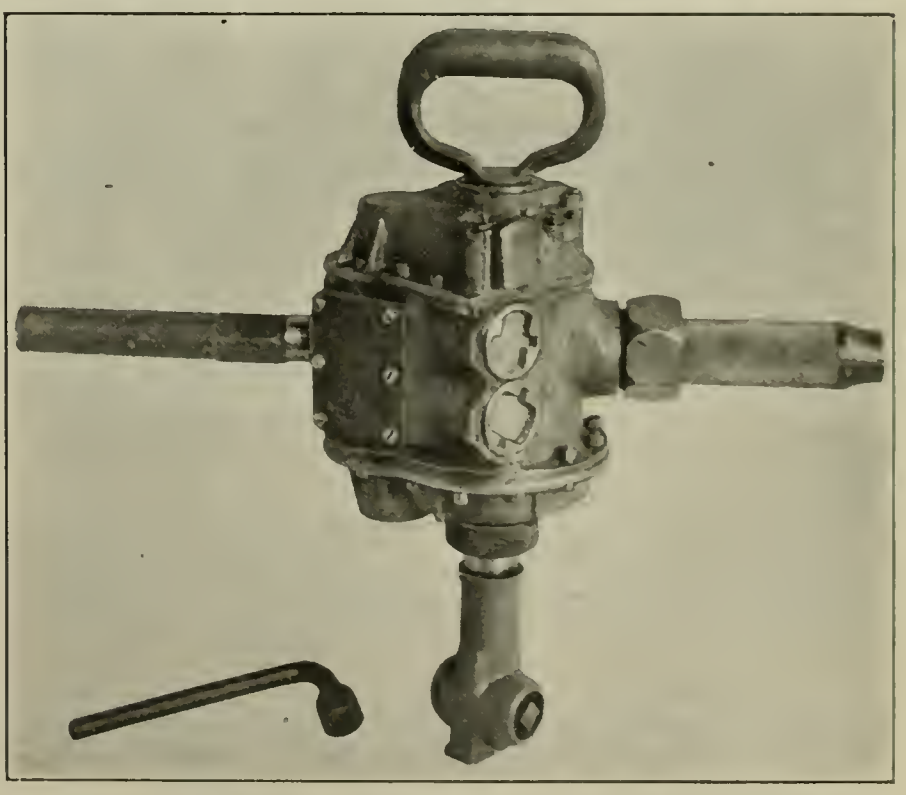
The cutter will work as readily edgewise as flat and so can be made to reduce markedly the use of powder and add to the percentage of large coal obtained.

Labor and Time Saved by Driving Shot Holes by Power Drills

Portable Rotary Power-Driven Drills Drive Holes from Fifteen to Twenty Times as Fast as They Can Be Bored by Hand

By R. S. Marshall
New York City

DEVELOPMENT of the portable rotary power drill for driving shot holes either into the working coal face or into the softer kinds of mine rock has greatly simplified and facilitated the process of coal production. For many years there has been a demand for a strictly portable device of this nature. Light in weight,



AIR DRILL WITH GRIP HANDLE FLAT-TAPER CHUCK

Bits are made of flat steel twisted into a helix. The rear end is then tapered along the edges so that it readily may enter the socket or chuck on the drill, where it is held firmly by a sunk-head set screw.

they are flexible in operation, sufficiently powerful to sink shot holes rapidly to any practical depth, and have a drilling capacity or footage far exceeding what they are normally called upon to deliver.

The past year or so has seen a rapid increase in the adoption and application of these machines in the coal fields, both anthracite and bituminous. Their advantages in the shape of more rapid shot-hole driving, increased production and consequent lower cost are readily apparent. They also better working conditions, and make the obtaining of men more easy, as

Drilling Low Coal

Low coal, unless unusually soft, is hard to drill with a hand auger. With a portable power drill the work can be done without strain or loss of time.

the miner is relieved of what is often the most arduous of his tasks—hand drilling.

Little Giant drills of this type, as manufactured by the Chicago Pneumatic Tool Co., have successfully met the conditions of service imposed. These machines are built in several sizes, driven by either electricity or compressed air, reversible and non-reversible.

By exhaustive field tests the bit speeds of these machines have been carefully determined. These speeds are such as to yield maximum average results under the conditions imposed. The machines may be used either mounted or unmounted and be operated by either one or two men, as circumstances may demand. A mounting is necessary only in the harder formations or where the coal carries sulphur bands or hard slate. As these drills are "overpowered" they are capable of penetrating substances that are much harder than can be drilled by hand. In fact they may be used successfully in any formation that does not ruin a high-grade steel auger.

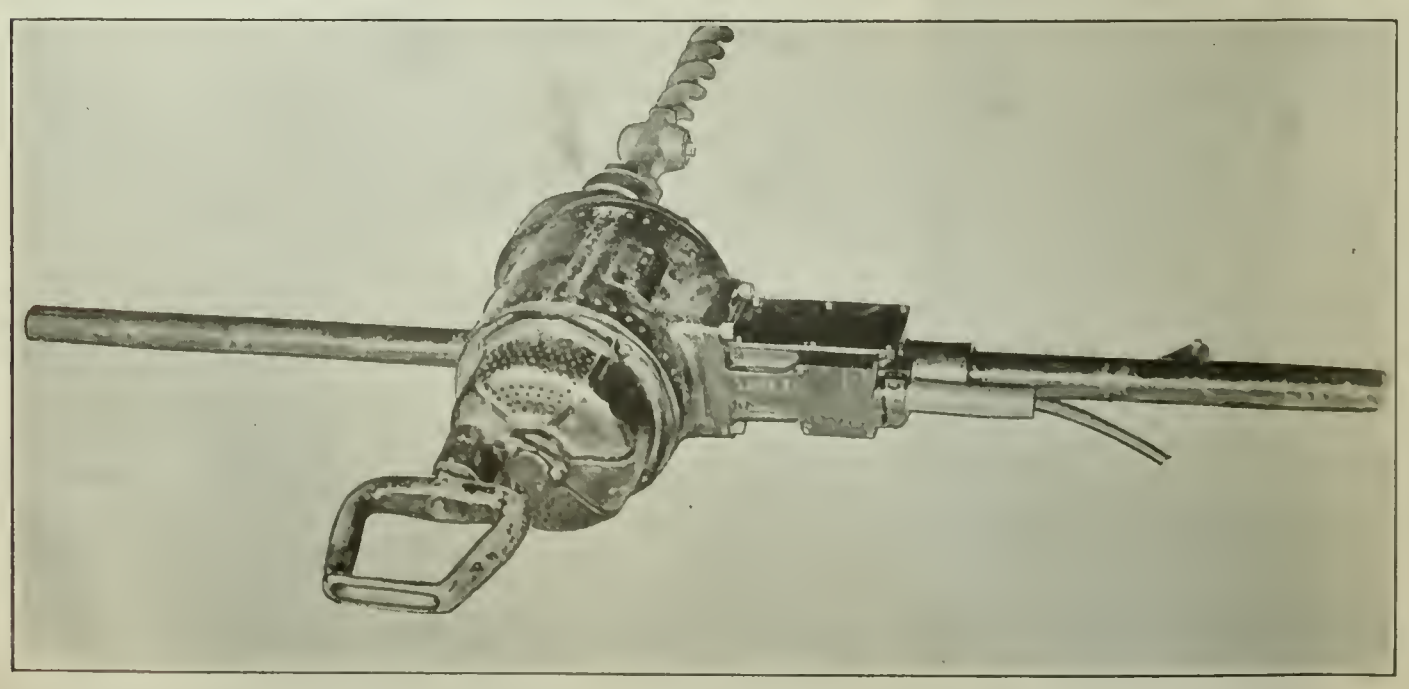
Shot holes on the average are approximately 6 ft. in depth and about 2 in. in diameter. Local conditions sometimes make it necessary to drill larger and deeper holes, but this in no wise affects the efficiency of these machines, as they are capable of easily drilling 10- or even 12-ft. holes in the average coal formation, when properly manipulated.

In speed of drilling they are many times faster than hand work. The medium-weight machines operated unmounted by two men in the Pittsburgh, Connellsville and similar coal beds put in 6-ft. holes in from 50 to 70 sec., which is on the average from fifteen to twenty times as fast as can be attained by hand methods. The average energy demand of these tools is from one to two horsepower. This permits the actual drilling of several hundred feet of holes per day at a cost amounting to only a few cents for power. The saving in time, labor and money is thus obvious.

In hand drilling it is not uncommon for the holes (top ones especially) to "run short." This tends to permit the coal to overhang and gives an unsatisfactory condition of the roof. With these drills extremely thin beds can be economically extracted, which cannot be accomplished with any degree of profit if the drilling has to be done by hand.

The standard form of mounting used is of either the frame or post type. The feed bars and boxings are furnished with various pitches of threads, so that the drilling speed of mounted machines can be regulated to suit conditions. The augers are of different "rolls" or sections, each applicable to drilling certain formations. Three standard forms of bits are normally used, namely, fishtail, half diamond and full diamond.

Certain modifications of these three forms are made to meet special conditions such as those imposed by "mine rock"—hard slate and shale, etc.—but those mentioned can be considered adequate for all practical purposes. The fishtail bit is a rapid cutter and is used in the softer coals. The half diamond is employed in medium hard and the full diamond in the hardest of coals, slate, etc. The standard form of tang and socket is a flat taper.



Electric Drill

Note grip handle behind the motor and the long bar handle by which the machine is prevented from turning. The long auger, of course, has been cut off short to reduce the illustration to reasonable size.

HUNT ELECTRIC SHOVEL LOADING PILE OF COAL INTO A MINE CAR

Rotary Shovel That Clears Wide Path but Delivers to Fixed Point of Discharge

Standing 36 In. Above the Rail with a Low Center of Gravity, the Hunt Machine Requires Neither Rail Clamp Nor Outriggers to Prevent Upsetting—Tests on Ore Loading Have Shown a Reduction in Costs Over Hand Loading Amounting to 74.2 Per Cent

By S. H. Hunt
Milwaukee, Wis.

DURING the past year a new mechanical shovel or loading machine has been developed by the Milwaukee Coke & Gas Co. which utilizes a rotary motion in delivering its material to the mine car. The machine, which is extremely compact, was designed by S. H. Hunt, chief engineer of the company.

Digging is accomplished by four revolving buckets which thrust themselves forward into the pile of material to be loaded in such a manner as to be readily filled, dump their load upon a belt and then recede into the cylinder to which they are attached. The action of these buckets is positive; they are actuated by a cam of high wear-resisting quality. The process of loading is practically continuous instead of intermittent, which makes this a machine of exceptionally large capacity considering its over-all height, which is only 36 in. above the rail.

A conspicuous detail in the design of this machine is the complete housing and protection of its mechanism against dirt and water as well as the extremely rough usage to which such equipment is subjected in a mine. The working range is 10 ft. in width, all movements being controlled by three hand levers and one foot lever. The end of the belt which delivers material to the car has a fixed central point of discharge regardless of the angle with the track at which the scoop shovel may be working. Because of the low center of gravity of the machine, its stability in any working position is such that rail clamps and outriggers are unnecessary.

This loader is driven by a single 15-hp. motor, which is twice as large as is required for the accomplishment of any one of its functions. This motor is located between the forward and rear gear-reduction cases. All gears are of heat-treated chrome-vanadium steel having Fellows stub teeth, which operate in oil. All bearings are of the Timken type, and the speed reduction is obtained by means of a Timken-David Brown worm gear. No cast iron enters into the construction of the machine, as it is considered that only steel castings will afford the desired margin of endurance.

The machine has two speeds forward and reverse. It slews readily to either side, it digs and delivers the material mined, and the entire machine can be elevated or lowered so as to adjust the digging to any unevenness of the mine floor. The foot lever which controls this latter movement also disengages the traction clutch, allowing the loader to be moved about the mine by power other than its own.

Automatic Guards Against Careless Operation

Certain automatic features have been embodied in the design that afford protection against careless operation. The slewing movement is stopped at its proper limit, making it impossible for an operator to overrun and upset his machine. Should the buckets come in contact with any obstacle that they are unable to move, the multiple-disc driving clutch slips, making it impossible to injure the buckets or the machine. In advancing into a pile, sufficient traction is allowed to fill the buckets properly, but even with the forward speed unchecked the driving wheels slip on the track before excessive stresses are imposed upon the propelling mechanism.

Safety, which is highly essential in mining machinery, was primarily considered in the design of this loader. In addition to protecting all moving parts, the truck wheels are entirely covered by steel castings, precluding

Front View

The shovel in this view faces straight ahead on the mine track. It is easy to slew it to the right or left, and when that is done the position of the discharge end is not changed. Note the wide belt by which the coal is carried from the point where it is discharged by the buckets back toward the mine car. The working range for the buckets is 10 ft. The loader is driven by a single 15-hp. motor.

the possibility of the operator getting his foot on the track while the machine is in motion. These same castings remove loose coal or ore from the rails and serve as an additional support for the swinging body. The belt conveyor extending over the mine car can be telescoped within the machine proper by means of a rack. This facilitates the movement of the loader around sharp turns or in rstricted places.

This machine was given its first test in loading coal cars at the face at the Weeksbury mine of the Steel & Tube Co. of America. The roof of the working place in which it operated was 39 to 42 in. above the track. Under these conditions the average loading time per car of 1¼-tons capacity was forty-five seconds. The ability of the machine to load coal from a standing face the coal from which has been shattered by a shot but could ordinarily be removed only by hard picking, showed it to be extremely sturdy and particularly well adapted to its work.

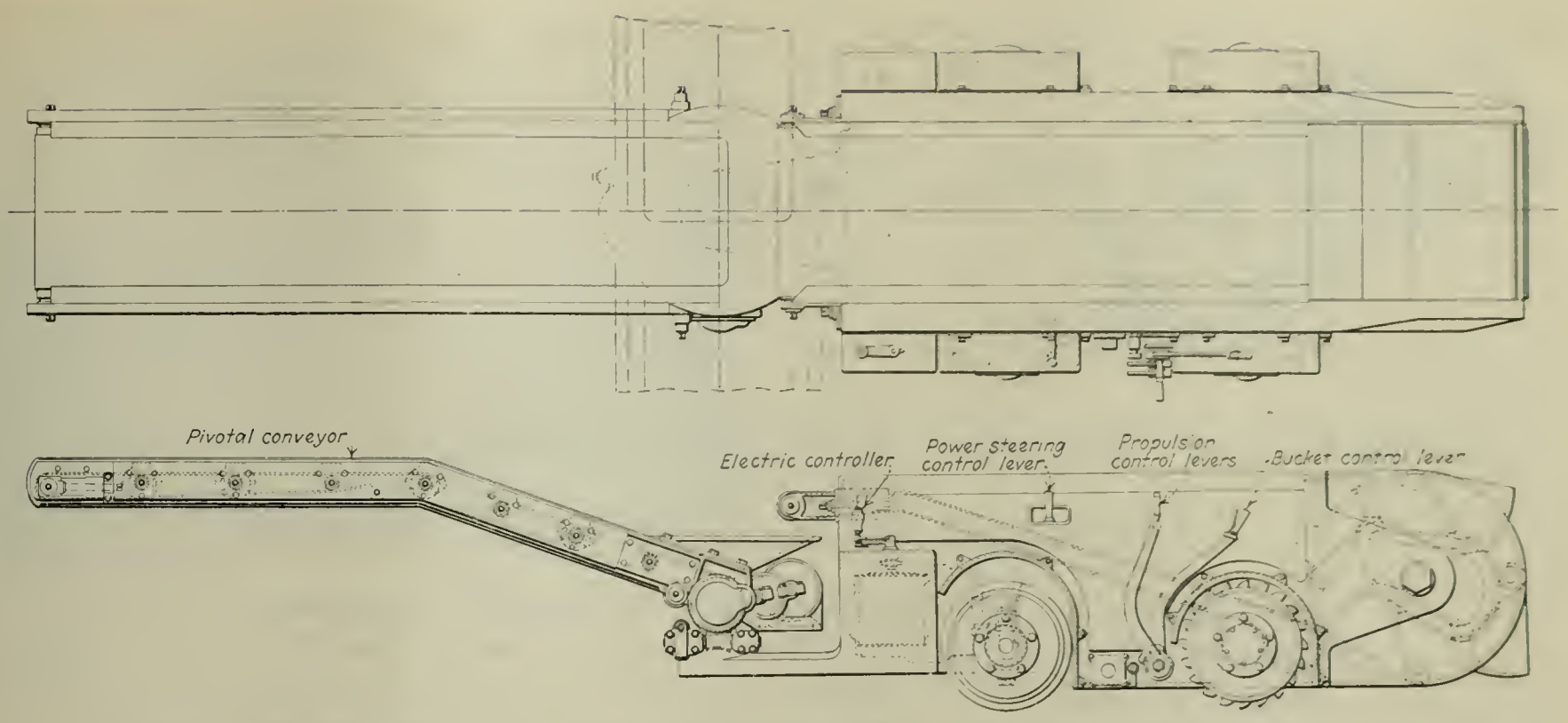
No mechanical or electrical trouble was experienced in the five days of its operation. The arrangement of track employed in this mine, however, prevented continued production to advantage, and it was evident that a different haulage method would have to be devised in order to move the cars promptly after they were loaded. Accordingly the machine was sent to Mayville, Wis., for a tryout in hard iron ore.

Alternate operation in low coal and in hard ore provides what may be properly termed the two extremes of mechanical loading. Iron ore as found in the Mayville mine is a material exceedingly hard to win, breaking, as it does, in big chunks. The bed rests upon a clay bottom with water flowing over it. Tracks carrying heavy loads are maintained with difficulty in new working places. At this mine both running and passing tracks were used. Upon the former a trip of empty cars was delivered to the loader. When the end car was filled it was switched to the passing track. As soon as a trip of loaded cars was made up on the passing track it was pulled to the shaft by a locomotive and at the same time another locomotive began spotting empties behind the loader in such a manner as to repeat the loading operation.

During the three consecutive days that time and tonnage were observed in loading by mechanical means

LOADING CHUNK OF IRON ORE WEIGHING A TON

This lump of iron ore weighed 2,100 lb. and measured 38½ x 24½ x 20 in., a mass of ore that seven men could not lift. The width of the bucket that has lifted this big block of ore is 28 in. In the shift that preceded this fea 316 tons of ore were loaded out.



PLAN AND ELEVATION OF SHOVEL AND CONVEYOR SHOWING THE VARIOUS POINTS OF CONTROL
Note the peculiar cam surrounding the shaft which gives a suitable crowding motion of the buckets, a good clear lift and a discharge that does not injure the coal. The front wheel is furnished with teeth that assist in crowding the buckets into the pile.

the rotary shovel averaged 260 long tons per shift of eight hours, showing a reduction in comparison with hand labor costs of 74.2 per cent. Throughout the test some interesting time records were noted for loading cars having a nominal capacity of 2.7 long tons. Quite frequently a car would be loaded in from fifty to fifty-five seconds, the best time noted being thirty-one seconds. A trip of six cars was loaded in ten minutes 25 seconds, which time included switching and spotting. Throughout the entire test the time of placing and loading each car was taken with a stop watch.

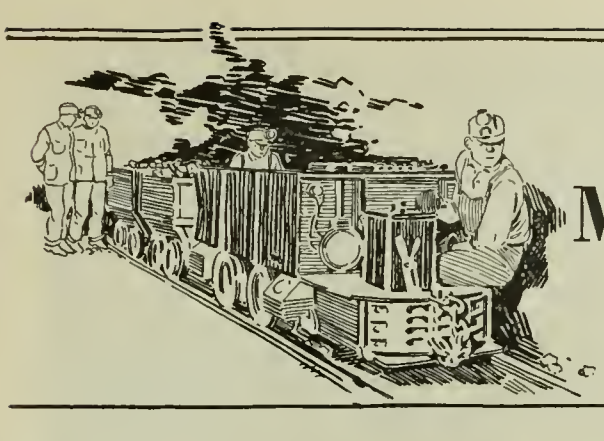
A new design of this type of shovel has recently been completed which introduces a number of details making it particularly adaptable to the mining of coal of limited head room by either the room-and-pillar or longwall method. The capacity of the first design has been maintained in the second, but the length and weight have been reduced approximately one-half. The new shovel is not dependent upon track for loading operation and only when moving from one room to another will it travel upon the rails that are used by the coal cars. By operating off the track the working range is greater than would otherwise be possible. By using a pivotal belt, cars can be filled from almost any angle.

The new machine has a three-point suspension, causing the two driving wheels to be in contact with the floor at all times, no matter how irregular the floor may be. Steering is accomplished by power. This relieves the operator of an arduous task. The wheelbase is sufficiently short to permit the machine when moving from one part of the mine to another to follow the track curvature without steering. The pivotal belt can be raised or lowered and swung through an arc of 180 degrees. The length of the machine proper is 8 ft. 10 in., the over-all width is 4 ft. 2½ in., and the height, measured from the rail, is 36 in.

FRONT VIEW OF MACHINE WITH EMPTY BUCKETS
By comparing the height of the machine with the men who are preparing to operate it it is easy to see how low it is built. It is only 36 in. high, having been designed for operation in a bed of coal running between 39 and 42 in. in thickness.

Portable Compressed-Air Machines Have Many Uses at Coal Mines

REPLACEMENT of compressed-air piping by electrical wires has made it difficult in many mines to employ compressed air for uses to which it is much better suited than electricity. In consequence the introduction of portable air compressors has been rapid. Electricity cannot be used in the mining of highly gaseous coal and in such cases portable compressors make possible the operation of ordinary and post punchers. Compressed air is preferable for drilling in hard rock and well adapted for drilling in softer material. Cement-gun work demands the use of air under pressure, and by use of it electrical workers can rapidly drill holes in the hardest of mine roof for the reception of trolley-wire hangers. Such portable compressors are useful for the operation of riveters and paint sprays and might be profitably employed for the dislodgment of coal dust from the tops of timbers and the ribs of haulageways. With a portable compressor near the point of application there is little fall in pressure and much economy in operation, but care should be taken that the compressor is not overloaded.



Mine Transportation

Experience Results in Radical Changes in Mine Locomotives for Heavy Duty

Leaf Springs and Equalizing-Bar Suspensions Make Derailments Less Frequent—Frames Cut from Steel Plate Resist the Inevitable Violence in Operation—Tandem Operation Makes Bigger Trips Possible—Electric Brakes Prevent Runaways

By B. S. Beach*
Schenectady, N. Y.

MANUFACTURERS of trolley-type locomotives and their equipment, profiting by long experience, have been developing during the recent past new methods of construction and new control devices that largely enhance their ability to fill the needs of the mine. The result has been that locomotives today are better suited to mine service than ever before. Experience has dictated that the strength of the locomotive frames may be increased over that of the old cast frame by cutting them from solid plates of rolled steel, and this practice is now being followed by the General Electric Co.

The reason for this preference is that rolled steel is of uniform strength throughout. It is free from blowholes or other structural weaknesses. The end frames of the locomotive are built up of steel channels fitted with wooden bumpers, which in turn are faced with steel protection plates. Metal for the purpose of balancing the locomotive, and, in some sizes, to afford also the necessary weight for traction, is bolted across the frame in the rear of the end channels.

Experience has shown that the springs of a mine locomotive play no small part in its ability to haul coal. This is because the track in most mines is more or less temporary in nature. As a result derailments are frequent, and the rough riding subjects the equipment to hard usage.

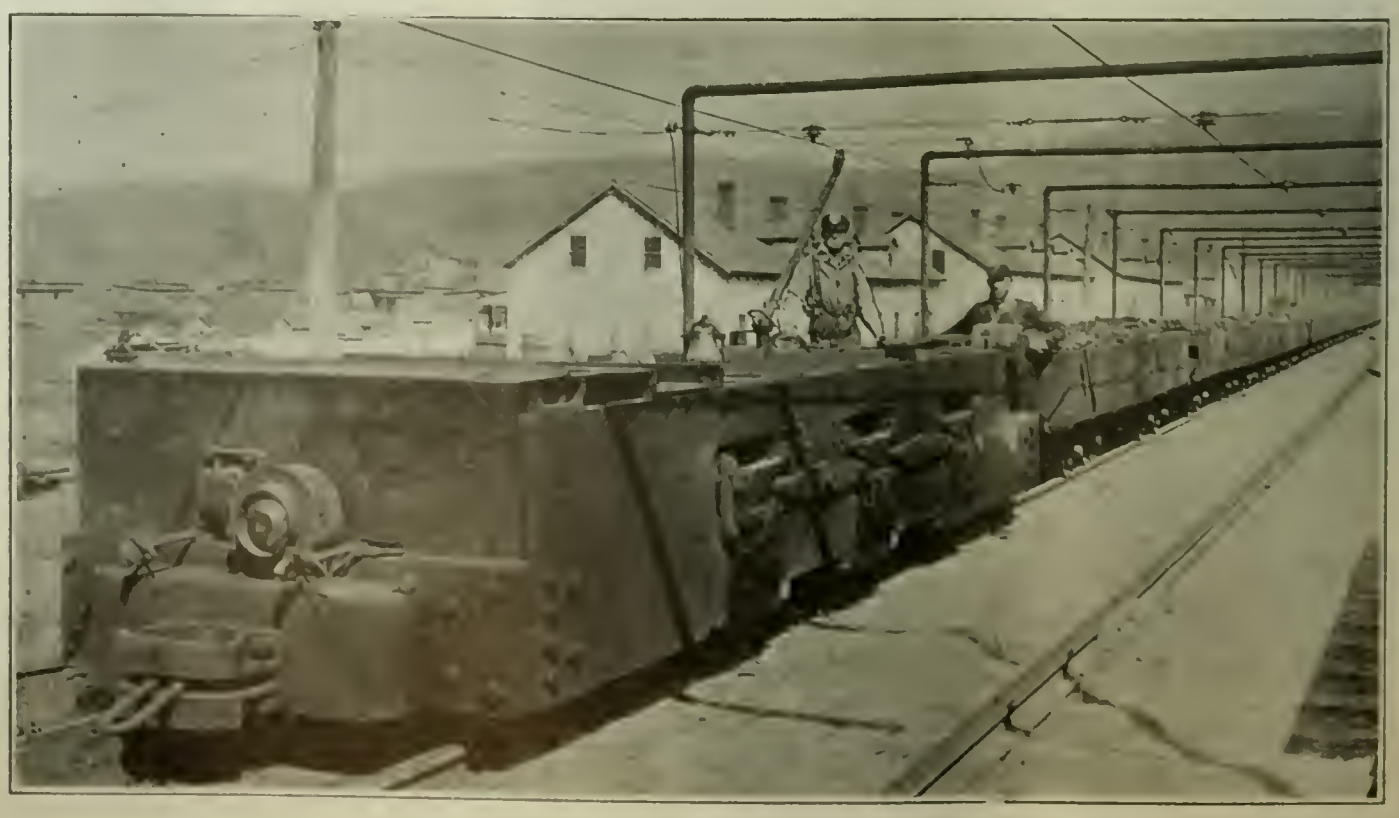
Equalizers Assist Wheels to Stay on Track

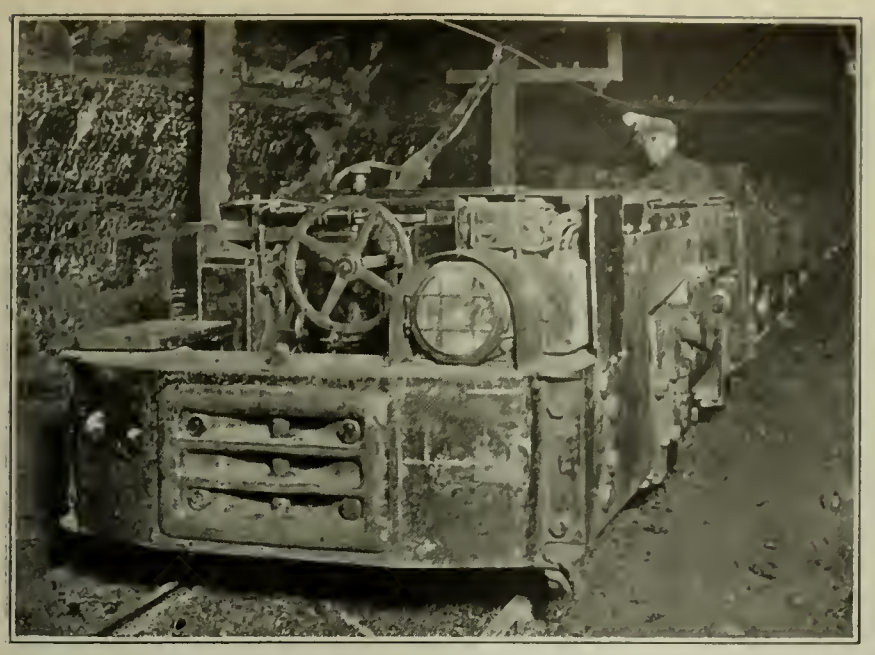
Semi-elliptical springs with equalizer bars on each side of the locomotive are now supplied to the two-motor units. This construction has been adopted because the three-motor types that have been thus equipped for several years have given highly satisfactory results. With the usual irregular mine track the weight of the locomotive does not rest equally on the

*General Electric Co.

Three-Motor Locomotive

This unit weighs twenty-five tons and has contactor control and equalized leaf-spring suspension. It is used at one of the mines of the H. C. Frick Coke Co. Note the long trip of steel cars which this locomotive is hauling.





LOCOMOTIVE WITH CONTACTOR CONTROL
Thirteen-ton locomotive with equalized semi-elliptical springs at mine No. 57 of the Springfield District Coal Mining Co., Springfield, Ill.

drivers unless some equalizing action such as this is provided. With it the cost of track maintenance is lowered, the locomotive rides more smoothly and, on a rough track, the likelihood that the wheels will kick loose is reduced. The combination of semi-elliptical springs and equalizers also allows greater vertical movement of axles and journals. Thus the locomotive is less frequently derailed than under the former arrangement.

When a locomotive having the new type of outside frame is derailed, the lower edge of the side frame clears the rails far enough to allow blocking and other re-railing devices to be slipped into position, so that the machine can be readily put back on the track. The old outside frame cleared the track only about three inches and when the locomotive was derailed the wheels could be reached only with difficulty. Consequently, much time was lost in getting the machine back on the track.

End Thrust Taken Up by Renewable Disk

All outside-frame locomotives are equipped with end-thrust journal boxes. A heavy bolted-on end cover carries a renewable bronze wearing disk which takes the thrust from the end of the axle, thus relieving the wheel hubs from wear. At the back a fibre dustguard is provided, which in connection with the tight-fitting front cover effectually excludes sand and dust. A waste-packed oil cellar provides lubrication and the linings can be easily removed and replaced simply by unbolting the end cover.

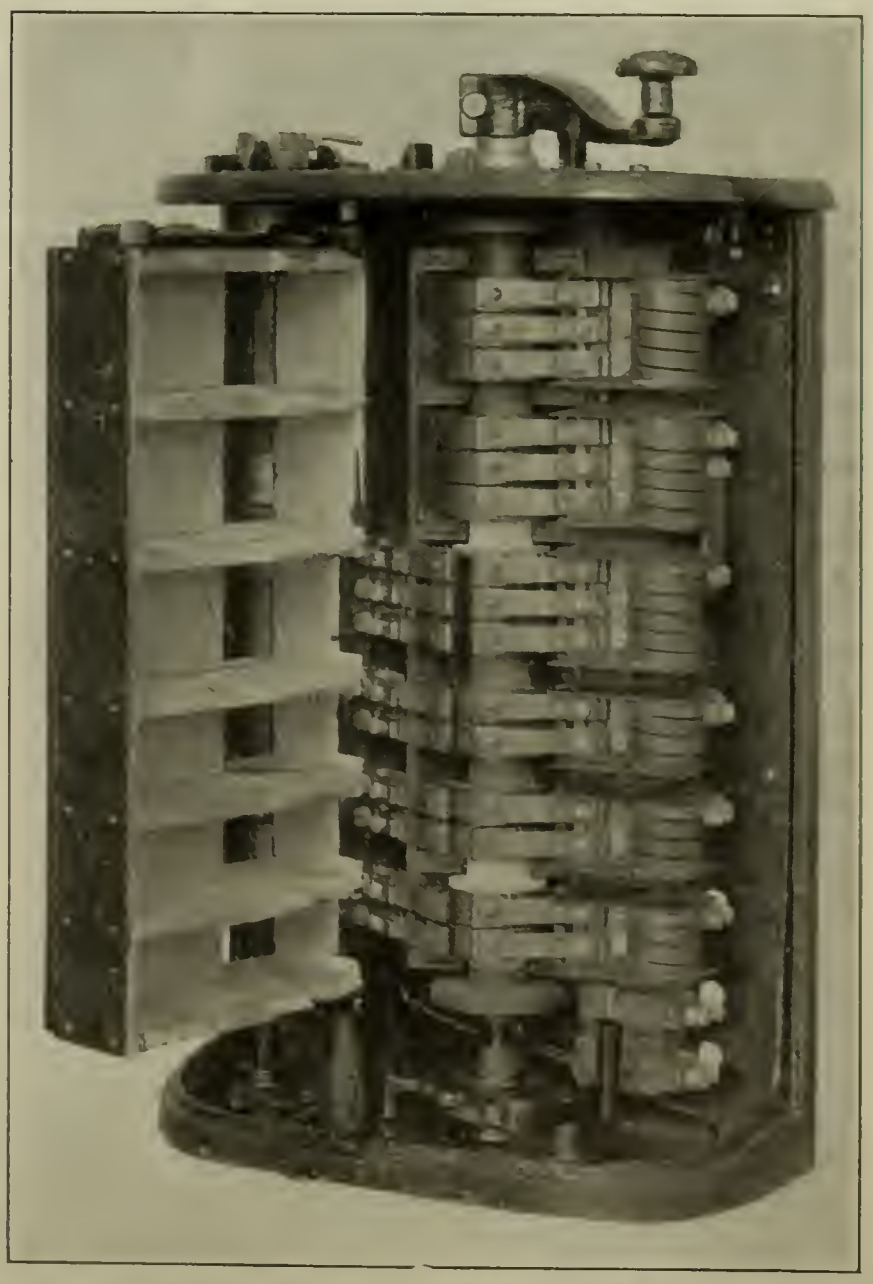
Motors employed on present-day locomotives are designed to endure the hard usage to which they are subjected. They are all of the inclosed split-frame type, series wound, with the armature carried in separate bearing heads. The motors are fastened in place by suspension bars, which are in turn spring-supported from the frame. As the suspension lugs are on the lower half of the motor frame, the upper half can easily be removed, and the armature taken out for inspection or repair without disturbing other parts. Ball bearings on the armature journals serve several purposes; they prevent the armature from touching the pole pieces, maintain commutator alignment and eliminate the leakage of oil into the armature, which frequently occurs when waste-packed bearings are employed.

The wide variety of track gages now in use has made standardization of motor equipment a difficult problem. Sizes up to and including twenty tons are normally fitted with two motors. For larger sizes and where more capacity is desired than can be obtained on two axles, because of the gage or other limitations, three-axle locomotives have been developed. Where light rails limit the amount of weight per driver, and it is not possible to obtain sufficient capacity on two or three axles, tandem locomotives are employed.

Tandem locomotives may be equipped with a four-motor controller on one of the units (called the primary half), while the other (or secondary half) is equipped with no controller, constituting a permanent tandem. Each may, on the other hand, have a two-motor controller, which permits each section to be used separately. Sometimes both units are equipped with four-motor controllers, making either of the halves primary and permitting a greater range of application and flexibility where several locomotives are used.

Control systems also vary with the weight, voltage and number of motors, being designed to meet the requirements of the special variety of work demanded of that particular locomotive. Four-, 6- and 8-ton machines, which include the trolley gathering types, are called upon to make frequent starts and stops at switches, room necks, etc. A new type of electric-braking controller was developed to meet this service.

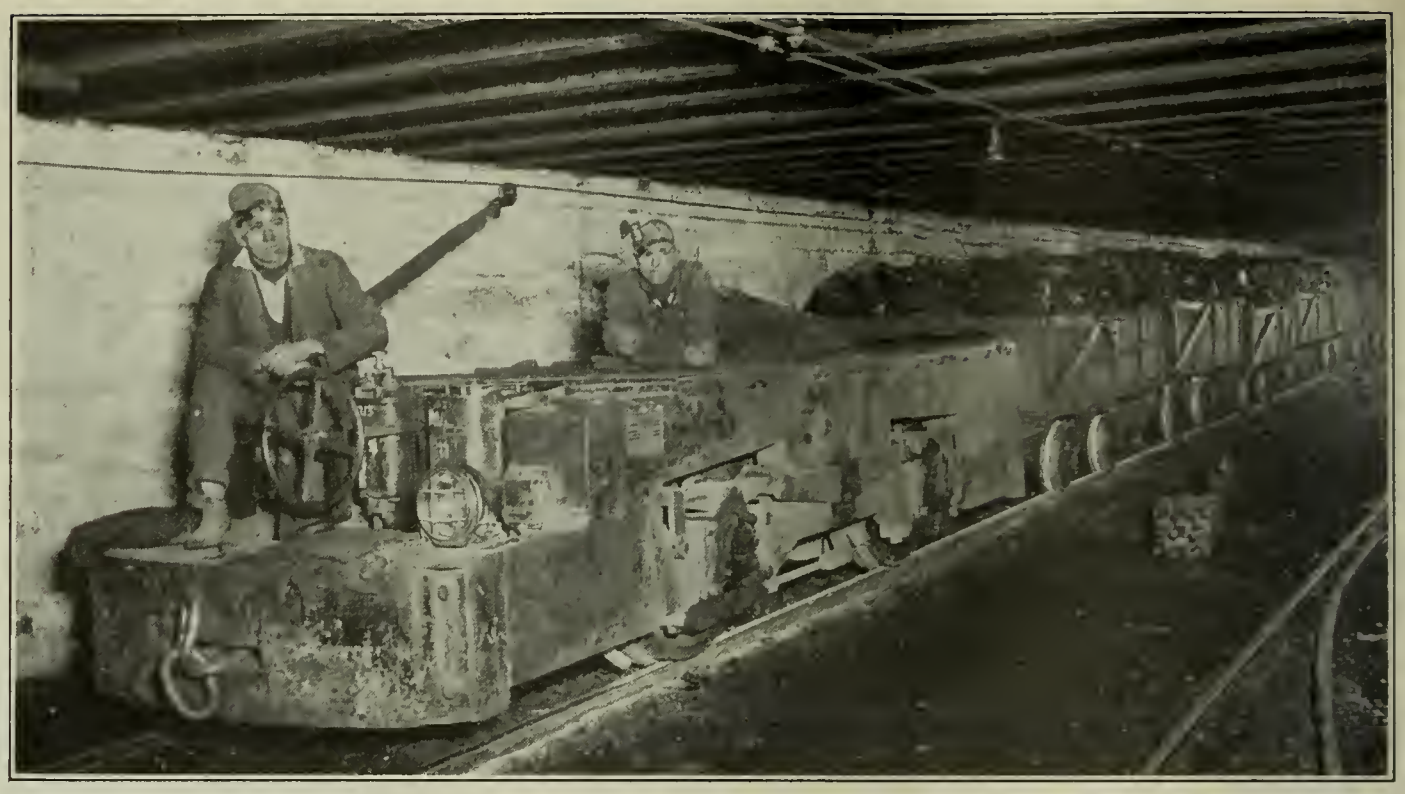
It is a drum controller of the series-parallel type,



CONTROLLER FOR HEAVY LOCOMOTIVES
The shelf-like asbestos arc chutes in the cover when closed isolate the various fingered contacts. The individual blowout coils on the right extinguish magnetically any arc that may be formed.

Heavy Locomotive

This illustration shows the equalized leaf-spring construction used to promote an even distribution of weight on the drivers despite any unevenness of the road. This view is taken at the West Frankfort mine of the Chicago Wilmington & Franklin Coal Co. The locomotive weighs fifteen tons.



arranged for rheostatic braking, and furnished with restricted arc chutes and individual magnetic blowouts. The series-parallel feature insures series starting, thus minimizing loss of energy either in starting or running slowly in the parallel position. The reverse cylinder is provided with four operating points, two for each direction of motion—namely, braking forward, motoring forward, motoring reverse, and braking reverse. The electric or rheostatic braking is a detail providing much economy, as it eliminates skidding, with its resultant flat spots on the wheels.

To stop the locomotive with this controller, all the motorman has to do is to throw the main cylinder handle to the indicated braking position. The degree of braking is governed by the main cylinder, and the trip can be brought to a stop, as long as its weight and the grade are within the braking capacity of the locomotive. A runaway is impossible with this electric control, even though the trolley jumps the wire while braking is being performed on a grade. In such a contingency the locomotive will start and stop, start and stop again until held at rest either by a level grade or by the hand brakes.

As the work done by the larger machines consists in the main of long hauls with heavy trips, a different type of control is employed. These are of the rheostatic, series-and-parallel variety. The fingers are fitted with removable burning tips, and with individual blowout coils for extinguishing arcs. Asbestos arc chutes are provided, which aid further in extinguishing any arc that may be formed.

Contactor Control Lowers Operating Cost

On 250-volt installations, where greater current capacity must be provided, particularly on 13-ton sizes and larger, many users prefer a contactor type of control. This, while more expensive initially, can be operated with lower maintenance cost. Such installations now in use consist of a master drum controller and reversing switch, mechanically interlocked. These are mounted in the motorman's "cab." The five contactors which open and close the main operating circuits are located at any convenient and accessible point on the locomotive. This also is a series-and-parallel type of control, the main line and resistance connections being made by means of a drum switch, which is provided with six points, with either kind of operation of the motors.

While this system is much more elaborate than any of the others, and its initial cost is higher, its savings through lessened maintenance and more satisfactory operation are sufficient to more than counterbalance the increased outlay.

Price of German Coal Raised 23 Marks Per Ton; Miners to Get Better Food

THE rise of German coal prices, reported several times to be impending, has now taken place. The demand of the mine owners was for an increase of 30 marks per metric ton, which they asserted to be necessary for balancing increased expenses. The rise now granted is 23 marks per ton, of which 5 marks are to be contributed to a fund for bettering the food supply to the workmen. This is intended to make up for the now abolished payments of 5 gold marks per ton granted for all deliveries made under the Spa treaty, which were to be devoted to a similar purpose. The payment of this sum, which in the aggregate amounted to 10,000,000 gold marks per month, has been stopped since February. This rise applies to the production of the Ruhr district. Rises of from 15 to 20 marks have been or will be granted to other sections, with the exception of Upper Silesia, where a rise has taken place already.

The price of brown coal has been raised 80 pfennigs per ton of coal, and 2.50 marks for bricks. This increase also is to be paid into the funds mentioned above.

This new adjustment of coal prices, satisfying only part of the claims of the mine owners, is to be considered only a step on the upward grade. It brings the price of Ruhr coal up to nearly 250 marks per ton at the mines. The freight charges, an increase of which also is impending, bring the cost of coal in the coast districts up to a figure which is not far below the latest quotations for English coal. Under such circumstances the question of decontrol of coal imports is receiving increased attention. An increase of imports is indispensable in the interest of shipping, as the harbors now have insufficient stores of English steam coal. The industry also strongly advocates a more generous attitude toward coal imports, in order to obtain the high-grade English coal used in pre-war times. The main consideration against decontrol is the apprehension that German coal would be marketed as and at the price of foreign coal. For fear of unscrupulous dealings of this kind the regulation restricting the grant of import licenses to dealers who imported coal in pre-war times—excluding firms established since then—will be upheld, in spite of the evident injustice of such privileges.

Designing the Storage-Battery Locomotive to Meet Conflicting Needs

Design of the Accumulator Locomotive Is a Complicated Problem—In the Last Analysis It Becomes Not a Compromise Between Evils but the Attainment of the Greatest Possible in Both Reliability and Battery Capacity

By C. W. Smith*
St. Louis, Mo.

MUCH has been written in the last few years regarding the development of storage-battery locomotives and their availability for the transportation of materials, particularly coal, in the haulage of which this type of machine up to the present time has found its most extensive application. This subject is becoming of increasing importance to the coal-mining industry because of the full recognition finally given to the value of this type of motive power when properly applied.

During the first few years of its development the storage-battery locomotive received a large amount of criticism. This was more or less warranted because of certain defects and crudities in early design. The points subject to censure were, first, mechanical and electrical unreliability and, second, the limited range or "cruising radius" of the machine, arising from its low battery capacity.

In the United States, as far as we can ascertain, the first application of a storage battery to a mine locomotive was made about the year 1912, but in 1915 a number of manufacturers began the construction of this type of machine. They approached the problem from quite different standpoints, and two main types of storage-battery locomotives resulted. These, with their subsequent refinements, persist even today.

Early Locomotives Fall Into Two Classes

The trolley type of locomotive in the year 1915 had reached a satisfactory stage of development. Manufacturers of this variety of equipment approached the storage-battery locomotive problem rather reluctantly. This, in many cases, resulted in the development of a modified trolley type of machine, with the elimination of the trolley pole and the substitution of a battery. Thus the first result was a locomotive heavy, pounderous, awkward in both appearance and performance, and possessing a battery of a seriously limited capacity.

Individuals and manufacturers who approached the design of a battery locomotive as a distinctly new type, one which must be developed along original lines, made their errors also, those mistakes being of the type that are almost inevitable in any new mechanical construction. The result was that in the first few years machines were built that gave an undue amount of trouble and types were designed that subsequently had to be discarded.

It must be confessed, therefore, that up to within the last few years battery locomotives were subjected to more or less well-warranted criticism. Even today in certain localities a feeling persists that a battery locomotive is unreliable and of a strictly limited applicability. This belief was engendered by machines of extremely small accumulator capacity.

Batteries and Charging Equipment Improve

However, the principles which underlie the successful design of the battery locomotive soon became recognized, and several years ago "freak" types began to disappear. With the combined experience gained from trolley-locomotive practice and the elimination of faulty mechanical and electrical design a series of machines was evolved that in appearance and operation meets to a satisfactory degree the severe requirements imposed upon this class of equipment.

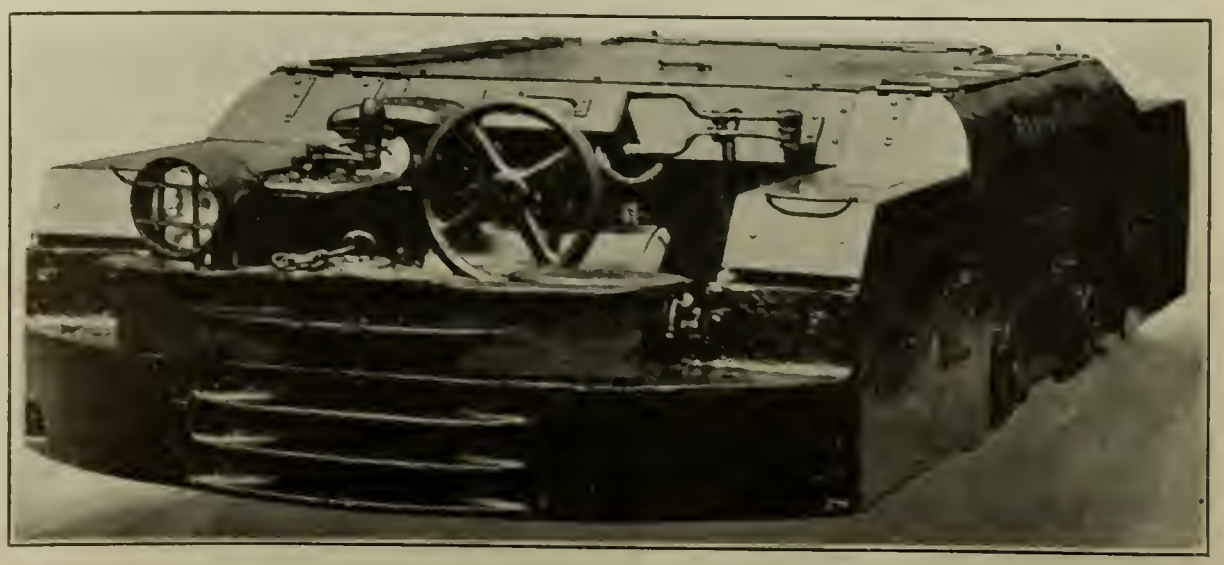
The storage battery itself has developed simultaneously with the locomotive. In particular its capacity greatly increased. Charging equipment has kept equal pace with that development. These two accessory elements, as will be readily apparent upon reflection, are just as important as is the locomotive itself.

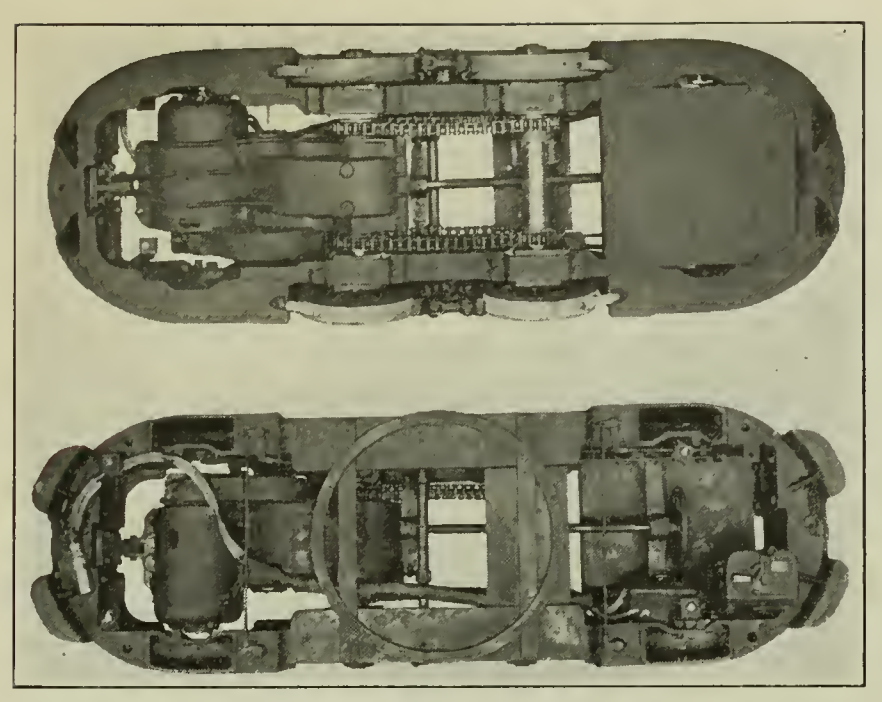
The final result has been that today a well-balanced line of speedy and rugged machines, adapted to almost

*Mancha Storage Battery Locomotive Co.
Illustrations furnished show Mancha Storage-Battery Locomotive Co.'s equipment.

Thirty-Inch Locomotive

A storage-battery machine weighing only four tons in use in the mines of the Akron Coal Co. The illustration, being taken from the front, naturally shows the length of the locomotive greatly foreshortened.





CHASSIS SEEN FROM BELOW AND FROM ABOVE

Note the single motor with chain drive to the front wheels. The controller and brake wheel are located at the opposite end of the locomotive from the motor.

all the highly varied requirements of mine transportation, has been offered to mine operators. A comprehensive inspection of the various modern battery locomotives gives a satisfactory impression of the "rightness" of their design.

Differences in model have today settled down so that now there are only two classes of design: First, as to type of transmission and, second, as to single or multiple motor drive. Each type of drive and transmission has its champions and each possesses certain possible advantages. Limit in the use of any battery locomotive depends entirely upon its effective battery capacity. It is quite reasonable to suppose that if the capacity of the accumulator were boundless this type of machine would entirely supplant all present trolley equipment.

The tendency, therefore, today is strongly toward increased battery capacity in accumulator locomotives. This has a marked bearing upon the design of both the electrical and mechanical elements of these modern machines, and, on account of the reasons outlined above, is a problem peculiar to this type of mine tractor. Accordingly the ratio of battery capacity to total locomotive weight has gradually increased during the last several years until in some cases it has approached 10 kw.-hr. per ton.

Can Give Great Power but Size Interferes

This is a point that well warrants careful consideration in the selection of a battery locomotive. However, a certain practical limit is imposed upon the undue extension of this ratio on account of the increasing width and length of the machine that naturally results.

Weight, width, length and height are often limiting factors for the mine operator in the selection of his haulage equipment. The problem, so far as he is concerned, then becomes one of finding a locomotive within his limitations yet possessing the requisite effective battery capacity. This problem has been well appreciated by battery-locomotive manufacturers, and the more recent designs show a marked tendency to incorporate such features as are calculated the better to accomplish the above results.

The question of single- versus multiple-motor drive becomes one of importance. Exponents of single-motor equipment claim higher electrical and operating efficiency—in other words, a greater effective use of a given battery capacity. Many tests and figures from actual operation seem to substantiate this contention in no small degree.

On the other hand, champions of the multiple-motor type claim that greater simplicity and reliability are inherent in this design. Individual motor drive on each axle presents certain aspects of simplicity, but if this is obtained at the sacrifice to a marked degree of effective battery capacity, the superiority of such design as applied to storage-battery locomotives may be questioned, provided it is possible to obtain equal simplicity and reliability with single-motor equipment.

Practical considerations, except in unusual cases, also demand that the battery in a locomotive shall be self-contained and of sufficient capacity for a single shift's work without the necessity of boosting or battery exchange. This again emphasizes the importance of a maximum effective battery capacity in comparison to total locomotive weight and its limiting dimensions.

The first requisite of any satisfactory machine, of course, is reliability and a reasonable freedom from breakdowns. This particularly applies to haulage units in coal-mine service. Second in importance in the case of the storage-battery locomotive comes the necessity that the accumulator have ample capacity for a full day's work. There is little to choose between a burned-out armature or a played-out battery when it comes to tonnage loss in a day's run.

There is, therefore, a close relationship in the design of a storage-battery locomotive between reliability and battery capacity, for in the effort to reach the maximum of one, the other may be seriously sacrificed. The problem has been to reach not a happy medium but the highest possible capacity in both requirements.

Seeking to Obtain Well-Balanced Design

This search for a design embodying a high degree of mechanical and electrical reliability and the maximum in battery capacity has led to an exhaustive study of both general design and details of construction. General design takes into consideration the kind of drive, motor specifications and characteristics, transmission layouts and types, also the location of parts in the chassis. Details of construction cover such matters as the frame—its type and material—type of bearings, the construction of transmission units, and the general quality of material and workmanship.

General design is of the greatest importance. Space and weight are limiting factors. Each unit used must be as light and compact as is consistent with the strength and ruggedness required in an unusually severe kind of service. It stands to reason that for any given weight of locomotive the lighter the general chassis design, the greater may be the weight of battery used. And not only must the power and transmission units be compact and of the lightest consistent weight but they also must be of a type that will obtain the greatest mechanical and electrical efficiency from the given amount of energy stored in the battery.

This brings into careful consideration motor characteristics, such as speed, voltage and general design. Also here is encountered the issue of single- versus multiple-motor drive, together with the transmission units required for either type.

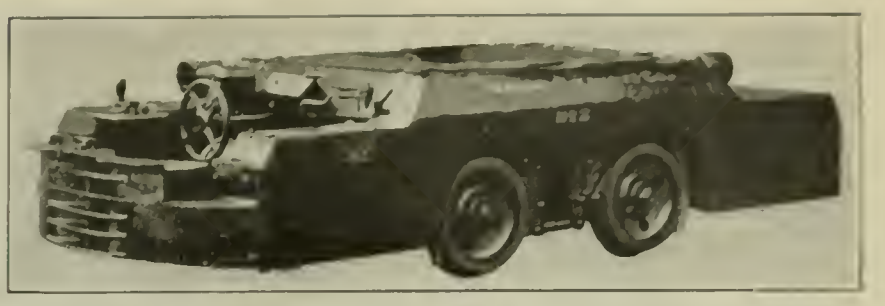
Selection of the locomotive frame must be approached with the same object in view—namely, rigidity and strength without excessive weight. A mine locomotive

is subjected to much abuse and many accidents, ranging all the way from ordinary derailments and wrecks to dropping down shafts and sliding down inclines and slopes. The frame bears the brunt of such mishaps and should be able to withstand extraordinary accidents without distortion, misalignment, or fracture. Upon its ability to do so depends the safety of the mechanical and electrical units placed within it.

Other considerations enter into the design of the storage-battery locomotive which have a direct bearing upon its general usefulness and ability to deliver the greatest possible tonnage. Such a machine must be easily and comfortably operated with the maximum convenience and safety for the motorman and the expenditure of a minimum of physical effort on his part.

This involves such considerations as brakes, lights, signals and the general arrangement of control. A slow and awkward brake may appreciably affect a day's tonnage. Faulty lights will do the same. A poor and unreliable sanding device causes delay when proceeding either up or down hill, as well as an occasional wreck or derailment. All these details need careful consideration, for in the aggregate they may seriously depreciate the capacity of an excellent machine.

Accessibility of mechanical and electrical units is important both for inspection purposes and for repairs. This is of secondary consequence but has a direct bearing upon the length of time a locomotive may be in the shop as well as upon its cost of upkeep. Many a good machine has been scrapped before its time because of the inability or reluctance of repairmen to take the time necessary for difficult problems of inspection, adjustment or repair.



LOW-TYPE LOCOMOTIVE AT SOLVAY COLLIERIES PLANT

This locomotive weighs six tons and stands only 33 in. above the rail. The trolley locomotive travels in headings that can be made high but the storage-battery has to make its way into low rooms. It is remarkable how it has been found possible to keep the height of accumulator machines so strictly within the bounds that their necessities mark out for them.

It is, therefore, apparent that the design of a storage-battery locomotive entails problems of a highly complicated and intricate nature. Their solution requires not only fine engineering judgment but due appreciation of the actual conditions under which the machine must operate and the nature of the work it inevitably will be called upon to perform.

Alden Coal Co. Installs Large Hoist Which Brakes Itself if Anything Goes Wrong

Large Cylindro-Conical Electrically-Driven Back-Geared Hoist Is Provided With Many Features, Both Automatic and Manually-Operated, That Insure Its Safe and Efficient Operation

By Lewis W. Le Grand
Wilkes-Barre, Pa.

A LARGE 400-hp. platform cage electric hoist recently was installed at one of the shafts of the Alden Coal Co., at Alden, Pa. This machine operates in balance, lifting cars from a depth below the surface of 585 ft. The weight of the cage is 10,000 lb., the weight of the car when empty 3,100 lb. and the capacity load of the car 7,500 lb., making the total weight lifted 20,600 lb., or more than ten tons. To carry this load the rope provided has a diameter of 1¼ in. The hoist is designed to raise 500 cars per day of eight hours, the maximum rope speed being 1,375 ft. per minute (about 15½ miles per hour). The head sheaves are set at 8 ft. 8 in. centers. The hoist is so placed as to lift from the side of the shaft.

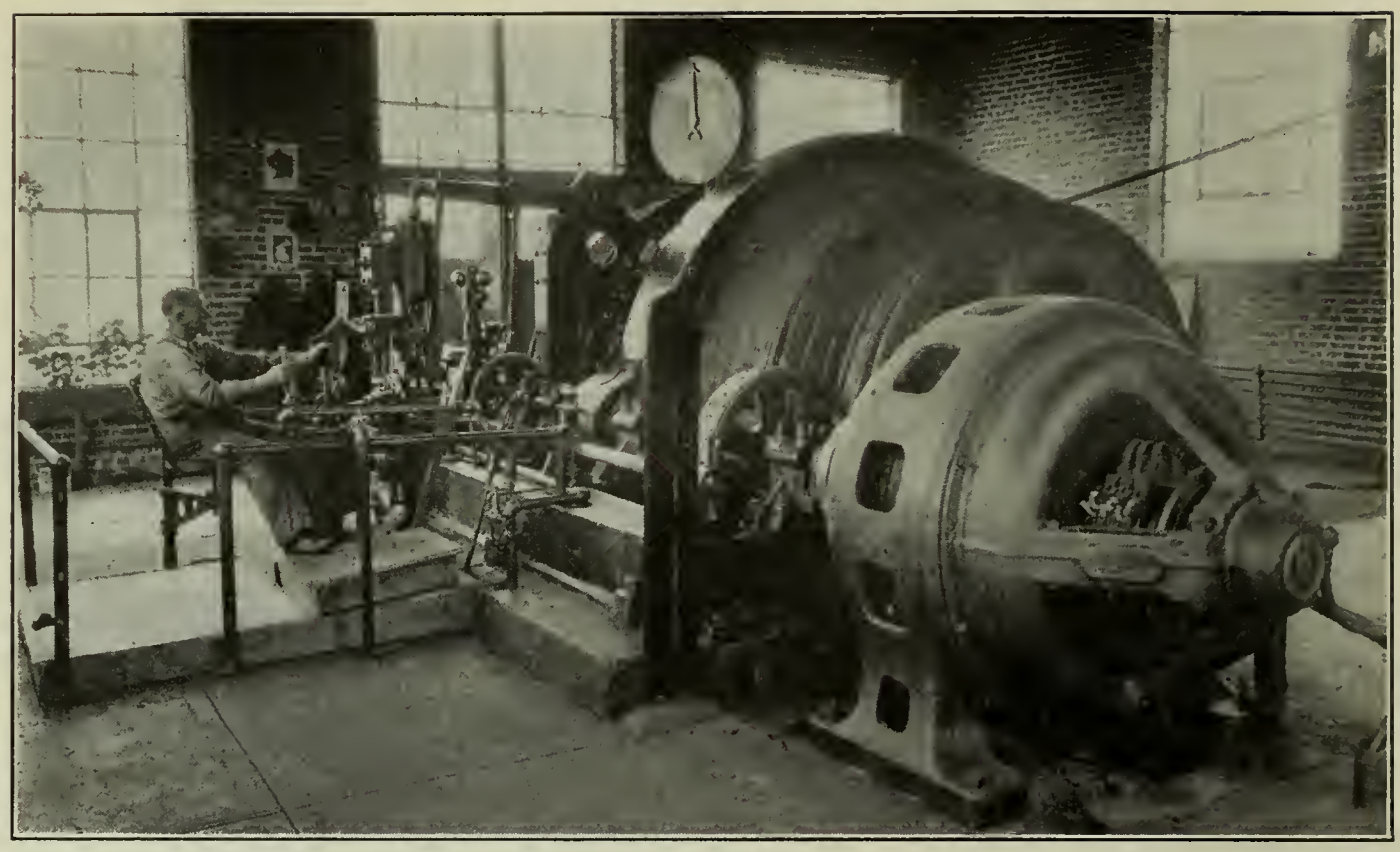
This hoist, which is of the geared type, is equipped with two cylindro-conical grooved cast-iron drums, varying from 7 to 9 ft. in diameter. Both are rigid on the drum shaft and driven by a slip-ring induction motor through a set of single-reduction herringbone gears. The drum grooves are arranged so that during acceleration the "up" rope winds onto the small diameter of one drum while the "down" rope unwinds from the large diameter of the other. This reduces the horsepower required at the peak of the load.

The bed-frame of the hoist has a bearing on the foundation throughout its entire length and is of "box" section. The three main or drum-shaft bearings have their housings cast integral with the side and center members of the bed. These bearings are of the wedge-adjusted type, the pinion-shaft bearings are of ring oiling pattern, and all have removable babbitted shells. A forged-steel shaft supports the drums and the main gear, which is keyed to the shaft close to the center bearing and also is bolted to one of the drum spiders.

A power-operated parallel-motion basswood-lined post type of brake operates on a suitable path on one of the drums, while an auxiliary asbestos-lined band brake operates on the pinion shaft. This auxiliary brake is interconnected with the power-actuated drum brake, the mechanism being such that both are operated simultaneously by action of the brake engine. Means for regulating the braking effort is provided so that the pinion-shaft brake is not called upon to assume an undue proportion of the load.

Brakes Act at Once if Anything Goes Wrong

The engine for the power operation of the brakes is of the vertical air-released weighted type provided with an oil cataract to insure smooth action. It is controlled for service braking by a hand lever, with the manipulation of which the motion of the engine is coincident. The engine also is equipped with a solenoid device which automatically causes a release of air from the cylinder, allowing the weights to apply the brake when power



Alden Coal Co.'s Hoist

This hoist, lifting 500 cars in eight hours from a depth of 585 ft., has two cylindro-conical grooved drums, the grooves being so arranged that the "up" rope winds onto the small diameter of one drum while the "down" rope wnids off of the large diameter of the other, thus reducing the peak load.

fails or when the current supply to the solenoid is interrupted by the action of the Vulcan safety device with which the hoist is fitted. Details of the combined brake engine and safety apparatus are such that the hoist cannot overtravel in either direction, the operator cannot start the hoist the wrong way at either limit of travel, and the machine cannot back away in case of failure of power or overload.

The hoist cannot overspeed from any cause whatever in any position of travel, nor in the prevention of overspeeding can the power brake be so suddenly applied as to cause an abrupt or violent stop such as might possibly break the hoist rope or cause other serious accident to life or property.

The operator must properly retard the hoist in approaching the landings or it will be stopped automatically. The machine will not start if, upon return of power after its failure or cessation, the operator has carelessly left the control lever in the "on" position. The hoist will stop if the control circuit becomes grounded or if the operator fails to keep the power brake and its posts in proper adjustment.

No costly delay in hoisting occurs after emergency stops. Should such a stop be made the operator is not endangered by flying levers, for there are none. The safety features are not dependent upon the will of the operator, but he can make an emergency stop if necessary by throwing a switch provided on his platform for that purpose. Travel limits and speed ranges are easily adjustable.

Air for the operation of the brake engine is provided by a small motor-driven air compressor having an automatic control consisting of a pressure regulator whereby the compressor cuts in at 60 lb. and out at 90 lb. pressure. A constant supply of air is thus maintained in the reservoir.

The hoist motor is a Westinghouse 440-volt 3-phase 60-cycle 585-r.p.m. continuous-rated slip-ring induction machine. It is joined to the pinion shaft by a flexible coupling and is mounted on a sub-base which is secured to the hoist bedframe. The control is of full-magnetic type, built by the Westinghouse company.

This machine also is equipped with a depth indicator, steel gear guards, operator's platform and a trip recorder of the Webb type. The gears are of Falk manufacture. The Vulcan Iron Works, of Wilkes-Barre, Pa., designed and built the hoist. The motor and control apparatus was installed by the Penn Electrical Engineering Co., of Scranton, Pa. A roomy, well-lighted and adequately ventilated building houses the entire outfit. The contactor panels are located in a room separate from that in which the hoist is installed.

Rhodes Fuel-Purchase Bill Reintroduced and Referred to House Mines Committee

REPRESENTATIVE RHODES of Missouri has reintroduced in slightly modified form his bill providing for the purchase of all coal and other fuel for all government services throughout the country, which has been referred to the Mines and Mining Committee, of which he is chairman. He also has reintroduced his bill for the purchase of land now occupied under lease by the Government Fuel Yard in Washington.

The bill providing for the uniform selection and purchase of coal and other fuel for use by the federal government directs the Bureau of Mines to select and contract for all coal and other fuel required by any branch of the federal service at Washington or elsewhere in the United States. A proviso is added that the selection of coal and other fuel may be made direct by any branch of the service "upon approval of the director of the Bureau of Mines." The bureau is authorized by the measure to make analyses and tests of coal and other fuels and to make investigations of fuel-burning equipment of branches of the federal service and their methods of handling, storing and using fuel, and to recommend changes in equipment and its use in the interest of fuel economy. Federal branches are directed, on request of the bureau, to furnish information relating to their fuel burning equipment, fuel consumption and fuel use as may be requested.

The bill also authorizes the bureau to contract for the purchase of coal and other fuel for the federal service in advance of the availability of appropriations for payment thereof, but not exceeding the necessities of the current year. Branches of the federal service are authorized to purchase under contracts made by the director of the Bureau of Mines in April, May and June of each year such coal and other fuel for their use during the following fiscal year as it may be possible to store at points of consumption. For administration of the act $250,000 is appropriated, through payment to the bureau of not exceeding 5c. a ton for each ton of coal purchased, analyzed or tested for each branch of the service.

Ayrshire's Oakland City Shaft Hoists Coal in Cages Built to Dump Gateless Cars

Will Readily Hoist Fifteen Tons Per Minute—Weight of Cage Being Always on Rope, Peak Power Is Not Needed for Starting—Dumping Is Always Successfully Accomplished, Avoiding Peak Common in This Operation

By Donald J. Baker
Wilkinsburg, Pa.

At NO. 8 mine of the Ayrshire Coal Co., at Oakland City, Ind., where the No. 5 bed of coal is being developed, self-dumping cages are, and will in the future be, employed to discharge the contents of solid-body mine cars, this company being among the first to utilize equipment of this type.

Heretofore operators have looked somewhat askance upon cages designed to discharge gateless cars. Most coal producers have preferred skip hoisting with rotary dumps underground or have adhered to the old form of endgate car, which can be discharged only by releasing or lifting the gate. In some cases, particularly in airshafts where men and material must be handled, non-tipping cages have been installed from which it is necessary to remove the car before its contents can be dumped.

The solid-body car has many and obvious advantages. These are so numerous that most operators would gladly adopt this type of equipment were they entirely satisfied that such a car could be as successfully and easily dumped as is a car with a lifting endgate when hoisted on a self-dumping cage. Many coal producers, however, are already of the opinion that this is being accomplished. Mines that were already equipped with the older type of cage have installed these solid-body car self-dumping cages as have also others having an output that does not warrant installation of a hoisting skip with a revolving dump at the shaft bottom.

Discharge Is Easy, as in Any Revolving Dump

The cage installed at the mine above mentioned not only permits the use of solid-body cars but provides for the discharge of their contents so easily and with such absence of shock that little degradation or breakage occurs. For reasons to be explained later the amount of power necessary for hoisting is lessened by the elimination of the peak load which usually comes upon the engine in starting the hoist and in dumping.

The shaft at the Ayrshire company's mine is only about 100 ft. deep, but the cages have to be lifted a distance of 150 ft. The car employed has a length of 10 ft. over all, a width of 5 ft. and height of 3 ft. It has a capacity of three tons or more, depending on its topping. At the bottom the loads gravitate to a landing where they are held by steel horns, being released one by one by an automatic cager which feeds them to the cage.

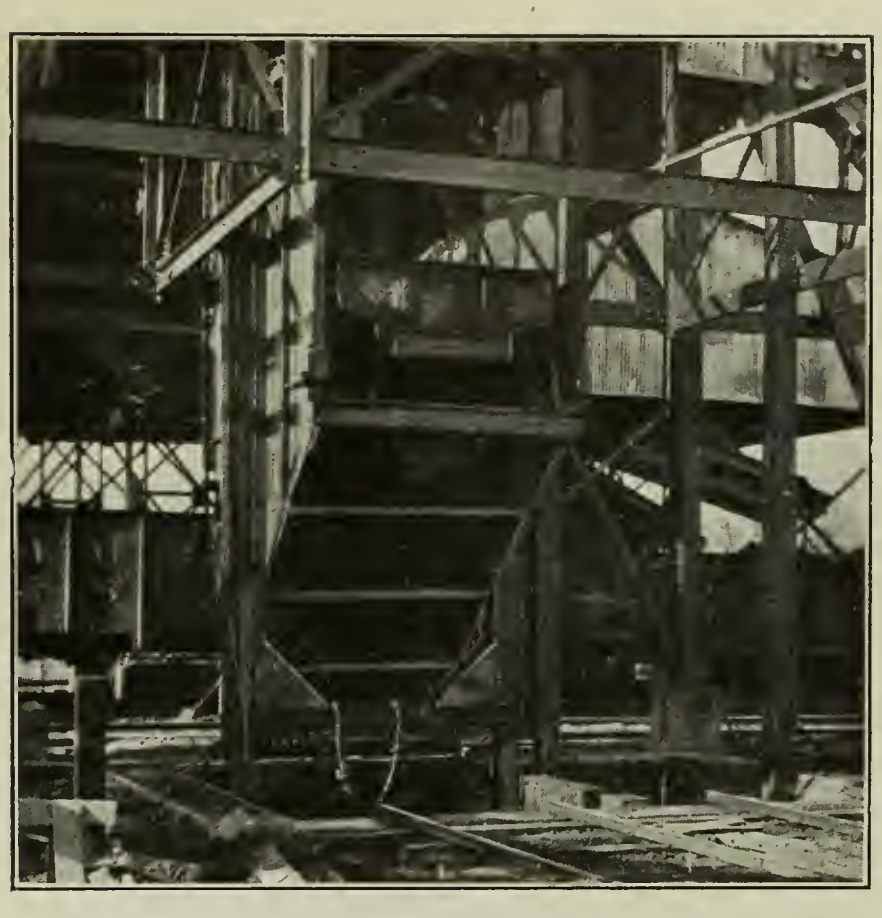
When there the car rests in a cradle which is mounted inside a hopper having a hinged discharge gate. This cradle is built in the form of a hoist platform and thus the cage can be advantageously utilized for handling coal, men or material. The cradle is pivoted on heavy trunnion shafts placed upon either side. These shafts carry the dumping arms, which are fitted with rollers at their outer ends. As the cage approaches the dumping point these rollers, working in guides at the top of the headframe, rotate the cradle and the car upon it through an angle of 135 deg., thus discharging the contents of the car into the hopper within which the cradle swings. Both cradle and hopper are positively locked except when the cage nears the dumping point. By this means the cage is always available for handling either men or material from the surface landing when occasion demands.

So Pivoted That Dump Takes Little Power

As the cage approaches the point of discharge the guides operate to unlock the hopper gate as well as the cradle on which the car rests. The rollers on the overturning arms then enter the main dumping guides, whereby the cradle is revolved easily and continuously without interruption until the car reaches its inverted position. As the cradle is pivoted at a point only slightly to one side of its center of gravity when loaded, the platform is so hung that the pressure on the dumping guides is almost negligible.

This is a detail of operation highly important from

NO. 8 TIPPLE, AYRSHIRE COAL CO., OAKLAND CITY, IND.
Shows the cage in the dumping position at the top of the headframe.



REAR OF DESCENDING CAGE AT THE SHAFT COLLAR

Note the empty car resting on the top of the hopper, the long sloping bottom of which, inclined toward the front or discharge side, gives this cage an individuality of its own.

the standpoint of power consumption. With the hopper located beneath the car it is possible to design the dumping guide with a long and easy curvature so that the overturning movement may be made gradual and smooth. Excessive stress or jar in the dumping operation is thus eliminated and the coal is spilled out of the car into the hopper in a steady and uninterrupted stream. A shield suitably placed protects the coal from excessive breakage.

When the hopper gate is unlocked, the unlocking occurring when the cradle is partly overturned, it is held closed by the action of the dumping rails at the side of the headframe. Coal already discharged into the hopper cannot be released therefrom until the gate is opened at the dumping point. When this point has been reached all the coal has left the car and flows from the hopper across the gate into the tipple with one continuous sliding motion. A cage that pitches its load into the dump hopper cannot be expected to handle the coal with as little breakage.

Weight of Car and Cage Always on Rope

One highly economical detail in the operation of this cage is the fact that the weight of the car and cage always rests on the hoisting rope. This gives a maximum counterbalancing effect, assisting the hoist in starting the load from the bottom of the shaft. This in turn materially reduces the peak of the hoisting-cycle curve and allows the installation of a hoist of smaller capacity than would otherwise be necessary. If power is purchased a reduced demand charge may be obtained from the power company on this account.

At the Ayrshire plant the hoist engineer does not have to operate his engine with a slack rope. The curvature of the dumping guide is so gradual that the cage can enter the guide at a fairly high rate of speed, being uniformly retarded until it comes to rest finally in the overturned position. The loaded car is fully discharged by the time the empty in the other compartment reaches the landing at the shaft bottom. It is never necessary to bring the engine to a stop before the cage enters the dump and then to resume operation in order to pull it and the car to the dumping position, losing meanwhile the counterbalancing effect of the empty cage. Time thus is saved and the capacity increased. Power cost also is lessened, as no severe peak load comes upon the engine.

Capacity Realized and To Be Attained

The cages in use at this operation, which were manufactured by the Car Dumper & Equipment Co., have not as yet been employed to their full capacity. This has been because construction work has been in progress at the shaft bottom. Sufficient results have been achieved, however, utilizing a single cage to furnish an interesting comparison with the older type of self-dumping equipment. An average of two trips per minute with one cage can be attained easily. When both cages are put in operation the hoisting of four cars per minute may be confidently expected. For all practical purposes the hoisting capacity mentioned above is being maintained. Four cars per minute, if reasonably topped, are equivalent to fifteen tons of coal hoisted and dumped.

One of the disadvantages formerly charged to this type of equipment was slowness of operation as compared with the older self-dumping cage. From the record of performance at the Ayrshire No. 8 shaft it would appear that this difficulty has been entirely surmounted.

New Cages Insure Never-Failing Discharge

The Ayrshire Coal Co. has operations at other points in Indiana, some of which are equipped with the older and better-known types of self-dumping cage. It has been found that the new cages effect economies in operation other than those already mentioned. Among these are positive and never-failing discharge. The success of the older type, as this firm has learned, is dependent upon the endgate hook invariably engaging the crane in the upper portion of the headframe.

DESCENDING CAGE AS SEEN FROM THE DISCHARGE SIDE

This illustration clearly shows the dump chute, closed up, however, for descending the shaf

DUMP CHUTE OF CAGE IN DISCHARGING POSITION

The coal has passed out of the hopper over the chute and onward to the tipple. The chute will be automatically lifted back into place by the roller on the track in the lower right-hand corner of the photograph, and locked by the action of the second roller.

Cars with loose or ill-fitting endgates often have their hooks out of alignment, with the result that an appreciable amount of time is lost and still more annoyance is caused by the crane missing its connection with the car hook. When this occurs it is necessary to lower the load and hoist it into the dump again.

This, of course, requires an excessive consumption of power. From actual tests made at large Indiana mines covering a period of two years it was found that 10 per cent of the cars missed the crane on the first trial and had to be taken into the dumping position a second time. The solid-car self-dumping cage, of course, entirely obviates this difficulty.

TWO MEN WORK OUT OF TURN; STRIKE ENSUES.—Dering Mine No. 6 in the Clinton (Ind.) field was closed down recently, the mine workers refusing to work because two of the employees had been allowed to work out of their turn. One morning the men arrived at the tipple and learned there that these two men had been favored with more than an equal share of work. They walked out at once and refused to return until the mine officials were ready to make an agreement. The Dering Mine is one of the largest in the Clinton field, employing about 300 miners and daymen. The mine was marked up for work and has been operating steadier than any of the other mines.

BIDS WILL BE OPENED by the Indian Office May 5 for 50,000 tons of bituminous and 2,000 tons of anthracite coal for Indian schools and agencies for the next year.

New-Inman Colliery Has Two Hoists Lifting Coal Twelve and Fifteen Hundred Feet

BY DEVER C. ASHMEAD
Wilkes-Barre, Pa.

AT INMAN, PA., a new mine is being opened by the Lehigh & Wilkes-Barre Coal Co. Work here has been progressing for some time, two hoisting shafts have been sunk to place and more or less development has been made in both the Hillman and Baltimore beds, which measures are reached by one of the shafts. The other shaft extends downward to the Red Ash vein. In this lower bed little development has been made, efforts having been concentrated on operations in the Hillman and Baltimore measures.

From present indications the equipment when finally completed will form one of the most modern installations in the anthracite field. Only a portion of the necessary machinery has, as yet, been installed, this including the two steel headframes, one engine house and part of the boiler plant. A temporary engine, the one used in sinking, is now employed at the Red Ash shaft. This opening is now utilized chiefly as an airshaft and for hoisting water.

The engines serving the other shaft are of modern and almost identical design. The Hillman bed lies 1,221 ft. and the Baltimore 1,522 ft. below the surface. The loads to be handled by these hoists are identical and may be enumerated as follows: Car, 3,000 lb.; coal, 7,000 lb.; cage, 6,000 lb. A carload of rock will weigh 8,000 lb., hence the total weight to be hoisted when the car contains coal is 16,000 lb. and when the car is filled with rock is 17,000 lb.

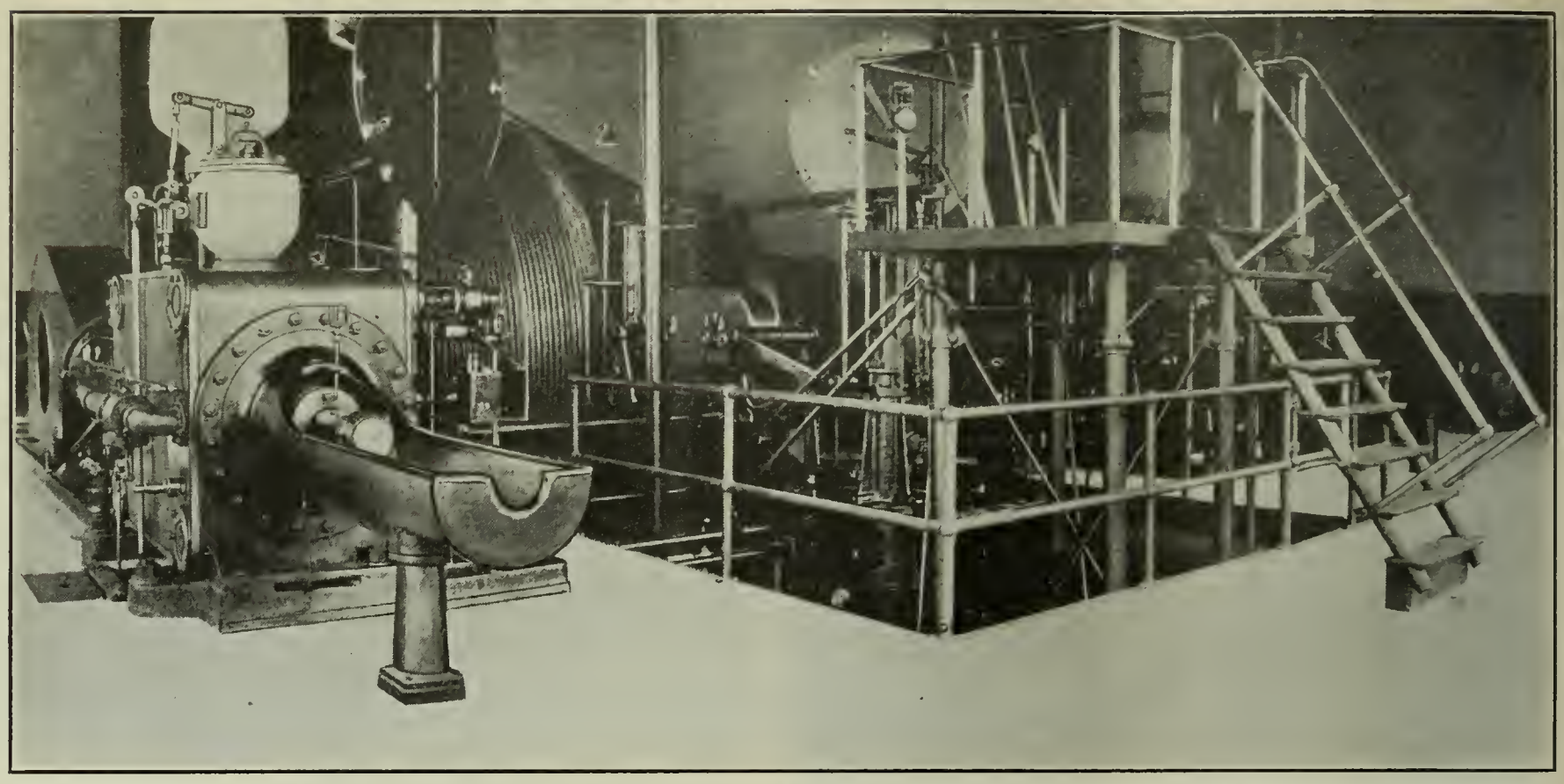
CAPACITY OF 1,192 CARS A DAY POSSIBLE

Thirty-three seconds will be required to make a coal hoist from the Hillman bed and forty-two seconds from the Baltimore bed. With a caging period of ten seconds it will thus be possible to raise sixty-nine cars from the Baltimore and eighty cars from the Hillman bed per hour. Accordingly, in a day of eight hours the maximum capacity from the two beds will be 552 cars from the Hillman and 640 cars from the Baltimore, making a total of 1,192 cars from both measures. Of course, these figures represent the maximum possible, and in practice doubtless will be subject to many deductions on account of unavoidable delays.

Both the engines installed at this shaft were built by the Nordberg Manufacturing Co., of Milwaukee, Wis., and with the exception of their drums they are identical. Their cylinders are 32 x 48 in. in size. The drums are conical, that hoisting from the Hillman bed being 10 ft. in diameter at the ends and 14 ft. in diameter in the center. The hoist serving the Baltimore bed is provided with a drum 10 ft. in diameter at the ends and 15 ft. in diameter in the middle. Both are grooved for 1½-in. rope.

Both engines, of course, are simple twin direct-connected machines. They work on 150 lb. steam pressure and are fitted with Corliss valve gears, tail guides, and Welch overwinding devices. The brakes are of the gravity-operated post type. The total weight of the engine serving the Baltimore bed is 335,000 lb., that of the Hillman machine being 325,000 lb.

The building which houses these engines is quite large as compared with other engine houses. Its dimensions are 56 x 97 ft. The walls are of brick and the roof is built with steel trusses and covered with as-



HOIST AT INMAN COLLIERY WILL LIFT COAL FROM BALTIMORE BED 1,522 FT. BELOW THE SURFACE

Using 150 lb. of steam pressure and being regulated by Corliss valve gears, the 32 x 48-in. steam engine will lift to the surface sixty-nine cars per hour, the total weight lifted when hoisting coal being 8 tons and when rock is hoisted being 8½ tons.

bestos shingles. The doors and window sash are of steel. For convenience in making repairs or doing other work upon the engines a trolley beam is provided over each. As the two hoists are installed near together a brick wall has been placed between them so that signals to the hoistmen may not be confused, as unquestionably might be possible otherwise. Such a confusion of signals might result in serious accident.

The accompanying illustration shows the engine that raises coal from the Baltimore bed. As has been stated, however, the two hoists are identical except in the size of the drums. This photo gives a fair idea of the size as well as the general ruggedness of these machines.

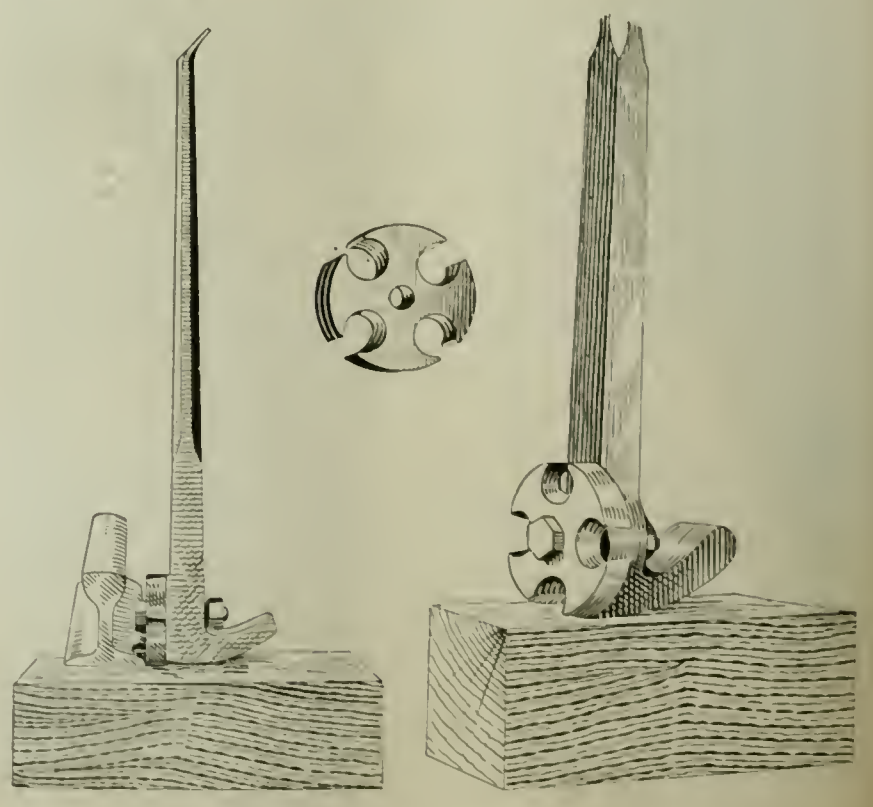
Spike Puller Has Four-Grip Disk That Pulls Spikes Without Deforming Them

THE ordinary forked spike bar has many shortcomings chief among which probably is the short lift it affords. A secondary drawback, however, lies in the fact that the spike-pulling claw is forged integral with the bar itself, and this, being made of mild steel, cannot be tempered or hardened so as to resist indefinitely the severe usage to which it invariably is subjected.

In order to obviate these difficulties the American Hinge Co., of Memphis, Tenn., has developed the spike puller shown in the accompanying illustration. Instead of the usual single integral claw this new bar carries a disk of properly tempered tool steel in the periphery of which are four tapered slots or grips the sides of which straddle the spike under the head. A foot projects from the opposite side of the bar and acts as a fulcrum when pulling. This gives such a large-radius path to the lifting effort that the spike is raised almost vertically throughout its entire length. In withdrawal, therefore, the spike is not bent or deformed in any way and is in condition for immediate use in new track.

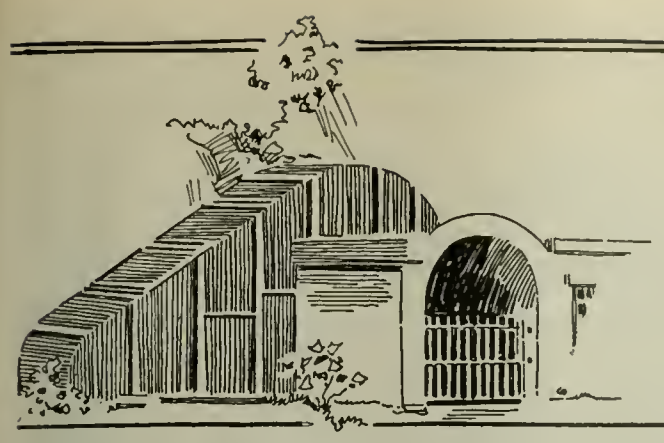
This tool has many advantageous details of construction. A light blow on the end of the fulcrum causes the disk slot to grip the spike firmly close under the head. Driving upon the upper end of the bar is entirely unnecessary, and this end accordingly may be preserved as a pinch. Should any particular slot in the disk become worn or unsuited to the withdrawal of a certain size of spike, rotating the disk through 90 deg. brings a new slot into position. When all four slots become worn so as to be useless it is unnecessary to buy a new tool, as only the disk requires renewal.

This puller is now available in two sizes, one adapted to spikes measuring $\frac{5}{16}$ x 2½ in. and $\frac{3}{8}$ x 2½ in. It weighs 6 lb. The other will lift ½ x 4-in. spikes and weighs 13 lb. Interchangeable disks, although made of the best quality of steel available and consequently long-lived, are comparatively inexpensive and may be renewed at small cost.

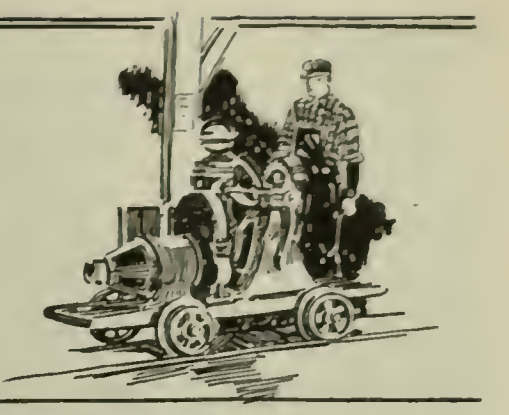


SPIKE BAR WITH TOOL-STEEL GRIPPING DISK

Bar is so constructed that it lifts almost vertically and so does not deform the spike. The grip, being of tool steel, keeps its shape under the stress to which it is subjected.



Ventilation and Pumping



Kempton Fan Has Inclined Evasé Opening With Bearing on Skeleton A-Frame

A RECENT mine fan installation made by the Davis Coal & Coke Co., at Kempton, Md., is shown in the accompanying illustration. R. P. Maloney is vice-president and general manager of this company, which has its headquarters at Cumberland, Md. The fan itself is a seven-eights housed double-inlet reversible Sirocco machine arranged primarily to operate exhausting. It is belt-driven from an induction motor.

As may be seen in Fig. 1, this fan is provided with an inclined evasé stack. This is an important detail because by this arrangement when the fan is changed over from an exhauster to a blower the direction of the air current is only slightly altered, whereas with a vertical fan stack the change in direction of air flow would amount to about 90 deg. It is, of course, highly advisable, where air travels at a velocity as high as that attained when issuing from a fan of this kind, to arrange for changing its direction as little as possible when shifting over from exhausting to blowing, or vice versa, as the expenditure of power in unnecessary work is thereby avoided. The less the resistance offered to the entry of air into a fan and the more easily it can be discharged therefrom the greater will be the power left available for actual mine ventilation.

For similar reasons the mouth of an airshaft should be provided with a curve of ample radius at the inner edge and the hood over the shaft either should be curved gently or be inclined at about 45 deg., so as to deflect the air leaving the shaft to the side drifts of the fan as easily as possible.

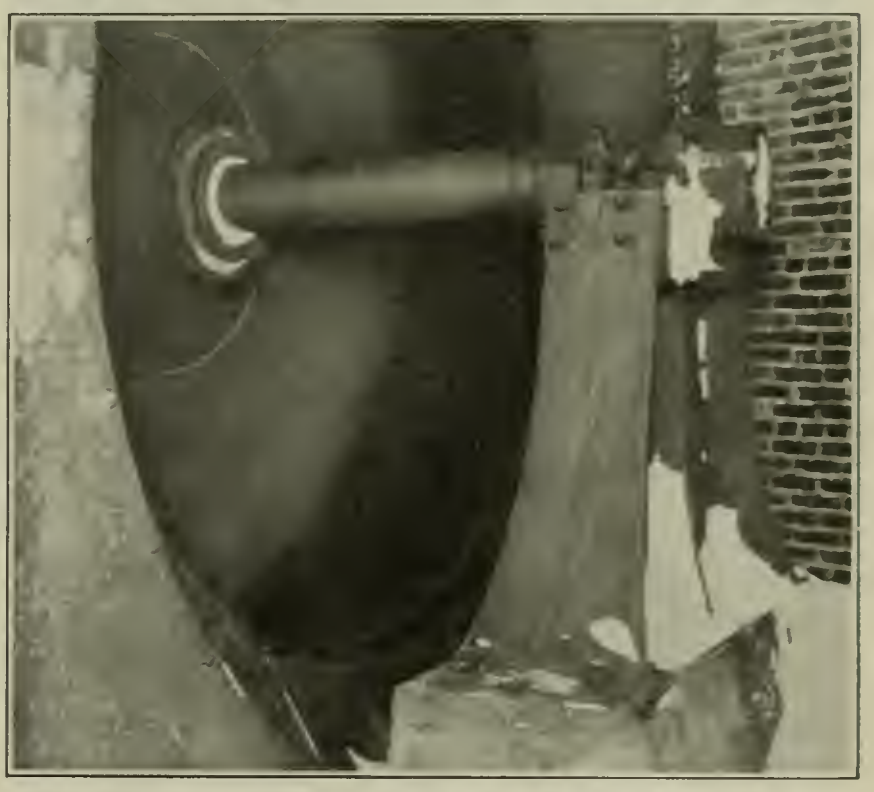


FIG. 2. SIDE VIEW OF MINE FAN

By making the bearing pedestal of skeleton form the air has plenty of room to enter the eye of the fan. The bearing is adjustable both vertically and horizontally.

Fig. 2 is a view taken from one of the side drifts. The fan bearing is so mounted as to be adjustable both horizontally and vertically. This is desirable, as it renders it easy to keep the fan bearings in line regardless of any slight subsidence that may occur. The

Fig. 1 Kempton Fan House

Note the inclination on the evasé stack which projects from the top of the fan building. It is usual to set such stacks vertical, but when the fan is changed from exhausting to blowing, the air must take a right-angled course, and that involves a loss in power which is largely avoided where the stack is inclined.

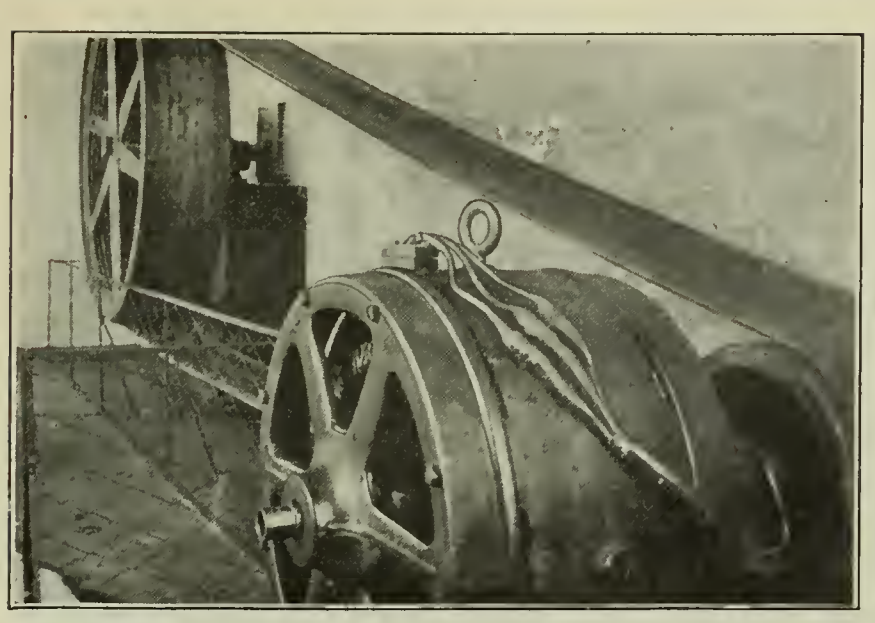


FIG. 3. MOTOR, BELT DRIVE AND FAN PULLEY

The duty to be performed by the fan being light, the fan pulley can be safely overhung, as in this case, and it will still give satisfactory running conditions. A larger fan would require the shaft to be lengthened for another bearing.

FIG. 4. FAN AND FAN-MOTOR HOUSE

The fan is built primarily as an exhausting machine, but the door being open shows that it is being operated as a blower drawing in air from the surface and not from the shaft, thus availing itself of the advantages of an inclined stack.

bearing in this case is supported on a skeleton A-shaped cast-iron pedestal, so that small resistance is offered to the flow of air, which may thus enter the fan eye both around and through the bearing support.

Fig. 3 shows the motor, belt drive and fan pulley, the latter being overhung, which is not an undesirable condition, as the horsepower transmitted is in this case relatively small. When a mine fan performs heavy duty it is desirable to provide an outboard bearing, which will satisfactorily take the pull of the belt. Fig. 4 is an exterior view of the fan and motor house. At the right may be seen the concrete hood over the airshaft, which is provided with a sloping roof. In the right foreground, also, will be noticed one of the fresh-air inlet doors. This door being open shows that the fan was being operated as a blower at the time this photograph was taken. It was, therefore, drawing the air from the atmosphere and discharging it into the mine.

The fan is provided with a double-inlet impeller 10 ft. in diameter and 5 ft. wide at the periphery. The contract duty is 155,000 cu.ft. of air against a mine resistance equivalent to a 1½-in. water gage. The speed is 110 r.p.m. and the power consumption was guaranteed not to exceed 49 brake-horsepower delivered to the fan shaft. The equivalent orifice of the mine as figured by Murgue's formula is as follows:

$$EO = \frac{.0004 \times \textit{volume handled in cubic feet per min.}}{\sqrt{\textit{water gage}}}$$

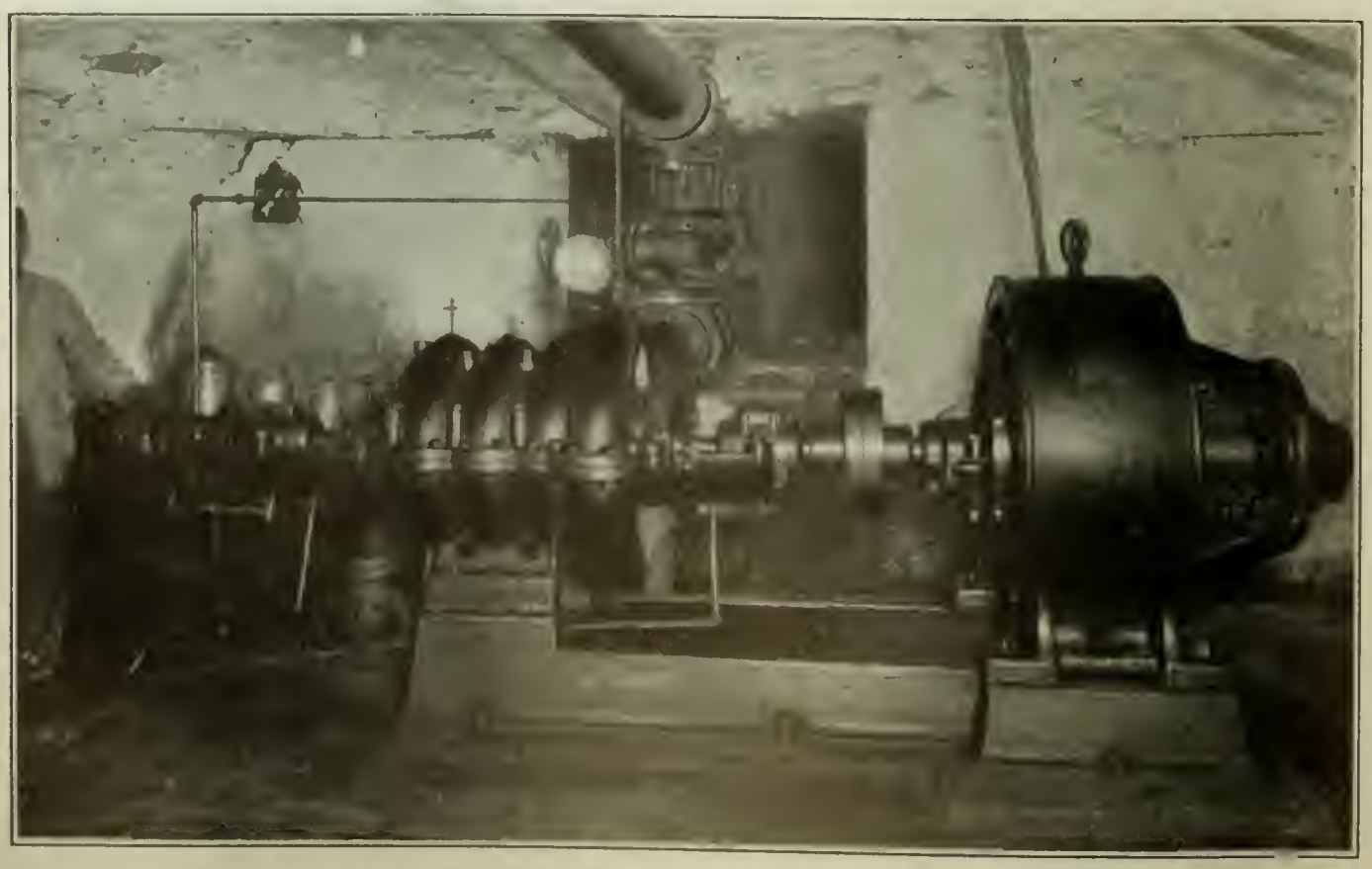
Solution of this equation shows that this equivalent orifice is 50.6 sq.ft. in area.

Centrifugal Pump Runs Over Twelve Years Without Needing Any Repairs

By Dever C. Ashmead
Wilkes-Barre, Pa.

WHEN a piece of machinery performs exceptionally difficult work in a coal mine the service rendered becomes of interest to the whole industry. Mining conditions are so exacting that in order to withstand them any piece of machinery necessarily must be of an exceedingly rugged type. Furthermore it must be properly cared for.

So far as pumps are concerned, however, there are times each year when the pumping capacity of the mine is taxed to the limit. Then in case of a breakdown to one of these machines, parts of the mine are liable



Centrifugal Pump

Because only traces of sulphuric acid are to be found in the water which this pump handles and because of the excellence of its design it has run for a dozen years without a cent's expenditure for repair, lifting water 375 ft. from the Orchard vein at the rate of 800 gallons per minute without rest night or day.

to damage by flooding. Furthermore the liability of pumps to damage is greater, as they are installed underground and operated by artificial light, which makes the detection of wear less easy and repair more difficult. Again, the class of labor employed to operate pumps is not as skillful as the drivers of hoisting engines and consequently these men are not as well fitted to meet the difficulties encountered as a more skillful attendant would be.

With these considerations in view it is well to note a particularly successful centrifugal pump installation that is being operated in the No. 1 shaft of the Kingston Coal Co. at Kingston, Pa. This pump is installed in the Orchard vein and delivers against a head of 375 ft. It is a Janesville machine of four stages, with an 8-in. discharge, and has a capacity of 800 gallons per minute. It is driven by a direct-current Westinghouse motor, which has a horsepower of 125.

This pump was installed on Oct. 1, 1908, since which time it has been in continuous service. It has thus been in operation for a period of slightly more than twelve years and a half. During this time not one cent has been expended for repair, replacement of parts, or labor upon the pump proper. Night and day throughout this period the pump has handled its 800 gallons of water per minute. A little trouble has been experienced with the motor, but only such as may be expected from a machine of this kind operating in a damp place.

The water that this pump handles is not ordinary mine water as this term usually is understood but is practically spring and ground water containing only a slight trace of sulphuric acid. Furthermore no grit or dirt is present to eat the impellers. It is interesting to note that with these favoring conditions the pump has given service that might be regarded as exceptional.

By Movement of a Rotor Three Spaces Enlarge and Contract, Thus Drawing and Expelling Water

Triangular Impeller Revolves Within a Square Rotor to Which It Imparts Motion—As They Revolve Spaces Are Formed Which First Enlarge, Forming a Suction, and Then Grow Small and Act as a Compression Chamber; Thus Water Is Sucked in and Voided by the Pump

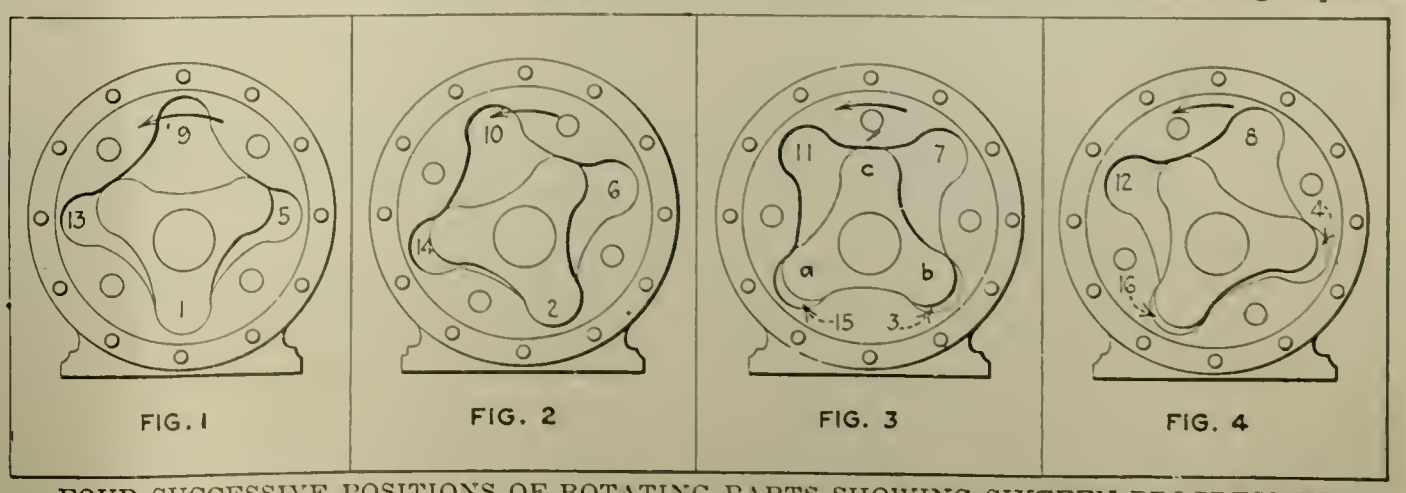
PUMPS now being used in mines may be classified roughly into two main basic types, namely, plunger or reciprocating, and centrifugal machines. The turbine type may be included in the second classification, although its action is not quite the same as that of the centrifugal. Because of the inherent disadvantages heretofore found in the rotary type of pump its use in the mining industry has not been extensive.

Mining engineers generally concede that, mechanically, both plunger and centrifugal pumps leave much to be desired from the standpoint of general efficiency. In the former an exceedingly close fit is necessary between plungers and cylinders, and the resulting rubbing and wear quickly bring about excessive slippage. Then again the inertia of the whole volume of the head of water must be overcome before maximum efficiency can be obtained.

Centrifugal and turbine types of pumps are weak in creating suction and are not positive in action. They cannot profitably be used for any conditions differing in any essential from those for which the particular pump was originally designed. It follows, therefore, that if a rotary type could be evolved which incorporated the positive action of the plunger pump with the continuous flow of the centrifugal or turbine type, the ideal in mine pumping efficiency would be attained. The rotary types thus far evolved may be divided broadly into the following classifications: Those using the meshing gear movement, those of the rotary plunger type and those of the rotary bucket and packing-strip types. In practice all these develop more or less friction between either the moving parts themselves or between the moving parts and the casing.

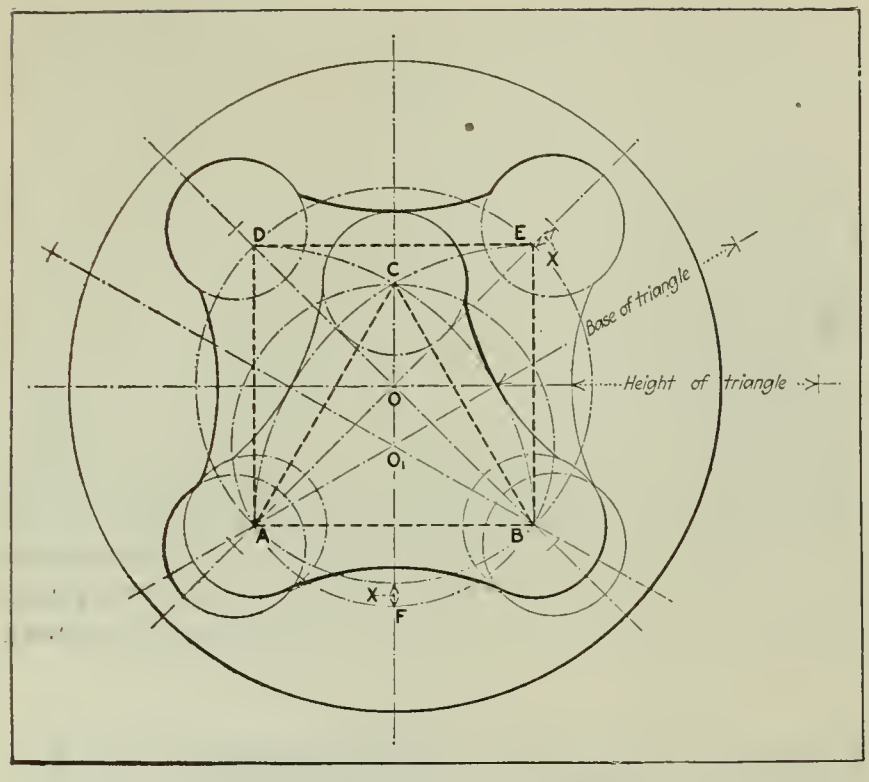
The Exeter rotary mine pump built according to the Feuerheerd patents is based upon an entirely new idea in rotary-pump construction. This pump creates its own suction, its action is positive, and the flow of the water is continuous. There are no valves and no reciprocating parts to get out of order, while, compared with its output, the size of the pump is remarkably small. Because rolling rather than rubbing action takes place between its surfaces, the wear has been reduced to a minimum.

Broadly speaking, the underlying principle is a variant of the square-hole drilling device in which a triangular bit functions inside a restraining square



FOUR SUCCESSIVE POSITIONS OF ROTATING PARTS SHOWING SIXTEEN PROGRESSIVE SHAPES OF PUMPING POCKETS

Pocket 9 in Fig. 1 becomes 10, 11 and 12 in Figs. 2, 3 and 4. Again looking at Fig. 1 it has become 13. It gradually reduces till it becomes 16, and, going back to Fig. 1, it is seen to have disappeared altogether. After which it gradually develops from 1 to 9. While it is decreased in size it is discharging the water that it contains under pressure; as it increases it is taking in water by suction.



METHOD OF DETERMINING ROTOR SHAPES

The two parts are built around an equilateral triangle and a square on an equal base. Both are enlarged by circular additions at their angles and by curved processes which join the circles.

former of equal size. This combination has been developed as a three-tooth pinion meshing with an internal four-tooth gear, the two being set eccentrically one to the other. The irregular spaces, increasing and diminishing in volume as the two parts rotate together, are utilized to admit and eject the fluid. Using an equilateral triangle inside a square will, of necessity, give the largest spaces for a given size of the contacting pair. Any other combination—four to five, five to six, etc.—will more nearly approach equal size and consequently leave smaller voids.

It is obvious that true geometrical forms would not function smoothly. The next step, therefore, was to evolve by experiment such a series of curves on both members as would enable continuous contact to be maintained without jar and assure a smooth rolling motion between the parts. It is of more than passing interest to note that the solution found employs only circular arcs.

The accompanying illustrations, Figs. 1 to 4, show the two rotating elements in sequence of position during one complete revolution. Fig. 5 illustrates the geometrical construction employed in the design of the two rotors.

Considering Fig. 5 first, an equilateral triangle *ABC* and a square *ABED*. The angles of the triangle are bisected and the lines produced; the diagonals of the square also are drawn and produced. The circumscribing circles of both triangle and square also are drawn. It will be seen that at the bottom of the figure the circles cut each other and that *X* is a measure of the distance by which the two circumscribing circles overlap. With the points of the triangle as centers, circles with a radius equal to one-fourth of the common side of the triangle and square are described. With *O* as a center and *OF* as radius, arcs are struck intersecting the diagonals of the square. From the four points thus found as centers and with a radius one-fourth the common side of the square and triangle, circles are described. The joining arcs for the completion of the square figure are struck with the height of the initial triangle as a radius, and the similar arcs on the triangular figure are described with the side of the square or triangle as a radius.

The first center found is upon the vertical center line, and the arc contacts with the extreme top of the triangular figure. The explanation is more involved than the actual construction, which, if a pair of compasses are used, may easily be followed from the diagram and the foregoing description. The only variation from the geometrical figures found as above described is that the sides or outlets of the recesses in the square figure formed as above are made parallel, so that the projections on the inner figure enter and leave more easily.

We will now consider Figs. 1 to 4 in sequence. In Fig. 1 the space *9* between the two rotors is at a maximum. The inlet port has just closed and the outlet port is about to open. The entire cycle of movement and variation of one space can be progressively followed through the four diagrams by the numbers *1* to *16*. Starting with maximum volume as *9* in Fig. 1, then going to *10*, *11*, *12*, *13*, *14*, *15*, *16*, *1*, *2*, *3*, *4*, *5*, *6*, *7*, *8*, and *9* completes the progression. The capacity of the pump per revolution is equal to three times the volume of space *9*.

The pump consists of an outer casing of cylindrical form which contains a pair of rotors meshing, the inner rotor being keyed to the driving shaft. These two rotors are set eccentric one to the other, the axial line being at the intersection of the bisection lines at *O* in the geometrical diagram, Fig. 5. The outer rotor has four ports which open to both the suction and discharge during rotation. These ports are closed momentarily by a lip at both the top and the bottom of the pump body in order to effect the cut-off between the suction and the discharge of the pump. The liquid is drawn into the machine through the ports of the outer rotor while the size of the pocket is increasing, and is forced out at the opposite side of the pump during the last half revolution when the size of the pocket is decreasing.

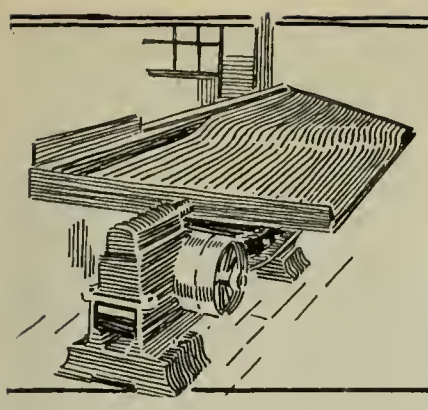
The rotors themselves are acid-resisting bronze castings of suitable thickness, worked on edge to the figures described, their faces or ends being in parallel planes. The outer rotating member is a working fit in the casing at its periphery but is otherwise free. The inner rotor imparts motion to the outer.

Two Rotating Parts Have Equal Speed

The chief defect common to the rotary pumps heretofore developed has been that, because of local differences in speed, wear was irregular. Rotary pumps have been built of great initial exactitude for high duty and extreme conditions, but such accuracy has heretofore been highly difficult to maintain for any length of time because of the variation mentioned. This trouble is common to each of the three general types of rotary pumps referred to, and there is no simple method of compensating such irregular wear.

Hydraulic engineers of wide experience assert that reciprocating motion is preferable to rotation in a positive-acting pump. In the Exeter rotary pump this objection is minimized if not entirely eliminated for all practicable purposes. This is due to the maintenance of rolling action throughout.

Pumps of this kind are self-priming, easy of installation and can be readily adapted to every dewatering condition found in the mining industry, from the smallest gathering to the largest mine-drainage pump. Dirt and grit do not seem to affect the pump inasmuch as there is no rubbing or sliding contact. Small pumps thus far tested have shown a sustained volumetric efficiency of 98.67 per cent, and an over-all efficiency of between 70 and 82 per cent.



Surface Machinery

Method of Washing Coal for Metallurgical Coke at Risco, in Birmingham Field

Coal Crushed to One-Inch and Under, Jigged and Delivered at Steel Plant with Only Six Per Cent Moisture Without Use of Drainage Tanks or Centrifugal Driers—Water Clarified for Re-use Contains Only Fifteen-Hundredths of One Per Cent Solids

By E. P. Stewart
Chicago, Ill.

THE Birmingham coal field of Alabama has long been noted for the careful attention it gives to, and the progress it has made in, the art of coal washing. Though a number of plants are devoted to the preparation of clean, well-sized domestic fuel, by far the greater number and the more elaborate coal-washing installations have been made with a view to producing coal for coking purposes with the lowest possible ash and sulphur content. In recent years the larger companies in this district have constructed byproduct plants which have called for extreme care in cleaning and preparation.

What probably is one of the latest and most completely equipped plants for the preparation of coking coal is to be found at the Risco tipple and washery of the Republic Iron & Steel Co. This is located at Risco mine, about twenty miles northwest of Birmingham, near Palos, Ala. A general view of the tipple and washery may be seen in one of the accompanying illustrations. This plant contains the best of modern means for handling and treating coal from the time it leaves the mine until it is loaded into railroad cars for shipment to the coke ovens. Unusual attention has been given to the cleaning, screening and crushing of mine-run before it is delivered to the washery, to the separation of coal from its accompanying impurities in the washery, to the drying of the washed product and finally to the prevention of loss of fine coal, this last result being effected by the clarification of the water used in the washing process with attendant recovery of fine material.

Ash Eight Per Cent, Sulphur Below One

The coal measure mined and treated is known as the Mary Lee bed. In the vicinity of Palos this is somewhat lower in ash content than at other points in the immediate district and after treatment in the plant it yields a high-grade coking product containing approximately 8 per cent ash and less than 1 per cent of sulphur. Moisture in the washed coal as shipped is less than 10 per cent. This is further reduced in shipment so that by the time the coal reaches the ovens it does not contain more than 6 per cent of moisture. The tipple and washery are designed for a capacity of 250 tons per hour.

Mine-run coal is delivered in solid-body cars to a rotary dump in the tipple by means of an endless rope haulage. After the cars have been disengaged from the rope they are fed at regular intervals to the platform scale and dump by a car feeder which is under control of the weighman. The mine-run coal is subjected to a

STEEL TIPPLE AND WASHERY OF REPUBLIC IRON & STEEL CO., AT RISCO, ALA.

careful treatment designed to furnish a material not only of a uniform size but one thoroughly hand-picked before crushing. Coal is discharged from the pit cars by the dump into a large concrete receiving hopper and thence fed out uniformly onto a Marcus screen. This screen removes all of the fine coal that will pass through a 1-in. circular perforation and offers facilities for complete removal by hand-picking of all coarse rock, sprags, or other refuse which might damage the coal crushers. This refuse and rock is thrown into a steel trough attached to the screen and conveyed by it to the rock and waste bin, while the coal finer than one inch passes direct to the conveyor which leads to the washery.

Washer Coal Crushed to One-Inch Diameter

Mine-run coal larger than one inch freed from rock and refuse is delivered from the Marcus screen into a crusher so set as to reduce it to a maximum size of one inch. The coal after passing through the crusher is collected and elevated to a special set of shakers and rescreened, the oversize returning to the crusher. The 1-in.-and-under coal passing through this special screen meets the fine coal previously mentioned as coming from the Marcus screen and is conveyed with it to the washery. It should be noted that no coal can reach the washery that has not actually passed through a 1-in. circular perforation.

In addition to the coal-preparation equipment described above the tipple contains interesting means for inspecting cars containing an excessive amount of rock, for which the miners are docked. Cars to be inspected are directed to a second rotary dump and discharged to a feeder and inspection table. Movement of the feeder and inspection apron is so timed that the contents of the car is spread evenly over the full length of the table. After the necessary inspection and picking the coal is discharged onto the Marcus screen, where it mingles with that delivered from the main rotary dump.

A conveyor leading from the screen to the side of the tipple permits the loading of picked mine-run coal direct into railroad cars, when for any reason this is desirable. At times a few cars of rock are brought out of the mine along with those loaded with coal. To dispose of this rock, by-passes have been arranged in the hopper beneath the second rotary dump above mentioned. When this rock is discharged it is deflected direct into the rock bin which receives the pickings from the Marcus screen.

The 1-in. coal leaving the tipple is transported by means of belt conveyors to a large storage bin located behind the jigs in the washing plant. At this point the equipment contains an interesting and rather unusual feature in that the coal may be screened if desired and the dust eliminated from the washing process. The screens employed for this purpose are located above the bin and are provided with $\frac{3}{16}$-in. circular perforations. When these are used the fine material removed is conveyed to a bin and thence to the final washed coal conveyor, where it mixes with the washed product. The oversize is deposited in the bin and fed out to the jigs.

At present the plant contains three two-compartment coal-washing jigs with provision for the future installation of a fourth. The arrangement of these machines, as well as the general layout of the operating floor in the washery, is shown clearly in the accompanying illustration. The jigs are constructed of cast iron and equipped with specially-designed rotary valves for the removal of bone coal and refuse as well as special valves in the bottom for the withdrawal of fine hutch products.

Jig Compartments Built of Cast Iron

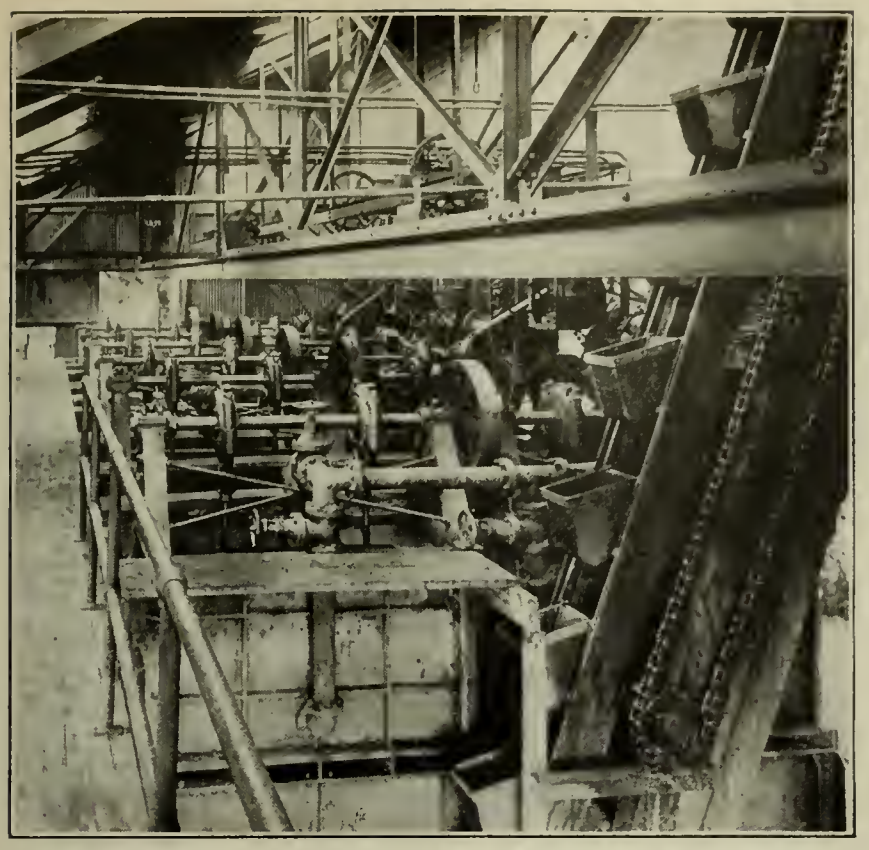
The coal is fed uniformly from the bin to the jigs by rotary feeders, each jig and feeder having a normal capacity of seventy-five tons per hour. Each jig and the feeder serving it constitutes a separate motor-driven unit. Any number of these units may be operated at

Outside View of Washer

Showing the draining conveyor. The coal in its movement passes over a finely-perforated trough which retains the coal but lets the water through, which then returns to the sludge recovery. The water goes to overflow tanks and thence to the Dorr thickeners in the background.

One of Two Thickeners

Rakes in the bottom of the thickener revolve once in two minutes and with their plowlike blades move the fine coal toward the center, whence it is withdrawn by a diaphragm pump, the product being half coal and half water.



JIG FLOOR SHOWING CAST-IRON JIGS

On the opposite side of the walk facing the jigs are the various motor controls by which all the machinery in the washer is handled.

will. It is not necessary to describe the two-compartment jig. It should be noted, however, that cast-iron jigs as employed in this plant not only assure great rigidity and absence from vibration but offer unusually long life and great desirability. They are not subject to the excessive corrosion frequently attending operation of similar equipment when used in acid water such as is often encountered in coal-washing installations.

The jigs produce three products, viz: clean washed coal free from rock and bone, bone coal suitable for boiler fuel, and refuse containing but little combustible matter. These products are directed by suitable sluiceways to the necessary tanks, dewatering elevators, and conveyors. The washed coal finally is deposited in the shipping bin and the refuse in the waste bin.

Gray Band Crushed and Rewashed in Jigs

The bed as mined at Risco is peculiar in that it contains a gray band of very hard, heavy coal, low in ash and high in fixed carbon. Some of this material is discharged with the high-ash bone coal from the jigs. To prevent loss this bone is first dewatered and then crushed and rewashed in one of the primary jigs.

Means and methods used in this plant for dewatering the washed coal are somewhat of a departure from the usual practice and have proven highly effective. The arrangement of the draining conveyor employed in the process will be noted in the illustration of the outside of the breaker. All the washed coal and water from the jigs is first sluiced to a revolving screen having $\frac{3}{8}$-in. circular perforations. The coal retained on this screen passes direct to the final washed coal conveyor leading to the shipping bin.

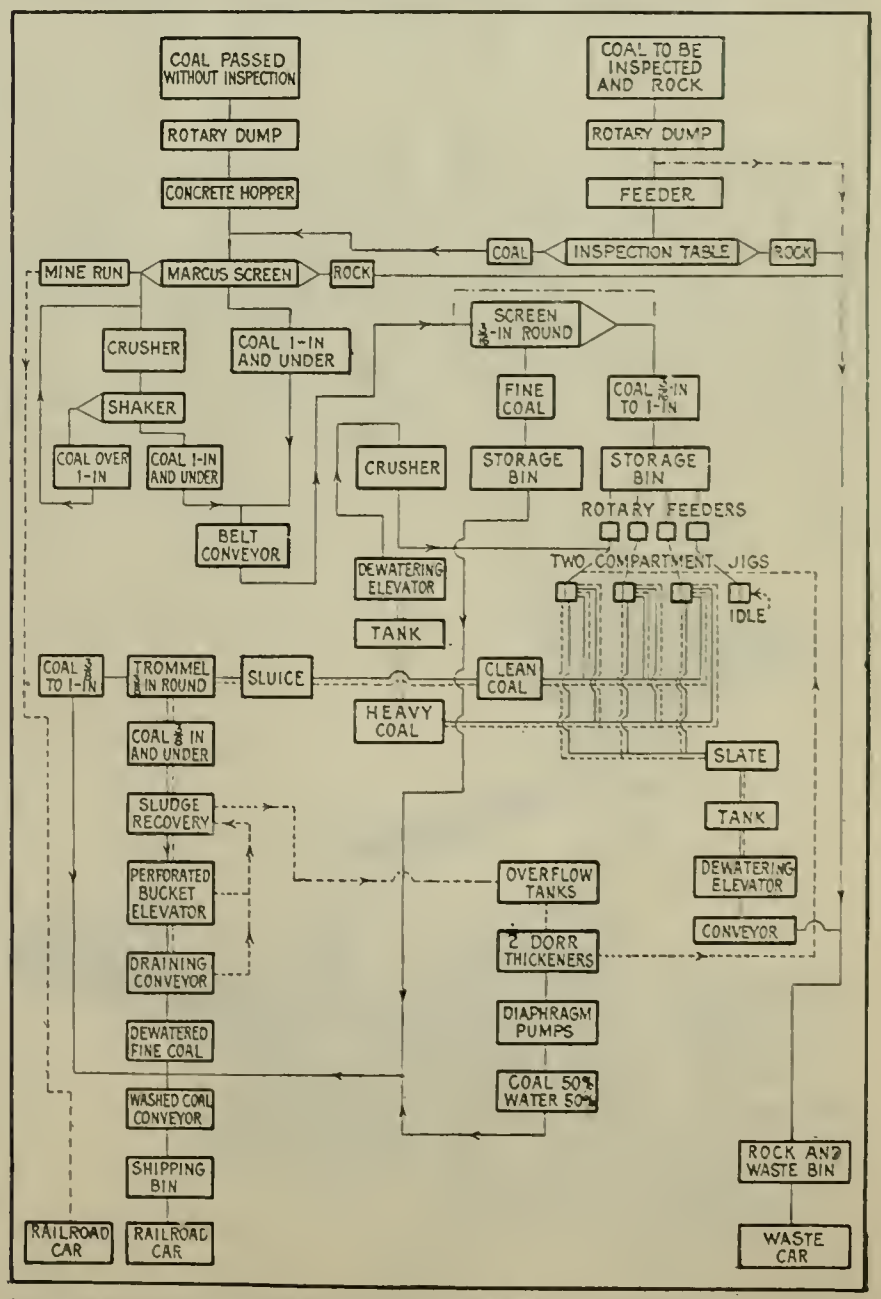
The finer material or that passing through the screen, together with the water, flows to a standard sludge-recovery apparatus. This is a long rectangular tank fitted with a slow-moving flight conveyor designed to move the coal, as it settles, to the pit end of the recovery tank. From here it is withdrawn by a perforated-bucket elevator.

This fine coal taken from the sludge recovery is discharged by the elevator onto a draining conveyor. It is here that thorough dewatering of the fine coal takes place. The draining conveyor is similar to the well-known flight conveyor except that it has a finely-perforated trough. As the coal is dragged along this trough the water passes through, finding its way back to the sludge recovery. The dewatered coal finally is discharged from this conveyor into the washed-coal conveyor mentioned previously. This conveyor also receives the oversize material from the revolving screen in the beginning of the drying process.

Water Clarified in Thickener for Re-use

The water kept in continuous circulation in the process of washing, amounting to approximately 3,500 gal. per min., is subjected to clarification. The cycle of operations here followed represents one of the latest advances in the art of coal preparation. The general arrangement and details of construction of the Dorr thickener are well known, but to those still unacquainted with them the details may be noted in the accompanying illustration.

After overflowing the various tanks and having been collected in a central container the water is sent by centrifugal pumps to two Dorr thickeners each 70 ft. in diameter. The water entering these thickeners contains from 4 to 6 per cent of solids. It overflows the periphery of these tanks into sluices and is led back to the jigs, to be again used in the process of washing.



FLOW SHEET OF WASHER, SHOWING CLEANING OF COAL AND PURIFICATION OF WATER

The coal is first reduced to one inch and under and then taken to the washer, where the fine coal ($\frac{3}{16}$ and under) may be taken out before washing. Washing is done in two-compartment jigs. Dashes in the drawing show permissible routes for the coal and dotted lines the course taken by the water in its various degrees of clarification.

This water as it leaves the thickeners contains about 0.15 of 1 per cent of solids, being practically clear.

The thickener tanks have cone-shaped bottoms and are fitted with centrally-located vertical shafts to which are attached slow-moving rakes. These scrape on the bottom and conduct the fine material, as it settles, to the center of the tanks, whence it is withdrawn by diaphragm pumps. This fine coal, or sludge, as it is termed, consists of approximately 50 per cent solids and 50 per cent water.

After being discharged by the diaphragm pumps it is conducted by a sluiceway to the final washed-coal conveyor, where it is mixed with the other washed products and delivered to the shipping bin. It will be seen that this method not only precludes possibility of any loss of fine coal but enables the washing process to be conducted with practically fresh water at all times.

The plant throughout is of fireproof construction, all structures and buildings being of structural steel covered with corrugated sheet roofing and siding. All tanks are of reinforced concrete. Ample protection is afforded the operatives through the use of safety guards everywhere. All machinery is electrically-driven, the controls being located at the most convenient points for the operation of the tipple and washery equipment.

In conclusion it should be stated that special interest in this plant centers in the modern and somewhat unusual features employed for the preparation of coal before washing, the washing process proper, the means employed for dewatering the washed product, the facilities for by-passing the fine coal without washing, and finally, the clarification of the circulating water and recovery of the coal dust.

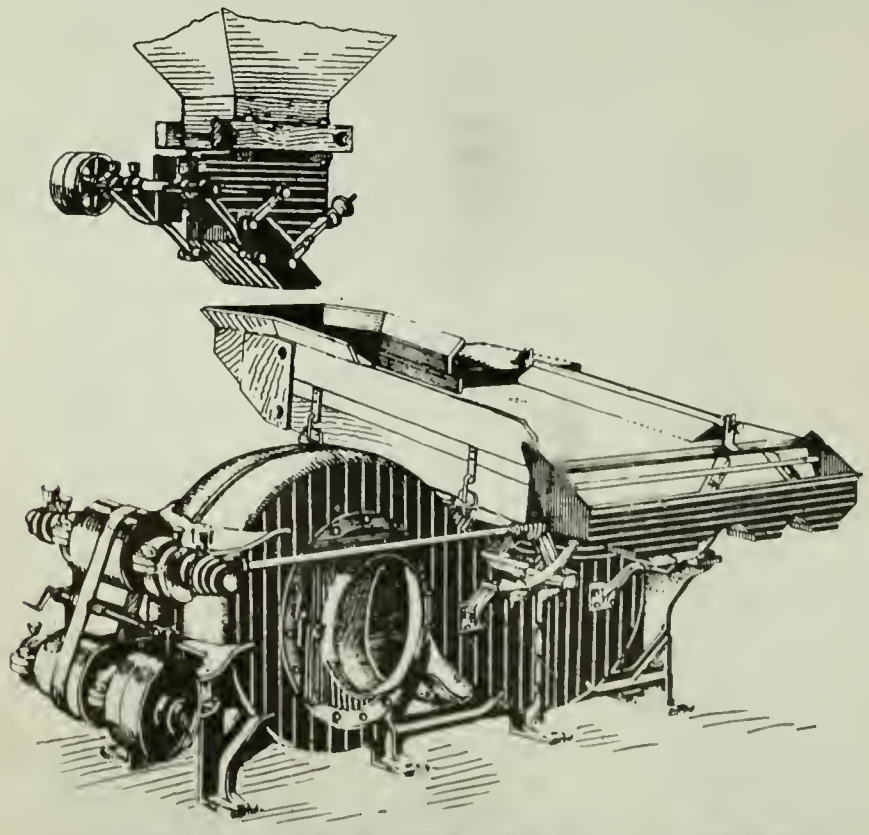
The plant was designed and built by the Roberts & Schaefer Co., of Chicago, in close consultation with F. G. Morris, general superintendent of coal mines for the Republic Iron & Steel Co. It has been in operation for the past two years, and as the mine development proceeds it will become one of the company's most dependable sources for coal required in coke production.

Washing Coal with Air Instead of with Water

Air Forced Upward Through Table Deck and Its Load of Material Almost Immediately, Separates Light from Heavy Particles—Thus Machine Has a Large Capacity—Furthermore the Product Is Dry

By L. E. Woods
Welch, W. Va.

Dry cleaning of coal by means of air flotation is a comparatively new process for the demonstration of which a small plant has been erected at Welch, W. Va. In general the basic idea involved differs little from that employed in the ordinary concentrating table except that upward-moving air under pressure is employed as a separating medium instead of water. Both processes depend upon the difference in specific gravity between the coal and its accompanying impurities. The new method, however, not only uses air to accomplish the separation but applies it in a manner differing radically from that in which water is utilized.



CONCENTRATING TABLE WITH FAN FOR ITS OPERATION

To one corner of this table is delivered coal in any one of many narrow ranges of sizes. It is lifted by an upward flow of air and receives also, by the motion of the table, a thrust which forces it up hill along the deck. The heavier material is not lifted off the table and so receives the full effect of the thrust. The impure material therefore is propelled along the deck, and the cleaner passes across the riffles, gravity determining its passage.

The ordinary concentrating table is provided with a deck that is impervious to the water which is employed as a separating medium. Consequently this fluid must flow over the table surface in order to submerge the material forming the deckload and wash the lighter from the heavier particles. The deck of the new separator is pervious to air, and the separating medium accordingly is forced upward through the deckload, positively lifting the lighter elements away from the heavier. In this process the lesser weight of air as compared with water is much in its favor, as it greatly facilitates the speed of separation and increases the efficiency of the operation. With air the separation is practically instantaneous, with a corresponding effect upon the capacity of the machine.

Used Mainly on Fine Sizes of Material

This air separator is primarily intended for the finer sizes—that is, those pieces ranging from 1½ in. down to dust. As it is impossible to separate particles differing only slightly in specific gravity but varying widely in weight it is necessary to perform a certain amount of screen grading in order to obtain products in which the sizes of particles are not widely variant. Because of the comparatively small difference in the specific gravities of coal and slate a minimum of four sizes should be made in such material as has been named above, namely, 1½ to 1 in., 1 to ½ in., ½ to ¼ in. and ¼ to ⅛ in.

Practically all run-of-mine material that will pass a ½-in. perforation is of sufficient purity for commercial

purposes. This size (less than ⅛ in.) can, of course, be cleaned quite as readily as any other, but ordinarily this is unnecessary. The minus ⅛-in. particles may be eliminated by screening, leaving a material to be treated that ranges from ⅛ in. to 1½ in.

The air jig consists essentially of a body mounted upon inclined supports and oscillated by a pair of bronze eccentrics. An ordinary centrifugal fan is built into the base of the machine and supplies air to the body, which accordingly becomes an air chamber or windbox. The pervious or perforated cover to this chamber forms the deck whereon separation takes place. This receives the material to be treated, and the air moving upward through the small holes in the deck causes the particles to assume positions in accordance with their respective specific gravities.

Machine Closely Resembles Sludge Table

The deck proper consists of a frame provided with slats or ribs supporting the perforated cover. It has an area of 12.5 sq.ft., about one-third of which is taken up by the ribs, leaving a clear or net space of 9.3 sq.ft. A steel and cast-iron running gear is provided, so designed as to afford both longitudinal and transverse adjustment of the inclination of the deck. The toggles of this running gear are set at an angle of 35 deg. from the vertical. The body and deck are oscillated with a throw of 5.8 in. The speed is about 300 strokes per minute.

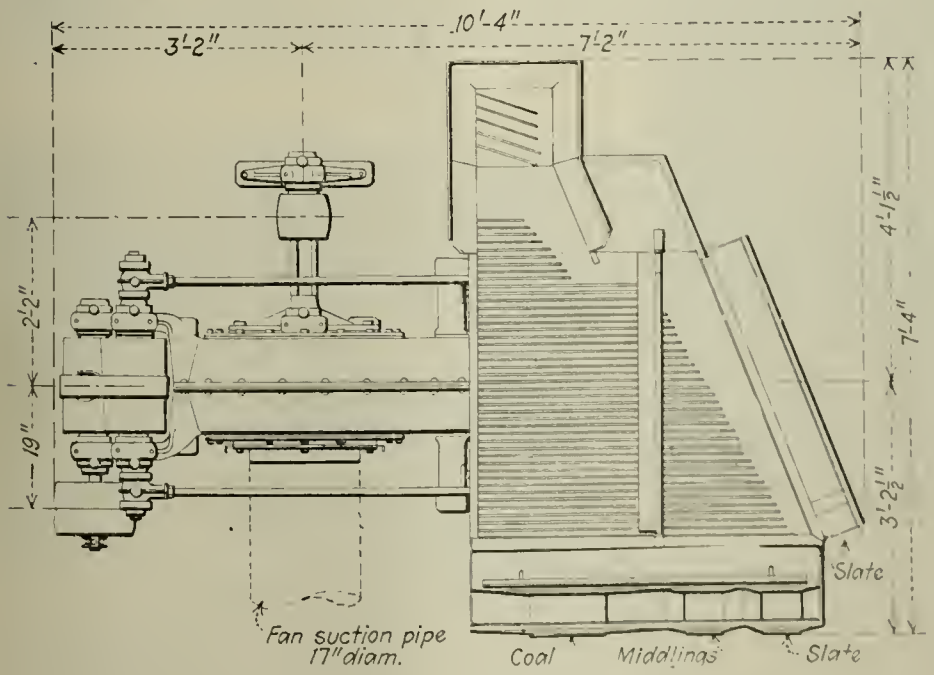
A speed-change device is built into the base of the machine. This consists of two parallel shafts bearing cones, set oppositely, with a belt under control of a shifter running between them. The eccentrics for the oscillation of the body and deck are fastened to one of these shafts. The constant-speed shaft makes 300 r.p.m., giving a speed range to the other shaft of from 270 to 330 r.p.m., which communicates to the body and deck an equal number of complete oscillations per minute.

The fan is a 40-in. steel-plate centrifugal suction-blower and is driven at 1,600 r.p.m. The eye or intake is provided with a gate to regulate the amount of air entering the machine, and consequently the volume passing the deck apertures.

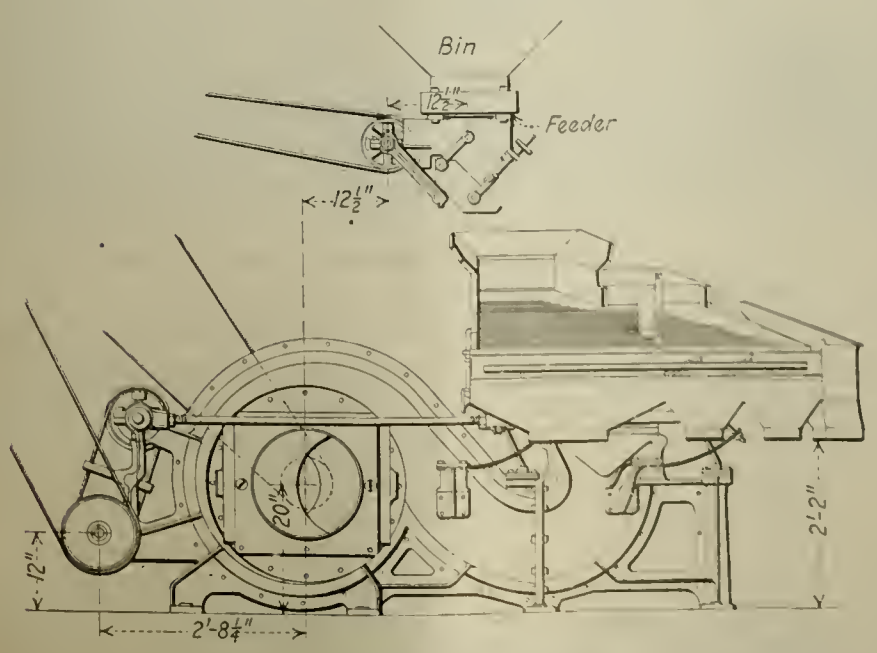
Cloth or perforated metal is used to cover the deck. In either case the porosity of the covering is suited to the size of the material being handled. Above the deck surface is placed a series of metal riffles, fastened to the ribs. These members are designed to retard the transverse movement of the load across the deck.

Table Inclination Adjustable to Suit Coal

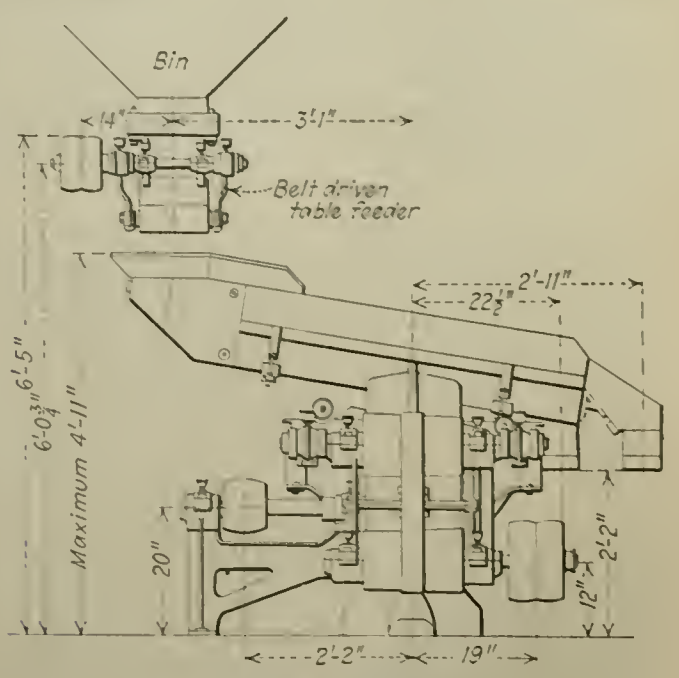
Both longitudinal and transverse inclinations of the deck are adjustable to suit the size of particle being treated. The usual transverse setting is about 5 deg. from the horizontal, the deck sloping away from the feed. The longitudinal inclination is about 1 deg. from the horizontal, the slope being upward from the feed. The oscillating movement tends to thrust the load up the



Plan



Side Elevation



End Elevation

Front and Side Elevations and Plan of Air Concentrator

Coal finds its passage unretarded by riffles and unhindered by the jolting of the table. It comes straight down the inclination, actuated by gravity, vaulting the riffles with the aid of the air current. Slaty material has to travel to the end of these obstructions to a point where a smooth surface permits it to move down by gravity to its point of discharge. Coal of mixed character, part slate and part coal, also is moved toward the smooth space at the end of the riffles, but fails to reach it. It ultimately lands at a discharge point between the coal and the slate.

longitudinal inclination, while gravity tends to carry the material downward laterally away from the point of feed.

Air from the fan enters the windbox below the deck at high velocity, the volume being regulated by the gate on the fan suction. This air is retarded in its escape by the perforated cover and the density of the deckload. It is thus compressed within the body of the machine and finally escapes through the deck cover in a multiplicity of fine streams. The volume escaping, of course, is governed by the amount admitted to the fan.

The velocity of escape is dependent upon the density of the deckload and the degree of compression existing within the cleaner body. Small particles require a small volume of air at high velocity and larger pieces require a greater volume at less velocity.

Screen Regulates Air to Suit Deckload

Within the air chest or body and below the deck is placed a perforated plate or air screen. This is designed to regulate the flow of air through the deck and to vary its pressure and volume to suit the requirements of the load. Thus an increased volume and pressure are obtained where the deckload is greatest or where the material composing that load is heaviest. Such varying zones of air pressure and volume facilitate the process of separation.

Passing the perforations of the deck under pressure the air immediately expands and forms a sheet or cushion above the deck surface under partial compression. This air film, controlled as to volume and density at different portions of the deck, supports, at least in part, the material being treated and forms the separating medium.

Coal to be cleaned is fed to the deck at one corner, namely, that forming the highest point of transverse inclination and the lowest point of the longitudinal inclination. It immediately encounters the upward flow of air, a positive thrust tending to propel the mass longitudinally—that is, up hill—along the deck, while the force of gravity tends to move the coal down hill across the deck. The air cushion facilitates the stratification of the material or its arrangement in regular gradation from the heaviest at the bottom to the lightest at the top, all particles arranging themselves according to their respective specific gravities.

Heavy Particles Move Lengthwise of Table

The heavier particles of the lower portions or zones are retarded in their movement by the riffles and receive the thrust of the deck vibrations. Accordingly, they are propelled along the deck while the lighter particles forming the upper strata, under the action of gravity move across the deck.

In actual operation the feed, consisting of coal and of slate and other substances detrimental to the product and of greater specific gravity than coal, is delivered to the corner of the deck, as above described. The heavier constituents are immediately submerged in the air film while the good coal is forced to the top of the mass. Thus the slate is forced upward and backward along the deck by the riffles to the end, and the coal moves across the riffles and deck to delivery at the side. A series of banking bars or obstructions are placed in the line of travel of the slate at the farther end of the deck. These receive and bank the slate and other heavy material and force it to the lower delivery side, thus forming a dense mass of slate over which the coal cannot pass. This action gives two zones of segregated materials—the coal discharged near the feed end of the deck and the slate discharged at the opposite end.

Table Works Most Rapidly on Larger Fines

The capacity of the cleaner varies according to the size of the material being treated. The amount that the machine will successfully handle increases rapidly from the smaller to the larger sizes of particles within the range of $\frac{1}{8}$ to $1\frac{1}{2}$ in. For all sizes the average is about six tons per hour.

An official test recently made on a sample of $1\frac{1}{2}$-in. screenings from the Pocahontas No. 4 bed weighing 56,600 lb. gave the results shown in the accompanying table.

ANALYSIS OF RAW COAL, CLEAN COAL AND REFUSE

	Raw Coal, 100.00 per Cent	Clean Coal, 94.59 per Cent	Refuse, 5.41 per Cent
Volatile matter	18.60	18.65	12.09
Fixed carbon	72.45	74.75	34.91
Ash	8.95	6.60	53.00
Total	100.00	100.00	100.00
Sulphur	0.84	0.83	1.20

ASH IN RAW COAL, CLEAN COAL AND REFUSE ARRANGED IN SIZES

	Per Cent of Size	Per Cent Ash in Raw Coal	Per Cent Ash in Clean Coal	Per Cent Ash in Refuse
On 1 in.	1.14	44.20	....	44.20
Through 1 in. and over $\frac{3}{4}$ in.	2.70	29.00	7.80	48.36
Through $\frac{3}{4}$ in. and over $\frac{1}{2}$ in.	4.66	20.96	9.29	55.77
Through $\frac{1}{2}$ in. and over $\frac{3}{8}$ in.	7.11	14.38	7.30	57.84
Through $\frac{3}{8}$ in. and over $\frac{1}{4}$ in.	7.40	10.72	5.91	51.44
Through $\frac{1}{4}$ in. and over $\frac{1}{8}$ in.	19.88	7.93	6.68	56.00
Through $\frac{1}{8}$ in.	57.11	6.48	6.48	.....
	100.00			

From the results thus obtained it will be noted that the efficiency of the machine is high. The ash content of the coal was reduced from practically 9 per cent to 6.6 per cent, with a reject of only 5.41 per cent of the material treated and with only a small amount of good coal in the tailings. Furthermore it will be observed that in this instance the impurities exist almost entirely in the larger sizes, everything remaining on the 1-in. screen being added to the tailings without any treatment whatever. Coal passing through a $\frac{1}{8}$-in. aperture likewise was not treated but was added directly to the cleaned product.

Invented for Cleaning Seeds and Grain

The equipment above described has been patented and is manufactured by the Sutton, Steele & Steele Co., Inc., of Dallas, Texas. It was designed originally for the cleaning and separation of seeds, cereals, nuts and legumes, in which operation it has proved highly efficient. It has also demonstrated its value in the separation and cleaning of fine ores and, in fact, for the treatment of any small granular material where a difference in specific gravity exists between the particles to be separated.

The machines themselves are simple and inexpensive in construction as well as efficient and economical in operation. The small plant maintained by the Central Pocahontas Coal Co., at Welch, W. Va., was built for purposes of demonstrating the machine and for testing any coals that may be offered.

Among the contracts signed Thursday, April 14, by Mayor J. Hampton Moore of Philadelphia was one with the Philadelphia & Reading Coal & Iron Co. for $55,000 for the furnishing and delivering of coal.

Rock Larries Build Their Own Dumps and Provide Economical Disposal

Dragline Scraper Not Only Limits Size of Rock Dump but Becomes Increasingly Expensive in Operation as It Gets Bigger and Higher—Electrically-Propelled Larry with Swinging Body Admirably Solves The Problem of Rock Disposal

By Dever C. Ashmead
Wilkes-Barre, Pa.

WHETHER the rock to be disposed of at an anthracite colliery comes from shaft or breaker its disposal often presents a serious and expensive problem the magnitude of which is likely to increase with the passage of time. Numerous methods for the disposal of this material are now employed. Sometimes it is crushed and flushed back into the mine as filling. Sometimes it is piled in large conical heaps by means of a dragline conveyor, which is extended from time to time as the pile grows. Sometimes the mine cars are run out on the dump, there to be discharged either by hand shoveling or otherwise.

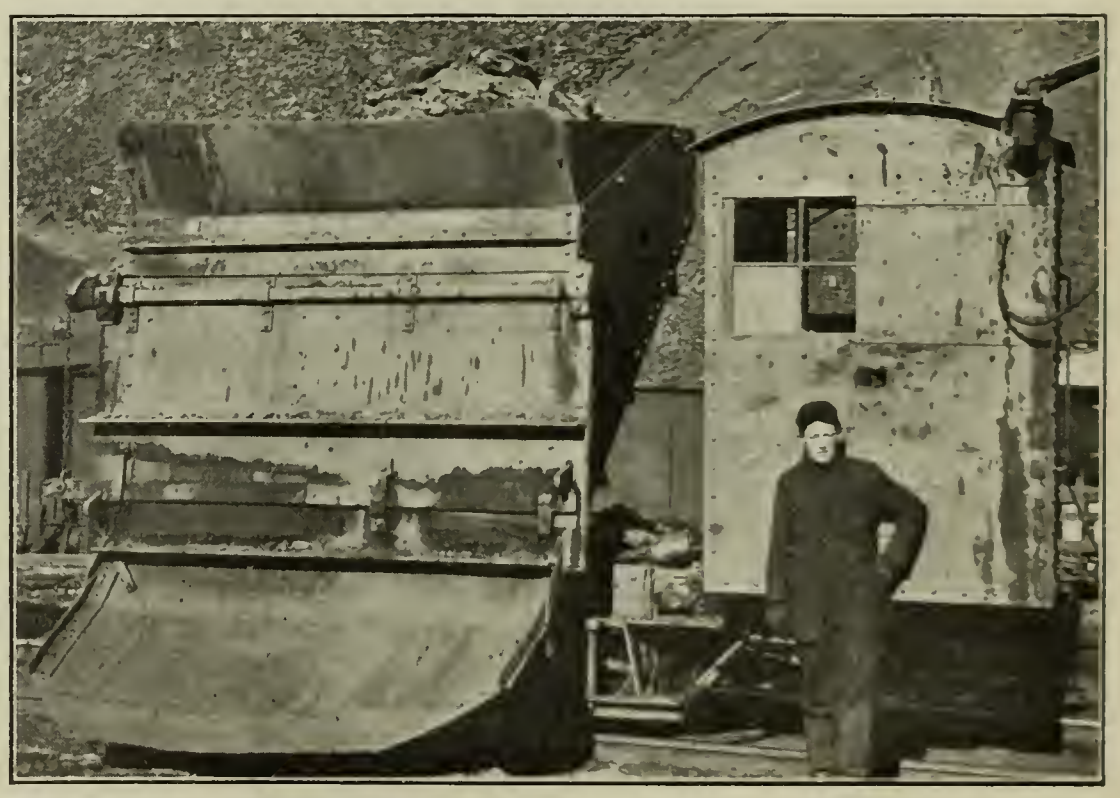
Many other methods have been adopted for disposing of this material but possibly the most satisfactory of them all is that employed by the Susquehanna Collieries Co. at its Pennsylvania colliery, near Mt. Carmel, Pa., where electrically-driven larries are employed for the purpose.

Prior to the introduction of these larries the rock was conveyed to the dump by means of a dragline scraper. This means of disposal became more and more expensive as time went on, as the height of the bank increased rapidly, thus not only lengthening the conveyor but also the height to which the rock had to be raised. These changes rapidly augmented the power consumed.

Dragline Too Long and Rock Pile Too High

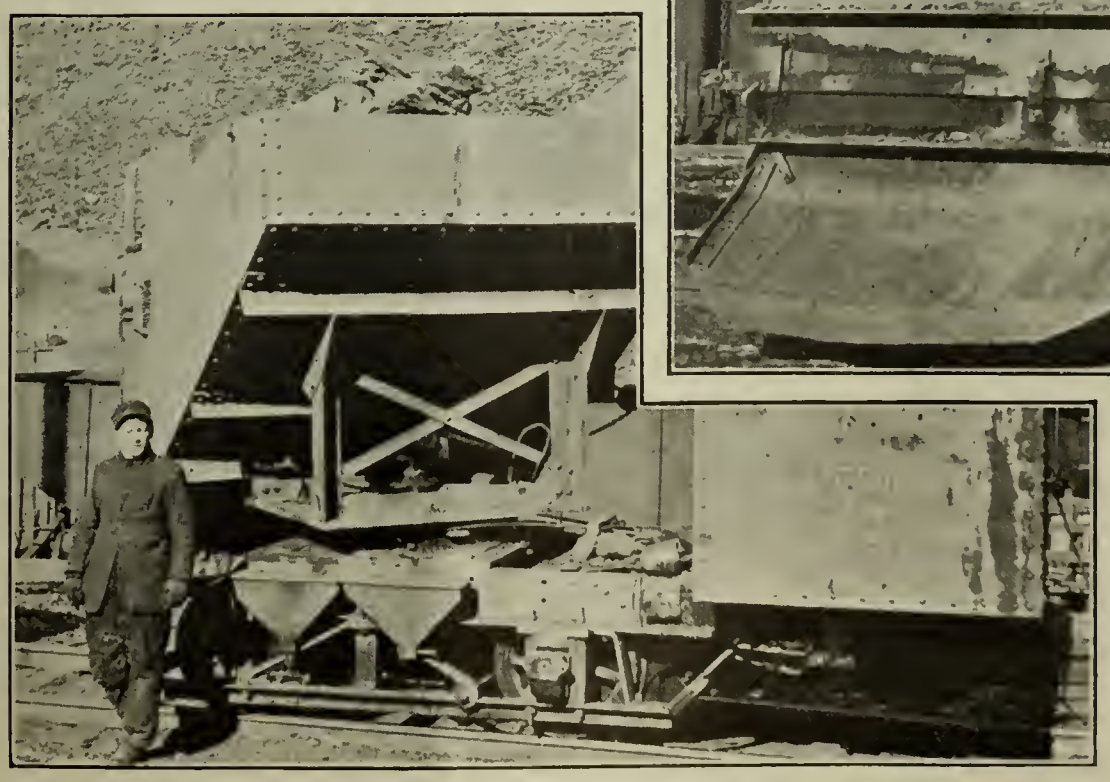
In a single day hundreds of tons of rock may have to be disposed of on the surface, and conditions, as outlined above, soon became intolerable. The rock-disposal problem is particularly serious in those portions of the anthracite field where the beds pitch steeply, as under such circumstances it is practically impossible within the mine to separate extraneous material from the coal. Where the beds are flat or nearly so most of the refuse can be picked out and gobbed underground.

One of the great difficulties in the formation of a rock dump on level ground is to secure sufficient height to take care of the material dumped. It is possible to run these larries up a grade of six per cent, and therefore in seeking to secure a satisfactory dumping height on ground which is not sufficiently irregular to provide a



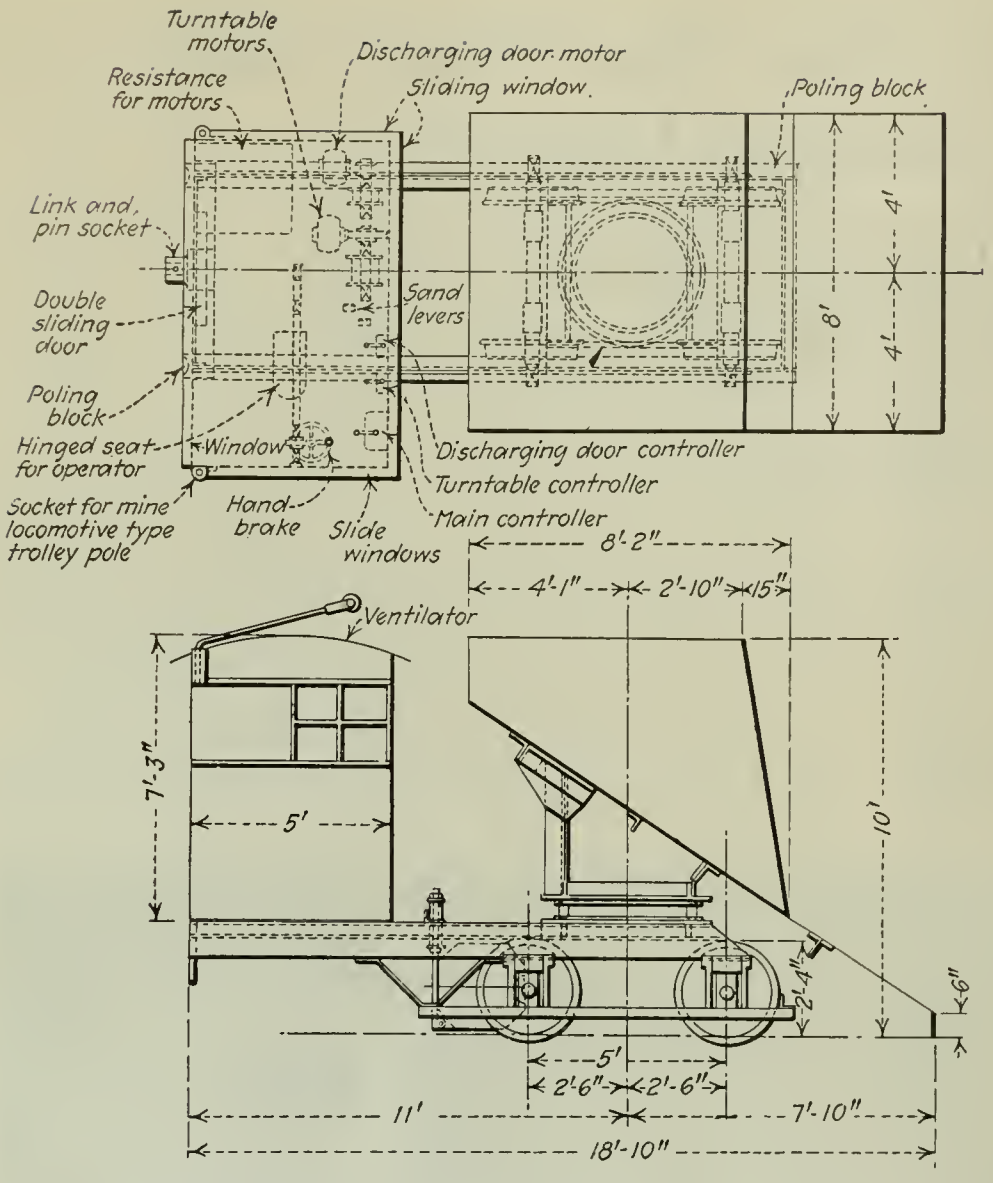
Side Dumping

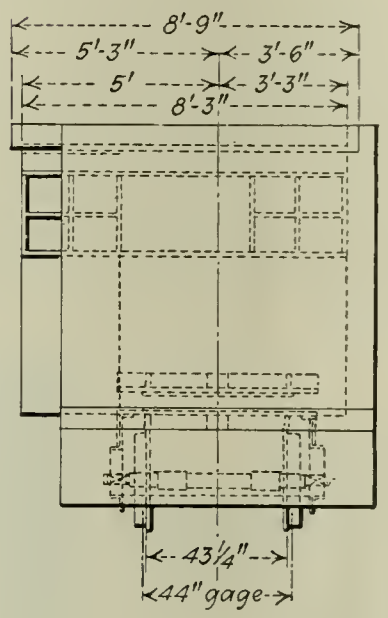
When dumping from mine cars the rock does not have enough spread to make a good and permanent dump unless much rock is lifted out of the car, carried to the side of the dump and dropped over the edge. This larry widens its own dump as cheaply as it extends it.



Diagonal Dumping

Here again the larry provides for the immediate establishment of a dump that will stand satisfactorily up to the point of extension. The material also being in bulk, the bottom of the larry body being smooth and the grade of the bottom steep, the rock shoots into place and runs to a stable position.





Slate Larry Dumping Forward

Note that the rock does not leave the larry chute till at a point 5 ft. 4 in. beyond the footing of the front wheel. Even there it is 6 in. above the top of the rail and about 16 in. above the base of the ties. It is easy, therefore, to see how completely it can prepare the subgrade for a track extension. The objection to transportation of rock in mine cars is that when the rock gets to the dumping point it is hard to discharge, and the advantage of a larry would be comparatively small if in dumping it did not cast the material with force well away from the side of the track, making it possible to build up a dump that will not be forever sliding down and developing low spots.

level dump of adequate capacity, advantage can be taken of the ability of the larries to climb up to a considerable elevation in a short distance.

At the Pennsylvania colliery the rock dump attained such size that disposal by dragline became unduly expensive. No suitable place existed near the breaker where a new dump could be started. There was available, however, plenty of room for a dump of almost unlimited size just beyond the reach of such a conveyor.

Accordingly it was decided to handle the rock by means of larries. At the present time only breaker rock is disposed of by this means but arrangements are being made whereby rock cars from the mine may be discharged at the top of the breaker and their contents sent to a separate rock bin. From this point the material will be drawn into a separate larry for disposal. This arrangement will necessitate two machines but each may assist the other in case of need. The larry was built by the Connellsville Manufacturing & Mine Supply Co. and has a capacity of 10 tons when loaded with rock.

Success in this method of rock disposal depends much upon the type of larry used. The design in this case is in some ways exceptional, therefore attention may well be called to some of its special features. It is so designed that it may dump either forward or upon either side. This enables it to build its own roadbed as it advances.

Motors Move, Turn and Discharge Larry

The machine is electrically-operated throughout, being provided with four motors. Two (one on each axle) propel the larry, a third operates the turntable and swings the discharge to any desired position, and the fourth opens the gate. Controllers for these motors are located convenient to the operator.

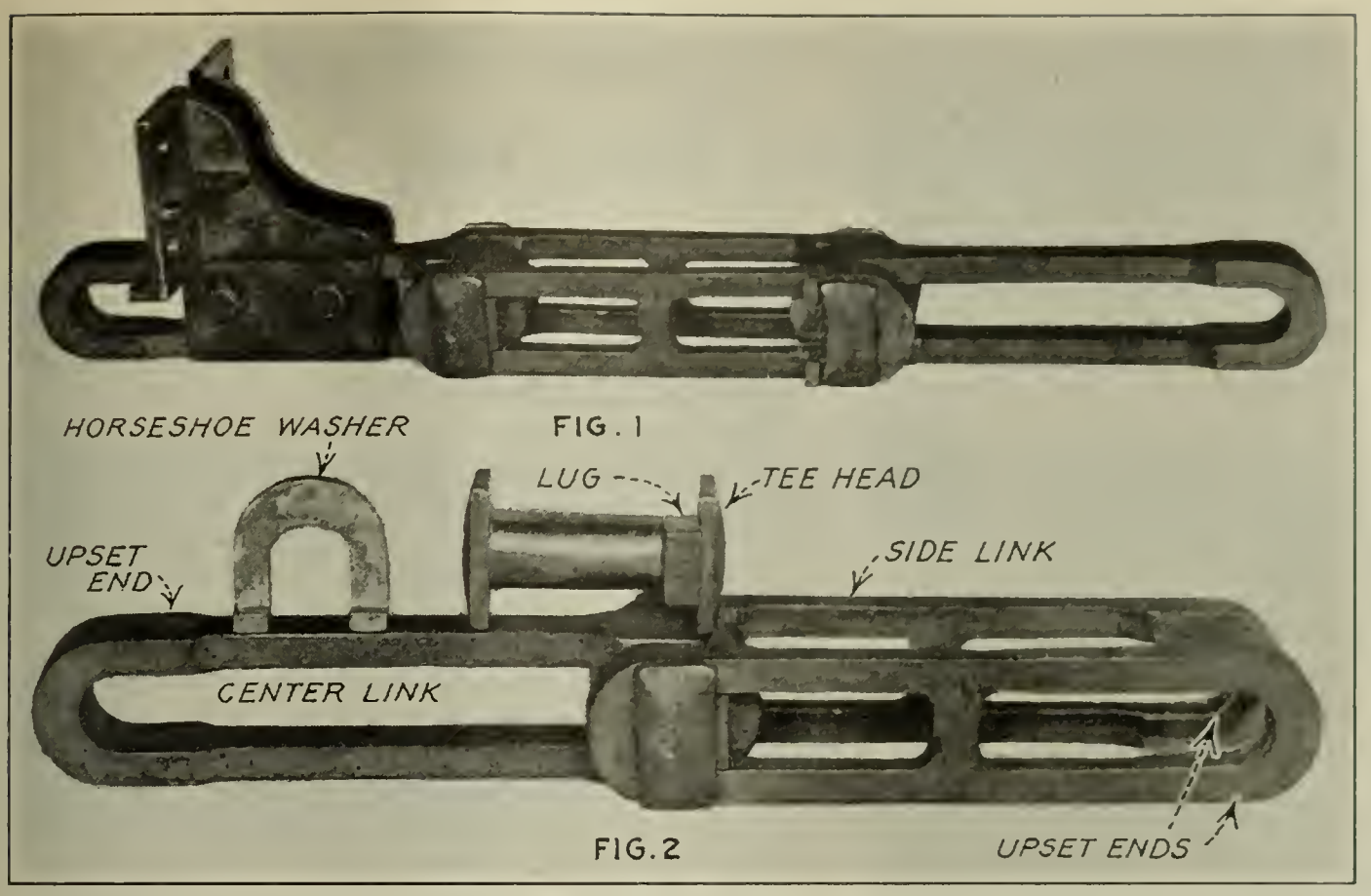
This type of larry reduces the necessary amount of track shifting to a minimum, and it is only necessary to extend track as the dump builds up. This in turn means that all track extensions may be made by the outside gang and that no regular force of men is needed on the dump.

Grades encountered, of course, are against the loaded larry, but these need not be excessive. One of the chief advantages of this system as compared with the dragline is that it requires less power. It naturally takes less energy to move rock horizontally than vertically; the rock also travels more easily when carried on wheels than when dragged along a piece of sheet iron. The rock may be carried a long distance by larry without the cost of rock disposal by that means even approaching the expense of operating a dragline, as this involves not only a large power expense but heavy depreciation.

Three Distinct Parts Form Conveyor Chain

ABOUT 115 miles of heavy-duty conveyor chain are in use in the anthracite region, being employed largely in the movement of culm to the breaker, refuse to the slate bank or silt to the dump. It is estimated also that more than 200,000 ft. of such chain is installed or renewed annually in this field alone. The work to which it is subjected is of the roughest and severest kind and, unless a chain is simply and ruggedly constructed, it will fail in a comparatively short time. Many sizes, types and varieties of chain for this purpose are now in use, and each succeeding year sees one or more new designs placed upon the market.

The latest and possibly the simplest design so far evolved is illustrated herewith. This is the invention of J. C. Law, of Scranton, Pa., and patents covering it have been applied for. This chain while intended pri-



Rivetless Chain

Fig. 1. Shows chain fitted with flight brackets and Fig. 2 two plain links. Resting on the chain may be seen a joint pin and a horseshoe washer, the latter being used only when the links are worn. The ends of the links are upset, so that the pin is held firmly in place as long as the links are not pushed together.

marily for use in the conveyance of anthracite materials may also be employed advantageously in industrial and manufacturing plants for the movement of almost any bulk granular commodity.

Both Links of Pair Have Enlarged Ends

As may be seen in the accompanying illustration, the chain in its simplest form consists of two kinds of links and one type of pin. Other forms adapted to the outside drive of the chain as well as various modifications in length of link or pitch may, of course, be employed. The illustrations here given, however, well depict the basic principle upon which the chain is constructed. The center link is of open pattern bossed, or upset, at the ends. This reinforcement takes the shape of an increased width of link upon both sides of the center line at either end. The side links likewise are upset at the ends, but the reinforcing boss here takes the form of an increase in width upon one side of the link—that toward the center line of the chain—only. The connecting pin is provided with a tee head on both ends, but on one end this head surmounts a rectangular lug extending from the side of the pin at right angles to the arms of the tee.

From the above it will be obvious that when the links at any joint are pushed endwise toward each other until the bossed ends unmask or clear each other, they may be collapsed or squeezed together sideways sufficiently to release the lug on the end of the pin from the grip of the side link. The pin may now be rotated through an angle of 90 deg. and withdrawn, the opposite tee head passing readily through the slots of the links. The reverse operation, of course, may be performed in fastening links together or building up a joint in the chain.

Horseshoe Washer Takes Up Wear in Chain

If in course of time excessive wear should occur at a chain joint, the links and pinheads wearing upon each other until appreciable transverse play develops, this wear may be taken up or compensated by the insertion of the open-sided washer, or "horseshoe," shown in the illustrations. This washer is inserted under the head of the pin opposite to the lug, the pin itself preventing movement in one direction, while the upturned ends, or "heel calks," bearing against the pin tee head prevent movement in the other. This effectually takes up any side wear on the links and allays any possibility of the pin lug failing to function.

As an example of the saving made possible by the use of this washer assume that wear on a 1,000-ft. length of 6-in. pitch chain has to be taken up. This length of chain contains 2,000 pins. If these are replaced by pins of a length shorter than the original they will cost about 20c. each, or $400. Two thousand of these washers, on the other hand, would cost about 3½c. each, or $70, showing a saving of $330 per 1,000 ft. of chain. On conveyors of larger pitch than the one above assumed the possible saving would be somewhat less than in the example above given, such saving being roughly proportional to the number of joints involved.

Attachments Easily Bolted to Center Link

Flight brackets or attachments of various kinds may be fastened to this chain. One form of these attachments is shown in the illustration. The particular type here depicted consists of two brackets formed to fit the center link of the chain, to which they are attached by two machine bolts passing through the link. A variety of flight shapes might easily be secured to brackets of this kind.

All parts of this chain except the washers and flight attachments (which are stamped and cast respectively) may be dropforged. They are thus comparatively cheap as well as strong and of easy and rapid manufacture. As may be well appreciated by those accustomed to the installation, use and repair of conveyor chain, this design is extremely simple. A small amount of slack on the take-ups permits the removal and renewal of any link that is dangerously worn. The building up of a new chain, of course, is quite as easy and rapid as the repair of an old installation. Another obvious advantage is that no tools of any description are necessary in either initial installation or repair.

Fifty-Ton Side-Dump Cars Lighten Labor at Mines But Might Have Wider Use

Used for Breaker Waste and Culm—Available Also for Bringing Coal from Mine or Strip Pit to Tipple or for Removing Surface Material in Strippings—Some Missabe Methods — Used for the Transferring of Supplies

ONE of the most important of the many operations in anthracite mining is the transference of large quantities of material from place to place on the surface. Both standard- and narrow-gage equipment are employed in this work. Waste rock must be removed from the breaker to the dump and often culm transferred from the pile to the breaker. At some plants it is necessary also to haul the coal to the preparation plant from distant shafts or slopes.

Where narrow-gage or small dump cars are utilized in maintaining a rock- and refuse-disposal service from the breaker each trip can handle only a small tonnage. The dead weight of such cars is unduly high as compared with the live weight and the tractive effort that the locomotive can exert is expended to little advantage. The net tonnage, consequently, suffers. The locomotive has the further disadvantage that it is too small to be really economical in operation. Moreover, such transportation is not only costly in itself but expensive also because of the large force of men which has to be maintained on the dump if, so as to charge little dead or standing time against the trip, it is arranged that the cleaning of the tracks be done by a separate crew.

In moving culm from the bank to the breaker, wherever narrow-gage equipment is utilized, similar relatively high transportation labor costs obtain. In addition to this the charge for loading and unloading is excessive because, owing to the size of the units employed, much time in both operations is consumed with little result. Where coal is conveyed to the breaker from an open pit or distant mine, the employment of narrow-gage equipment limits the size of the trip that can be efficiently handled. Furthermore, transporting coal through comparatively long distances in springless cars over rough track tends greatly to degradation of the product.

Cars of Forty-Three Cubic Yards Capacity

The accompanying illustrations show how one of the large anthracite companies is meeting its outside transportation needs with extension side-dump cars, as manufactured by the Clark Car Co., of Pittsburgh, Pa. The operation referred to now maintains a fleet of thirty of these cars and is contemplating adding from twelve to fifteen more for delivery at such time as certain extensions of its outside work are completed.

This car is of the standard-gage type and has a normal loading capacity of 43 cu.yd., or 50 tons. Each car is dumped by air supplied from the locomotive. It is not necessary to employ a special gang of men for this operation, as the cars may be emptied of their contents by the train crew alone. In dumping, the entire side of the car turns down as the body is tilted. The load thus is given a throw so that it clears the outside of the track rails by several feet. As a result it is not necessary to employ track cleaners to clear the roadways at the dumping point. With the ordinary equipment the track if not cleared would become so cumbered with material that derailments inevitably would occur. The dead weight of the car is less than that of its capacity load. This permits large tonnages to be handled per trip, with a corresponding shrinkage in the charge per ton for haulage labor.

The results obtained from the use of these cars are striking. At one operation, a train crew of two men disposes of from 1,500 to 2,000 tons of rock in an eight-hour shift. Three such crews transport and unload from 4,500 to 6,000 tons daily. The gang at the dump consists of only three men.

Culm Hauled to Breaker in Fifty-Ton Cars

At another operation culm is loaded into the cars by steam shovel for removal to the breaker. The grades on the roadway are against the loads and a single car makes up a trip. Even with this handicap the culm pile is reduced by from 600 to 800 tons daily. Two such crews suffice to keep the shovel working to capacity, with the result that from 1,200 to 1,600 tons of culm are fed to the breaker daily.

At still another operation the cars operate loaded in both directions. On the outbound trip from the breaker they carry a load of rock to the dump, and after discharging it the car is loaded to capacity with culm and returns to the breaker. This, of course, is the most effectual method of operation and should be practiced wherever possible.

Sometimes coal is transported from the shaft openings to a breaker, and the cars are loaded with rock and routed to the disposal pile on the outbound trip. By employing much longer trains than would be possible with narrow-gage rolling stock, the labor charges per ton may be reduced to an extremely low figure. In the unloading of either coal or culm at the breaker the dumping of the cars demands no labor aside from that furnished by the train crew. A simple manipulation of a control valve will serve to tilt the body of each car. After being discharged of its contents the car body is righted automatically and is locked. This action is performed by giving the air valve a turn in the opposite direction to that required for dumping. In the event that a fill is being made the dumping operation may be controlled from the locomotive, and the entire trip discharged at once. In this manner 200 tons or more may be dumped at one time.

Dumping Methods in Big Iron-Ore Pits

Far greater will be the future use of cars of this type at anthracite strippings, for all the overburden thus moved must be loaded into dump cars and transported to the dump. In the Missabe region, where large air-dump cars are used, there are no hills and almost no elevations that would make side-hill dumping possible. In the anthracite region it would in most cases be easy to excavate a side-hill road and dump the cars down the

slope. But where the foregoing would not be convenient it would be possible to build up on level ground, as in the Missabe region.

A steep grade is constructed by the erection of a light trestle such as is built in ordinary railroad construction work, and this is filled up till the desired height is reached. Where, however, there is a little roll in the ground, advantage is taken of it to extend a trestle out onto the lower ground, and dumping is commenced on each side till a fill is consolidated.

It is then easy to extend the dump either to the right or left. It is found best when a dump height of 40 ft. is reached to carry the dump in two benches or decks, for if a greater height is used the settling of the dump often causes trouble. Under average conditions a dump from 25 ft. to 40 ft. high gives the best results. The material dumped is glacial drift for most part. Under this drift in the measures is sometimes found Virginia slate.

Sometimes the track is jacked up and filled as the dump is widened out, which increases its height as well as its width. When the limiting distance horizontally is reached, it is common practice to throw the track back, raise it up and make a new level by working back over the part already filled. Another method is to build a second trestle on the first dump and to start a second deck in the same manner as the first deck.

Helping to Spread Dump by Use of Water

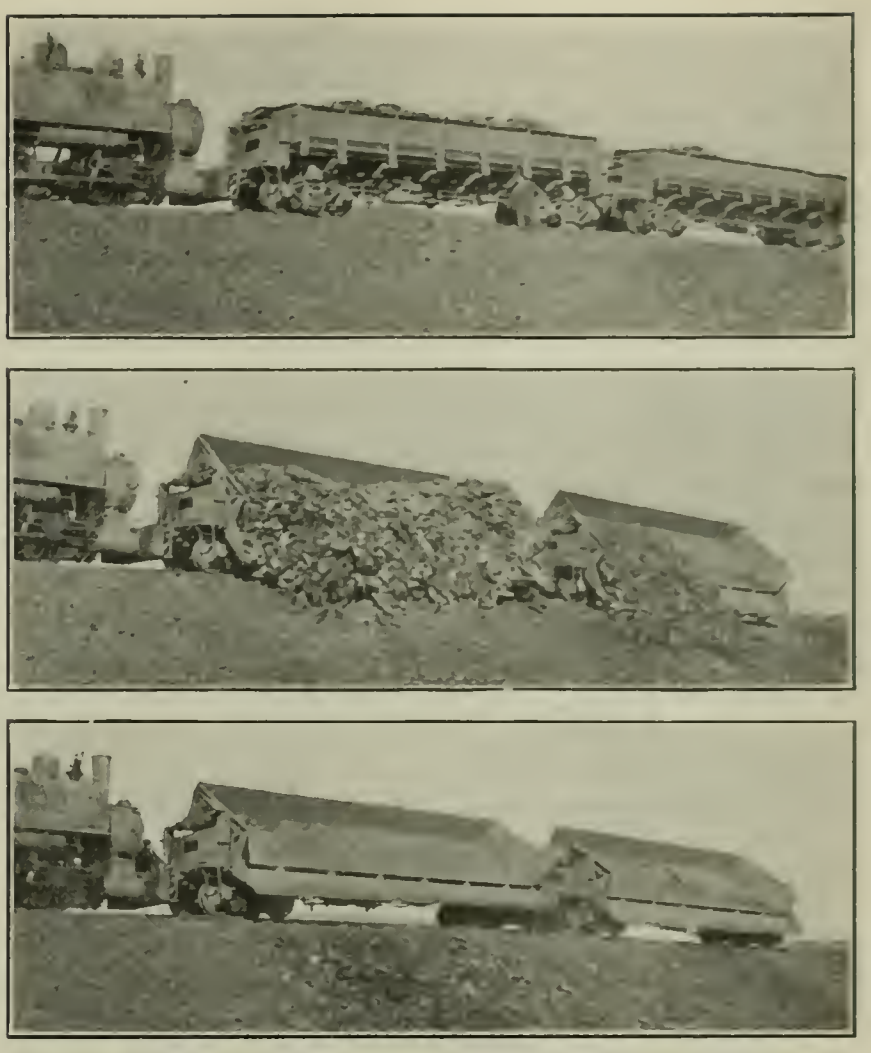
L. D. Davenport, writing in the *Engineering and Mining Journal* on this subject, says: "A slush dump may be made by the use of a trestle, substantial enough to carry the loaded train, fitted with an apron 6 to 8 ft. wide, on the dump side. A 3- to 4-in. pipe line, perforated with ¼- to ½-in. holes at short intervals, is laid along the upper edge of the apron against the ends of the ties, and water, flowing through the openings in the pipe, washes the dumped material off the apron and down the bank.

"At one dump on the shore of a lake, where the material handled was principally quicksand, a different arrangement was used: Trains were dumped until the track was filled; the accumulated material was then washed down the bank with lengths of 2-in. hose attached to a 4-in. pipe line at 100-ft. intervals. This type of dump is used for filling lakes and swamps where the necessary amount of water is easily available. Considerable stripping can be disposed of without moving the tracks, but the system is not practicable in freezing weather.

"The details of dumping operations vary with each stripping job and will depend on the equipment used, size of the job, type of dump, etc. Three methods in common use may be thus described:

Spread Dumped Material with Side Plow

"First method: A side plow or 'dozer' is used to level off the dump to the height of the track for a width of about 5 ft. The track is then jacked up, lined over three or four feet and blocked in such a manner as to carry the cars but not the locomotive. Dumping is then started at the end nearest the pit, and a shoulder is carried toward the further end of the dump, so that, as the shoulder is advanced, the track has side support and can carry the weight of the locomotive. When the limit of the dump is reached, all the material that can be dumped is placed on the end length and the remaining track is filled to the limit, working back to the beginning of the dump. The 'dozer' is then used again and the operations are repeated.



AIR-DUMP CARS OF 43-CU.YD. CAPACITY DISCHARGING

A train crew of two men can dispose of 1,500 to 2,000 tons of rock in eight hours with a dump equipment of this kind. The gang at the dump consists of only three men. The dead weight of the cars is less than their capacity load.

"Second method: A plow having a spread as wide as 30 ft. is used to level off the dump 18 in. below the track. The dump is then refilled and the spreader used until the limit of spread has been reached. The last plowing is made level with the track, which is then lined over 12 to 15 ft., and the operations can then be repeated. This method is used in connection with 20-cu.yd. cars and heavy equipment.*

Track Moved Over a Foot at Each Dump

"Third method: The track is made safe for both cars and the locomotive and the first train out is dumped. The dump crew then level off the dirt and line the track over 1 ft. or more, if possible, along that part of the dump just filled. After the track is ballasted the next train is dumped further along and the next section of track lined over as before, working toward the end of the dump. With a high dump, several trains may be emptied before a sufficient shoulder is formed to allow the track to be lined over. The crew levels the dirt and throws the track between trains. With this method there is always room to dump a train.

"With the first and second methods a dump crew consisting of a foreman and one or two men is required on each dump and both shifts. A track crew also is required, consisting of a foreman and fourteen men working day shift only. Under ordinary conditions a crew of this size can handle the track work on four dumps.

*Today 30-cu.yd. cars are quite common in this class of work. It will be noted that the cars described as being used at one anthracite operation are almost 50 per cent larger. Probably when the anthracite plants break away from their old equipment and their present method of contracting they will distance even the iron regions in the size of their equipment and their large methods of operation.—Editor.

With the third method a foreman and six men on each shift can handle all the work required for one dump."

At bituminous strippings, where the product must be transported from the pit to a preparator building for cleaning and sizing, the same economies may be effected by the use of these cars as are realized at anthracite mines. The loaded carriers are dumped into a hopper at the foot of the building. The coal is then delivered to the tipple by means of some suitable conveyor. No ratchets and pawls are present to freeze up in the winter months and hinder rapid dumping.

As the entire side of the car turns down, there is no limit to the size of lumps that may be loaded, for any piece of material that can be placed upon the car can be discharged. Stripping is primarily an earth-moving operation. This probably is the reason why such wide use has heretofore been made around strip pits of the types of rolling stock employed by contractors, despite the fact that side-dump cars operating on narrow-gage track are poorly designed for the work of moving coal.

The standard-gage side-dump car has a low center of gravity and can negotiate curves of short radius without danger of overturning, as well as travel over temporary and poorly-laid track. Such cars also may be advantageously employed in moving supplies about the mine. The side may be lowered when such a car is placed alongside a loading platform and materials taken aboard without resorting to the use of any variety of hoisting equipment. This will be advantageous when moving lumber, machinery and the like.

How Portable Electric Drills May Best Be Used and Cared For

Capacity Rated on Ability to Drill Mild Steel—Direct or Low-Frequency Alternating Current Preferable—Drill Will Not Stall Except if Bent or Upon Passing Through Plate—Care of Armatures, Fields, Gears and Cables

By E. L. Connell*
Cleveland, Ohio

THE portable electric drill embodies essentially an electric motor and should be given all the care and consideration usually accorded to such a machine. The small sizes of drill in common use are equipped with a universal motor which drives the chuck through a train of gears that give a drill speed between one-fifth and one-twenty-fifth of that of the armature. Energy is supplied to the tool through a flexible cable with a lamp-socket connection and is controlled by a switch conveniently located on the handle of the drill. A typical tool of medium size is illustrated on page 820. It weighs 10½ lb. and is capable of drilling ⅝-in. holes as fast as the operator can force it through the work.

Portable electric drills have rapidly shown their value in the machine, electric and car shops of the coal mines, where the high cost of day labor makes it highly profitable to furnish such mechanical assistance as will save time and labor. Car repairs are an important item of expense at any mine. With a power drill these costs can be greatly reduced, cars can soon be returned to operation and in some cases employment of an additional man can be avoided.

A drill of ¼-in. capacity and one of ½-in. capacity are shown on pages 821 and 819, respectively. The capacity of electric drills is based on the power and speed requirements of a carbon-steel drill boring a hole through 0.20 to 0.30 per cent carbon steel. It is evident that the capacity of such a tool will vary with the material upon which it is working, also that the speed for maximum production will change with conditions, but by standardizing on some one method of rating, such as that mentioned, the manufacturers have done much to aid the prospective purchaser by giving him a basis of comparison so that he can select the tool most nearly meeting his requirements. By the exercise of judgment acquired through experience the maker can readily recommend the proper tool for special applications such as wood boring, though the capacity may vary widely from its rating in steel owing to the nature of the material, the depth of the hole, and other variables.

The speed appearing on the name plate is the free-running speed and bears no definite ratio to that attained under load. This may decrease the number of revolutions 25 to 50 per cent or even more. It is not generally appreciated that this characteristic automatically adjusts the speed of the tool to correspond with the size of drill being used and the hardness of the material. An operator who has become acquainted with the tool will have little use for a two-speed machine with gear-shifting mechanism. The greater simplicity and ruggedness of the single-speed tool would even justify some sacrifice if a compromise were necessary.

Feed pressure is the important factor in obtaining the best performance from an electric drill. The pressure required for drilling in steel to the full capacity of the tool is greater than can be exerted by hand for all except the smallest sizes. Even in these tools as built by the best makers enough power is available to operate the drill under all the pressure a heavy man can exert. A pressure of 500 lb. is seldom too much for a ½-in. machine drilling in steel. A feed screw, therefore, usually is supplied with the larger sized electric drills.

*Chief engineer, The Van Dorn Electric Tool Co.

The minimum boring performances of a universal drill with carbon-steel bits in 0.20 to 0.30 carbon steel should be as indicated in the following table. The operating speed represents a cutting speed of 50 ft. per min.

MINIMUM DRILLING PERFORMANCE OF UNIVERSAL PORTABLE ELECTRIC DRILLS

Carbon-steel bits drilling in 0.20 to 0.30 carbon steel

Size of Drill, Inches	Speed, R.p.m.	Rate of Feed, Inches per Min.	Power Consumption at 1 Hp. per Cu.In. of Metal Removed per Min.
¼	800	1½	0.08
5/16	650	1⅜	0.10
⅜	525	1¼	0.13
½	375	1	0.19
⅝	300	¾	0.23

* Extensive tests have shown this to be a reliable basis for determining power requirements.

The free-running speed will be about twice that given in the above table except where the tool is designed for a lower cutting speed. The capacity of the motor should appear on the name plate in amperes, and the motor should be capable of carrying this load for thirty minutes without overheating. As far as the motor is concerned the temperature reached in this time may be 50 deg. C. (90 deg. F.) above the room temperature.

Despite Speed, Forced Draft Cools Coils

High armature speed gives an excellent opportunity to make use of forced ventilation, and with a well-designed fan the cooling system is highly efficient. The nature of the work is such that full capacity of the motor is never required continuously for thirty minutes. Consequently if the tool will stand this test, no objectionable heating will result in actual practice.

The ampere capacity of these tools is not always given, in which case a test by competent engineers is the only method of checking their power and heating characteristics. The efficiency at a load which reduces the speed to about the figure given in the table above will vary between 40 and 60 per cent, according to size and design. An approximate check may be made on this basis.

In checking the performance of a universal motor the test always should be made on 60-cycle alternating current. The characteristics of a motor of this type are similar to those of a direct-current series machine, but the construction is changed to permit operation on alternating current. These structural differences include lamination of the magnetic circuit of the field—often a slotted field design with the windings distributed in slots—a high ratio of armature to field turns, and a large displacement of the brushes from neutral position.

These special features are all used to reduce the reaction of the windings and maintain the power on alternating current. The power developed with alternating current will always be less than that obtained with the same direct-current input.

Low-Frequency Is To Be Preferred

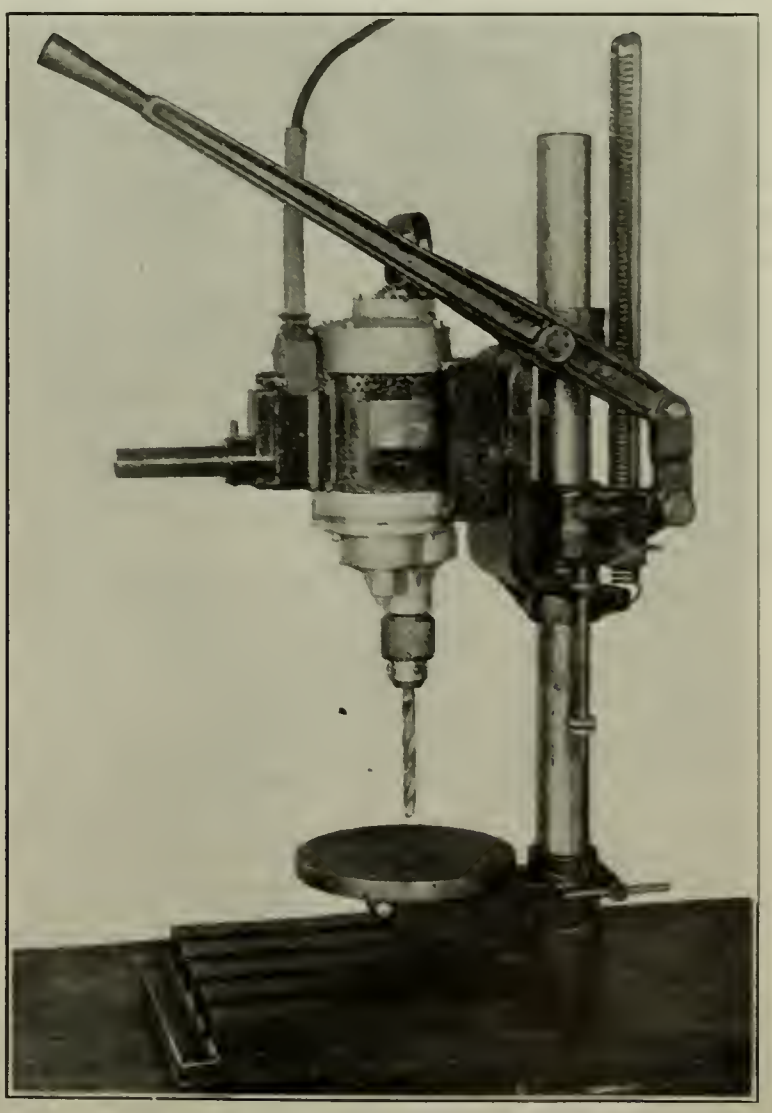
Manufacturers of this type of motor usually do not recommend them for use on frequencies higher than 60 cycles because the efficiency falls rapidly with increasing frequency. The lower the frequency the more nearly do the characteristics on alternating and direct current coincide. It will be found that when the tool is operated on high-frequency circuits the power will be deficient and the heating excessive.

Brushes furnished for the motors of portable drills have been chosen as the result of exhaustive tests made by the maker who is seeking to obtain those that will give the best performance and have the longest life. It is therefore imperative that only such brushes be used as are furnished by the manufacturer for the particular machine. A brush made from any material at hand may ruin the motor. Some of the effects likely to occur from substituting unsuitable brushes are overheating from friction, sparking or high resistance.

If the material is too hard the friction and wear on the commutator are excessive, and if it is too soft the mica may wear high and bring on chattering and destructive sparking. If the resistance of the brush is too low, excessive short-circuit current will cause sparking and overheating of the commutator and armature coils; and if the resistance is too high the normal current may overheat the brush. The life of the brushes cannot be stated in ordinary terms because of the great variation in the use of the tool. However, it is wise to examine the brushes before the expiration of 200 hours of actual running. It also will be a help to clean the commutator with fine sandpaper several times during the life of the brush. The tension on the brushes should be uniform and just sufficient to prevent arcing on a smooth commutator. A tension of at least 4 lb. per square inch of brush contact usually is necessary. Should the commutator become rough the armature should be removed and the commutator refinished by taking a light cut in a lathe.

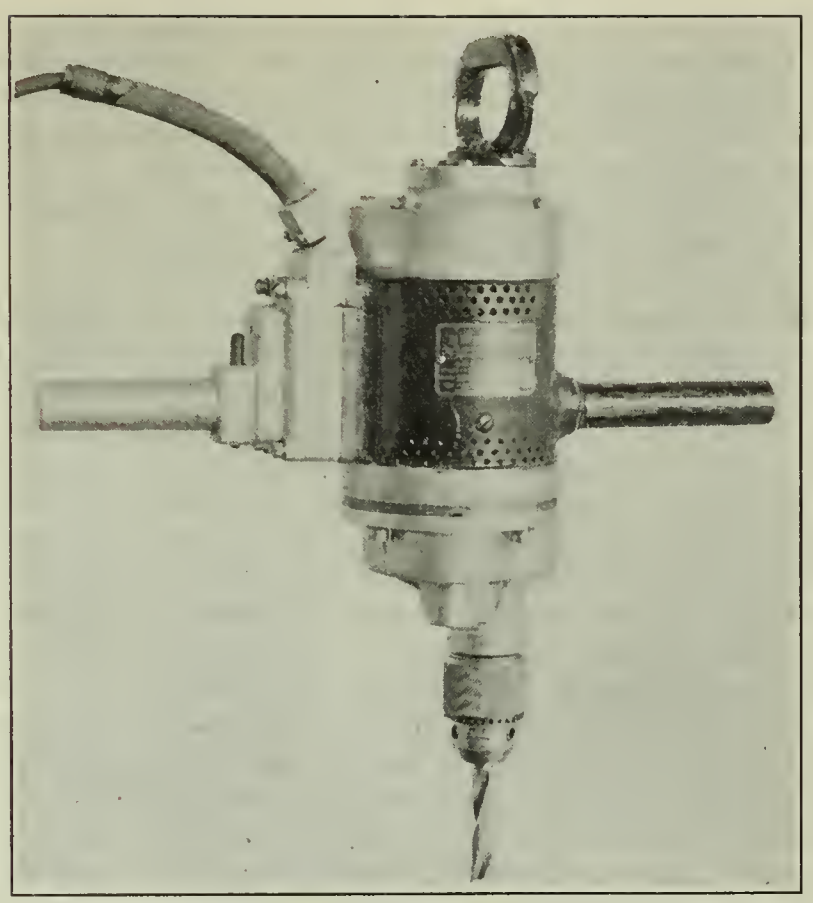
Well-Built Tool Should Never Stall

All well-built tools of this type have enough power to absolutely prevent stalling except under accidental circumstances. When this occurs through the bending of a drill or other mishap the power should be cut off as soon as possible. Momentary stalling of this kind will



PORTABLE MACHINE MOUNTED ON DRILL PRESS

In the drilling of steel with a ½-in. machine the motor nearly always will run without stalling so long as the pressure on the drill is kept at or below 500 lb.



PORTABLE DRILL WITH TWO ROD HANDLES

A grip handle also is provided at the rear of the drill. The tool when drilling in green wood should be cleaned frequently if the hole is to be driven to a depth many times greater than the diameter.

not injure a well-designed machine. The part most liable to failure under such circumstance is the switch, which must then act as a circuit breaker. Quick break and a generous contact area are highly important requirements. Some tools are equipped with fuses for such emergencies, but as the operator, not finding a fuse immediately available, usually replaces them with copper wire, their practical value is rather doubtful.

Sometimes when drilling sheet metal the lip of the drill will catch as it breaks through the metal, thus stalling the tool. This trouble can be prevented by grinding the drill especially for this work. The angle of the cutting edges should be reduced to give a longer point; 59 deg. is the standard angle. The acute angle of the cutting edge should be ground off slightly to give the same result as would a smaller angle of the spiral flute to the axis of the drill. This latter procedure alone also may help to prevent "grabbing" in soft material and will allow of high feed pressures without causing chipping of the cutting edges in extremely hard material.

In Thick Wood Ship Auger Must Be Used

For drilling in wood the type of drill to be employed will depend upon the condition and kind of material and the depth of the hole. Deep holes require the ship auger. When drilling green wood the hole should be cleared several times if its depth is many times the diameter. In soft, dry wood the speed of cut and size of hole that can be drilled with these little tools is amazing. This matter of choosing and conditioning the drill is an important one and can best be solved by the mechanic on the job.

The better class of tools are lubricated with grease which gives maximum cleanliness with minimum attention. It is good practice to replenish the grease supply as often as the tool is cleaned or inspected. This, on account of brush wear, should not be less than once in each 200 hours of service.

All reliable machines have ball-bearing armatures, which will operate without load at from 10,000 to 18,000 r.p.m. With a poor bearing this would result in destructive vibration. On the slow-speed members, such as the compound gear shaft and chuck spindle, plain bronze bearings of ample size have given satisfactory service but a tendency exists toward the use of ball bearings on these members as well. The danger here encountered is that of overloading through lack of room wherein to install a bearing of sufficient capacity. The thrust is an important item, and must be taken up by a ball bearing of the direct thrust type or one of the angular contact type capable of carrying both longitudinal and radial loads.

Inspect Your Armature Frequently

The armature is the most delicate part of any machine of this type and it is the first member to be examined should the machine show signs of distress. In many intances a motor may be completely burned out because signs of trouble are neglected. If severe sparking appears at the armature the tool should be taken out of service at once and sent to a competent electrician for inspection.

These machines, of course, are subject to the ordinary diseases of electric motors, and these may be detected in the usual way. If grounds have developed they may be discovered with the aid of the magneto ringer. If they cannot be detected in the armature, the field, switch and cable connections should be tested. An open circuit in the armature will be shown by burning between the commutator bars to which the open coil is connected. A "short" within a coil will burn out the shorted turns. If there is a "short" between commutator bars it will overheat the bars thus shorted.

A "short" between bars may sometimes be repaired, if discovered before the coil is burned, by removing the foreign substance causing it, but an open or shorted coil requires a rewind. If the armature is built with open slots and form-wound coils, the repair in many instances can be made economically by the average repair man provided he purchases the coils from the maker. If the armature is built with semi-closed slots it probably will be wise to return it to the maker for rewind. The maker's guarantee of correct rewinding should not be overlooked, hence it is strongly recommended that the maker be asked to make all difficult repairs or those more or less out of the ordinary.

Fields and Gears Rarely Give Trouble

The fields are not apt to give trouble, but occasionally they are burned out by operating the tool after the armature has failed. A shorted coil will cause overspeed or flashing when the switch is closed. Rewinding the field coils is simple, but the coil must be kept within the original dimensions and must be properly fastened into position. The best tools have windings treated with an impregnating varnish by an elaborate process. This furnishes an excellent reason why a rewind by the maker is preferable to one made locally. This is perhaps more important in the repair of the armature than in that of the field.

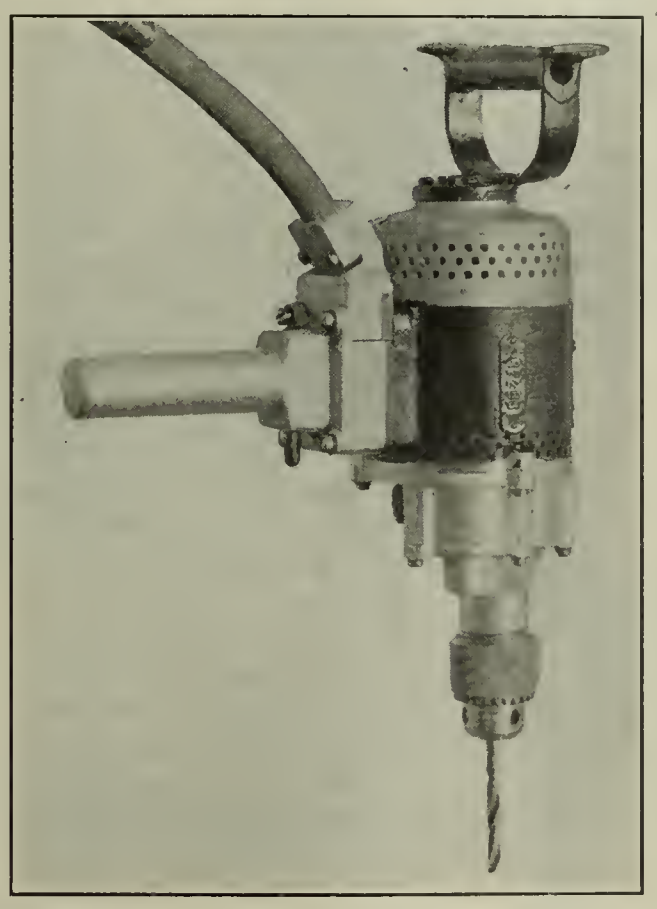
The gearing on the better class of these machines seldom gives trouble. These parts, however, are subject to wear and should be made so as to be renewable with a minimum of trouble and expense. A removable armature pinion is a highly valuable detail, as it permits renewal of this part without the cost of a new shaft and a rewind, which are required when the pinion is made

integral with the shaft. This objection becomes still more forcible where the commutator is built directly upon the shaft.

Cable Should Be Suspended and Balanced

The cable connection often is abused. It is sometimes used to drag the tool around, and trucks are run over it. Some types of cable are better than others but all require reasonable consideration, and, where the drill is used in one position only, as on production work, both it and the cable should be suspended from above and counterweighted. The machine is then always accessible and the cable is not abused. Some tools are provided with terminal screws, by which a new cable can be attached without the aid of a soldering iron.

The weight of a portable electric drill is an important consideration, but the lightest type of tool may prove



LIGHTER DRILL WITH ROD AND GRIP HANDLE

Cable is shown going upward at a good angle. A suspended cable will have a longer life and give better service than one which is allowed to drag along the ground.

difficult to maintain. Weight is reduced by increasing the armature speed, by the use of aluminum housings and by employing the best steels properly treated. An excessive armature speed will shorten the life of the tool, and the only assurance of proper design and material in the gear train is the reputation of the maker. It also should be borne in mind that the aluminum housings may be crushed by pounding or by dropping the tool. Caution of this kind may be unnecessary, but it is appalling how much abuse of this sort some tools receive.

Portable electric drills as manufactured by the leaders in this industry should not be classed with vacuum cleaners and other domestic appliances. They are built to machine-tool accuracy, of the finest materials, distributed in a manner that gives the purchaser much more for his money than is possible in the domestic appliances mentioned. They are built by mechanics for the use of mechanics; they are practical, rugged machines that will save many hours in miscellaneous drilling operations and are indispensable in production where the drill must be taken to the work.

How to Install a Tipple Scale So That It Will Not Fail to Give Correct Weight

By E. C. Dodge
Denver, Col.

EVER since the inauguration of the custom of placing scales on the tipple so as to obtain the weight of the coal as it came from the mine, weighing has made more or less trouble both for the miner and the operator. The causes leading to discrepancies in weight are various and are often quite difficult of detection. Consequently I will enumerate only a few of the major reasons as I have found them.

When tipple scales were first installed back in the nineties, most of them were set up hurriedly and almost any kind of construction was resorted to in order to get the scale in place as soon as possible without delaying production. In many instances these scales were installed at night or on Sundays or holidays.

As the designer of the tipple had made no provision for the installation of scales, sometimes it was quite a problem to place them at a point convenient to the shaft without making serious changes in the timber work. In most cases such alterations were left to the scale men. Under the circumstances many scales were not properly installed, and it was only a short time until they began to give trouble. Being placed on the same framework as that which supported the shaker screens, they naturally were subject to more or less vibration, which as the timbers became older and softer grew worse and worse, to the detriment of the original accuracy of the weighing device.

In many instances even today the scale is mounted upon the same timbers that support the shaker screens. In nearly every case of this kind trouble develops with the weighing apparatus. Vibration causes the bearings of the scale to shift, and the weights indicated will vary in consequence. It also has a tendency to loosen bolts. When these are slack the levers are likely to settle out of level and this causes undue friction on the knife edges, thus introducing another cause for variations in weighing.

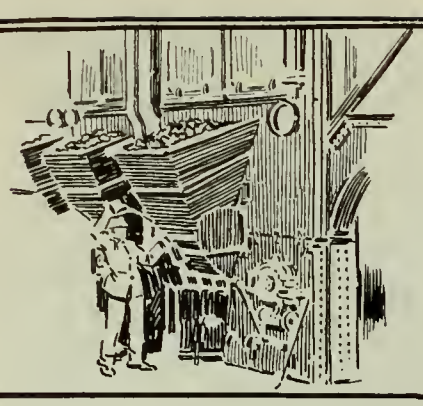
Most of these troubles can be overcome by installing the scale on a foundation entirely independent of the tipple structure. Sometimes this precaution may appear to be an extra expense but it is easy to perceive the benefits that may be derived by having correct weights all the time, with everybody satisfied.

The time to install a tipple scale is when the tipple is being built. The designer can then plan the supports for the scale so that they will not be interfered with in any way by the shaker-screen construction.

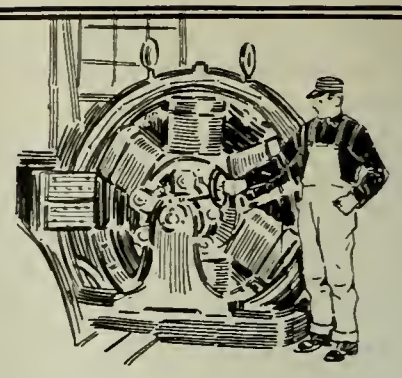
Cost of American, European and Asiatic Labor Compared

INFORMATION showing the comparative labor cost in America and in foreign countries was laid before the Ways and Means Committee of the House in the recent hearings on the Fordney emergency tariff bill, which was vetoed. The figures were presented by the representative of a prominent American industry, who has investigated labor costs at home and abroad, and he finds the following average costs of labor per hour (in every case the reckoning is in terms of gold and the comparison is between comparable production groups):

United States	70c. per hour	Great Britain	18c. per hour
France	15c. per hour	Germany	6c. per hour
		Japan	4c. @ 5c. per hour



Power Equipment



Seven Recent Changes in the Stirling Boiler

Front and Rear Steam Drums Raised, the Latter Being Protected by a Baffle—Steam Now Taken from Rear Drum—Superheater Chamber Enlarged—Bonding Tile Used in Front Wall—Present Standardization Has Reduced Number of Types from Fourteen to Three

DURING the last fifteen years many changes have been made in the Stirling boiler. Some of these have been intended to meet special and unusual operating conditions, while others have been improvements in some detail of design and construction. The principal improvements in design over the boiler hitherto offered are as follows:

(1) All steam drums are now placed on the same level, the steam being taken from the rear steam drum.

All tubes between the drums through which steam and water circulate are distributed on the basis of the experience gained in numerous tests made under service conditions, the necessary degree of restriction to the flow of steam and water which they give being such that water in which the impurities have become highly concentrated can be handled without difficulty from priming. The time in which impurities in the water will become objectionably concentrated depends on the rate at which steam is made, and in the old form of boiler some feed water that at low capacity could be readily handled would begin to prime in a troublesome degree unless an unusual and wasteful quantity of water was blown off.

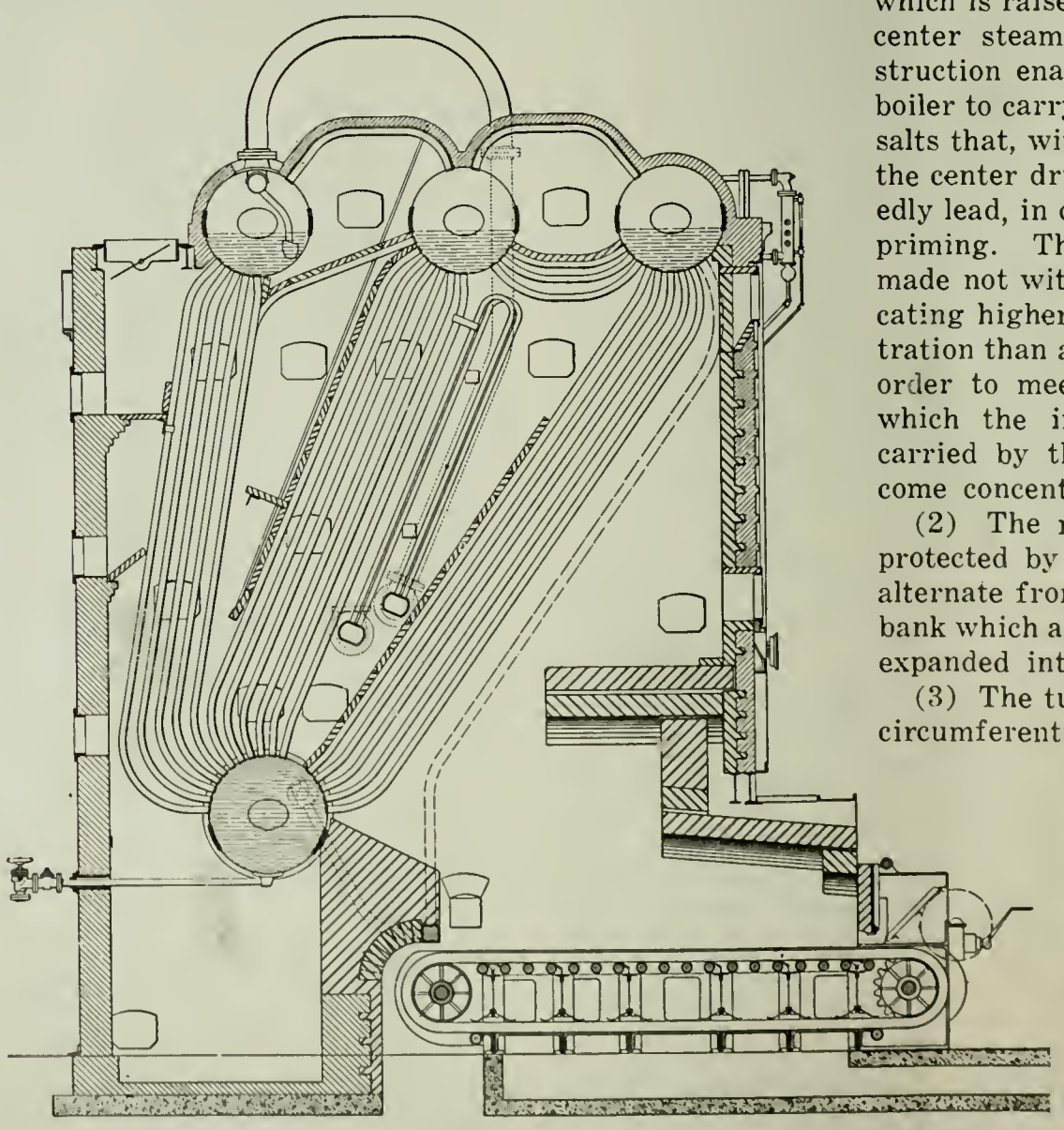


FIG. 1. SECTION THROUGH ONE OF THE NEW TYPES OF STIRLING BOILER

Note that the steam drums are level, that steam comes from rear drum and that the front and center banks of tubes are separated by a large space on the periphery of the mud drum. Note also the construction of the front wall.

Many experiments were made to overcome priming troubles under the peculiar conditions sometimes encountered, with the result that in the Stirling boiler, as now designed, the steam is taken from the rear drum, which is raised to the level of the center steam drum. This construction enables the redesigned boiler to carry a concentration of salts that, with a steam outlet in the center drum, would undoubtedly lead, in certain instances, to priming. The change has been made not with any idea of advocating higher degrees of concentration than are now usual but in order to meet conditions under which the impurities that are carried by the feed rapidly become concentrated.

(2) The rear steam drum is protected by a baffle carried on alternate front tubes of the rear bank which are bent forward and expanded into the center drum.

(3) The tubes are so arranged circumferentially on the mud drum that they give a larger superheater chamber. In the earlier design all tubes were pitched at equal intervals around the mud drum, there being no extra space between the rear tube of the front bank and the front tube of the middle bank. This caused the superheater chamber to be excessively cramped at the lower end, making it difficult and uncomfortable to get at the headers of the superheater.

In the redesigned boiler a space is left between the front and middle banks equal to that hitherto occu-

pied by two tubes. This provides for a greater amount of superheating surface and for higher superheat than was previously obtained, simultaneously making it much easier to get at the superheater headers and handhole caps.

(4) In stoker-fired work, except where the stokers are of a design that permits of their carrying the front boiler wall, this wall is carried on supporting members

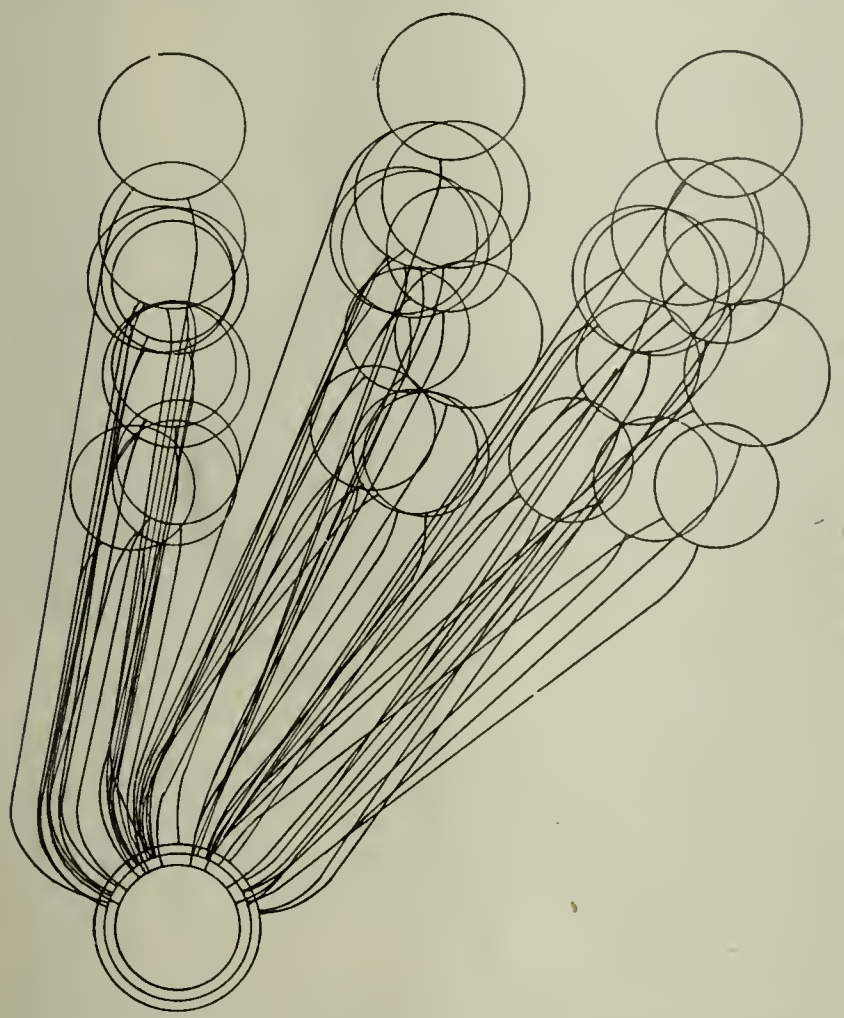


FIG. 2. ROUGH OUTLINE OF THE FOURTEEN OLDER CLASSES OF BOILER

One company at least has taken to heart the lesson that a multiplicity of standards makes for high cost of construction and slow delivery. Fortunately it does not have a track gage and existing equipment to match it (to which new equipment must be fitted) to interfere with efforts at standardization.

furnished as part of the standard boiler equipment. Where this front wall is so carried, a slip joint is used between the front boiler wall and that portion of the wall that is carried on the stoker. These features not only definitely fix the responsibility for the carrying of the front boiler wall but give a construction that may be repaired without taking down the entire front of the setting.

(5) Where the size of the boiler wall is such as to make it advisable, bonding tile with properly designed supporting members is regularly employed. This construction, as proved in operation, successfully overcomes the tendency of the front wall to spring inward. Where necessary it is followed in the side walls also.

(6) In the earlier designs, where battery settings were installed, a three-legged center support was standard in the division wall. In the redesigned boiler the center support has only two vertical members, doing away with the objection sometimes raised to the third or incased leg.

(7) In battery settings special means of access for inspection of the inside mud-drum heads is standard in the redesigned boiler.

The studies preliminary to the redesigning of the Stirling boiler naturally led to a consideration of the differences between classes and sizes of boilers. This has resulted in an entirely new classification in which the variation between the classes and sizes is simple, logical and progressive. The gradations between classes is clearly indicated by Fig. 3. Compare this with the classes hitherto used, as shown in Fig. 2.

While the purchaser of steam boilers is not primarily interested in methods of manufacture, provided proper

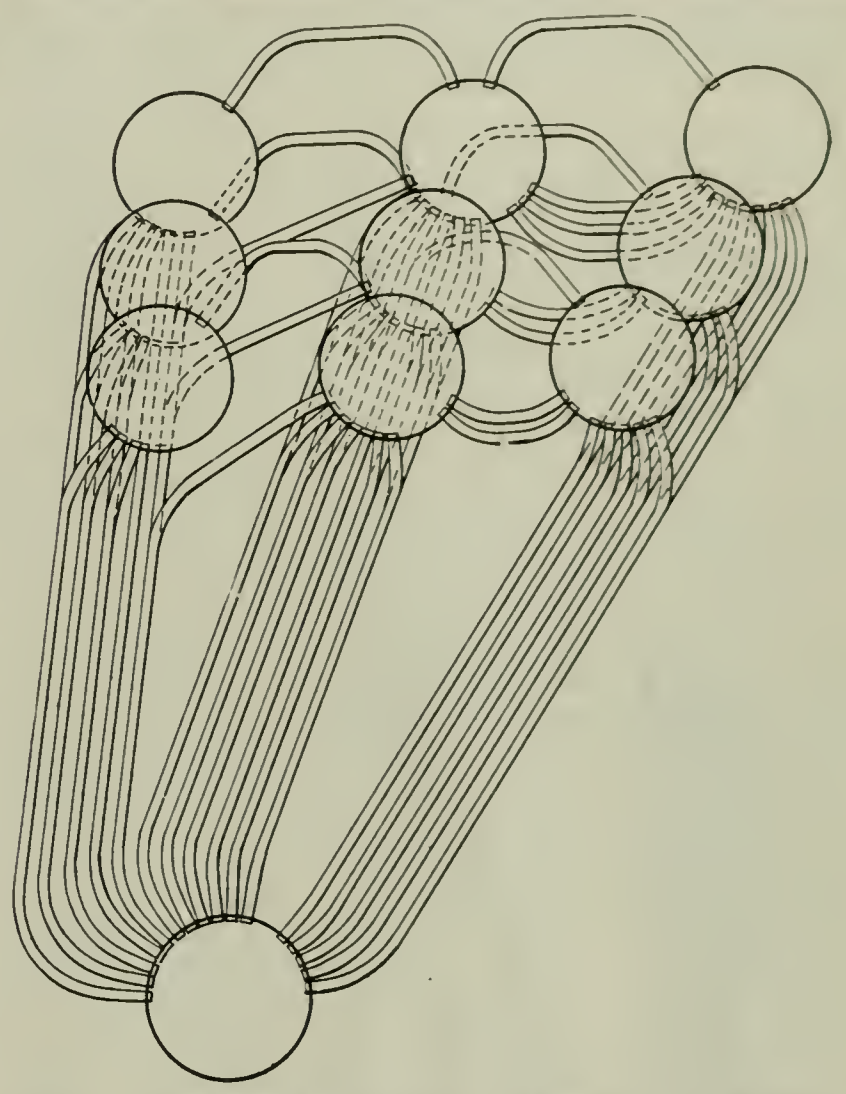


FIG. 3. SOMEWHAT FULLER OUTLINE OF PRESENT CLASSES OF BOILER

Three classes have replaced fourteen. Note that the larger boiler has three water tubes between the front and the middle steam drums and the two smaller sizes have only two. In all boilers alternate front tubes of the rear bank are expanded into the middle steam drum.

construction is followed, it is, however, the purchaser who ultimately receives the benefit of any improvement in manufacturing methods. The reclassification undoubtedly will lead to reduction in manufacturing cost. Comparison between classes as hitherto standard and as now reclassified leaves no question as to which leads in simplicity of manufacture.

With reclassification the manufacturing costs will be reduced as the quantity of material that must be carried will be lowered; fewer standards will be in use, more of the parts will be interchangeable and the manufacturer will be able to build more nearly for stock. This will make the output more flexible and result in prompter shipments.

While the manufacturers of this boiler will offer previous standards to complete plants in which such standards were installed, it is the intention in all new work to offer the redesigned and reclassified boilers. A side view of one of the new classes of Stirling boilers with superheater and chain-grate stoker, is shown in Fig. 1.

FEBRUARY EXPORTS through the Port of New York were 5,133 tons of anthracite, 8,037 tons of bituminous, and 809 tons of coke. In the corresponding month of 1920 exports were, 2,933 tons of anthracite, 2,858 tons of bituminous, and 1,926 tons of coke.

Recorder Indicates in Boiler Room and Office What Excess of Air Is Admitted to Fire

HIGH production costs are causing coal operators and other power-plant owners to utilize all available means of reducing heat wastes. Perhaps coal-mine plants waste more heat than any others. As is well known, the greatest single heat loss in boiler operation is incurred through hot gas escaping up the chimney. This, in the average plant, frequently represents 35 per cent or more of the heat content of the coal. Much of this loss arises from an undue supply of air. Although a certain amount of excess air is necessarily admitted to the furnace in order to obtain complete combustion of the fuel, a large excess results in a loss that is unnecessarily heavy. Continuous analysis and records of the carbon-dioxide content of the flue gases enable those responsible for fuel consumption so to regulate the air supply to the furnace as to obtain the best results. Frequently such records also reveal other causes of boiler inefficiency, so that wasteful practices may be "nipped in the bud."

The Uehling Instrument Co., of 71 Broadway, New York City, has recently introduced a new model of its CO_2 recording equipment. This embodies certain improvements over preceding models, chief among which are quick action, greater accessibility, increased simplicity and the economy effected by combining in one instrument the means for determining simultaneously the carbon-dioxide contents of the flue gases from any number of boilers up to six.

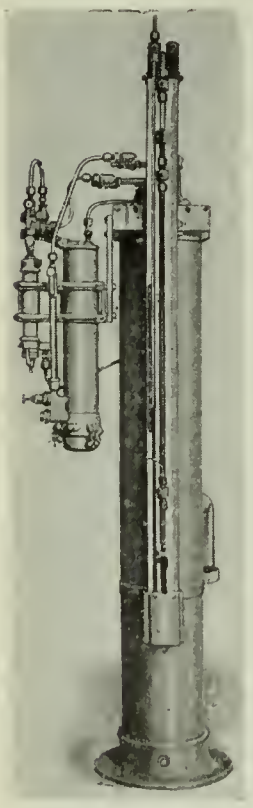


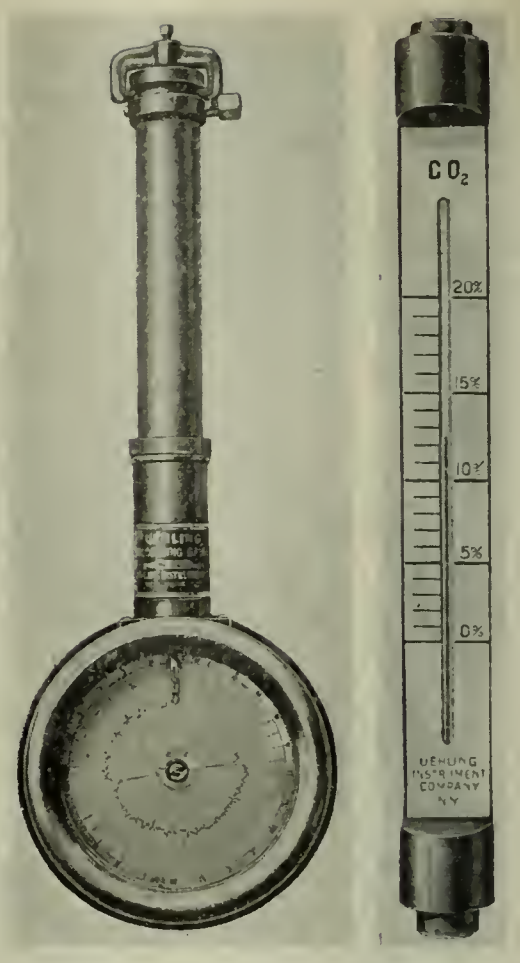
FIG. 1

A single-unit equipment for one boiler consists of three elements, namely, the CO_2 meter proper (Fig. 1), the recorder (Fig. 2), and a boiler front indicator (Fig. 3). The meter may be placed at any convenient point. Its function is to actuate the indicator on the boiler front and to operate the recorder which usually is placed in the engineer's office.

The flue gas is analyzed in the meter in a manner that can be understood by reference to Fig. 4. Flue gas is caused by means of an aspirator to flow continuously, at first through the aperture *A* and then through the aperture *B*. The volume of gas is reduced between the two apertures by the absorption of the carbon dioxide in the gas, and this causes the pressure existing in chamber *C* to be lower than that which the aspirator would normally cause. This pressure is transmitted to the recorder and indicator which are calibrated to register the decrease in pressure in terms of the carbon-dioxide content of the flue gas.

The meter consists essentially of a cylindrical regulator on which is mounted the analyzing mechanism. This regulator maintains constant the suction created by the aspirator, thereby eliminating all changes in pressure between apertures *A* and *B* except that arising from the absorption of carbon dioxide. This change is registered by the indicator and recorder.

Suction created in chamber *C* actuates the recorder and indicator instantaneously and continuously. In the new model the travel of the gas from the boiler to the analyzing chamber is hastened by utilizing the exhaust from the main aspirator in an auxiliary aspirator for drawing the gas from the boiler up to the analyzing instrument. The main aspirator then draws the gas sample through the absorption chamber. The soot and dust are removed by a preliminary filter before the flue gas reaches the apparatus. This filter may be conveniently cleaned in a few seconds without interrupting operations. Multiple equipments combined in a single outfit provide means for analyzing, independently and continuously, the flue gas from two or more boilers up to and including six. As these meters are built on the unit or sectional plan, additions may be made to them from time to time. Thus a single-unit outfit might be purchased in the beginning and additional units added as other boilers are installed. With the multiple-unit machine each boiler is equipped with its own recorder, its own indicator on the boiler front, its own preliminary filter and absorbent chamber, together with all necessary appurtenances. The aspirator and other parts of the master unit serve all boilers in common.



FIGS. 2 AND 3

The recorder makes a continuous record of the carbon-dioxide content of the flue gas, furnishing what might be termed an "autographic history" of the operation of each boiler throughout an entire day. This indicates when the fires receive attention, when and for how long the furnace doors are open, how often the stoker feed or thickness of fuel bed are changed, when the fires are broken or cleaned, the effects of damper regulation and of methods of firing.

The boiler-front indicator enables the fireman to know whether he is supplying the amount of air which will consume the fuel with the least possible loss of heat in the chimney gases. Chemical solutions are not employed, their place being taken by a dry absorbent carton readily removed and replaced.

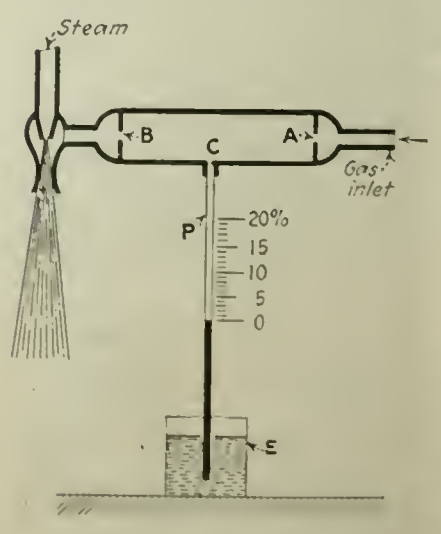


FIG. 4

These CO_2 recorders are designed primarily for service in the boiler room rather than for use in the laboratory. Accordingly all parts are made readily accessible. The apparatus may be combined with Uehling pyrometers to give upon the same chart continuous records of both the carbon-dioxide content and the temperature of the stack.

Problems of Operating Men

Edited by James T. Beard

Shelter Holes on Haulage Roads

Drawing Attention to Inadequacy of Many Mine Laws Providing for the Use of Roomnecks as Shelter Holes. Used as Shelter Holes, They Are a Menace to Safety

IN A LONG experience as mine official in the bituminous region of Pennsylvania, it has been my good fortune to often hear discussed that section of our mining law which permits the use of roomnecks as shelter holes on haulage roads. The conclusion has generally been that this provision of the law is wholly inadequate for safety.

The Bituminous Mine Law of Pennsylvania, Art. 4, Sec. 8, reads:

> The mine foreman shall see that, on all animal and mechanical hauling roads, holes for shelter shall be cut into the strata not less than 2½ ft. deep and 4 ft. wide and level with the road, at least every 30 yd., and kept whitewashed and clear of obstruction; except in entries from which rooms are driven at regular intervals not exceeding 90 ft.; provided that the entrance to each room be kept clear of obstruction for a distance of 3 ft.
>
> On all main haulage roads on which hauling is done by machinery, shelter holes shall be cut into the strata not less than 2½ ft. deep and at least 4 ft. wide and level with the road and not more than 15 yd. apart; and said shelter holes shall be kept whitewashed and clear of obstruction; except in entries from which rooms are opened at regular intervals not exceeding 45 ft.; provided that the entrance to such rooms be kept clear of obstruction for a distance of 3 ft.

To my mind, it is not a safe proceeding to consider a roomneck as a shelter hole. There are several reasons why the use of roomnecks for this purpose is not safe. While rooms are being driven there is no certainty that the mouth of the room will be free from obstruction. A loaded car may be standing there just at the time when the space is most needed for protection.

Roomnecks Used as Refuge Holes Expose Miners to Danger

For the sake of illustration, let us suppose there are a number of rooms working on a main haulage road and a miner has forgotten to change the latches leading to his room. Another miner coming down the entry hears an approaching trip and steps into this roomneck believing he is safe while the trip is passing.

The motor is pushing a few cars into this entry and the motorman knows nothing of the latches being set for the room. As a consequence, the trip of cars is pushed into the roomneck and the man waiting there is either injured or killed.

Again, suppose when a man has stepped into a roomneck to allow a trip to pass him safely and is caught by a car that has, at that moment, gotten away from the miner working at the head of the room. This is not an unheard of occurrence.

Such Accidents Not Uncommonly Happen in Our Mines

Instances such as these have come under my personal observation, at different times, and they convince me that roomnecks are not safe places to be used as shelter holes on haulways. But, the way the law reads it is unnecessary to provide other places of refuge on roads where the rooms are driven at regular distances apart, not exceeding the distance named in the law for refuge holes.

In my opinion, where rooms are turned off haulage roads there should always be provided shelter holes cut in the rib between adjoining rooms. On roads where mechanical haulage is used, the distance between these holes should not exceed 45 ft.; and on roads where animal power is employed, the distance should not exceed 90 ft. To comply with the law, these holes should be on the clearance side of the entry, opposite to the trolley wire.

Pittsburgh, Pa. Joseph Northover.

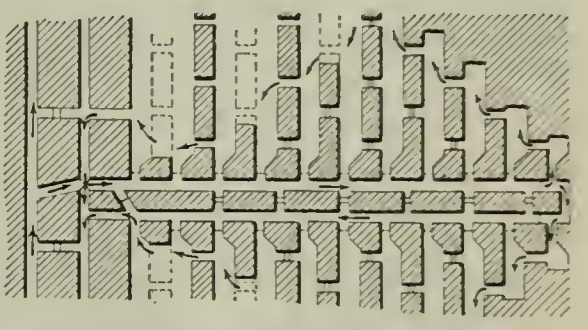
Operator Owns Coal Rights Only

Damage to surface avoided, in the room-and-pillar system of mining, by only taking out each alternate pillar in the rooms.

PERMIT me to suggest what I believe is the best and cheapest way of gaining the largest extraction of coal with the least possible chance of damaging the surface. I am referring to the inquiry of Mining Engineer, *Coal Age*, Feb. 24, p. 369, regarding the working of a 300-acre tract, in the Pittburgh seam lying at a depth ranging from 250 to 300 ft. below the surface. In this instance, the operator owns the coal rights only.

The plan I would adopt, in this case, is the room-and-pillar system of mining. The rooms should be driven on 40-ft. centers and widened out to a width of 20 ft., making the room pillars 20 ft. wide. As shown in the accompanying figure, I would use the advancing method, drawing back the pillars as each room reached the limit.

In order to incur no risks of damage to the surface, I would drive the rooms in pairs, taking out the pillar between the two rooms of each pair, but not removing the pillars between the several pairs of rooms. I have indicated



DRAWING ALTERNATE PILLARS PREVENTS SURFACE DAMAGE

this by the dotted lines in the figure, which show where the pillars are removed.

All rooms should be driven on sights to insure the full thickness of each pillar, and breakthroughs should be made 6 ft. wide. The rooms must be well timbered, using good cap-pieces, or light crossbars over the props for the better support of the roof.

In this system, the conditions being favorable, machines can be used both in driving the rooms and when drawing back the pillars. In taking out the pillars, I would make a cut 6 yd. wide through the pillar, leaving a stump 2 yd. thick on each side of the cut.

When the first cut has been made through a pillar, good cribs should be built in each room at points that will offer good support to the roof. By continuing this plan, most of the coal in each pillar can be removed back to the entry stumps. All timbers, cribs and coal stumps should be left for the support of the roof, in order not to damage the surface. T. K.

Echo, Pa.

ANOTHER LETTER

Working a 300-acre coal tract by adapting the plan of extraction to the increasing depth of cover.

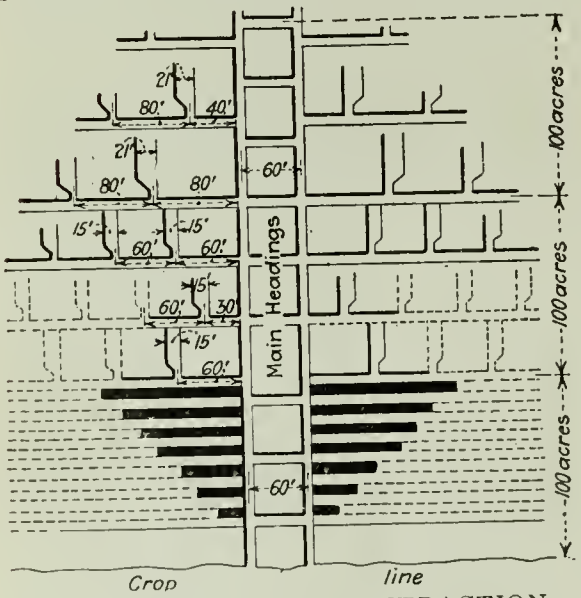
THE inquiry that appeared in *Coal Age*, Feb. 24, p. 369, regarding the working of 300 acres of Pittsburgh coal, describes the proposition as having a cover ranging from zero at the outcrop to 300 ft., in depth, under the hill. The approximate acreage is also given for varying depths of cover.

The statement is made that the operator owns the coal rights only, and he is therefore anxious to avoid any damage being done to the surface in the extraction of the coal. It appears to me that it would be well, in this case, to adapt the plan of working to the increasing depth of cover.

With this idea in mind, I have prepared the accompanying sketch showing the entire tract as being divided into three sections of 100 acres each. This, of course, is only roughly approximate, as the distribution of the acreage is not given. The main entries are driven in from the outcrop, on 60-ft. centers.

Adapting the Plan of Working to Increasing Depth of Cover

As I have indicated in the figure, starting from the outcrop, the coal in the first one hundred acres can be worked best, perhaps, by the pillar-and-stall method of mining, which consists



PROPOSED PLAN OF EXTRACTION

in driving narrow stalls 10 or 12 ft. in width, on 20- or 25-ft. centers, and drawing back the pillar as each stall reaches the limit.

Again, in the second section of one hundred acres, I would drive cross-headings to the right and left of the main entries at distances of, say 50 or 60-yd. apart. In this section, rooms are turned off the cross-headings on 60-ft. centers and driven up 5 yd. in width, to the chain pillar.

In the third section or the remaining one hundred acres, cross-headings are driven to the right and left of the main entries, as before, say at distances of 75 to 80 yd. apart. In this section, the rooms are turned off the cross-headings on 80-ft. centers and driven up 7 yd. in width. In each of the two sections last named, the rooms are driven staggered as shown in the figure.

This plan will leave the remaining coal in good shape and will not disturb the two seams overlying the Pittsburgh coal, which can be taken out at the proper time, later. Also, there will be no damage done to the surface. In my opinion, the adoption of some such plan as this will make it possible to extract from 65 to 75 per cent of the coal and leave the balance in good shape for future operations.

———, Pa. OPERATOR.

Wise Superintendence

Wisdom and tact essential to superintending a mine successfully, particularly where the superintendent's knowledge of underground conditions is limited.

THERE is no doubt in my mind but that the success of a superintendent depends largely on his wisdom in dealing with matters and men in his charge. The superintendent of a mine may be wholly capable in respect to the arrangement and operation of all surface equipment and yet his actual experience underground be limited.

In such event the superintendent will need to use much judgment and tact in dealing with inside affairs. Everything will depend on the confidence he is able to place in his mine foreman. That man should be a practical miner, having a thorough knowledge of what is required in the mine and capable of handling his men and directing the work in his immediate charge.

A Wise Superintendent Can Learn Much from His Foreman

If the superintendent is wise he will listen carefully to any advice and suggestions offered by his foreman in regard to the more successful operation of the inside work. In so doing the super will doubtless learn much that he did not know before. The knowledge will give him a broader view of matters and greatly assist in his improving conditions on the outside.

As time goes on, the superintendent's visits in the mine become more and more frequent. If he has an amiable disposition and is capable of establishing pleasant relations with the men in the mine, he will gain from them much valuable information, besides strengthening his own position as superintendent of the mine.

One of the prime causes of friction between a mine foreman and his superintendent is a disposition on the part of the latter to listen to tittle-tattle brought to his ears by this one or that one. All such gossip should pass unheeded by a superintendent, whose dealings with his foreman should be direct if confidence is to be established.

Three Lines of Action Required To Build Up an Organization

Briefly outlined, there are three distinct lines in which the energies of a successful superintendent must be mainly exerted. These are: 1. To build an up-to-date, worth while organization. 2. To furnish adequate supplies of suitable material to enable the efficient operation of the mine. 3. To supervise wisely the general welfare work and living conditions of all employees.

The building up of an efficient organization will depend primarily on having a foreman who is both trustworthy and capable and who willingly and heartily co-operates with him in every respect. The superintendent must have confidence in the ability of his foreman and confer with him in a way that the foreman will not regard as interfering with his supervision and authority in the mine, which should be absolute.

The influence of a good superintendent is felt throughout the entire organization, from the mine foreman down to the humblest worker, whether that be a car-greaser or a trapperboy. Everyone has learned to regard him not as a meddler, but one who has the best interests of the men at heart and his visits to the mine are hailed with pleasure whenever he goes down.

What Is Required Today

I read with interest the letter of John H. Wiley, *Coal Age*, Feb. 17, p. 321, and will say that his remarks are in line with present-day requirements in coal mining. The superintendent should have a practical knowledge gained by actual work in the mine; but this is not always the case with a good superintendent.

In what I have written it has been my endeavor to emphasize the need of wisdom on the part of a superintendent whose actual underground experience is limited. If I am not mistaken the day is not far distant, however, when mine superintendents will require the same certification that is now demanded of mine foremen and firebosses, as suggested by Mr. Wiley.

If we are to avoid terrible mine catastrophies there must be more technical knowledge and practical mining experience on the part of every mine official. Then such instances as the Hill Farm mine fire, when 31 lives were sacrificed, June 16, 1890, and many other similar disasters will cease. Competent men in charge underground must be given absolute control and supervision of all operations in the mine.

Gans, Pa. ROBERT W. LIGHTBURN.

Working Under Troublesome Roof

Roof falls often caused by pressure of gas in the overlying strata. Holes drilled in the roof relieve this pressure, by draining off the gas. Other suggestions regarding roof troubles.

AVOIDING roof troubles was the subject of an interesting letter by W. H. Luxton, *Coal Age*, Mar.17, p. 498. The difficulties he has mentioned and the means adopted to overcome them remind me of many experiences of my own. In instances, I have known the roof to fall badly while development was still in progress.

I recall working in a mine where the pressure of gas in the overlying strata made the roof heavy and gave much trouble, until we adopted the scheme of drilling holes up in the roof. This drained off the gas and relieved the pressure on the pillars, so that we were not troubled by the same frequent falls as before. We insisted on every miner putting up a hole in the roof each time a new cut was taken out at the face of the coal.

The suggestion of driving wider openings with a view to making the roof more elastic does not appeal to me as a good one. In that connection, Mr. Luxton advises driving entries 12 ft. in

width and standing posts along the side of the track.

While it is true, as he says, the plan avoids the payment of entry yardage and provides space for storing the waste, it must be acknowledged that posts set at the side of the track are an unnecessary hazard on haulage roads. Moreover, the saving of entry yardage may be more than counterbalanced by the cost for timbering.

Take Up Bottom for Headroom Rather Than Break Roof

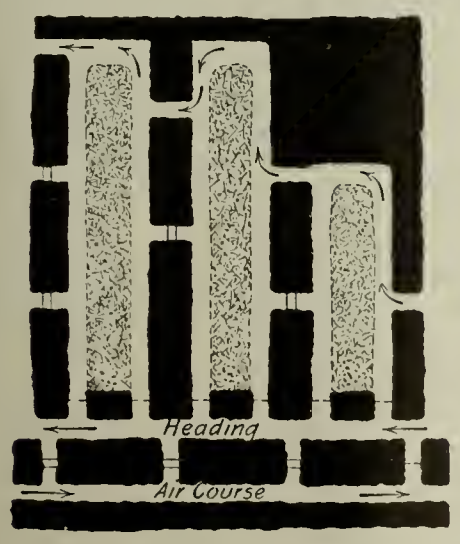
It has always been my practice to avoid breaking the roof wherever that is possible, even though it is necessary to take up bottom rock to gain headroom on the road. I have found it a great advantage, in mining seams where the coal is 8 ft. thick or more, to leave up 2 ft. of roof coal, in the first working, and take this down when drawing back the pillars. It will often avoid the need to double-timber.

The idea suggested of leaving a large percentage of coal in the first working is good whenever mining under troublesome roof. I have followed this plan in most instances, although companies often object to it as being expensive and delaying returns on the investment.

Thus far, I fail to understand what is meant by driving a "caving room" just behind and parallel to the back entry. In an experience of 12 years in the bituminous fields of South Wales and England, such a plan never came to my knowledge.

Wide Openings an Advantage

Speaking of wide openings, a plan that I have found that makes this possible and gives good results is to drive double rooms, after the manner shown in the accompanying figure. The plan gives ample opportunity for the roof to fall over a large area, thereby relieving the pressure on the pillars.



DRIVING DOUBLE ROOMS PROVIDES WIDE OPENINGS DESIRED

As shown in the figure, two roomnecks are turned off the heading and driven narrow for a distance of, say 4 or 5 yd. The intervening pillar is then cut through, forming a wide breast. This is driven forward in the usual manner, the coal being taken out on both the roads and the space between packed with waste.

One difficulty is that, in all narrow-work, little attention is too often given to the roof, until a large area has been developed and there are signs of trouble beginning. I recall an instance where a haulage road was driven 4,000 ft. without a set of timber being placed on the entire road.

Owing to the fact that the coal, in that case, was overlaid with 40 ft. of fireclay, trouble then began to manifest itself by numerous caves on the road. One fall followed another and kept the daymen busy cleaning up the road, till it was finaly decided to double-timber the entries throughout and there was no further trouble.

In the case mentioned, the coal was only 42 in. thick and it was necessary to take up bottom in order to gain the required headroom on the road. In the rooms crossbars were used over the roads, supported on a single post and hitched into the rib. Taking up bottom produced much waste, which was packed between the posts, while another wall was carried parallel to the other rib and about 6 ft. from it. This also proved an advantage in conducting the air to the face of the rooms. The road being carried along the straight rib also proved an advantage when the pillars were being drawn.

Plains, Pa. Richard Bowen.

Inquiries Of General Interest

Centrifugal Pump Formulas

The Selection of a Centrifugal Pump for a Given Work Dependent on the Quantity of Water To Be Discharged Under a Given Head. Careful Proportionment Essential to High Efficiency

Some time ago I recall seeing a number of formulas relating to centrifugal pumps but have since been unable to find them. The subject is one of great interest to me at the present time, and I want to request that this information be given again in the columns of *Coal Age*. I am particularly anxious to ascertain the proper proportionment of the parts and the sizes of pump and column pipe necessary to insure the highest efficiency in operation.

J. Rutherford

Cumberland, B. C., Canada.

The principle of the action of a centrifugal pump is similar to that of a centrifugal fan. The impeller of the pump corresponds to the fan wheel. The rapid rotation of the impeller generates a centrifugal force in the water within the pump, whereby the water is thrown outward from the center to the circumference where it is conducted, by the volute casing, to the discharge portal and enters the column pipe.

The design is such as to convert the energy of the motor, transmitted through the shaft of the impeller and the curved blades, into kinetic energy, with as little loss as possible, which kinetic energy is then imparted to the water discharged in the column pipe. This is accomplished by gradually enlarging the area of passage in the volute of the casing surrounding the impeller and the connection to the column pipe. By that means the velocity of the water is reduced with a corresponding increase of pressure.

Experience has shown that a velocity of 12 ft. per sec., in centrifugal pumping, is required for heads varying from 80 to 90 ft.; and it is assumed that this velocity will vary approximately as the square root of the head. Estimating on this basis, the discharge G (gal. per min.) of a pump having a diameter d (in.) at the discharge portal and operating under a head h (ft.) is given by the equation:

$$G = \frac{60 \times 12 \times 12\ (0.7854\ d^2)}{231} \sqrt{\frac{h}{85}}$$

$$= 3.186\ d^2 \sqrt{h}$$

This gives for the diameter (d) in inches, of the discharge portal of a pump capable of discharging a number of gallons (G) per minute, under a head (h) in feet, the following formula:

$$d = \sqrt{\frac{G}{10\sqrt{h}}}$$

The diameter thus found is that of the discharge portal of the pump and is the number by which the pump is rated. For example, a No. 4 pump has a discharge portal 4 in. in diameter; a No. 5 pump, a discharge portal 5 in. in diameter, etc.

To illustrate, let it be required to find the size of pump necessary to discharge 1,600 gal. of water per minute, under a head of 400 ft. The number of this pump or size of its discharge portal is calculated by substituting the given values in the above formula; thus,

$$d = \sqrt{\frac{1{,}600}{\sqrt{10 \times 400}}} = \frac{40}{\sqrt[4]{4{,}000}}$$

$$= 5.03, \textit{ say } 5 \textit{ in.}$$

A No. 5 pump, therefore, is best adapted for this service. In estimat-

ing the size or number of pump required in a given case, it is important to remember that the highest efficiency is obtained when the required discharge bears a fixed proportion to the square root of the head. The No. 5 pump just estimated for delivering 1,600 gal. per min., under a head of 400 ft., would not give the same efficiency when working under a head of 500 ft., with the same discharge.

Calling the number of a pump N and writing this for d in the last formula given, the discharge (G) for any given head (h) and size of pump (N) is expressed by the formula:

$$G = N^2 \sqrt{10\ h}$$

Substituting in this formula the values large $N = 5$ and $h = 500$, we find for the necessary discharge of a No. 5 pump, under a 500 ft. head, to give the highest efficiency, as follows:

$$G = 5^2 \sqrt{10 \times 500} = 1{,}768$$
gal. per min.

In all pumping practice, it is customary to estimate the diameter of the column pipe for a velocity of 400 ft. per min., which makes the diameter of the pipe, in inches, $\frac{1}{4}$ of the square root of the gallons discharged per minute, as expressed by the formula,

$$d = \tfrac{1}{4} \sqrt{G}$$

Unless careful attention is given to the proportionment of both the pump and the column pipe to the quantity of water handled and the head under which the pump must operate, there will always result a large loss in efficiency.

Examination Questions Answered

Examination, Foremen and Assistant Foremen, Twenty-first Anthracite District

(Selected Questions)

QUESTION—*Why will flame not pass through the gauze of a safety lamp?*

ANSWER—In its passage through the mesh of a gauze, the hot burning gas is cooled by its proximity to the cold metal of the gauze. When this cooling effect is sufficient to reduce the temperature of the burning gas below its point of ignition the flame is extinguished. This effect is greatly assisted by the entering gas being divided into numerous little streamlets, which are more readily cooled. However, as the heat of the burning gas is transferred to the metal of the gauze, the latter is heated and its cooling effect reduced, till finally the metal fails to abstract sufficient heat from the gas to prevent the passage of the flame.

QUESTION — *What produces blackdamp in mines, and what are its injurious effects on the workmen employed therein?*

ANSWER — Blackdamp is a variable mixture of carbon dioxide in the mine air and is produced by the complete combustion of carbonaceous matter in a plentiful supply of air. The chief sources of blackdamp in mines are the burning of lamps, breathing of men, mine fires, explosion of powder, gas or dust, and the slow oxidation of carbon in gob fires, decay of timber, etc. Its effect when breathed for a considerable time is to produce headache, nausea and pains in the back and limbs, followed by suffocation and death.

QUESTION — *How would you use a safety lamp when inspecting for gas; and how could you tell whether or not gas was present?*

ANSWER—Having carefully prepared the lamp before entering the mine and when about to make a test for gas lower the flame of the lamp to little more than one-eighth of an inch above the wick, or until the luminous portion of the flame has practically disappeared. Then, holding the lamp in an upright position, as illustrated in the accompanying figure, raise it cautiously

MAKING A TEST FOR GAS WITH A SAFETY LAMP

toward the roof, watching closely for any appearance of a faint non-luminous cap, or any increase in the height of the flame. In the use of the unbonneted Davy lamp burning a good quality of sperm, lard or cottonseed oil, the failure to detect a flame cap, by an experienced person, will show there is less than 2 per cent of gas present.

QUESTION—*If, in making your morning examination, you discover 10 in. of gas at the face and tailing back along the roof 20 ft., to a point, what would be your duty in such a case?*

ANSWER—If a reliable man is available, station him at the entrance to the place to prevent any one from approaching the face. But if no such person is at hand, bar the entrance with a suitable danger signal to warn anyone against entering the place. Then, having completed the examination of the section in charge, return to the bottom and enter a full report in the book kept for that purpose. This being done, remove the checks of the persons working in those places and the adjoining places where dangers have been found, and report the results of your examination at once to the foreman, giving him the checks retained to insure that no one will go to work in those places found to be unsafe.

QUESTION — *How should a person who has received an electric shock be treated?*

ANSWER — Assuming the person has been removed from contact with the wire, he should be at once taken to a nearby place where he will have good air and every effort made to restore normal breathing. If unconscious, artificial respiration should be promptly applied, preferably by the Schaefer or "prone method." To do this, the man is laid prone on the ground with arms stretched forward above his head and face turned to one side to allow a free passage of breath. The operator, then kneeling astride of the man's thighs, spreads both hands over the small of his back in a manner to bring pressure on the lower short ribs. It is important to see that the tongue is drawn forward in the mouth so as not to obstruct the throat and prevent easy breathing. The operator alternately swings forward and backward, at the rate of normal breathing, or, about 16 times a minute, thereby compressing and again expanding the lungs of the person, in an effort to induce and restore the action of breathing. This should be kept up until there are signs of returning life or the person is pronounced dead by a doctor.

QUESTION — *Why is it safer to approach accumulations of water under high pressure, than accumulations under low pressure?*

ANSWER — The near approach to an accumulation of water under high pressure gives warning by the observed seeping of the water through the pores of the coal and the interstices of the strata. This occurs before there is any danger of the coal giving way and allowing the water to flood the mine. Under a low pressure, no previous warning of this kind is given, and the miner breaks through suddenly into a body of water that may overwhelm him. In any case, when approaching places suspected of containing an accumulation of water or gas, drillholes should be kept from 15 to 20 ft. in advance of the face. No place should be driven more than 10 or 12 ft. in width, only safety lamps should be used and soft wood plugs should be kept ready to be driven into a hole the moment it has tapped the water.

Production Costs of Central Pennsylvania Mine Mount 358 Per Cent in 5 Years

THAT cost of production of coal has mounted greatly in recent years is clearly shown by the accompanying figures giving comparative costs in detail from a large operation in central Pennsylvania:

PRODUCTION COSTS AT A CENTRAL PENNSYLVANIA COAL MINE

Items	Costs in Cents per Gross Ton 1915	1916	1917	1920	Increase 1920 Over 1915 per Cent
Mining	47.815	60.213	86.097	118.081	246.9
Timbering	0.422	1.011	1.062	5.284	1,252.1
Yardage and deadwork	3.333	3.098	4.346	16.657	499.6
Roads	2.927	2.660	2.369	17.601	601.3
Drainage	0.839	1.670	1.418	4.685	558.4
Ventilation	0.336	0.589	0.798	2.395	712.7
Haulage	7.404	8.443	11.668	26.574	358.9
Dumping and shifting	2.800	2.675	4.453	6.426	229.5
Yard expense	.....	0.064	.....	0.099	154.6
Power	5.788	3.592	8.441	29.629	511.9
Mine office	1.328	1.721	2.389	2.324	175.0
Superintendence	1.379	2.025	2.948	9.446	684.9
Sundry	2.138	4.035	3.602	21.195	991.3
Mine overhead	17.499	16.004	39.429	34.023	194.8
General expense	1.617	4.093	2.327	44.865	277.4
Preparation	.....	.....	.....	3.118	.....
Repairs to buildings	.....	.....	.....	0.551	.....
Surveying	.....	.....	.....	0.296	.....
	95.625	111.893	171.347	343.249	358.9
Production in gross tons	131,036	153,537	129,602	144,207	.....

Shutdown of Washington Mines Redounds To Profit of British Columbia Operators

WITH winter over, Seattle fuel dealers have ceased to worry over the shutdown in the western Washington coal mines. Although the stocks of Washington coal that were on hand when the mines closed down have been pretty well exhausted, there has been no shortage, as imports of Utah and British Columbia coal were increased.

The shutdown of the mines, which came when more than 2,000 union mine workers refused to accept an average wage reduction of 24 per cent, has not affected the railroad mines of the Northern Pacific in eastern Washington, which are operating as usual and employing about as many men as are out of work in the commercial mines of the west side counties. The Great Northern is bringing between 300 and 400 tons a day into the state from the mines at Fernil, B. C., in which that road is interested, and the Milwaukee is using in its steam locomotives in the yards at Seattle and Tacoma nearly forty tons of coal a day from Roundup, Mont.

The shutdown in the Washington mines has put a neat little profit into the pockets of British Columbia mine owners, who not only mine their coal with cheap, non-union and Asiatic labor, but also are able to ship their product into the United States free of duty and also free of the 3 per cent war tax on freight payments that domestic coal pays.

Estimated Soft-Coal Output, January and February, 1921; Monthly Average, 1920[b]

(In Thousands of Net Tons)

	Monthly Average, 1920	January, 1921	February, 1921
Pennsylvania	13,583	11,465	8,930
Maryland	338	231	228
West Virginia	7,292	6,229	4,307
Virginia	821	518	408
Eastern Kentucky	1,722	1,712	1,352
Ohio	3,750	2,963	2,232
Michigan	120	125	98
Total	27,626	23,243	17,555
Illinois	7,504	7,147	5,354
Indiana	2,535	2,243	1,834
Western Kentucky	861	856	676
Total	10,900	10,246	7,864
Tennessee	563	454	371
Alabama	1,391	1,338	1,068
Total	1,954	1,792	1,439
North Dakota	64	56	54
Iowa	764	610	506
Missouri	479	433	310
Kansas	558	508	399
Oklahoma	350	230	173
Arkansas	193	157	119
Texas	150	102	81
Total	2,558	2,096	1,642
Colorado	1,008	981	706
Montana	370	279	283
Wyoming	833	694	598
Utah	489	397	309
New Mexico	313	262	203
Total	3,013	2,613	2,099
Washington	313	270	244
Other States (a)	16	10	8
Total	329	280	252
Grand total	46,380	40,270	30,851

(a) Includes Alaska, California, Georgia, Idaho, North Carolina, Oregon, and South Dakota. (b) Estimates by Geological Survey.

Estimated Monthly Production of Soft Coal, 1920, by Groups of States[b]

(In Thousands of Net Tons)

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Pennsylvania	13,706	11,232	13,502	10,854	10,899	12,866	13,523	15,352	14,872	15,687	14,893	15,614	163,000
Maryland	302	216	368	306	302	288	365	375	395	392	393	348	4,050
West Virginia	7,215	5,630	7,279	6,247	6,388	6,979	7,808	8,254	8,172	8,195	7,817	7,516	87,500
Virginia	1,050	756	939	866	863	876	734	719	766	786	760	735	9,850
Eastern Kentucky	1,787	1,522	1,634	1,354	1,534	1,587	1,854	1,871	1,783	1,800	1,953	1,987	20,666
Ohio	3,639	2,950	3,553	2,890	3,272	3,884	3,814	4,098	4,170	4,255	4,218	4,257	45,000
Michigan	155	117	123	123	81	127	115	115	115	117	115	137	1,440
Total	27,854	22,423	27,398	22,640	23,339	26,607	28,213	30,784	30,273	31,232	30,149	30,594	331,506
Illinois	8,276	7,128	8,269	6,128	6,096	7,364	6,059	7,262	7,606	8,487	8,577	8,798	90,050
Indiana	3,023	2,184	2,450	1,684	1,724	2,670	2,120	2,224	2,842	3,112	3,147	3,240	30,420
Western Kentucky	893	761	816	677	768	794	927	936	892	899	977	993	10,333
Total	12,192	10,073	11,535	8,489	8,588	10,828	9,106	10,422	11,340	12,498	12,701	13,031	130,803
Tennessee	651	495	564	490	522	569	567	560	498	596	603	635	6,750
Alabama	1,589	1,282	1,435	1,279	1,375	1,394	1,452	1,348	1,238	1,430	1,453	1,425	16,700
Total	2,240	1,777	1,999	1,769	1,897	1,963	2,019	1,908	1,736	2,026	2,056	2,060	23,450
North Dakota	85	63	59	53	40	43	50	66	62	75	95	79	770
Iowa	880	787	855	723	689	770	650	683	688	817	806	822	9,170
Missouri	565	482	550	417	465	445	455	436	477	485	462	511	5,750
Kansas	698	557	640	495	552	554	458	365	530	629	604	618	6,700
Oklahoma	426	355	345	325	330	330	340	350	317	355	375	352	4,200
Arkansas	219	177	202	147	172	193	206	203	186	207	210	188	2,310
Texas	182	133	128	146	152	169	173	168	122	138	144	145	1,800
Total	3,055	2,554	2,779	2,306	2,400	2,504	2,332	2,271	2,382	2,706	2,696	2,715	30,700
Colorado	902	1,045	743	818	878	1,050	1,056	1,094	1,059	1,078	1,185	1,192	12,100
Montana	467	372	340	326	261	308	333	416	346	420	448	403	4,440
Wyoming	939	795	798	655	678	707	795	882	903	975	955	918	10,000
Utah	302	524	539	350	413	530	575	530	500	506	573	528	5,870
New Mexico	340	293	337	272	266	297	301	316	317	322	345	344	3,750
Total	2,950	3,029	2,757	2,421	2,496	2,892	3,060	3,238	3,125	3,301	3,506	3,385	36,160
Washington	380	311	345	299	257	304	265	273	302	363	331	320	3,750
Other States (a)	18	14	19	14	16	16	14	14	14	18	18	18	193
Grand total	48,689	40,181	46,832	37,939	38,993	45,114	45,009	48,910	49,172	52,144	51,457	52,123	556,563

(a) Includes Alaska, California, Georgia, Idaho, North Carolina, Oregon and South Dakota. (b) Estimates by the Geological Survey.

Roads Move 110,522,086 Tons of Bituminous Coal During Last Quarter of 1920

BITUMINOUS coal mines of the country furnished the Class 1 railroads 110,522,086 tons of revenue freight during the last quarter of 1920. The figures are those of the Interstate Commerce Commission. They form a part of its quarterly statement covering seventy commodities. Incidentally bituminous coal furnishes by far the greatest tonnage of any item on the list. Next in importance as a tonnage producer is the item made up of clay, gravel, sand and stone. Some of the other items in the order of their importance as tonnage producers are as follows: Anthracite coal, iron ore, logs, wheat, refined petroleum, structural iron.

The total tonnage of anthracite coal carried during the quarter covered by the figures was 21,224,244. The coke tonnage was 6,871.501.

The Eastern district furnished 61,624,973 tons of bituminous coal to the railroads to be hauled as revenue freight. The Western district came next with 19,298,817 tons. The Southern district was in third place with 15,458,473 tons. The Pocahontas district furnished 14,139,823 tons.

The coke tonnage was divided as follows: Eastern district, 5,348,549 tons; Pocahontas district, 425,668 tons; Southern district, 539,791 tons; Western district, 557,493 tons.

March Coal Exports Greatly Reduced

BITUMINOUS coal exports in March, 1921, from the United States, as reported by the Bureau of Foreign and Domestic Commerce, amounted to 1,151,840 gross tons, compared with 1,500,540 tons for the corresponding month of 1920.

Exports of anthracite, which go mainly to Canada, declined to 307,940 gross tons from the March, 1920, figure of 419,682 tons. Coke exports dropped 55,435 to 25,061 gross tons.

IMPORTS AND EXPORTS OF COAL AND COKE BY THE UNITED STATES, MARCH, 1921, IN GROSS TONS

IMPORTS	
Coal:	Mar., 1921
Anthracite	1,697
Bituminous	83,100
Imported from:	
Canada	71,883
Japan	9,543
Australia	1,443
Coke	3,853

EXPORTS	
Coal:	Mar., 1921
Anthracite	307,940
Bituminous	1,151,840
Exported to:	
France	37,728
Italy	71,517
Netherlands	26,881
Sweden	6,839
Canada	591,557
Panama	19,657
Mexico	12,687
British West Indies	1,449
Cuba	74,963
Dutch West Indies	1,335
Argentina	68,562
Brazil	52,801
Chile	26,783
Azores and Madeira Islands	1,543
Czecho-Slovakia	6,722
Denmark	6,577
Gibraltar	40,192
Greece	7,610
Spain	800
England	7,683
Bermuda	4,594
British Honduras	199
Guatemala	1,046
Honduras	1,322
Colombia	1,451
Ecuador	2,376
French Africa	8,130
Egypt	68,748
Other countries	88
Coke	25,061

Development Lags in Eastern Kentucky

WHILE there have been a few new coal companies formed in eastern Kentucky during the past few months and there is talk of developments, reports from the field show that about the only new work in evidence is the finishing up of work already started. Some land deals are being made, but there is little new development work looking toward early production of coal.

Although many mines have been idle or only working part time, necessary repairs are about all that has been undertaken, due to uncertainty concerning future markets, high costs of machinery and materials, and the fact that the larger companies have not much hope of operating their plants to present capacity basis, and the small mines and wagon mines will not risk much in improvement.

The situation in eastern Kentucky is a peculiar one, in that increased production capacity wouldn't help the operator much even if he could obtain business, because he can get it only when everyone else is able to obtain production, and under such conditions there is either a shortage of cars, due to actual scarcity, or else the obsolete coal-carrying lines of eastern Kentucky are not equal to handling the tonnage offered by the shippers. The Hazard lines are totally unable to handle capacity production of that field, and have not been able to handle it for some years. The situation in the Harlan field is not much better. Of course, large capacity means larger car allotment, which would aid some in time of good demand.

The principal companies are building practically no new miners' homes or buildings of any kind, and are making few changes of interest. C. L. Ryley, Lexington, Ky., of the Happy Coal Co. and No. 4 Superior Coal Co., has been in the market for equipment for some of his new mine operations. The Bailey Ferguson Coal Co., Prestonburg, Ky., is planning to buy full equipment for a 1,500 acre coal land development, including cars, motors, mining machinery, boilers, engines, fans, screens, tipples, etc. The Ryley interests, of Lexington, contemplate some development, and have been asking for quotations on necessary machinery.

As a whole development work in eastern Kentucky this year will be largely in the line of railroad work. Several big improvements are planned by the Louisville & Nashville and there are some short railroad lines in process of formation to aid in handling increased tonnage and make better connections, some of these lines tapping excellent coal areas.

Temporary Anthracite Rates in New England Pending Final Readjustment

PENDING final determination of the question of readjustment of rates on anthracite coal to points in New England, the Coal and Coke Committee of Trunk Line Territory has announced that as a temporary expedient new rates will be issued to various points on the Boston & Albany R.R. and Boston & Maine R.R., effective May 20, and to points on the New York, New Haven & Hartford R.R. effective on June 1.

Hearings on the proposed adjustment of rates were held in New York on Feb. 3 and in Boston on March 3.

The rates to Boston, East Boston, Chelsea, Everett, East Cambridge, Cambridge, Brookline, Brighton and Cambridgeport on the Boston & Albany R.R. will be as follows:

From	Prepared Sizes	Pea	Buckwheat No. 1	Buckwheat No. 2 and Smaller
Delaware & Hudson Co.	$4.62	$4.20	$3.78	$3.78
N. Y. O. & W. Ry.	4.76	4.20	3.78	3.78
Erie R.R.	4.76	4.62	4.62	4.62
Penna. R.R.	5.74	5.46	5.46	5.46
L. & N. E. R.R.	4.76	4.76	4.76	4.76
C. R.R. of N. J.	4.76	4.76	4.76	4.76
Lehigh Valley R.R.	4.76	4.76	4.76	4.76
Phila. & Reading Ry.	4.76	4.76	4.76	4.48

To Boston, Chelsea, Everett and Cambridge on the Boston & Maine R.R. from the Delaware & Hudson Co. the rate on prepared sizes will be $4.62; pea, $4.34; buckwheat No. 1, $4.06 and buckwheat No. 2 and smaller, $3.78. There will be no change in rates of other originating lines.

From the Delaware & Hudson Co. to Worcester, Ware, Gilbertville and Bondsville on the Boston & Maine, the rate on prepared sizes will be $4.90; pea, $4.34; buckwheat No. 1, $4.34 and buckwheat No. 2 and smaller, $3.92. There will be no change in rates of other originating lines.

Rates from originating points on the various roads to Boston, via the New York, New Haven & Hartford follow.

	Boston, Mass.			
From	Prepared	Pea	No. 1	No. 24 and Smaller
D. & H. Co.	$4.62	$4.48	$4.48	$3.92
N. Y. O. & W. Ry.	4.62	4.48	4.20	3.64
Erie R.R.	4.62	4.62	4.62	4.62
P. R.R.	4.62	4.62	4.62	4.62
L. & N. E. R.R.	4.62	4.48	4.20	4.06
C. R.R. of N. J.	4.62	4.48	4.20	4.06
L. V. R.R.	4.62	4.48	4.20	4.06
P. & R. Ry.	4.62	4.62	4.62	4.62

THE DEPARTMENT OF AGRICULTURE has requested Congress to appropriate $9,000 for fuel for the balance of the year to July 1. It points out that only $10,000 was appropriated, whereas $19,500 had been estimated for. It states that fuel purchased by it from the Government Fuel Yard in March was at $9.22 a ton, and that for April, May and June it is estimated to cost $8.50 a ton.

I. C. C. Grants Cut in Freight on Lake Coal; Virtually Seasonal Rating; Fruit Shippers May Ask Reduction

By Paul Wooton
Washington Correspondent

BY authorizing the carriers to put into effect reduced rates on Lake coal, the Interstate Commerce Commission has authorized what is in effect a seasonal coal rate. The decision is regarded as being one of the most significant since the priority orders of last autumn. The authorization took the form of special permissions. Such permissions, No. 52,757 and No. 52,761, dated April 27, authorized the carriers participating in the movement of coal to Lake Erie ports for transshipment by water to publish on not less than five days' notice the following provision in their tariff:

"Upon representation of proof to delivering line that coal shipped hereunder has been loaded into vessels at Lake Erie ports specified in this tariff and discharged from vessel at west bank Lake Michigan ports north of the Illinois-Wisconsin State line, to and including Manistique, Mich., or Lake Superior ports west of White Fish Point, Mich., including Port Arthur and Fort William, Ontario, Canada, the rates on coal so delivered will be 28c. per net ton less than the rates on coal for transshipment via Lake as cargo named in this tariff. Protection of such rates to be accomplished by readjustment of charges after presentation of the proof above specified. Expires at midnight on Oct. 31, 1921, unless sooner cancelled, changed or extended."

This order is expected to stimulate the shipment of coal to lower Lake ports. It is expected to be of the greatest advantage to coal operations in Ohio, West Virginia and western Pennsylvania. Shipments from Illinois and Indiana fields to the Northwest probably will be affected adversely. Adjustment of the rates from the Upper Lake ports to interior points still is under discussion. The Louisville & Nashville R.R. asks that the privilege be extended to it.

The matter of adjusting Lake rates has been the subject of conferences since last September. The more recent conferences between Lake coal shippers and railroad officials resulted in an agreement on the part of the carriers to the adjustment, whereupon at a conference with the Commerce Commission it was decided to issue the foregoing order.

It is certain that California fruits and other commodities in need of seasonal reductions will seize upon this as a precedent on which to demand similar reduction.

So far as coal rates are concerned, greatest interest centers on the probable action which will be taken by the industry in Illinois and Indiana.

National Coal Injunction Is Continued; Ruling Delayed

Justice Hitz Orders Submission of Government Brief in 10 Days—Association Allowed Similar Period to Reply

PENDING a study of the legal questions involved in the National Coal Association's injunction suit, the temporary injunction is to remain in effect. A ruling in the matter may be delayed from three to six weeks.

Arguments in the suit began April 25 before Justice Hitz in the Supreme Court of the District of Columbia. The arguments lasted throughout the whole of two days. At the close of the argument Justice Hitz took the case under advisement and suggested that counsel submit briefs. He directed that the government should have ten days within which to file its brief and the National Coal Association ten days additional in which to file its reply.

L: Ert Slack, an Assistant Attorney General, and Charles W. Arth, Assistant U. S. Attorney for the District of Columbia, appeared for the government. Owing to the importance of the case it had been expected that the defendants would be represented by some of the distinguished lawyers attached to the Washington office of the Department of Justice. Major Bullitt of Philadelphia was given permission to intervene in the interest of Colonel D. B. Wentz, who was allowed to become an additional party to it.

Summed up briefly the government contended that the bill of complaint should be dismissed on the ground that it was in effect a suit against the United States. It also was contended that it was an attempt to have a court of equity enjoin a criminal prosecution.

The attorneys for the National Coal Association based their case on the general proposition that their bill of complaint was filed to protect the constitutional rights of the plaintiffs. They contended that all parties accused of a criminal offense, whether they be individuals or corporations, have the constitutional right to a full hearing on the question of probable cause before being compelled to appear in a foreign jurisdiction for trial. So far as a corporation is concerned, it was declared, a court of equity is the only place it can get such a hearing.

It was pointed out that the District of Columbia court by taking jurisdiction will avoid multiplication of proceedings and vexatious litigation that would be involved in separate removal proceedings against Messrs. Wentz, Morrow and Couffer.

Counsel for the National Coal Association also contended that the government officials are acting beyond their authority because they threatened service of process on the National Coal Association not authorized by any act of Congress and because the Sherman Act, on which the indictment is based, was superseded by the Lever Act and is inoperative so far as the coal industry and the acts complained of are concerned. It was further contended by the lawyers for the National Coal Association that this is not a suit to enjoin criminal prosecution, as contended by the government, but one merely to secure to the plaintiffs the constitutional right to a full preliminary hearing on the question of probable cause in the district of their domicile.

Tidewater Coal Exchange Members to Pay Annual Dues of $300

MEMBERS of the Tidewater Coal Exchange, Inc., have been notified that, effective May 1, 1921, they will be obliged to pay annual dues of $300, payable $75 quarterly, in advance, the money so received to be applied toward the total members' portion of the maintenance of the exchange, all members' share of expenses over and above that covered by annual dues to be prorated on a tonnage basis. The resolution providing for the payment of dues was adopted by the Board of Directors at their meeting on April 7, and the Executive Committee at a meeting held on April 21 amended rule 1 of the rules and regulations of the exchange to conform with the resolution adopted by the Board of Directors.

THE ARMY APPROPRIATION BILL for the year beginning July 1, reported to the House by the Appropriations Committee, carries $5,225,000 for fuel for the army and $85,000 for fuel for the West Point Military Academy, with a provision authorizing the War Department to contract for and pay for supplies in advance of availability of appropriations therefor.

Amount and Value of Coal Exports from the United Kingdom During March and First Quarter of 1913, 1920 and 1921

	Quantity (Tons) — March			Value — March		
	1913	1920	1921	1913	1920	1921
Anthracite	216,151	182,216	87,120	£169,245	£544,980	£198,660
Steam	4,144,761	1,952,595	1,436,330	2,911,046	7,708,002	3,109,975
Gas	833,547	176,450	348,626	497,520	698,411	796,387
Household	141,867	8,494	15,317	90,618	12,391	34,097
Other sorts	262,448	86,396	80,685	160,105	286,438	142,758
Totals	5,598,774	2,406,151	1,968,078	£3,828,534	£9,250,222	£4,281,877
	Three Months ended March			Three Months ended March		
	1913	1920	1921	1913	1920	1921
Anthracite	701,516	477,167	309,004	£562,253	£1,391,905	£981,397
Steam	12,609,068	6,907,315	4,010,521	8,752,520	25,651,798	10,345,748
Gas	2,610,246	635,268	850,768	1,533,254	2,308,684	2,231,727
Household	435,454	24,917	28,073	277,493	60,362	71,660
Other sorts	882,725	321,102	198,966	544,430	1,073,322	447,673
Totals	17,239,009	8,365,769	5,397,332	11,669,950	30,486,071	14,078,205

Destination of Coal Exports from United Kingdom, March 1913, 1920 and 1921

	Quantity (Tons) — March		
	1913	1920	1921
Russia	111,338	3,914	.....
Sweden	281,468	160,759	78,853
Norway	201,410	77,249	44,587
Denmark	252,905	106,490	148,599
Germany	615,008	.....	67,732
Netherlands	166,439	9,686	113,713
Belgium	220,687	91,169	10,938
France	1,072,300	1,184,031	437,659
Portugal	88,230	18,011	29,024
Azores and Madeira	7,906	7,071	4,341
Spain	233,147	27,810	127,642
Canary Islands	88,667	35,822	6,916
Italy	841,966	204,290	332,480
Austria-Hungary	118,498	2,953	.....
Greece	49,598	10,988	37,083
Algeria	112,917	70,853	64,623
French West Africa	14,840	20,380	10,919
Portuguese West Africa	16,769	15,984	13,926
Chile	48,076	418	179
Brazil	206,160	12,733	6,097
Uruguay	53,526	13,261	31,972
Argentine Republic	290,459	39,075	98,520
Channel Islands	8,967	17,281	7,075
Gibraltar	42,584	120,719	54,176
Malta	94,005	34,809	9,126
Egypt	183,000	70,160	66,857
Anglo-Egyptian Sudan	.....	.....	3,008
Aden and Dependencies	4,978	4,847	13,672
British India	34,328	59	27,049
Ceylon	23,067	5,682	25,239
Other countries	115,531	39,647	96,073

British Strike Still Drags Along Despite Government Offer of £10,000,000 Bribe

LIBERAL offers on the part of the operators of the British coal mines, made on April 25, apparently in no degree brought nearer the end of the strike, and the only hope seems to rest in assuring the mine workers that their faith in ultimate and complete victory is vain. Even an offer by the government on April 28 to subsidize the industry out of the pockets of the taxpayers £10,000,000 per annum, with the guarantee that the wage reduction will not exceed 3s. (72.9c.) per shift was without result.

On April 26 at a three-hours conference in which the government, the mine operators and mine workers took part, the owners of the mines made the following proposals: (1) That for a temporary period any change in wages shall be on a flat-rate basis in each area; (2) that the wage rate shall be calculated on the area instead of on the district basis and (3) that the owners shall forego profits for three months.

The mine workers answered these offers as follows: (1) The mine workers' demands for flat-rate advances and reductions on a national basis are in no way met; (2) the areas are only a minor variation from the old districts and (3) capital, having always based its claim to reward on the assumption that it takes the risks of industry, should bear losses in times of depression as it reaps profits in good times.

The employees' representatives are strongly of the opinion that the mine operators should be willing to operate at a loss. When the operators agree to forego profits the labor leaders say "That is no concession; you are making no profits now," which, of course, is really not true, as the operators have not controlled the mines for some years and had them returned to them only on April 1, when the strike commenced. The government held them till April 1 and stood the losses, paying profits to the operators and wages to the mine workers. The operators say, merely as a basis of argument, that if those of them which make profits must pay them over to the mine workers where less than a minimum wage would otherwise be paid, those employees who make more than a minimum wage should be willing to pay those who make less.

The operators, while admitting that this would make for inefficiency, declare that any arrangement that makes one operator who mines at a profit participate in the payment of the employees of another operator who would otherwise mine at a loss will similarly make the otherwise successful operator indifferent as to the efficiency of his methods and the mine owner who operates at a loss also inefficient because the loss is no matter of his but of the man who makes a profit. Equalization of any kind may look just, but it results in inefficiency and in the end is unjust to everybody.

Mine Costs, $7.62; Selling Price, $6.26

Sir Robert Horne, Chancellor of the Exchequer, said that during the last month of government control of mines, March, there was a loss of £5,259,209 ($25,612,348 at normal rate of exchange) on the month's working. Coal cost 39s. 1d. ($9.52 at normal exchange and $7.62 at $3.90 exchange). Of this, 27s. 9d. was paid as wages ($6.76 normal exchange or $5.41 with exchange at $3.90). The price at which the coal was sold was 32s. 1d. ($7.81 or $6.26). The cost of production was figured for the actual expenditures involved, without any allowance for mine owners' profits, depreciation or interest.

On April 27 the government showed its disposition to make concessions if, by any means, the strike might be more speedily ended. Conditions throughout the nation were bad, the National Union of Railwaymen having only the day before instructed its members not to handle coal from colliery sidings or overseas. Although on the following day this order was modified in favor of public utilities, the number of trains running was only one-third that before the strike. Street lighting had received a 50-per cent cut. Many London firms, including the underground railroads, were considering the substitution of oil for coal, not only in this emergency but to take care of similar conditions in the future.

In view of these difficulties the government offered to contribute £500,000 monthly for a limited period, provided the average wage reductions should not be more than 3s. (73c. or 58.5c.) a shift. The next day the government offered £10,000,000 ($48,700,000 or $39,000,000) to guarantee that the same average wage reduction would not be exceeded in May, nor more than 3s. 6d. (85c. or 68c.) in June, the balance of the sum being used to alleviate as far as may be the severity of the reductions in July and August. This did not satisfy the mine workers' representatives. They broke up the conference and went to the coal fields to report and to receive a vote from their

constituency. It is reported that only a small majority favored the rejection of the government's offer. A few miners have gone back to work.

When the representatives returned to the field and presented their case, the leaders of the Lanarkshire Miners' Union decided not to call for a vote, so certain were they that the majority of men in that Scottish county would favor the continuance of the strike. The Lancashire and Cheshire Miners' Federation passed resolutions supporting the decision of their representatives, and the Notts Miners' Association and the Forest of Dean mine workers at a mass meeting at Merthyr, in Wales, also determined that the fight must be continued till victory was achieved. Other executive committees passed similar resolutions. Nowhere did it appear that a vote was desired, and at Porth, in South Wales, 12,000 mine workers met and decided to make an attempt May 2 to withdraw all the safety men working in the Rhondda district. Mass picketing is to be begun around the pits in the hope that thereby the volunteers may be terrified or dissuaded from entering the mines.

Frelinghuysen Rewrites Commissioner Bill; Now an Ostensible Aid to Stabilizing Coal Industry

By Washington Correspondence

AFTER extended discussion before the full membership of the Interstate Commerce Committee of the Senate Senator Frelinghuysen has rewritten his coal commissioner bill, which now becomes a bill "to aid in stabilizing the coal industry." The revised bill vests practically all of the provisions of the coal commissioner bill in the Secretary of the Interior. The appropriation is increased from $50,000 to $200,000. The provisions of the bill are to apply, in addition to anthracite and bituminous coal, to "semi-anthracite, sub-bituminous, lignite, and coke."

It is the intention of Senator Frelinghuysen to hear a few specialists but general hearings on the measure are not to be reopened. J. D. A. Morrow has been invited to present his views and James Barbour, a traffic specialist from Canton, Ohio, who is in the service of a large consuming manufacturing industry, also is to be heard.

It is thought to be the idea of the Secretary of Commerce that the fact-finding in regard to coal should be vested in his department. It is known to be Secretary Hoover's idea that the reporting of certain essential facts as to the production, distribution and consumption of coal should be made compulsory. His thought in the matter is said to be that there should be certain simple returns on fundamental matters, such as production, stocks, available transportation equipment, as well as information as to prices and costs. He would, however, divest the fact-finding of any regulatory function.

If lodged in the Department of Commerce, the work naturally would be assigned to the Bureau of the Census. The idea frequently has been advanced that the collection of purely commercial statistics should be vested in other than scientific bureaus. It also is being urged that the collection of information as to zoning and transportation matters should be assigned to the Interstate Commerce Commission. The scientific and technological investigations covered by the Frelinghuysen bill would be left with the Secretary of the Interior for assignment to the proper bureau in his department.

Extracts from the revised bill are as follows:

Sec. 5. That the Secretary of the Interior shall investigate from time to time conditions affecting the organization, management, and practices of dealers and operators, costs and profits in connection with the mining, sale and distribution of coal, the terms contained in leases of coal mines, the prices demanded or received for coal, the distribution, storage, and sale of coal, and the methods and processes employed therein, the consumption of coal, and the transportation of coal in commerce, including the distribution of coal cars.

Sec. 6. That the Secretary shall investigate, from time to time, the wages, working conditions and practices, terms of employment, and the living expenses of miners and other workmen employed in mines, washeries, coking plants and other plants pertinent thereto from which coal is transported in commerce.

Sec. 7. That the Secretary shall investigate, from time to time, methods and processes for the storage, inspection, sampling, analysis, purchase, classification and economic utilization of coal and conduct such experiments and researches as he may find advisable to determine the most efficient means for such storage and other processes involved in the preparation, transportation, and utilization of coal.

Sec. 8. That the Secretary shall file, analyze and compile all data and information obtained under sections 5, 6 and 7 and shall keep such data and information revised currently and available for immediate reference. He shall publish from time to time, in such form as he deems proper, such portions of the data and information obtained thereunder, except trade secrets or names of customers, as he may deem advisable in the public interest.

Sec. 9. That the Secretary shall, on request, and to the extent that he deems proper in the public interest, place at the disposal of any private or public board, commission, or other group engaged in the arbitration, conciliation, or settlement of any labor dispute arising in any mine from which coal is shipped in commerce, all data and information in the files of his office relating to the matter in controversy. The Secretary shall co-operate with the Interstate Commerce Commission in promoting the proper distribution and most efficient use of coal cars in commerce. He shall also cooperate with dealers, consumers, and others to encourage the construction of facilities for the storage of coal, and for its utilization.

Sec. 10. That the Secretary shall investigate the desirability and practicability of prescribing standards for various kinds and grades of coal prepared for the market, and shall submit a report thereon to Congress on or before December 5, 1921, accompanied by such recommendations as he may deem proper.

Sec. 11. That the Secretary shall investigate the desirability and practicability of a statutory zoning system defining the distance from the mine within which coal therefrom may be transported in commerce, and shall submit a report thereon to Congress on or before December 5, 1921, accompanied by such recommendations as he may deem proper.

Secretary Given Wide Supervisory Powers

Sec. 16. That the Secretary may prosecute any investigation authorized by this Act, personally or by such examiners as he may designate for that purpose, in any part of the United States. For the purposes of this Act the Secretary, or his duly authorized agents, shall at all reasonable times have access to and the right to examine the mines, washeries, yards, equipment, offices and other places of business of any operator or dealer, and (to sample the coal at any place) and shall have access to and the right to copy any books, records, papers, correspondence, or any entries therein, of any operator or dealer. Any operator, dealer, or other person who shall neglect or refuse to permit the Secretary or any duly authorized agent thereof to have access to, and to examine any such mine, washery, yard, equipment, offices or other place of business and to sample the coal at any place or to have access to or an opportunity to copy any book, record, paper or correspondence or any entry therein, for the purposes of this Act, shall be guilty of a misdemeanor, and shall on conviction be punished by a fine of not more than $1,000 or by imprisonment for not more than six months, or by both.

Sec. 23. That the Secretary shall have power, by general or special orders, to require operators and dealers, or any of them, to file with him in such form as he may prescribe, annual and special reports or answers in writing to specific questions, furnishing to the Secretary such information as he may require as to the organization, practices, management, relation to other persons, costs, prices and profits of the operator or dealer so required to report or answer questions. Such reports and answers shall be made under oath or otherwise, as the Secretary may require, and shall be filed with the Secretary within such reasonable period as he may prescribe, unless additional time is granted in any individual case by the Secretary.

Sec. 27. That all laws and parts of laws in conflict with the provision of this Act are hereby repealed.

The seasonal freight rate bill also will be revised, it is believed. It now seems probable that the bill will be drawn so that the matter of granting seasonal rates will be left entirely to the Interstate Commerce Commission.

Although Industry's Coal Pile Is Dwindling, Stocks Are Nearly as Large as Two Years Ago

Public Utilities and Retail Coal Dealers Have Large Accumulations—Railroads' Supply Is Normal—Iron and Steel Trades Lack Storage Sufficient for Business Boom—Industrials Using More Coal Than They Are Buying

STOCKS of coal are significant because they are the consumers' reserve against a possible interruption in supply. Such interruptions have occurred in the past through mine strikes, traffic congestion on the railroads, or severe weather interfering with the delivery of loaded coal. When stocks are large, consumers can delay purchasing until offered favorable terms. Small stocks, on the contrary, drive many consumers to enter the spot market and conduce to higher prices. The condition of stocks, therefore, has an important effect on the coal market and is a matter of consequence to all who buy and sell coal in quantity.

The following is the preliminary report on stocks of coal in the United States prepared by F. G. Tryon, of the U. S. Geological Survey, for the first quarter of 1921. This is the third year in which a survey on this very important subject has been made, previous reports having been made in the spring of 1919 by the Fuel Administration, and last year by the Geological Survey.

The questionnaires on which this report is based were mailed March 31. The replies, received up to Wednesday, April 27, are summarized herewith. Grateful acknowledgments are extended to the thousands of producers, distributors, and consumers who have furnished information. The report is subject to revision. Additional data will be presented in detail in the Geological Survey's weekly report on coal production, and a final report on stocks will be issued when the returns are complete.

In considering stocks a sharp distinction must be made between anthracite and bituminous coal. Although the two fuels are in competition, the businesses of mining and distributing them are so distinct as to be practically separate industries.

Current Bituminous Output and Consumption

Production of bituminous coal declined steadily from December, 1920, to the end of the coal year, March 31. In late March and early April the soft-coal mines were working on the average only two or three days a week. Mine capacity (not theoretical but proven) and demonstrated transportation facilities sufficient to produce another 6,000,000 tons of coal every week were and still are lying idle.

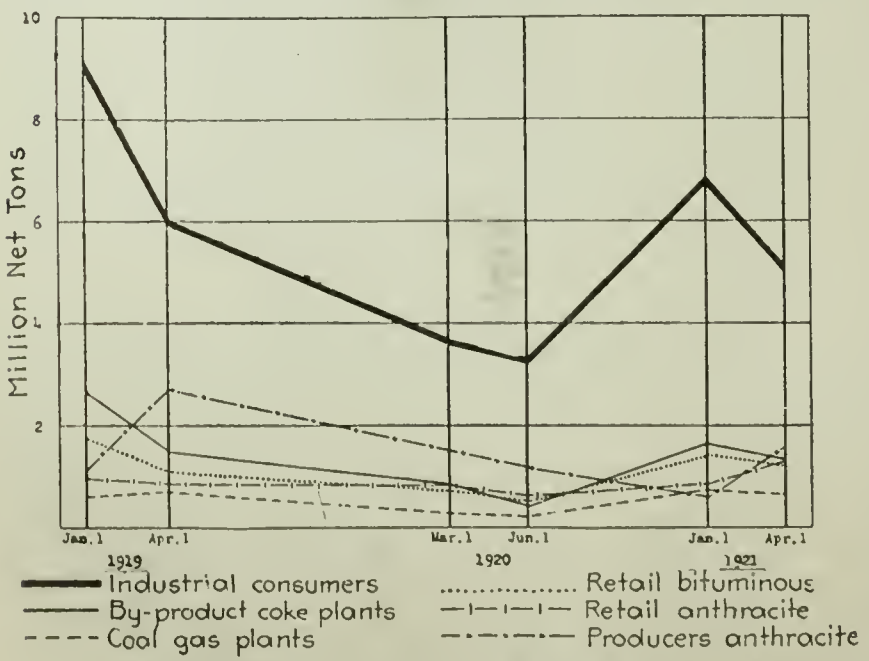


FIG. 1. FLUCTUATIONS IN TONNAGE OF COAL IN STORAGE, JAN. 1, 1919, TO APRIL 1, 1921

Lines in diagram show tons on hand at selected lists of establishments on dates mentioned. The lists are incomplete but as the same establishments are included for the several dates the figures are comparable.

An army of men dependent on the mines for livelihood are unemployed, or at best working but a few hours a week. From a maximum of 12,800,000 tons a week in December, production had sunk to a bare 6,000,000 tons, the lowest point (except of course, for the great strike of 1919) touched since April, 1914. Indeed, if the growth in the country's requirements during the past seven years be considered, the present depression in the soft-coal industry is more acute than that of 1914, and one must go back to the panic of 1893 to find its parallel.

At first thought this profound slump in production might give ground for alarm as to the sufficiency of next winter's supply of coal. Before, however, it is assumed that the slump in output foretells a shortage of coal, two other facts must be taken into account. The first fact is that the slump was preceded by several months of heavy production, which brought the total output in 1920 up to 556,000,000 tons, exceeding even the war year, 1917, and approaching the record production of 1918—579,000,000 tons. Not all of this large output was consumed or exported. Some millions of tons of it were added to consumers' stocks, and it was to be expected that these stocks would be drawn upon during the late winter. The second fact to be remembered is that the slump in output was accompanied by a great cut in consumption. While complete data on current consumption are lacking, there is enough evidence to show that the combined domestic consumption and exports during the first quarter of 1921 were 20 per cent less than during the first quarter of 1920. Comparing the month of March, 1921, with March, 1920, the decrease was about 30 per cent.

Production Falls Below Consumption

Piecing together the available facts concerning production, consumption and stocks, it appears that the output during the first quarter of the year 1921 was 100,000,000 tons; that consumption and exports were in round numbers 108,000,000 tons, and that the deficit between production and consumption was made up by a draft upon consumers' stocks of about 8,000,000 tons. Moreover, this draft upon stocks did not end with March 31. Although the returns for the week ended April 23 show an increase in production (6,829,000 tons as against 6,457,000 in the last week of March), the total output for April will fall short of the total consumption. Six million eight hundred and twenty-nine thousand tons a week is not enough to meet our current requirements, even in the present atmosphere of business depression.

Stocks.—A final estimate of the total stocks on hand cannot be made until more complete returns are received from consumers. It is, however, possible to state that the stocks on hand as of Jan. 1, 1921, were somewhere between 42,000,000 and 48,000,000 tons—say 45,000,000—and that on April 1 they had fallen to somewhere between 34,000,000 and 39,000,000—say 37,000,000. In the following table are given the stocks at various times in the past.

ESTIMATED TOTAL COMMERCIAL STOCKS OF BITUMINOUS COAL IN THE UNITED STATES (*a*)
(In net tons)

Oct. 1, 1916	27,000,000	Jan. 1, 1919	57,900,000
Oct. 1, 1917	28,100,000	April 1, 1919	40,400,000
July 15, 1918	39,700,000	March 1, 1920	24,000,000
Oct. 1, 1918	59,000,000	June 1, 1920	20,000,000
Day of Armistice	63,000,000		

(*a*) Coal in transit not included.

The following table has been prepared by selecting from the 4,850 reports received, 3,779 plants for which reports were available on each of six dates from Jan. 1, 1919, to April 1, 1921, and tabulating their stocks in tons on each date. The table shows that the 3,779 plants had on hand as

of Jan. 1, 1921, a total of 13,770,000 tons of soft coal. This was 23 per cent less than the tonnage on hand at the same plants on Jan. 1, 1919, just after the armistice. Three months later, on April 1, 1921, the 3,779 identical plants had 11,159,000 tons in storage, a decrease as compared with Jan. 1 of 19 per cent. In terms of total tons in storage these plants were less well off than on April 1, 1919. They were, however, much better protected than on either of the two dates shown for 1920.

The course of stocks of bituminous coal at 3,779 identical plants epitomizes the present condition of consumers' stocks. At the beginning of 1921 consumers' reserves were comfortably large. In the three months which followed they were heavily drawn upon. The quantity remaining on April 1 was less than the abundant stock of early 1919 but much greater than the stock in the period of scarcity of 1920.

STOCKS OF BITUMINOUS COAL IN HANDS OF CERTAIN CONSUMERS AND DEALERS, JAN. 1, 1919, TO APRIL 1, 1921

(In thousands of net tons)

Class	Plants Reporting	Jan. 1, 1919	Apr. 1, 1919	Mar. 1, 1920	June 1, 1920	Jan. 1, 1921	Apr. 1, 1921
Byproduct coke plants	41	2,628	1,541	850	404	1,763	1,340
Steel plants	79	1,646	1,142	444	491	1,028	752
Other industrial plants	2,209	9,109	6,012	3,672	3,252	6,877	5,023
Coal-gas plants	102	756	661	310	212	610	724
Electric utilities	241	2,112	2,013	1,081	1,098	2,068	2,116
Coal dealers	1,107	1,753	1,095	740	530	1,424	1,204
Totals	3,779	18,004	12,464	7,097	5,987	13,770	11,159
Railroads	283	(a)	(a)	(a)	(a)	6,741	6,737

(a) No comparable data.

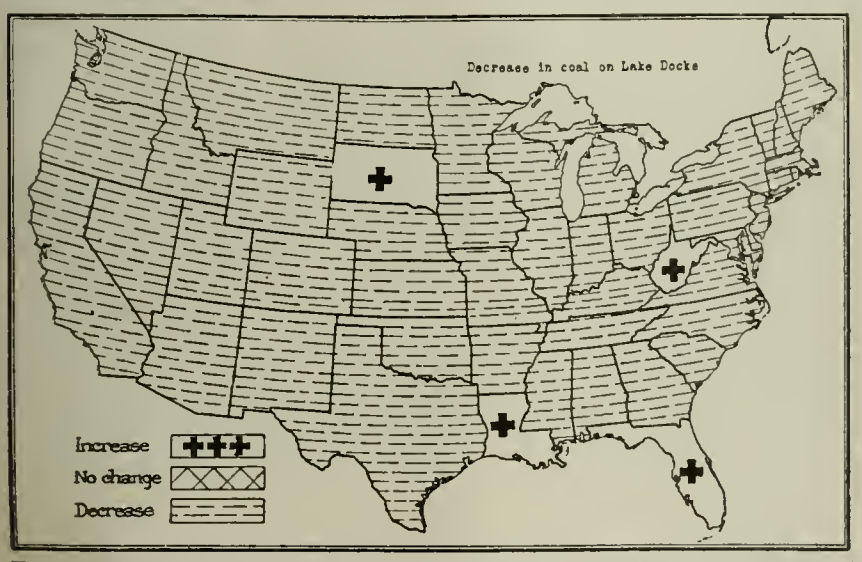


FIG. 2. CHANGES IN STOCKS OF INDUSTRIAL CONSUMERS FROM JAN. 1 TO APRIL 1, 1921

Soft coal at industrial plants other than steel and byproduct. Industrial consumers as a class drew heavily on their reserves in the last quarter of the coal year except in four states. Of the four exceptions, three are industrially unimportant states, and one —West Virginia—is in the heart of the mining region.

Summary of present condition of bituminous stocks.—At the beginning of 1921 consumers' reserves of coal were comfortably large. Since then they have been heavily drawn upon. Up to April 1 the quantity withdrawn had not been great enough to lower the level of stocks to the danger point. On that date the tonnage in storage, though a little less than in the time of abundance of 1919, was much greater than in the period of scarcity of 1920. The draft upon stocks continued into April, however, and probably still continues; and obviously, if it be not soon checked, reserves will fall below the level of safety.

Stocks by Types of Consumers

Industrial Consumers.—Of all classes of consumers the general industrial group, exclusive of the special classes of steel and byproduct coke plants, furnish the best index to changes in stocks. They are therefore made the subject of special analysis in the four accompanying diagrams.

Byproduct and Steel Plants.—The trend of stocks at byproduct coke ovens and steel plants has followed the course of industrial stocks generally (Fig. 1). The byproduct plants in particular illustrate how greatly the size of the stocks necessary for safety is affected by the rate of consumption. Measured in tons, stocks at the plants reporting on April 1, 1921, were midway between the abundance of early 1919 and the scarcity of 1920.

Public Utilities—Unlike the industrial consumers, the public utilities seem to have built up their reserves during the three months from January to March, and to be at present well supplied with coal. Reports were received in time for inclusion in this bulletin from 102 gas and 241 electric plants. Both groups

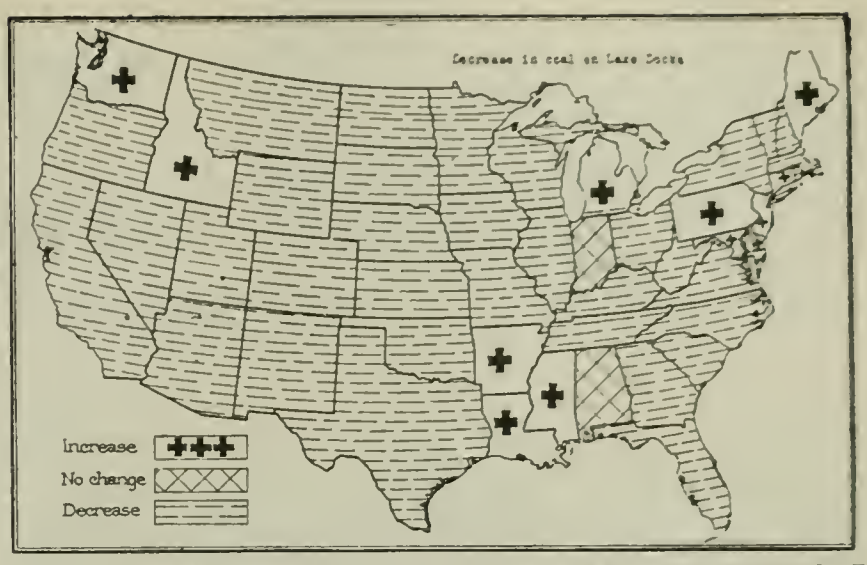


FIG. 3. HOW PRESENT STOCKS COMPARE WITH THOSE AFTER THE WAR

Changes in tons of soft coal on hand at group of identical industrial plants (excluding steel and byproduct) from April 1, 1919, to April 1, 1921. As a result of the great accumulation of coal prior to the armistice, stocks on April 1, 1919, were admittedly high. On the corresponding date this year they were very generally lower.

increased their stocks from Jan. 1 to April 1, largely through deliveries on contracts entered into previously; both have practically as much on hand now as they did in early 1919 and twice as much as in June, 1920.

In comparison with 1920 practically every state showed an improvement, and the Appalachian, Middle Atlantic, New England States, and much of the Lake docks territory recorded increases over even April 1, 1919. Assuming that these preliminary conclusions will be confirmed by later returns, it therefore appears that the public utilities as a class have taken advantage of the present opportunity to get coal easily and quickly and are today in a strong position.

Retail Yards.—Stocks of bituminous coal in the yards of retail coal merchants were greater on April 1, 1921, than on the corresponding date two years ago, and much larger than last year.

Railroad Fuel.—The railroads of the country had about three weeks and five days' supply of coal in cars, stock piles and chutes on April 1. Reports from 283 roads had courteously been assembled by the American Railway Association up to Friday, April 29, and complete returns for all roads are promised. The 283 roads had on hand 6,741,000 tons as of Jan. 1, and almost exactly the same amount—6,737,000 tons—on April 1. This was equivalent to twenty-six days' requirements at the going rate of consumption.

WEEKS' SUPPLY OF BITUMINOUS COAL HELD BY RAILROADS

(Figures represent supply in weeks and days at current rate of consumption at time of stock-taking)

July 1, 1918	3–4	March 1, 1920	*1–4
Oct. 1, 1918	4–1	June 1, 1920	*1–3
Nov. 11, 1918	4–3	Jan. 1, 1921	3–5
Jan. 1, 1919	4–4	April 1, 1921	3–5

* Probably low.

Bituminous Coal in Transit

Lake Docks.—Coal in transit forms a sort of mobile reserve as opposed to the stationary reserve in the bins of

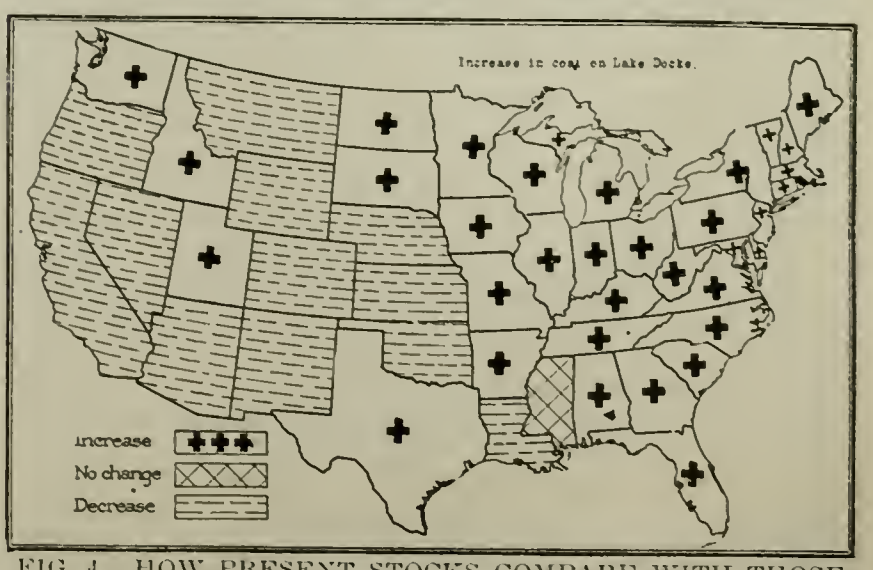


FIG. 4. HOW PRESENT STOCKS COMPARE WITH THOSE OF A YEAR AGO

Changes between June 1, 1920, and April 1, 1921, in tons of soft coal on hand at same group of industrial plants shown in Fig. 3. The low state of stocks in eastern half of the country and in the territory supplied by the docks, reported on June 1, 1920, was an important factor in the high prices of last year. In the territory then feeling scarcity, stocks now are much larger.

consumers. This mobile reserve includes not only the coal in cars but also the coal on the commercial docks at the head of the Lakes. The tonnage on the docks is normally greatest in the fall at close of navigation, and least in the spring when navigation opens.

According to the Northwestern Dock Operators' Association, the carry-over at the beginning of the past four seasons has been:

BITUMINOUS COAL ON HAND AT OPENING OF NAVIGATION AS REPORTED BY 24 DISTRIBUTING DOCK COMPANIES ON LAKE SUPERIOR AND LAKE MICHIGAN

(In net tons)

April 1, 1917	572,687	April 1, 1919	3,374,506
April 1, 1918	1,031,978	April 1, 1920	860,521

Complete returns concerning the carry-over on April 1, 1921, are not yet available, but the total is thought to be at least 2,250,000 tons. The following statement shows the bituminous coal on hand at the opening of navigation, held by companies now reporting to the Northwestern Coal Dock Operators' Association (though incomplete, the figures cover an identical group of companies operating at Duluth, Superior, Ashland and Washburn), in net tons:

1917	387,968	1920	514,902
1918	987,246	1921	1,643,034
1919	2,439,749		

Though smaller than 1919, the 1921 carry-over was thus much larger than in either of the war years, and three times as great as last year.

Coal at Tidewater.—Coal in cars sometimes accumulates in volume at Tidewater piers. How the tonnage has fluctuated in the past two years is suggested by the accompanying statement of the quantity on hand at two of the three piers at Hampton Roads, the country's leading port of export. As in other instances in this report, the figures are samples only (in net tons):

Jan. 1, 1919	138,000	June 1, 1920	234,000
April 1, 1919	198,000	Jan. 1, 1921	199,000
March 1, 1920	138,000	April 1, 1921	296,000

The tonnage on hand April 1, 1921, was nearly 100,000 tons greater than on Jan. 1.

At New England Gateways. — Coal seldom accumulates at the New England rail gateways over the Hudson in volume sufficient to constitute an important item in the mobile reserve. On April 2, for example, the number of cars of soft coal waiting to be forwarded to New England was only 286, equivalent to about 14,000 tons.

Stocks of Pennsylvania Anthracite

Unlike the bituminous industry the anthracite mines continued in active operation during the last quarter of the coal year. January shipments, as reported by the Anthracite Bureau of Information, were large, and those of February established a new record for that month. In March, however, shipments declined slightly.

The facts both as to dealers' and producers' stocks indicate that there is a considerable reserve of anthracite mined, prepared and even shipped well toward destination, ready for all who care to purchase it.

Producers' Stocks of Anthracite.—Steady operation of the anthracite mines at a time when the bituminous mines have been working but two or three days a week has been made possible to some extent by the accommodation of part of the output in the storage yards of the producers. Whereas storage of bituminous coal by the producer is so rare in the United States as to be practically non-existent, the larger anthracite companies have constructed storage yards to receive their excess production in times of low demand. According to the Federal Trade Commission, the stocks of anthracite in the hands of the principal producers were as follows in the five years before the war (in gross tons):

April 1, 1913	3,891,711	April 1, 1916	4,585,906
April 1, 1914	5,223,844	April 1, 1917	894,347
April 1, 1915	7,406,502		

What the total in storage amounts to now is not known, but from the following table, based on reports from seven large companies comprising the bulk of the tonnage, it will be seen that present stocks are smaller than those of 1913-1916 though greater than those of early 1917.

ANTHRACITE IN STORAGE BY SEVEN LARGE PRODUCERS (*a*)

(In gross tons)

Date	Domestic Sizes Including Pea	Steam Sizes	Total
Jan. 1, 1919	227,197	638,388	866,185
April 1, 1919	907,002	850,879	1,757,881
March 1, 1920	259,617	909,970	1,169,587
June 1, 1920	385,095	576,974	962,069
Jan. 1, 1921	124,354	353,571	477,925
April 1, 1921	371,088	987,888	1,358,976

(*a*) Includes coal on the Lake docks.

Anthracite in Transit. — The quantity of anthracite in cars at Tidewater on April 1 was about the same as on the corresponding date of recent years.

Anthracite lying on the docks at the head of Lake Superior is properly to be regarded as coal in transit. The quantity on hand April 1 was larger than in 1917 and 1918, but smaller than in 1919 and 1920. The following data, covering most but not all of the dock companies, are published by permission of the Northwest Coal Dock Operators' Association (figures in net tons):

April 1, 1917	8,294	April 1, 1920	103,867
April 1, 1918	3,955	April 1, 1921	83,893
April 1, 1919	134,911		

Retailers' Stocks of Anthracite. — Retail coal merchants appear to have as much or more anthracite on hand as at any time in the past two years. Reports received from 813 representative dealers in anthracite in the twenty-four states where Pennsylvania anthracite is sold in significant amounts showed the following quantities on hand (in net tons):

Jan. 1, 1919	980,000	June 1, 1920	623,000
April 1, 1919	865,000	Jan. 1, 1921	874,000
March 1, 1920	843,000	April 1, 1921	1,323,000

If the situation of these dealers is typical of the trade in general, there was an increase of nearly 50 per cent in the stocks in retailers' yards from Jan. 1 to April 1. The increase was general throughout New England and the Middle Atlantic States, and as far south as Virginia and west as Indiana and Michigan.

In striking contrast to the East, stocks decreased in Illinois, Missouri, Iowa, Nebraska and the territory supplied from the Lake docks. Even in these states, however, the stock in retailers' yards on April 1 averaged from two to six weeks' supply at the rate of delivery prevailing from January to March. For the entire group of 813 merchants the average supply was sufficient for five weeks and one day.

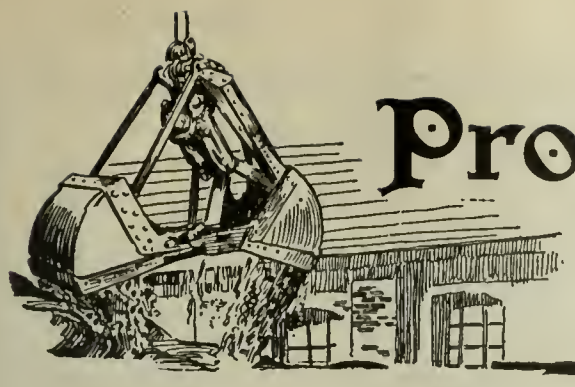
In comparison with either 1919 or 1920, retailers' stocks at present show a very general increase.

Hoover and Cummins to Address National Coal Association Convention

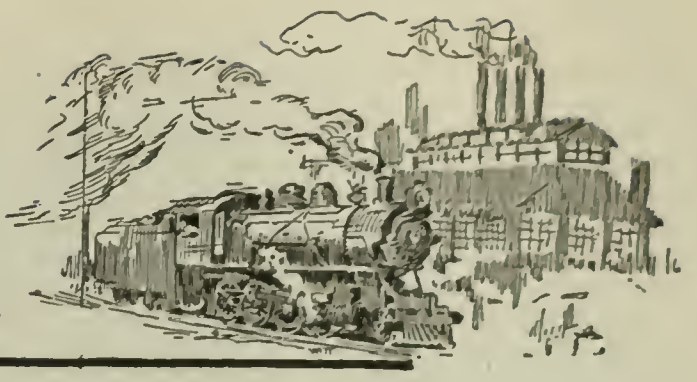
WHILE the program for the annual convention of the National Coal Association has not been completed, the association on May 2 issued the following forecast of the program:

"The program includes Herbert Hoover, Secretary of Commerce, who has some new and practical ideas about trade associations and the extent of the government's relation to business; Senator Cummins, chairman of the Interstate Commerce Committee of the Senate and one of the greatest authorities on transportation in the United States; James A. Emery, counsel of the National Association of Manufacturers and primarily responsible for the splendid growth of that fine organization; A. W. Douglas, vice-president of the Simmons Hardware Co., who can tell us when business will revive and how and why, if any man can; Dr. Stanley L. Krebs, who can give the most experienced coal operators some new and helpful ideas on coal salesmanship, and John J. Cornwell, former Governor of West Virginia, whose experience in that office gives great weight to his views on the proper relationship of the state and the coal industry."

AS COAL AGE GOES TO PRESS it is reported that the indictments for fraud against Charles S. Allen and Gibbs L. Baker, of the Wholesale Coal Trade Association of New York, secured last February by Armin W. Riley, will be dismissed.



Production and the Market



Weekly Review

PRELIMINARY data on stocks of coal in the United States in April, just released by the Geological Survey is not as disquieting as had been anticipated by some. Briefly the figures indicate a drop in total stocks of bituminous coal in the three months from January 1 to April 1 this year, of 8,000,000 net tons, after having climbed 25,000,000 from the 20,000,000-ton mark on June 1, 1920, to 45,000,000 tons total on Jan. 1, 1921.

As production less exports in the months of January, February and March of this year was in round numbers 95,700,000, and stocks were decreased by 8,000,000 tons, consumption was about 103,700,000 net tons, or at an average rate of less than 38,000,000 tons a month, and probably less than 35,000,000 tons in April.

Stocks of bituminous coal on April 1 were therefore more than sufficient for one month's needs, at the present rate of consumption. The reluctance of consumers to purchase coal and the resistance offered to sales arguments of the coal men is thus largely explained.

The conclusion based on the Survey preliminary figures is that the draft on stocks of bituminous coal is not as yet serious, in view of the low rate of consumption. The figures hold out a cheerful prospect in that they forecast a steadily improving market.

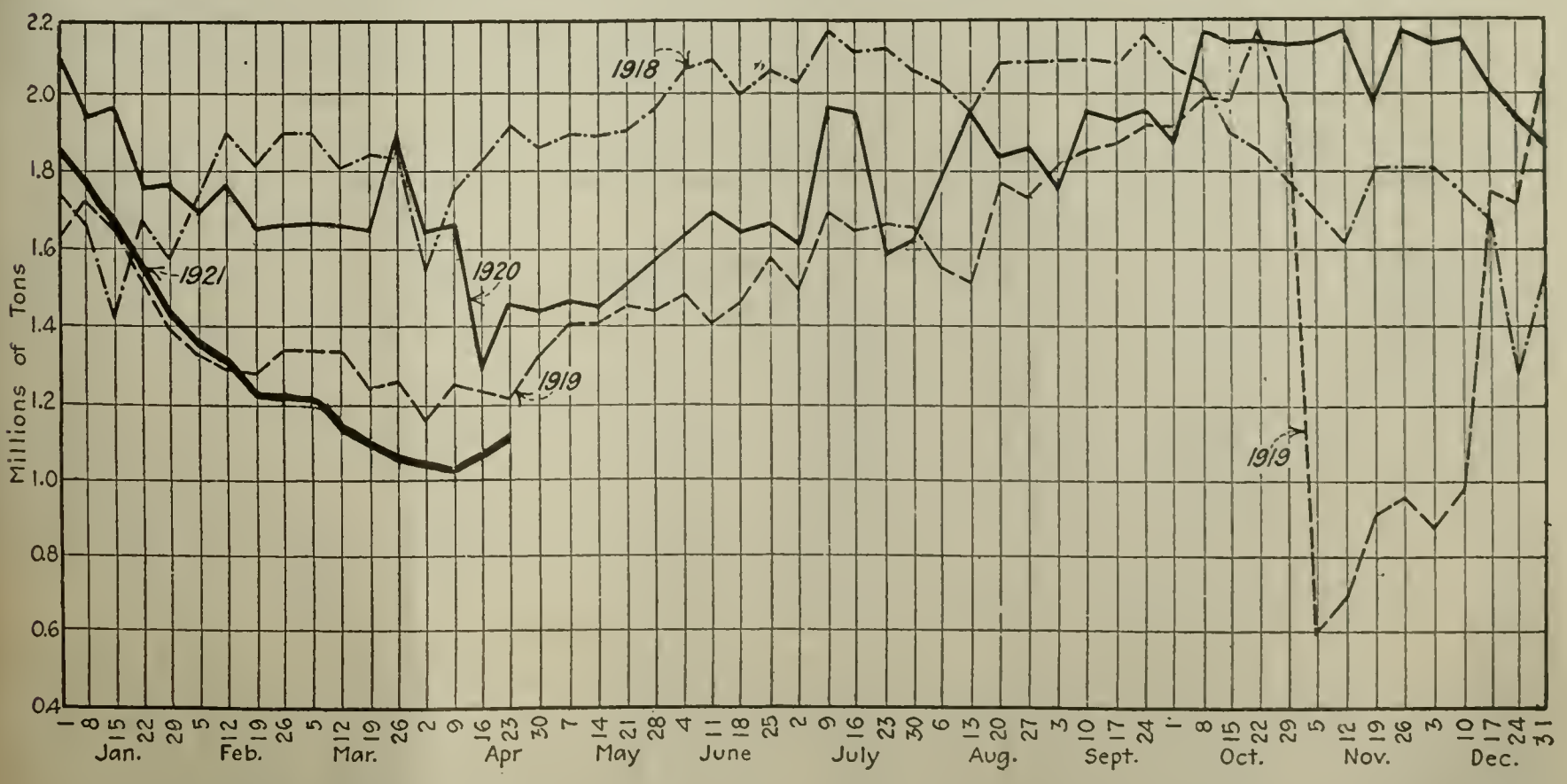
On the contrary, the figures of stocks of anthracite show the country full of hard coal. Consumers are taking it in at a satisfactory rate, producers' storage is accumulating and production is holding well up to the 2,000,000 tons a week mark.

Lake Carriers Give Seasonal Reduction

Apparently with great reluctance the Interstate Commerce Commission last week gave the Lake carriers permission to file tariffs for lower rates in coal to the Lower Lake ports. The new rates are lower than those at present by 28 cents a ton. The permission extends only until October 31 and is therefore in the nature of a seasonal rate. It is expected that this move will give life to the shipment of Lake coal, now lagging. No concern has been felt as yet over the slowness of the Lake movement because of the size of the hold-over stocks at the Head of the Lakes.

Prices gained very slightly, *Coal Age* index going up one point, from 103 to 104 at the beginning of the week. The gain was the result of new circular prices on May 1, in the Middle West. Strangely enough, the stiffening of prices in that territory has increased demand. Buyers who did not buy when prices were at the bottom are in this market as prices are marked up.

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

BITUMINOUS

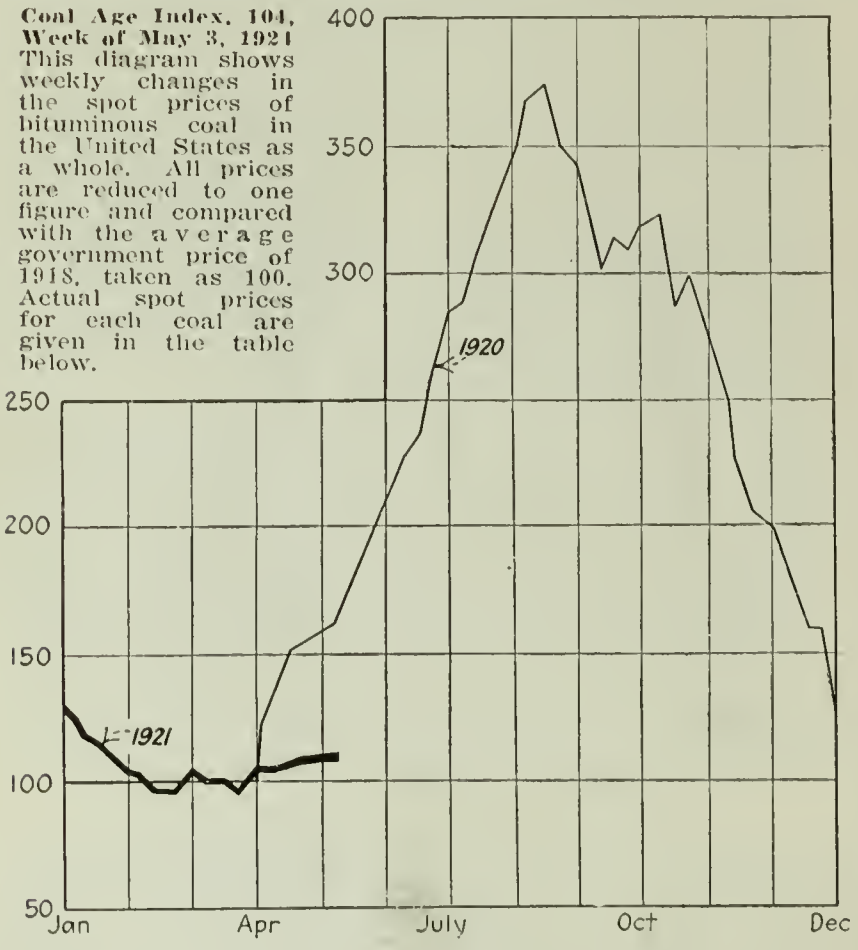
Recovery in rate of production continued during the week ended April 23. The total output is estimated by the Geological Survey at 6,829,000 net tons or 294,000 tons more than during the last preceding week. A further recovery is seen in the heavier loadings for Monday and Tuesday of the next week, April 25-30. Although production is increasing, the total output for April will fall short of consumption, as outlined in the report of stocks of coal on hand April 1, 1921, shown elsewhere in this issue.

The coal market is almost devoid of activity to date. The British strike has brought some trade but only a few cargoes have sailed to apply on English business. Some coal has been shipped on speculation, which means that it will ultimately fall on the British market, but actual orders in hand, accruing from the strike, are few.

Readjustment of discrepancies in the all-rail and rail and water charges to the Northwest is expected to have a bolstering effect on cargo coal business up the Lakes, from Ohio, Pennslyvania, West Virginia, Kentucky and Tennessee fields, as operators believe that the new tariffs will place them on a more favorable competitive basis with Illinois and Indiana producers. Early Lakes charters have just been made, the vessel rate being unchanged from last year. Notices have been posted on the various coal docks in Duluth, Superior and Ashland announcing a further cut in wages of about 8c. an hour for those employees who do not sign before May 1 the wage scale presented by the companies on April 1. Only a small percentage of the workers have maintained their demand that wages and working conditions remain unchanged.

Contracting is progressing very slowly. Some business has been closed for railroad fuel in the Alabama and Kentucky fields but one or two of the larger Middle Western railroads are showing a disinclination to sign contracts, stating their intention, in case of a national necessity, to try to work the old game of preferential car supply.

Coal Age Index, 104, Week of May 3, 1921 This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table below.



Estimates of Production

From the Weekly Report of the Geological Survey

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date *a*
April 9*b*	6,120,000	108,743,000	9,690,000	145,990,000
Daily average	1,020,000	1,298,000	1,615,000	1,732,000
April 16*b*	6,535,000	115,278,000	7,563,900	153,553,900
Daily average	1,089,000	1,284,000	1,261,000	1,701,000
April 23*c*	6,829,000	122,107,000	8,523,000	162,076,000
Daily average	1,138,000	1,275,000	1,420,000	1,683,000

(*a*) Less 2 days' production during first week in January to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date *a*
April 9*b*	1,865,000	24,612,000	1,538,000	23,461,000
April 16	1,885,000	26,497,000	1,249,000	24,710,000
April 23*c*	1,903,000	28,400,000	1,663,000	26,373,000

(*a*) Less 2 days' production during first week in January to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

BEEHIVE COKE

Week Ended Apr. 23 1921*a*	Apr. 16 1921*b*	Apr. 24 1920	1921 to Date	1920 to Date*c*
73,000	74,000	341,000	2,774,000	7,015,000

(*a*) Less 2 days' production during first week in January to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

	Market Quoted	Mar. 1920	Apr. 5 1921	Apr. 26 1921	May 3 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$3.50	$3.35	$3.35
Pocahontas lump	Columbus	2.60	5.50	5.25	**5.25@ 5.50**
Pocahontas mine run	Chicago	2.35	4.15	4.00	3.50@ 4.50
Pocahontas lump	Chicago	2.60	5.15	5.00	4.50@ 5.50
*Smokeless mine run	Boston	...	5.85	5.75	**5.85@ 6.15**
Clearfield mine run	Boston	2.95	2.45	2.20	**2.00@ 2.65**
Somerset mine run	Boston	2.95	3.05	2.80	**2.25@ 3.60**
Pool 1	New York	2.95	3.40	3.50	**3.50@ 3.75**
Pool 1	Philadelphia	2.95	3.50	3.40	3.25@ 3.50
Pool 1	Baltimore	2.95	3.15	3.10	**3.10@ 3.25**
Pool 9	New York	2.95	2.80	2.75	*2.60@ 2.75*
Pool 9	Philadelphia	2.95	3.05	3.05	*2.80@ 2.90*
Pool 9	Baltimore	2.95	2.90	2.95	2.90@ 3.00
Pool 10	New York	2.95	2.45	2.55	*2.35@ 2.75*
Pool 10	Philadelphia	2.95	2.65	2.75	*2.50@ 2.75*
Pool 10	Baltimore	2.95	....	2.45	2.40@ 2.50
Pool 11	New York	2.95	2.15	2.20	*1.90@ 2.25*
Pool 11	Philadelphia	2.95	2.00	2.45	*2.25@ 2.50*
Pool 11	Baltimore	2.95	....	2.30	2.25@ 2.35
Pool 71	New York	2.95	3.15	2.95	*2.65@ 3.00*
Pool 71	Philadelphia	2.95	3.00	3.30	*3.00*
Pool 71	Baltimore	2.95	....	3.00	*2.90@ 3.00*
High-Volatile, Eastern					
Pool 34 (54-64)	New York	2.50	2.00	2.00	**2.00@ 2.25**
Pool 34 (54-64)	Philadelphia	2.50	2.15	2.15	*1.90@ 2.00*
Pool 34 (54-64)	Baltimore	2.50	2.05	2.15	*2.00@ 2.15*
Pittsburgh mine run	Pittsburgh	2.35	2.25	2.25	2.25
Pittsburgh sc'd gas	Pittsburgh	2.35	2.85	2.85	2.85
Kanawha mine run	Columbus	2.70	2.35	2.25	*2.00*
Kanawha lump	Columbus	$2.95	$3.35	$3.50	*$3.25*
Hocking mine run	Columbus	2.50	2.25	2.20	*2.00*
Hocking lump	Columbus	2.75	3.25	3.35	*3.00@ 3.15*
Pitts. No. 8 mine run	Cleveland	2.35	2.25	2.20	2.15@ 2.25
Pitts. No. 8 lump	Cleveland	2.60	3.45	3.40	*3.10@ 3.40*
Midwest					
Franklin, Ill., mine run	Chicago	2.35	3.40	3.40	3.25@ 3.50
Franklin, Ill., lump	Chicago	2.55	3.55	3.55	**3.65@ 3.85**
Central Ill., mine run	Chicago	2.35	2.25	2.75	**2.75@ 3.15**
Central Ill., lump	Chicago	2.55	2.85	3.00	**3.00@ 3.50**
Ind. 4th Vein mine run	Chicago	2.35	2.65	2.75	**3.00@ 3.50**
Ind. 4th Vein lump	Chicago	2.55	3.15	3.25	**3.25@ 3.75**
Ind. 5th Vein mine run	Chicago	2.35	2.50	2.75	**2.85@ 3.00**
Ind. 5th Vein lump	Chicago	2.55	2.75	3.00	**3.15@ 3.40**
Standard mine run	St. Louis	2.35	1.95	1.80	1.75@ 1.85
Standard lump	St. Louis	2.55	2.40	2.40	2.25@ 2.50
West Ky. mine run	Louisville	2.35	2.40	2.25	*2.10*
West Ky. lump	Louisville	2.60	3.05	3.00	*2.60*
South and Southwest					
Big Seam mine run	Birmingham	2.45	2.85	2.95	2.85@ 3.10
Big Seam lump	Birmingham	2.75	3.15	3.60	**3.40@ 4.00**
S.E. Ky. mine run	Louisville	3.00	2.70	2.75	*2.50@ 2.85*
S.E. Ky. lump	Louisville	3.25	3.55	3.75	3.50@ 4.00
Kansas mine run	Kansas City	3.50	4.40	4.40	4.25@ 4.50
Kansas lump	Kansas City	4.00	5.50	5.00	5.00

* Gross tons, f.o.b. vessel, Hampton Roads. Quotations on Pocahontas mine run, Boston market, heretofore quoted included both Pocahontas and New River and will henceforth be quoted as West Virginia "Smokeless."

† Advance over previous week shown in **heavy type**, declines in *italics*.

Publicity given rumors of sweeping reductions in freight rates also has an unfavorable reaction upon buying. New England continues indifferent and competition among shippers to sell is as keen as ever. Receipts are low in all quarters and few can see any activity for a good many weeks to come. New York and Philadelphia market prices remain practically unchanged but a better tone is apparent. Undoubtedly freight rates will decrease but as soon as they do those buyers who have been holding off will rush in and place orders, with the natural result of boosting the market. The wise man is purchasing his coal now as any decrease in freight will be more than wiped out by the increased prices of coal after the new rates go into effect.

ANTHRACITE

Production for the week ended April 23 was 1,903,000 net tons, some 20,000 tons in excess of the output for the second week in April. Considerable more activity has been reported, some of which may be attributed to the campaign being conducted urging the early buying of domestic sizes. Stove coal is in the heaviest demand while pea coal is hard to move.

Independents are maintaining their prices at 10 to 30c. above company schedule. The latter were raised May 1, as anticipated. The increase amounts to 10c. on domestic sizes up to 25c. on stove, steam prices being unchanged. April shipments to New England proved to be smaller than expected. A dull spell is predicted for mid-summer in this section but deliveries will have to improve very materially during the early summer if there is to be any lack of orders later on.

COKE

Very little change marked beehive production during the week ended April 23. The total output was 73,000 net tons, only 1,000 tons less than during the preceding week. Connellsville prices show a wide range and the market outlook seems improved.

Lake Coal Dumped Season to May 1

NET TONS

	1917	1918	1919	1920	1921
Total	651,000	891,000	1,113,000	329,000	1,176,000

Reports From the Market Centers

New England

BOSTON

No Real Improvement — Distributors Watch Lake Movement — Light Volume to Tide — Smokeless Responds Slightly to British Situation—Anthracite Tightens.

Bituminous—The beginning of May shows little sign of better industrial conditions. Buyers continue indifferent and there is the same keen competition among shippers that has been characteristic since January. A certain number of spot sales have been made on offers, but in nearly every case the purchaser is reluctant and queries whether it would not have been better to wait.

Operators who have contracts effective from April 1 and May 1 realize they are far short of the consignments necessary to run more than two days per week and consumption is at so low an ebb that many steam users find themselves no nearer the spot market than in February, full contract quotas having come forward where permitted during all three of the last months in the old coal year.

Publicity given rumors of lower rail freights also has an unfavorable reaction upon buying. At the same time, should the reduction be accomplished the trade here has doubts whether before August it would very much accelerate movements to New England. Receipts are low in all quarters, and few can see any activity for a good many weeks to come. Even then, the recovery will be very gradual and at reasonably stable prices, for it it is difficult now to imagine the possibility of any runaway market. Credits and other conditions are entirely too restrictive to permit this.

Lower rates from West Virginia to the Lakes may give an impetus to trade in that direction and movement will be watched closely for its bearing upon other markets. Meanwhile the volume of steam coals flowing to Tidewater shows no appreciable increase.

Pocahontas and New River dumpings remain about on a 30 per cent basis. Since last week the smokeless coals have reacted slightly to inquiries offshore, and it is understood several additional cargoes have been placed with British interests at points ordinarily served from English ports. Certain agencies have withdrawn quotations of $5.50@5.75 per gross ton f.o.b. Norfolk and Newport News, but doubtless this is due to unexpected sales abroad. The trade feels there has as yet developed no buying power sufficient to mark up prices more than for the time being.

Anthracite—There is every appearance of stove size being somewhat jammed. April shipments proved most disappointing to New England, although early in the month inquiry was almost the lightest for years. Egg as well as stove is now in good request and dealers dependent upon barge movements, especially from Philadelphia, are apprehensive. A dull spell is still being predicted for mid-summer, based very largely upon the lack of ready money in the hands of ultimate consumers, but deliveries will have to improve very materially during May and June if there is to be any lack of orders in July.

Retail buying is spotty, but in most cities in this territory a good spring tonnage is being moved to the cellars.

Tidewater—East

NEW YORK

Anthracite Prices Advance — Domestic Demand Is Strong—Steam Coals Drag — Bituminous Shows Slight Improvement—Many Inquiries for Export.

Anthracite—There is no sign of a let-up in demand. All domestic coals move readily but there is a slower movement of steam. Operators entered the month of May with enough business on the books to insure an active four weeks.

As was expected, the large operators increased their mine prices on May 1. Some advanced the usual 10c. on all domestic including pea, others added 10c. to these sizes with the exception of 15c. on stove. Others added 25c. to the price of various domestic coals.

Independent coals are finding a ready market. The larger sizes, with the exception of pea, are well sold ahead. In some instances it has been necessary to offer concessions to move chestnut. The better independent grades are bringing an average of about 50c. over the company schedules, while pea is $5.25@$5.75, according to quality.

The demand for steam coals has not been quite as strong. Some independent buckwheat has moved at slight concessions below the company schedule while some of the better grades have brought 25c. more.

Current quotations for company coals per gross ton, at mine and f.o.b. Tidewater, lower ports, follow:

	Mine	Tidewater
Broken	$7.20@$7.75	$ 9.81@$10.36
Egg	7.20@ 7.75	9.81@ 10.36
Stove	7.50@ 8.10	10.11@ 10.71
Chestnut	7.50@ 8.10	10.11@ 10.71
Pea	5.75@ 6.15	8.22@ 8.62
Buckwheat No. 1	$3.50	$5.97
Rice	2.50	4.97
Barley	1.50	3.97
Birdseye	2 50	5.02

Bituminous—Some of the more active houses say conditions are about the same as they were four weeks ago. Demand cannot be said to be stronger. Indications however, point to a more

active market shortly. In fact, it is believed the market would be stronger today but for the belief that there is to be a cut in freight rates. This report has been current for the past week and consumers do not hesitate to say they will not place new orders until the report is definitely settled.

Local houses are receiving many inquiries for export on account of the British labor troubles but there has been little actual business closed. In some instances pool coal is entirely eliminated in the consideration of the business, individual grades alone being considered.

There has been no change in the contract situation. Buyers are watching the spot market closely. Tidewater quotations range about as follows: Pool 9, $6.15@$6.30; Pool 10, $5.80@$6; Pool 71, $6.25@$6.35, and Pool 11, $5.30@$5.60. Mine quotations are reported in the Weekly Review.

BUFFALO

Quiet Is Still the Word—Waiting for Wage and Freight Adjustment — Anthracite Fairly Active — Lake Loading Good.

Bituminous—Some shippers express suspicion of a certain class of contracts that are coming out at ridiculously low prices, some as low as $2.46 being reported. They are made by certain mine owners who are noted for not holding to an agreement when it is convenient not to do so. This business looks well on the books, but it is not believed that they will hold when the pinch comes.

A cautious shipper does not like to make a year's contract for less than $3 and often is so situated that he cannot afford to stop very near that mark. It seems to have been the operators with fair contracts that they kept up the year through, who came out best at the end of the last coal year, and they are willing to enter on more of the same sort, but, as a rule, the consumer refuses anything that has profit in it for the shipper. so nothing is being done.

With no real contract basis yet, the spot price still runs about $3.50 for Youghiogheny gas lump, $3 for Pittsburgh and No. 8 steam lump, $2.60 for all mine run and $2.25 for slack. The making of so little lump has produced something of a scarcity of slack and the price has come up a little.

Anthracite—The demand ran up somewhat at the end of the month. But it has not been as good as it should be, if there is to be no shortage next fall. The independent mines find it hard to keep going and some are shut down.

Lake trade is still pretty brisk, but so much is now afloat that shippers are not anxious for tonnage. Many cargoes are now cleared, but only a few have gone out, as the coal is loaded at vessel-owners' option and they will not sail unless there is a return cargo.

Clearances for the week totaled 118,561 net tons, being 51,961 tons for Chicago, 26,800 tons for Milwaukee, 30,300 tons for Duluth and Superior and 9,500 tons for Fort William. A single bituminous charter, Ohio ports to Duluth at 50c. for the season, is all that is yet reported.

PHILADELPHIA

Anthracite Prices Increase—Better Retail Buying—Stove in Strong Demand —Tax Act Awaits Signature — Bituminous Holds Own — Contracts Unchanged—Trade Grows Hopeful.

Anthracite—While all the producing companies have not at this writing announced their May schedules, the leading company came out with an advance of 10c. on broken, egg, nut and pea, with an extra 5c. on stove. It was rather expected that stove would receive a heavier advance, as the demand during the past two weeks had risen to a point where it was all out of proportion to the tonnage produced, although it will take a much heavier increase than this to remove any of the pressure from the consumer. Some independents have increased this size 15c.@20c. Steam sizes have not been increased.

If anything, the retail prices have been more stable around $13.75 for stove and nut, but there is still much quiet shading. So far the trade has not added anything to the selling price on account of the increase in mine prices, but they will not quote beyond immediate delivery. It is likely that the retail prices will not be changed until the Governor signs the tax act adding 1½ per cent to the mine price—about 12c. a ton. With this added to the mine increase, it will mean about 25c. additional on the retail prices.

Stocks have become much reduced, and with the exception of pea, many are down to the boards. Dealers have more orders for stove than they will be able to fill. Lately there seems to be a tendency on the part of the dealers to complain of the excessive amount of small sizes in nut and this may explain the somewhat better condition of pea.

Steam coals are possibly in little better demand, and not much free buckwheat is on the market under $3.25. It appears that some of the ordinarily large users of this size are beginning to store.

Company mine prices per gross ton and f.o.b. Port Richmond for Tide are as follows:

	Mine	Tide
Broken	$7.35	$10.05
Egg	7.35	10.05
Stove	7.70	10.35
Nut	7.65	10.30
Pea	6.00	8.40
Buckwheat	3.50	6.00
Rice	2.50	5.00
Boiler	2.00	4.40
Barley	1.50	3.90

Bituminous—Business about holds its own, there are even instances where shippers claim there is a bettering of conditions, and we know of at least one good-sized concern who had five full days work recently. This is one of the best coals mined, and the present market is mostly concerned with the best grades. Even though no general improvement is reported there seems to be something of cheerfulness pervading the trade as it looks to the future. There has been some slight resumption in the iron trades and this is encouraging as they take by far the larger share of production.

The stronger houses cling closely to the contract quotations made earlier in the season and while the consumer, in many instances, is inclined to sneer at a figure around $4 when he can get good coal on the market for one-third less, there is little inclination recently to shade prices. Spot prices vary little, and are shown in the Weekly Review.

HAMPTON ROADS

Business Increases — Some Speculative Cargoes — Prices Firm Up — Seamen's Strike Affects Contracts.

Indications that Great Britain has already felt the pinch of the strike of coal miners were given this week when two American steamers loaded cargoes for Ireland. During one day this week, six coal cargoes, aggregating 37,770 tons, sailed from Hampton Roads, all of them for foreign ports except one to Cristobal. This establishes a record for one day's sailings during the last six months.

A number of cargoes have also sailed for Gibraltar, for orders, which is taken to mean that they will ultimately find their way to British vessels or for other purposes. Some of this coal is being sold before shipment, while other cargoes are forwarded on a speculative basis.

Prices remain at approximately $6.25 for Pools 1 and 2, and $5.25@$5.50 for other pools. Accumulations at Tide have decreased. Some cargoes are being contracted for dependent upon the strike of American merchant seamen, the proviso being made that cargoes will be delivered within a certain period if the strike is not of long duration.

Activities at the piers during the week ended April 28, as represented statistically, were as follows:

C. & O. piers, Newport News—	
Cars on hand	2,280
Tons on hand	113,660
Cars dumped April 1 to 27, incl.	5,406
Tons dumped, same period	300,396
Tonnage waiting	3,570
Virginian Ry., Sewalls Point—	
Cars on hand	1,333
Tons on hand	66,650
Cars dumped April 1 to 27, incl.	7,201
Tons dumped, same period	360,819
Tonnage waiting	50,700
Cars on hand outside pools	269
N. & W. Ry., Lamberts Point—	
Cars on hand	1,698
Tons on hand	81,542
Cars dumped April 1 to 27, incl.	5,900
Tons dumped, same period	427,078
Tonnage waiting	22,590

BALTIMORE

Slow Home Market—Prices About on Even Keel — More Activity for Bunkers and Cargo—Hard Coal Men Have New Problem.

Bituminous—A look over the home conditions for soft coal discloses no material change. There is a slight slump from a recent bit of a spurt which seemed to promise better prices. Keen competition exists on all classes of sales in the spot or short-time delivery market, while the contract mar-

ket remains almost dead. Gas and steam coals of better grade are now nearly on a level as to price.

The export movement is increasing, although far from heavy, and more activity is noted at the piers. The desirability of the bunkerage business to many coal men has led to some price-cutting and this end of the trading is less firm than is line business. The light amount running daily on the railroads and the increased dumpings at the piers has cut down the pool reserve to some extent.

Anthracite—Dealers thought they had about all the problems possible for this season in the slowness of the public to order and the question of a retail price adjustment. Now along comes a concern, operating in several Eastern cities, with an offer by advertisement in the daily press, of coal at a price per ton more than $2 below the retail figures here. The advertisement does not explain that this is a net ton, while local dealers sell by law on a gross ton basis; nor that each purchaser must take a $10 share of stock for each $3 secured, adding $3.33 a ton to the cost of the coal—with a share of stock (whatever that may be) thrown into the bargain. All the above would not interest the coal merchants here if it were not for the fact that there is a constant call for information from consumers as to why "you can not sell coal as cheaply as it is advertised in the paper." Meanwhile the new problem only aids in causing delay in ordering.

Northwest

MINNEAPOLIS

Buy-Early Warning Not Taking Hold —Receipts Are at a Minimum—Tardy Lakes Season.

It seems to be a case of being "all out of step but Jim" in the coal trade, for the Northwest is said to be the only section of the territory which is not taking hold with an intention of stocking up a little for future needs. Despite the efforts to urge early coal buying, the situation is just the reverse. There is less buying of coal in the Northwest today than for several years.

To analyze the cause reveals that it is quite a natural outcome of conditions. People of the Northwest are very much of the opinion that the coal trade has profiteered at the expense of the consumer. They are not usually well enough informed to place the blame for the situation upon anyone in particular, and so assess the blame broadcast upon all members.

They have reiteration of possible reductions, to support their hopes of lower prices. Only this week, there was published in the daily press a statement that railroad officials were likely to grant a lower freight rate on coal for the summer months. It is to be hoped that this may prove true, and that it may mature right speedily. It would be a real contribution toward solving the problem. The shortage warning has been worked in the Northwest with varying success for many years, until it has become frazzled and worn. Only last year it was used with thrilling effect, because it was not possible to get coal as required, no matter how much the consumers and others placed their orders. The great and inattentive public forgets the circumstances, but remembers the facts, and when urged to buy early, simply recalls that last year the "buy early" demand was urged when it was not needed.

There is very little hard coal being received—almost none over the docks, but there is some that comes all-rail. It is hardly needed. so far as early buying at retail is concerned. The third week of April saw about ten vessels arrive at the docks at Duluth and Superior, with 80,000 tons of coal. This is larger than the receipts of a year ago, when the coal movement hardly started.

DULUTH

Large Fleet Expected—Contract Activity—Screenings Are Heavy.

Cargoes are now arriving daily and it is expected that a large fleet of coal boats will be received immediately after May 1. Contract business is now being placed, but shipments will not begin until probably late in the summer. Bituminous dock coal is being sold on a very narrow margin.

Most of the docks have individual signatures of their men covering wages and working conditions during the ensuing year, beginning May 1.

The iron mines are reluctant about starting operations because the outlook for ore is not very favorable. This has a tendency to hold back shipments of coal for their account. There has been a little pick-up in commercial business during the past week on all of the docks. There is a large accumulation of screenings on all of the docks and it does not look as though any relief will be found, because Illinois screenings are being sold in the Twin Cities at considerably less than dock screenings can be moved.

MILWAUKEE

Coal Market Dull—Dock Yards Busy Receiving Cargoes—Proposed Regulation of Coal Quality.

Demand is light and will continue so until a definite price schedule has been promulgated. The industrial situation has not improved to an extent appreciable in the demand for fuel.

Dock yards have been kept fairly busy. Thirteen cargoes have been unloaded and several more are on the way. The receipts thus far include 9,000 tons of anthracite and 109,944 tons of soft coal.

A bill has been introduced in the state legislature to compel dealers in Wisconsin to supply their customers with a sales slip covering every load delivered, such slip to bear a statement of the number of heat units contained in the coal, within 200, and the amount of ash within 2 per cent, also whether or not the coal has been screened. The bill reflects a protest against the poor quality of anthracite since war conditions scrambled the coal trade.

Inland West

COLUMBUS

Slight Depressing Reaction Has Taken Place — Buying Is Reduced — Lake Trade Slow in Opening.

The better feeling which had developed recently is disappearing and quiet has settled over the market. All grades are becoming a drug and there is considerable distress coal.

Lake trade is slow in opening because of unsettled prices. bad dock conditions and the slack demand for ore. Loading of bottoms is going on rather actively by producers who have their own dock connections.

Figures quoted for Hocking and Pomeroy ¼-in. lump are $3 and for ¾-in. $3.25. But shippers are still holding off and producers are not very anxious to close contracts because of the uncertainty of the slack situation.

Domestic trade is extremely slow. Householders are showing no inclination to stock up. Some few dealers are taking advantage of the extreme low prices and are stocking up for the summer rush, but this number is very limited. Retail prices are rather steady at former levels.

Steam business is showing slight signs of awakening but demand is still at a low ebb. Only a few public institutions are in the market for their supply for next winter. Public utilities are buying from hand to mouth in the hope of lower prices on screenings when the Lake season is under way.

CLEVELAND

Rate Adjustment Expected to Stimulate Coal Movement—Railroads Closing for Coal Needs — Lake Vessel Rates Fixed.

Bituminous—A distinct feeling prevails that the readjustment of freight rates will speed up the movement from mines in this district. Efforts of operators have been aimed at obtaining a proportional readjustment of rates from the mines in Ohio, Pennsylvania, West Virginia, Kentucky and Tennessee to Lower Lakes docks. Roads serving the Lake Erie ports recently made application for permission to reduce rates 28c. on soft coal carried to the ports for transshipment by vessel. By this means it was hoped to stimulate coal movements and preclude a coal shortage in the Northwest as well as a break down in transportation facilities due to congestion.

Operators believe that the new tariffs will place them on a more favorable competitive basis with Illinois coal producers.

Production at Ohio mines in the last

week slumped somewhat, due to the holding back of shipments to the Lakes in anticipation of the freight revision. Some cases of car shortages are reported due to sidetracking of loaded cars at the ports, which are not dumped because of lack of vessel tonnage. A favorable development in the market has been the covering of fuel requirements by railroads.

Lake—The past few days have seen the first chartering of the season in the coal trade. Contracts for movement of 500,000 tons to docks at the head of Lake Superior have been made by one large local steamship line at a rate of 50c. a ton. Fuel aboard ship will be provided by the shippers at $5.50 a ton based on present rail rates. The vessel rate is unchanged from last year. The fuel price is lower, however, than those charged by other shippers recently. The fact that ore movement will be slow, threatening to compel coal vessels to come down light, is causing steamship operators to keep prices up. Another contract for movement of 150,000 tons to Milwaukee has been placed at 65c. Prompt cargoes are being offered generously.

Pocahontas and Anthracite—Receipts of bituminous coal for the week ended April 23 amounted to 852 cars; industrial 604, retail 248, as compared with a total of 859 cars the preceding week.

Retail prices of coal delivered in Cleveland follow:

Anthracite—Egg and grate, $13.75; chestnut, $13.90; stove, $13.95.
Pocahontas—Shoveled lump, $11; mine run, $9.50.
Domestic Bituminous — West Virginia splint, $10; No. 8 Pittsburgh, $8.15; cannel $12.15.
Steam Coal — No. 6 and No. 8 slack, $5.75; No. 6 and No. 8 mine run, $6; No. 8 ¾-in. lump, $6.

CHICAGO

Conditions Are Unimproved—Railroads Favor Spot Market — Operators Meet to Oppose Preferential Car Supply.

City conditions remain uniformly unsatisfactory. Retailers are buying in a hand-to-mouth way if at all, and factories in operation are cleaning up their storage bins.

One or two of the larger railroads have decided to make no contracts for the time being. Purchasing agents figure that they will be able to buy on the open market and save money for the railroads. The railroads have a number of operators at a great disadvantage as there are many coal producing companies in Chicago who for years have made a specialty of railroad coal and who up until recently have contracted to the railroads. When some of the roads showed a disinclination to sign contracts in the spring, these mines found they were forced to close down as they had no sales organization with which to market their coal.

It has been called to the attention of the railroads that they are taking quite a chance, as it may happen when they come into the market that they will find coal hard to buy and will not be able to purchase on contract as cheaply as they can contract for it today. The answer to this probability is that in case of a national necessity, the railroads will try to work their old game of preferential car supply on railroad fuel orders.

There was a meeting a few days ago in Chicago, attended by operators from West Virginia, Kentucky, Indiana, Illinois, Ohio and Iowa. This meeting was held to determine what stand the operators wished to take relative to such preferential car supply. As a unit, the operators looked upon this with high disfavor.

At this meeting it developed that some of the higher officials of the National Coal Association were in favor of continuing the system for mines with railroad orders but the consensus of opinion of the operators represented at this meeting bitterly opposed the stand of these officials. The general opinion is that the railroads are entitled to no more consideration than a public utility.

ST. LOUIS

Some Activity in Domestic—Public Is Slowly Awakening—Steam Is Easy and Prices Falling.

Considerable improvement is shown in the local domestic situation caused by newspaper advertisements, setting forth the exact conditions. There is a good demand for Carterville for storage. Operating time is improving. The only obstacle to a good movement is the failure to move steam sizes. On May 1 prices on Carterville advanced retail from $7.25 to $7.50. Demand for Mt. Olive is considerably easier, but there is some moving locally. This price also advanced to $6.75.

Standard is slow, very little being put in for domestic and prices are up and down from day to day. The steam call is unusually light. Many mines are blocked out on egg, nut and screenings.

Country call on Carterville is picking up slowly. There is a good movement in the country on Mt. Olive north and west, with scattered shipments of Standard to smaller points inland, but nothing in any volume. Standard probably will not advance locally in retail above the present price of $5.50. There is no advance on coke.

CINCINNATI

Domestic Smokeless Strengthens—Talk of Freight Reductions Retards Trading —Retail Prices Cut.

A decided strengthening of the smokeless domestic market is the outstanding feature this week, traceable to buying orders which have been coming in steadily from inland points. Prices have stiffened so that 25@50c. can be had over the $5 price that had been set. Deliveries for May are being held in most of the offices at $5.50. Mine run has been strongly held at $3.50 for the past three days, and nut and slack has not shown the usual weakness.

The talk of a reduction in freight rates has an irritating effect and holds back those with disposition to contract for their supply. West Virginia interests, which have held aloof from price cutting, entered the market this week with reductions and this had a tendency to lower some of the prices.

Nut and slack, which had been fairly strong for several weeks, dropped to $1.75@$1.90; mine run sold $1.90@$2.10, while the little better inquiry for domestic bolstered the lump price up to $3.50. Prices quoted on contract coal remain relatively the same.

Retail prices have been cut in the effort to tempt householders to buy. Old line companies are quoting bituminous lump $7@$7.50; mine run $6.50@$7, and nut and slack $5.75@$6. Some of the river corporations and others have reduced these prices 25@50c. Another cut of 50c. has been made on smokeless deliveries of mine run, the spread being now $8@$9. Lump, which had a fixed price of $10 for several weeks, also has suffered a half-dollar cut.

DETROIT

Buyers Display Little Interest — Shipments Continue Light—Little Free Coal Found on Tracks.

With buyers holding back and only a small amount of coal coming to Detroit, wholesalers and jobbers are forecasting the development of a situation which will be troublesome to both consumers and dealers. Many of the large users seem to be relying on reserves to provide for their requirements, which are at present considerably below normal. Jobbers believe that when storage stocks have been consumed an unsettled market with rising prices will be the outcome of this policy.

Procrastination in buying is likely to lead to a rush of orders at a time when the steam plants will find there is an active demand for coal for New England, for Lake trade, and perhaps for the export market as well. Transportation conditions, too, are likely to become less favorable.

Smokeless lump is quoted $5 at the mines, mine run is $3.50, and nut, pea and slack is $2. Little distinction is made in quotations on West Virginia, Ohio or Kentucky products; 3-in. lump is $3.40, 2-in. $3.25, 1¼-in. $3.15, ¾-in. $3.05, mine run $2.50 and slack $2. These prices do not always apply on spot sales, however.

South

LOUISVILLE

Prices Well Maintained, but Market Is Sluggish — Movement Not Improving Very Rapidly—Southeastern Kentucky Conditions Improve.

No material improvement in movement is anticipated before June or July. This may throw a big demand into the fall months, resulting in short car

supply. Agitation for early buying is having very little effect.

Some manufacturers in conferences have held that conditions point to higher prices, but they are afraid that they may not get deliveries on contracts, and cannot afford to buy and place the coal on their yards, for the lack of necessary capital to carry it.

There is much surprise over the fact that the L. & N. R.R. paid as high as $3.15 a ton on contract, for eastern Kentucky 4-in. and under mine run. Contract prices show some Harlan mine run quoted as high as $3.50 with screenings, $2.75; Hazard mine run, $3.25; screenings, $2.50; Elkhorn, mine run, $3.50; screenings, $3; western Kentucky mine run, $2.75@$3; screenings, $2@$2.50. Spot prices are shown in the Weekly Review.

BIRMINGHAM

Steam Market Very Dull—Fair Domestic Demand—Supply Is Limited—Railroad Contracts Closed.

There is little steam inquiry in the local market and the tonnage moving over and above contract business is comparatively light. Sales continue to be confined to what is needed to meet current requirements of consumers who have no contract agreements. Practically no contract business is being offered, the only negotiations so far of importance being with the Frisco and L. & N. railroads. The Frisco closed for the year beginning April 1 at $2.75 for Big Seam mine run and $3.15 and $3.25 for Carbon Hill mine run and washed, respectively. The L. & N. contracted at $3.95 for its supply of Cahaba washed, but has not closed for other grades on which proposals were submitted.

There is a fairly good market for all the domestic coal now being produced and practically all the better grades have been sold up through September, and more business could be booked if there was any certainty when the coal would be available at the mines. Quotations for May are as follows per net ton mines; for lump and nut:

Carbon Hill	$3.70@$3.85
Cahaba and Black Creek	4.60@ 5.15
Big Seam	3.40@ 4.00
Montevallo	6.65

West

DENVER

Rates Uncertainty Is Cleared—Prices Stiffen—Production Falls.

Operators expect a gradual stiffening in sales during May. The uncertainty of freight rates has been cleared in a statement from railroads: "While the carriers recognize the necessity of making some realignment of the coal rates in the direction of restoring previously existing relationships as between groups of origin, no general reduction in the rate level is contemplated."

Production for the week ended April 16 was 133,000 tons of a possible 252,000, and 10,000 tons less than the previous week. The statement coming from the carriers is believed to have ironed out the surface troubles.

Prices of bituminous, with the exception of Victor-American and perhaps one or two other companies, will remain at the April base, the mine price of the others calling for an advance of 10c. to $5.75. However, the price is not being strictly adhered to, in view of the fact that the C. F. & I. Co. is selling at $5.50.

Southwest

KANSAS CITY

Domestic Buying Picking Up—Summer Quotations Stiffen—Trade Hampered by Freight Reduction Talk.

There is little buying of domestic grades and it is expected that by the middle of May retail dealers will begin filling up their yards. Buying would have been much heavier at this time had not the rumor gotten out that there was a chance for reduction in freight rates. Consumers and dealers are now convinced that there cannot be a further reduction in prices this year. Some advances have been made on certain grades effective June 10. Arkansas smokeless lump is $6.25 for May shipment. Operators refrain from taking future orders, knowing that later there will be a rush for this grade of coal. Kansas lump and nut is $5, mine run $4.25@$4.50, mill $4, slack $3.75; north Missouri lump is $4.50, mine run $4, and washed slack $4.05.

Canada

TORONTO

Consumers Urged to Stock Up Early—Coal Coming Forward Freely—Soft Coal Little in Demand.

There is practically no change in market conditions. Spring orders are coming in but not in such volume as dealers would like to see. Yards are well stocked and anthracite is coming forward in larger quantities than it is likely to do when navigation has fairly started and a large proportion of the supply is diverted to the Upper Lakes. Industrial conditions do not afford much hope for improvement in the near future. Quotations are as follows:

Retail:	
Anthracite, egg, stove, nut and grate	$15.50
Pea	14.00
Bituminous steam	11.25@11.75
Domestic lump	12.50
Cannel	16.00
Wholesale f.o.b. cars at destination:	
¾-in. lump	8.00@9.00
Slack	6.50@7.00

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Demand Picking Up — Independent Prices Holding — Production Increases.

Production during the last week of April will probably show a decline as ten collieries in the Wilkes Barre district were shut down for several days on account of water trouble when a large water main burst.

The demand appears to be picking up somewhat and this is reflected in a higher rate of production, although the number of independent operations closed remains about the same. The output for the week ended April 23 was 1,903,000 net tons.

PITTSBURGH

Freight Rate Revision May Restore Lake Business—Market Not Materially Changed — Contracts Not Sought by Operators.

For some time prior to last week's announcement it had been known that the Interstate Commerce Commission was disposed to approve of a reduction of 28c. in the rail rate on Lake coal. The local and bunker rate will remain at $2.05½ from the Pittsburgh district, while the cargo rate will be reduced from $1.86 to $1.58. Just now business is practically blocked by the fact that few boats are moving since they do not have ore business.

The coal market is not materially changed. Demand continues extremely light and prices are not well settled. Against the limited demand that appears, some coal from adjacent fields is being offered at less than $2 for steam mine run and this keeps Pittsburgh from selling much above that figure except when the consumer is particular about grade. Gas coal is rather strongly held.

Very little contract business has yet been done, there being little demand, while many operators have refrained from seeking this business, feeling that such contracts would be of little advantage now while they might prove disadvantageous later when there is heavier demand. Operations continue well under 40 per cent.

The spot market is poorly defined but is represented generally by prices previously quoted.

CONNELLSVILLE

Furnace Coke Demand Slightly Increased—Wide Range in Prices.

Demand for coke continues extremely light, but there is possibly a slight im-

provement in furnace coke. The majority of operators are making no effort to run, feeling that such business as they could pick up would not afford them an economical operation. They lose money by being idle, but would lose more by operating, if exhaustion charges are included.

Sales in spot and prompt furnace coke show quite a range. One operator has been making particularly low prices, $3.50 and prabably $3.30 or $3.25, while some small lots have sold at $3.75. The furnace at Yorkville, which recently bought at $3.50 with the announced intention of putting its by-product plant in operation, is in the market again for Connellsville coke, for 30 or 60 days. A steel interest at Canton, on the other hand, has decided not to buy pig iron but to start its blast furnace and byproduct plant instead, and has bought some Connellsville coke around $3.50.

The *Courier* reports production in the week ended April 23 at 26,440 tons by the furnace ovens, and 25,140 tons by the merchant ovens, making a total of 51,580 tons, an increase of 4,360 tons.

UNIONTOWN

Slightly Increased Production — Prices Have Wide Range — New Demand Developing.

The disposition on the part of a few independent coke operators to make attractive prices to the few buyers in the market has not met with general favor, most operators continuing their quotations at "dead-line" prices for all grades of coal and coke. The result has found two quotations in the market, with most sales being made at the minimum. Furnace coke has been sold at $3.50, with most operators, however, quoting $3.75 and $4. Likewise the minimum foundry price is $5.25 with other quotations ranging $5.50@$5.75. Steam coal is $1.60@$2 and byproduct $2.25@$2.75.

The Washington Coal and Coke Co. has resumed operations after two weeks' suspension, during which time the mine pumping system was changed to an electric drive. The plant resumed at the lower wage scale.

Slight production increase both on the part of furnace and merchant ovens is taken to mean that the downward trend has finally hit bottom. At scattered points, preparations are being made to increase production to meet a demand which has developed during the past ten days, which, however, is neither large nor of a permanent nature.

CENTRAL PENNSYLVANIA

No Increase in Demand — Better New England Market Seen — Reduced Independent Costs.

Up to the present time there has been no material increase in demand expected from the export trade due to the strike in England. Operators have signed but few contracts with the railroads, the carriers being content to buy on the spot market while some coal is being secured from old shippers with the understanding that the price will be agreed upon later. The railroad fuel situation is more uncertain now than for many years.

Operators who have contracts with the United Mine Workers are seriously handicapped, as they cannot compete with the independent mines. Thirty-five operators in the field employing non-union miners have reduced wages to the 1917 scale of $1.01 per gross ton for pick mining and $5 a day for day men.

EASTERN OHIO

Railroad Fuel Production Declines—Lakes Sluggish Pending Rates Adjustment—Some Contract Closings—Spot Prices Weak.

Production declined sharply during the week ended April 23, registering a decrease of 22,000 tons, and 14,000 tons under the weekly average output since Jan. 1, which average approximates 288,000 tons. Production amounted to 274,400 tons or about 44 per cent of the aggregate weekly potential capacity of 630,000 tons.

The two important factors said to account for these declining operations are: First, that output for railroad fuel was less than for any week in many months; and, second, shipments of Lakes coal have been seriously hampered by lack of tonnage offering and disposition on the part of Lakes shippers to hold off, pending the adjustment in rail rates on cargo coal. The scarcity of tonnage has resulted in several thousand cars of coal being held under load at docks and on the lines.

Operations will be further curtailed because of the factors already named and the further fact that there is no perceptible improvement in the demand for steam coal.

It is reported that the D. L. & W. R.R. has just closed for 300,000 tons of No. 8 coal for the year beginning May 1 at a price understood to be $3. As this will be the first time this line has ever used soft coal as fuel one may wonder what will become of "Phoebe Snow" who has traveled this "Road of Anthracite" these many years.

Some small contracts are now being closed, but the larger number of buyers continue in the spot market. If anything, prices are not very firm, ranging about as follows:

Slack	$1.80@$2.00
Mine run	2.15@ 2.25
⅜-in. lump	2.40@ 2.60
1¼-in. lump	2.50@ 3.00
Domestic lump	3.10@ 3.40

UPPER POTOMAC

Demand Unimproved — No Contracts Made, as Producers Await Spot Market Revival.

Demand is unimproved and consequently few mines are in operation, production being confined to the larger plants along the Western Maryland. There was no activity in the contract market during the week ended April 23, in fact, smaller producers were adhering to their policy of waiting for a revival of the spot demand instead of disposing of their output under contract.

FAIRMONT AND PANHANDLE

Better Market Outlook—Contracting Lags—Steam Demands More Active.

Fairmont

There was a slight increase in production in northern West Virginia during the week ended April 23, although market conditions were much the same. A somewhat larger tonnage moved on the bargain prices being offered, and there was a little better renewal of contracts. However, railroads were still refraining from contracting and it is expected that not much will be done along this line until June. Lakes shipment was at a minimum, pending the adjustment of freight rates. Tidewater shipments were slightly increased, with a better demand.

Northern Panhandle

There was a general absence of contract activity and beyond a small volume of railroad tonnage the mines had little work to do. The fact that steel companies were resuming operations is counted on to stimulate production to some extent.

Middle West

MIDWEST REVIEW

Domestic Prices Increase — Demand Improves — Steam Still Inactive—Predicted Freight Reductions Restrict Buying.

During the last few days of April there developed a fairly satisfactory domestic market. This improvement was brought about very largely by the fact that prices advanced May 1. Franklin County prepared coals were increased 20c. This differential has been brought home to the retailers and there was a rush of orders on the $3.65 basis for prompt shipment.

The main problem which is now confronting operators is the sale of steam coal. Some profess to see an improvement in the industrial situation but the consensus of opinion is this is just about as bad today as it was in February. Those with storage facilities are placing their steam coal on the ground and shipping domestic sizes to the trade in the Middle West.

A careful inquiry into the state of mind of the average coal man reveals the fact that he is very much more hopeful today than a month ago, although there has been no material increase in the tonnage sold or in the prices obtained. Sales agents now realize that a very strong boom market is fast heading for the coal industry. The country has wasted so much valuable time, and the coal tonnage required is so far behind normal that when the demand comes it is going to come without warning and like an avalanche.

A Franklin County operator told us that for the first time since early in January he did not receive the number

of cars he ordered, apparently because the railroads did not have the cars to furnish, not through any accident or through blockading on the line, but because all the coal cars available were in actual use.

The question of freight rates is assuming added importance in the eyes of the coal fraternity. A number of industries which have been in operation on a reduced basis the past months, have not been buying much coal, in fact, just enough to keep them running from day to day. Purchasing agents are putting off buying until freight rates decrease. Undoubtedly freight rates will decrease, but as soon as they do, these agents will rush in and place orders with a natural result of boosting the market on steam grades. The wise man is purchasing his coal now, as he realizes that the decrease in freight rates will be more than wiped out by the increased market prices of coal after the new rates go into effect.

WESTERN KENTUCKY

Prices Softer—Retail Buying Movement Is Not Taking Hold—Contract Quotations Show Strength.

There is some movement of nut coal south, and a little demand for mine run. Lump is moving slowly as the buy-early movement is not making much headway. Screenings prices are holding up fairly well, and demand is taking care of production.

Leading operators are getting up to three days a week. There is some little demand for railroad fuel, and some movement to retailers, with the bulk of the business just now in Kentucky, southern Indiana and the South, the Northern movement being rather quiet.

Principal quotations show lump, $2.60; nut, $2.40@2.45; mine run, $2.10; nut and slack, $1.90@$2; pea and slack, $1.80@$1.90. Some spot coal is selling at prices as much as fifteen or twenty cents under, where operators have overproduced orders in hand. Some operators are asking $2.75@$3 for mine run on annual contract; screenings on contract are quoted $2@$2.50.

SOUTHERN ILLINOIS

Carterville Prices Increased—R.R. Tonnage Is Heavier—Domestic Movement Makes Steam Sizes Drag.

A better domestic demand has developed in the Carterville field. Nut coal is moving slowly and screenings are dragging. The mines shut up about two or three days a week at present, which is an improvement of about one day from last week. Railroad tonnage is still light. Circular prices increased to $3.85 on May 1 on all domestic sizes. The screenings market of $2.85 is being maintained fairly well. The independents, however, have screenings as low as $2.25, mine run at $2.50, nut $3, with lump and egg from $3.25 up.

In the Duquoin field the prices are somewhat on the scale of the independent Carterville operators and mines work about two days a week. Some railroad tonnage is moving now.

There has been a slight improvement in the Mt. Olive district. Steam sizes are heavy. Domestic is moving toward the Northwest and better than the average to St. Louis. Domestic prices increased on May 1 to $3. Steam sizes are quiet with the lagging market. In the Standard field there is little improvement, if any, except that more railroad coal is moving than heretofore.

Devoy & Kuhn Coal & Coke Co. of St. Louis got the Frisco contract for approximately 800 tons daily, 400 tons from the Illinois Fuel Company's mine at Sparta for the River and Cape Division of the Frisco and 400 tons from the Eldnor mine on the L. & N. for the St. Louis Division. The price is understood to be $2 for egg, nut and mine run. An order for the Rock Island of 750 cars, it is understood, has been completed. This was for mine run and the price was $1.80.

Steam sizes are unusually heavy. There is much screenings and nut coal unbilled. Several mines that have been idle for the last couple of months are not expected to resume before June 1. Prices are quoted in the Weekly Review.

Middle Appalachian

LOW-VOLATILE FIELDS

Production Increases—Good Bunkerage Call — Prices Unchanged — Contracts More Active.

New River and the Gulf

More regular production featured the week ended April 23 in the New River field, and growing out of a steady Tidewater demand. The coal so destined was for bunkerage, only a small proportion going for export. Prices have not yet responded to the increased demand. Virtually no tonnage was being consigned to the Lakes, with no prospect of such movement before late in May. A few contract closings were observed.

Gulf production also increased, mines averaging 40 per cent. The Inland West market furnished the best outlet and contracts were being placed on a basis of $3.50. Tidewater demand continued weak with prices $6@$6.25 at piers.

Pocahontas and Tug River

Pocahontas output increased to 200,000 tons, although "no market" losses still amounted to more than 50 per cent. Bunkerage demand led to a larger movement of coal. Spot sales were gaining but most of the coal was being disposed of by agencies and it was rather difficult to get a line on spot markets insofar as it affected conditions in the field. Contract making was somewhat more lively.

A slight gain was made in Tug River production due to a better Tidewater demand for bunkerage. A few new contracts were being made but producers are inclined to wait for higher prices before closing. The spot market showed signs of gathering strength, although prices remained unchanged.

HIGH-VOLATILE FIELDS

Thacker Labor Disturbance Recurring —No Market Losses Are Somewhat Less—Better Market Developing.

Kanawha

Production remains at a very low ebb, with most of the mines closed down. Heavier inquiries have brought little actual business. However, when heard from, buyers were not demanding such low figures as recently, nor did they seem to expect such low prices. Shipments to Lakes were insignificant. There has not been any renewal of contracts on a large scale.

Logan and Thacker

Logan producers had received orders which enabled them to increase their output to some extent during the week ended April 23 but the larger part of the tonnage was stored. More coal was going to the Lakes than to Tidewater but most of it for storage. Comparatively few contracts were being closed.

Although not seriously interfering with production, miners had resumed hostilities in the Thacker field to such an extent that there is a prospect that drastic action would have to be taken by state authorities to prevent open defiance of the law. "No market" losses amounted to about 140,000 tons and most of the coal shipped was being applied on contract.

Northeastern Kentucky

Few of the mines were in operation during the week ended April 23. Aside from the few companies which were producing contract coal, there was complete idleness in the region with an output of only 27 per cent. The Lakes market was inactive and no contracts were being made.

Virginia

Only contract coal was being mined and production remained at about 50 per cent of capacity. This had the effect of keeping smaller mines out of operation.

West

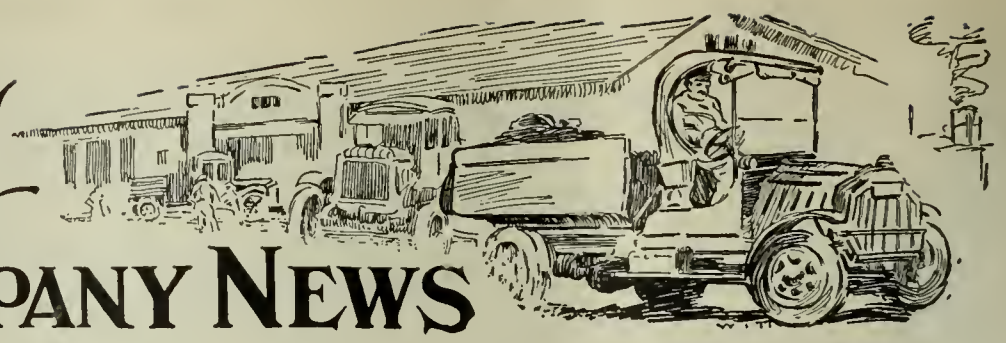
UTAH

Conditions Are Poor—Stocks Not Being Replenished—Shortage Predicted.

The recent cool spell has passed off and conditions are now about the same as they have been for the past two months. The demand, such as it is, is coming from the domestic consumer, and even he is buying from hand to mouth.

Up to this week all the mines but one have managed to keep open, but market conditions have forced two or three to close during the past few days and coal men seem very pessimistic. Salt Lake City yards are fairly well stocked, but there is no coal in the country towns.

MINE And COMPANY NEWS



ALABAMA

The Monro-Warrior Coal Co. has completed extensive improvements at its Sterling mine, on the Black Creek Seam, near Nauvoo, Walker County, expending approximately $200,000 on mine and camp equipment, which includes a modern tipple, washing and screening plant, and a large number of dwellings for employees. Goodman short-wall mining machines have been installed in the mines. All equipment is electrically driven. Charles Blanchard is superintendent of the new Sterling operation.

It is reported that the **Central Iron & Coal Co.**, with pipe plant and byproduct ovens at Holt, Tuscaloosa County, and mines at Kellerman, has closed a tentative contract with the W. J. Oliver Co., of Knoxville, to begin stripping operations on a large tract of coal lands in Tuscaloosa County, from which it is expected to recover around 6,000,000 tons of coal. The Central Iron & Coal Co. is a subsidiary of the Central Foundry Co., extensive manufacturers of sanitary sewer pipe.

ALASKA

The Alaska Engineering Commission has awarded the contract for coal handling machinery in the government-owned mines of the territory to the Brinkley Co., of Seattle. All of the machinery is to be made at the plant of the company in South Seattle. The machinery is to be used for washing and grading of coal from the mines, the coal to be used by the navy and the new Alaska Ry.

COLORADO

Heirs of J. Pierpont Morgan are winners in litigation involving 10,000 acres of coal lands in Colorado and New Mexico held by the **Wooton Land & Fuel Co.** The U. S. Supreme Court sustained judgments obtained in the Delaware courts against Colonel J. A. Ownbey, of Boulder, for $200,000. Coal was mined for two years but at a loss. Ownbey, as vice-president and general manager, controlled the affairs of the company, even after the death of Morgan in 1913, to which the Morgan heirs objected, according to the complaint. Ownbey resisted the Delaware law which barred him from appearing without furnishing bond for $200,000, and it was upon this action that the case went to the Supreme Court of the United States. The coal lands are in Las Animas County, Colorado, and Colfax County, New Mexico.

ILLINOIS

The new plant of the **Chicago, Wilmington and Franklin Coal Co.** in Franklin County, is planned on a huge scale. The contract for the shaft has already been let, and Allen & Garcia Co., engineers for the plant, are now working up the plans.

The exclusive selling agency of the **Victory Collieries Co.** mine at Tamaroa has recently been given to the **Keystone Coal & Mining Co.**, of Chicago. The Victory mine has been operated by its present owners for over two years.

INDIANA

Seeking to collect $5,781.06 alleged to be due from the city of Anderson on a contract for coal bought, William H. Albrecht and Paul N. Davidson, doing business under the firm name of the **Interstate Coal Co.**, filed suit in the Federal court in Indianapolis, asking $6,000 and costs. The petition alleges that during last summer the city of Anderson placed an order with the coal company for 600 tons of coal at a contract price totaling $11,927.28, on which it is alleged only $6,146.22 was paid.

KENTUCKY

Establishment of a mine rescue station in eastern Kentucky at Harlan or Pineville has been requested of the Bureau of Mines by Senator Richard P. Ernst and Representative J. M. Robsion, Kentucky. They were informed that a rescue car would be sent to Kentucky May 1, and that the establishment of a permanent rescue station would depend on recommendations of the car crew.

At Pikeville a $150,000 hospital building is to be erected by a new corporation backed by M. C. Justice, Pikeville; A. C. Bond, Ashland; Dr. Reed S. Johnson, Praise, Ky., and others. A fifty-bed institution will be erected. The new hospital is badly needed in that coal field.

NEW MEXICO

The White Mountain Coal & Development Co. is operating a coal property on leased tracts aggregating 3,600 acres near the town of Oscuro, Lincoln County, 128 miles north of El Paso over the El Paso & Southwestern Ry., and has already shipped to the El Paso market about six carloads of coal during the last month and a half. The company is incorporated at $200,000. Officers are: President, C. H. Gimbel; vice-president, V. E. Woods; secretary, Charles Culter; treasurer, C. A. Gimbel.

The La Joya Coal Mining Co., of La Joya, Socorro County, has filed articles of incorporation, giving its authorized capital stock as $50,000. The incorporators are Henry J. Miller, Alfe A. Swanson, Emma M. Swanson, La Joya; J. J. Mahan, El Paso.

OHIO

Suit in which he asks for $1,000,000 damages has been filed in the Jefferson County Court against the **Wayne Coal Co.**, of Pittsburgh, Pa., and ten individuals by B. F. Burkhart, living near Canton. Burkhart claims that he was deprived of options for and the profit he expected to make from the sale of these options on coal land in Stark and Tuscarawas counties. In April, 1917, he obtained options on 560 acres at Dundee, alleging that he opened negotiations to sell the options to the Wayne company and that while the negotiations were under way S. M. Dunbar, president, went to the owners and persuaded them to sell direct to the coal company. Burkhart alleges that Dunbar stated that the former lacked financial backing.

The Fulton Pit Car Co. has been chartered with a capital of $325,000 to manufacture mine cars and other equipment for mining. The incorporators are C. K. Myers, H. N. Myers, R. F. Myers, J. V. Dugan and D. Baughman.

The Big Coal Co., Akron, has been chartered with a capital of $100,000 to mine and sell coal in the Tuscarawas district. The incorporators are: J. B. Patton, H. A. Kinney, C. W. Patton, D. E. Heighberger and B. F. Hamlin

Papers have been filed incorporating the **Utilities Coal Co.** and also the **Kanawha & Ohio Coal Co.**, two separate corporations, each with a capital of $10,000. The incorporators of the two companies are the same and are S. C. Smith, Leo Schaffer, Charles P. Wahn, Herbert Hannigan and J. C. Martin. The offices of both companies are in Columbus. The first-named concern will be a purchasing agent for public utilities and will not do any jobbing business. Officers of this corporation are: J. C. Martin, president; Herbert Hannigan, vice-president; Charles P. Wahn, secretary, and S. C. Smith, treasurer and general manager. The Kanawha & Ohio Coal Co. will do a jobbing business as well as handle the output from the mines of the **Laurie Coal Co.**, of Greendale, W. Va.; the **Columbia Coal Co.**, of Charleston, W. Va., and the **Claybank Coal & Mining Co.**, of New Lexington, O. Officers of this concern are Herbert Hannigan, president; J. C. Martin, vice-president; Charles P. Wahn, secretary, and S. C. Smith, treasurer and general manager.

The C. G. Blake Co., of Cincinnati, has filed a second suit against the Navy Department in the United States District Court in that city to enforce a price payment of $5.60 a ton for coal requisitioned in 1920 and the early part of 1921. A first suit resulted in finding that the price asked by the company was reasonable and that the $4 offered by the navy was not reasonable. In the latest petition filed by the Blake company it sets forth six causes of action and avers that the government paid only $3 on account for this coal and that there is due a total of $21,073.20.

Quite an inducement is being offered the Cincinnati coal trade for its members to locate offices in the Dixie Terminal Building, recently opened, and which consists in locating the firms, at least as many as possible, on one floor. So far the following have quarters under lease on the eighth floor: **The Ohio & Kentucky Fuel Co., The Old Dominion Coal Corporation, The Semet-Solvay Co., The Riddle Coal Co., Thomas N. Mordue Co., Logan Pocahontas Fuel Co., M. A. Hanna & Co., The Interstate Coal & Dock Co., Elkhorn Piney Coal Mining Co.** On the sixth floor will be located the **Jewett, Bigelow & Brooks** offices.

The Pursglove Coal & Dock Co. has been incorporated with a capital of $30,000 to mine coal and ship the product on the Lakes. The incorporators are Joseph Pursglove, William McCaw, C. F. Taplin, C. N. Fiscus and M. E. Balcom. The offices will be located at 1414 Kirby Bldg.

The Tyrone Coal & Mining Co. has been chartered with a capital of $72,000 to mine and sell coal. Incorporators are Robert T. Salvage, Peter Ingham, John Ingham, Charles B. Hunt and Mary M. Hunt.

OKLAHOMA

Representative Snyder, N. Y., chairman of the House Indian Committee, has introduced a bill for the sale of coal deposits of the Choctaw and Chickasaw Indians in Oklahoma, and applying the coal and oil leasing law to unallotted Indian lands.

PENNSYLVANIA

W. J. Rainey & Co., Inc., has closed its Pittsburgh office and appointed the **Bixler Coal & Coke Co.**, of Pittsburgh, as exclusive sales agents for Rainey foundry coke in the States of Michigan, Ohio and western Pennsylvania.

Efforts to have all the coal companies operating in the city of Scranton pay their 1920 coal taxes promptly and to establish the future collection on the basis of the full market value were made recently by the city in filing municipal liens totaling $13,052.51 against the four following companies: **Delaware, Lackawanna & Western Co., Scranton Coal Co., Pennsylvania Coal Co.,** and **Leggett's Creek Anthracite Coal Co.** It is the contention of the companies that inasmuch as the surface property is assessed at 75 per cent of its market valuation the same should apply to the coal, instead of the latter being assessed at 100 per cent.

Repairs to property damaged by mine cave-ins during the last two years have cost coal mining companies in Scranton nearly $400,000, although the average value of the properties has been only about $5,000. The report of the mine cave commission, just made public, shows that 667 homes have been repaired at a cost of $368,706 and that $17,797 was spent in highway repairs.

Conditions in the Connellsville coke region are about the same as for the last few weeks. There have been increases in work in a small way in spots, but this is offset by some decreases, the net result being about the same.

TEXAS

The Huddleston Mining Co. has been organized at Belton for the purpose of mining coal and lignite. The company is capitalized at $200,000 and the incorporators are: H. F. Hannold, R. R. Huddleston and J. E. Palm.

UTAH

The Carbon Fuel Co., Salt Lake City, has been granted permission by the State Securities Commission to sell bonds in the amount of $101,000. The money will be used to open up new coal properties in Carbon County.

The Salina Canyon Coal Co. has been formed with a capital stock of $10,000.

WEST VIRGINIA

In order to insure a supply of fuel at all times in that particular section the Baltimore & Ohio has acquired a mine on the Connellsville Division of the road near Catawba, this mine having formerly been the property of **Andrew Lyons**, of Fairmont, and his associates. The coal is in the Pittsburgh seam. Until the mine was acquired by the B. & O. the owners of the mine shipped coal by the river route but since the railroad has acquired it a chute has been installed, making it possible to load railroad cars.

After a two months' suspension of operations, mines of the **Bethlehem Mines Corporation** at Barrackville and Dakota resumed operations on April 11 on virtually a full-time basis, affording employment to about 450 men. The mines are a subsidiary of the Bethlehem Steel Corporation and the product will be shipped to the steel company's plants. The resumption does not especially reflect any improvement in the steel business, the Bethlehem company simply desiring to secure coal from its own mines. Other companies at whose plants operations have been resumed are the **Troll Coal Co.** on the Western Maryland and the **Buttermore mines** on the Monongahela Ry.

Improvements are being made at the plants of the **Verona Coal Co.**, operating near Wellsburg and of the **Eddy Coal Co.**, operating near Oakmont in Mineral County. At both the plants houses are being built to make provision for more miners.

Capitalized at $325,000, the **Kenova Mine Car Co.** will engage in the manufacture of mine equipment of all kinds, including mine cars, the plant of the company to be located at Kenova point, where the company will also establish a foundry.

Grafton people have organized the **Adelaide Coal Co.**, with a view of engaging in mining operations in Taylor County, not far from Grafton, where the general headquarters of the company will be. The concern is capitalized at $25,000. Conspicuous in the organization of the company were: William P. Samples, N. F. Kendall, V. R. Kendall, A. Samples and Ole E. Wyckoff, all of Grafton.

Connellsville capitalists have launched the **Clearwater Coal Co.**, headquarters of which are at Fairmont, this company being organized with a capital stock of $250,000. Interested in the new corporation are: C. E. Wilson, A. B. Kurtz, J. C. Henry, W. L. Wright and David Wertheimer, all of Connellsville, Pa.

A preliminary organization of the **Eddington Coal Co.** has been effected by Wheeling business men, this concern having a capital stock of $50,000. It will undertake the development of mining property in the vicinity of Wheeling. Leading figures in the new corporation are: Harry Dornan, Harvey H. McDonald, Harry H. McDonald, Harry Davis and E. E. Sells, Wheeling, W. Va.

Mine and mill supplies will be handled by the **Beckley Coal Supply Co.**, newly organized, this company having a capital stock of $50,000. Among those behind the new concern are: B. B. Richmond, of Cranberry; W. C. Thurman, of Beckley; Fred Richmond, of Pemberton; G. E. Harvey and J. M. Bowman, of Sprague.

Operations have been resumed by the **E. L. & W. Coal Co.** at its plant on the Monongahela Ry.

ALBERTA

Large coal deposits west of Edmonton will be developed by Scottish capital in the very near future. It is the intention of the **Lucar Collieries**, under which name the new firm will be known, to confine their development work to the Mountain Park region, and if preliminary surveys warrant more extensive development will be undertaken.

BRITISH COLUMBIA

The British coal strike has resulted in at least one big order for coal for shipment from Vancouver to Great Britain's customers. **D. Thomas & Co.**, coal exporters, have contracted for the shipment of seven cargoes of Vancouver Island coal to South Africa. The order was placed through a Welsh firm and only awaits cable confirmation for the first cargo to go forward.

NOVA SCOTIA

The case of McIntyre vs. the **Dominion Coal Co.** was completed in supreme court recently, the jury returning a verdict in favor of the plaintiff allowing damages of $500. The suit was brought against the company to recover for damages caused property of the plaintiff by subsidence of ground on which it stood caused by the company's underground workings.

Traffic News

The I. C. C. has authorized railroads to continue rates on coke from points in Alabama to points in Texas without observing the long and short haul clause.

In the complaint of the **Citizens Coal Mining Co.** an I. C. C. examiner recommends that rates on bituminous coal from Citizens Mines A and B in the Springfield, Ill., district on the Chicago, Peoria & St. Louis R.R., to Springfield, to various intrastate and interstate points, are not unreasonable.

In the complaint of the **Charleston (S. C.) Mining & Mfg. Co.** an examiner recommends that the rates on coal from points in Virginia and Kentucky to the Charleston company were applicable.

The cases of the **Peerless Coal Co.**, of Illinois, and the **Jones & Adams Coal Co.** are assigned for oral arguments before the commission in Washington on May 12.

The Coal Trade Bureau of Illinois has been allowed to intervene in the case involving rates on bituminous and cannel coal from Ohio, Pennsylvania, Maryland, Virginia, West Virginia, Kentucky and Tennessee to points in the lower peninsula of Michigan.

The Kaw River Sand and Material Co., of Kansas City, in a complaint attacks as unreasonable the rates on coal between points of origin within 1,000 miles of Kansas City and its plants at Turner, Kansas.

The Canton (Ill.) Coal Co. in a complaint to the I. C. C. attacks as unreasonable the rates on bituminous coal from the mine at Rawalt, near Canton, to St. Paul, Minn.

The Hercules Motor Co. of Canton, Ohio, attacks as unreasonable the rates on coke from Detroit to Canton.

In the case of the **Missouri Pacific Ry.** against the **McGrew Coal Co.** from the Missouri Supreme Court, effort was made to set aside a judgment in favor of the coal company for refund of excessive freight rates on the ground that the shipper did not pay the overcharges. The action was brought by a shipper under the long and short haul law of Missouri and judgment for overcharges was given by the Missouri courts. The railroad brought the case on writ of error to the Supreme Court, contending that the law as construed violated its constitutional rights. In an opinion by Justice Brandeis the court holds that the only federal question which was substantially and properly raised in the courts below was decided adversely to the railroad's contention in a similar case involving similar transactions. The court holds that the objection that the shipper did not pay the freight charges and was not damaged raises no substantial federal question but is a question of State law, which the Supreme Court has no jurisdiction to review.

Black Mountain Railroad Co., a short-line feeder operating in the coal field of Bell and Harlan counties, in amended articles of incorporation just filed, provides for an increase of capitalization from $200,000 to $500,000.

The McKell Coal & Coke Co., of Glen Jean, W. Va., complain against unreasonable rates on semi-bituminous coal from its mines in West Virginia to various interstate destinations.

At Washington on May 14 the commission will hear the complaint of the **Duquesne Coal & Coke Co.**, and on May 16 the complaint of the **Hillsboro Coal Co.**

The Comptroller of the Treasury has refused a claim of the New York, New Haven & Hartford R.R. for payment of shipments of coal from Scranton, Pa., to New Bedford, Mass. The company says it was misinformed as to the point of origin of the shipment in question. The comptroller rules that it was the duty of the Delaware, Lackawanna & Western R.R. in the absence of specific through routing by the shipper to route the shipment via the cheapest reasonable route. He says there were two routes out of Scranton at the rate of $3.30 a ton which was well known to the D. L. & W., and that the railroad routed the shipment on the higher rate for its own convenience, and that the routing via the longer route cannot operate to increase the charges to which the shipment was lawfully entitled. The comptroller says the statement of the railroad that the adjustment of the excess charges should be between the government and the **Peoples Coal Co.** does not have merit.

The complaint of the **Fairmont & Cleveland Coal Co.** has been assigned for oral argument before the I. C. C. in Washington on May 21.

In the complaint of the **Merchants' Coal & Coke Co.** an I. C. C. examiner reports that the rates on lump coal from Eldnar mine and Cantine, Ill., to Rose Hill, Ill., and from Cantine to Jefferson Park, Ill., are not unreasonable.

In the complaint of the **Burns & Hancock Fire Brick & Clay Co.** an examiner recommends that the rates on shipments of mine run bituminous coal from mines in the Clinton, Ind., district to West Montezuma, Ind., are not unreasonable.

Poehlmann Bros. Co. and others, of Morton Grove, Ill., in a complaint to the commission, attack as unreasonable the rates on coal from mines in central and southern Illinois to Edgebrook and Morton Grove.

The commission has decided that the rates on bituminous coal from Belleville, Benton, Duquoin, Murphysboro and other southern Illinois points to Springfield, Mo., via routes in connection with the St. Louis-San Francisco R.R., are unreasonable, and that the rates on bituminous from Quinnimont, W. Va., and Lilly, Pa., to Springfield, Mo., are not unreasonable.

The I. C. C. has authorized the **Union Coal & Coke Co.** to intervene in the case of the Lackawanna Steel Co.

Senator Calder has introduced a bill to prevent the I. C. C. from issuing priority orders in advance of hearing thereon.

The Salt Lake & Utah Ry. has applied to the State Public Utilities Commission for the privilege of delivering coal in Salt Lake City on exactly the same terms as the other railroads. This would enable the company to haul coal to Salt Lake destined to consignees whose tracks connect with the Rio Grande or the Salt Lake Route, as well as to those consignees whose plants are situated on spurs of the St. L. & U. R. Co. At the present time the tariff of the company contains a clause reading "Rates applicable only to traffic delivery on the team tracks of the Salt Lake and Utah railway or to industries served by it when so routed by shipper."

Oral arguments have been assigned in coal cases before the I. C. C. at Washington as follows: **West Kentucky Coal Bureau**, May 18; **Reeves Coal & Dock Co.**, and the **P. Koenig Coal Co.**, May 19.

In a complaint to the commission the **Terre Haute, Indianapolis & Eastern Traction Co.**, of Terre Haute, Ind., attacks as unreasonable the rates on bituminous coal from producing points in Indiana to Terre Haute, and asks refund of $29,652 as overcharges on former shipments.

Michael S. Goss and others, of Auburn, N. Y., complain against unreasonable rates on anthracite coal from producing points in Pennsylvania to Auburn and other New York points.

In the complaint of the **Cameron Coal Co.**, an I. C. C. examiner recommends as follows:

"Refusal by the Chicago, Burlington & Quincy R.R. Co. to serve complaining coal companies' mines located on the rails of the Marion & Eastern R.R., whereas it serves coal mines located on the rails of the Missouri Pacific R.R. at Royalton, Ill., and on the rails of the Illinois Central R.R. at Logan, Ill., not found to be unduly prejudicial.

"Not shown that the public interest would be served by the construction of a physical connection between the rails of the Chicago, Burlington & Quincy and the Illinois Central at a point two miles west of Marion, Ill.

"Not shown that public convenience and necessity require the extension of the rails of the Marion & Eastern to connect with the rails of the Chicago, Burlington & Quincy at a point about two miles west of Marion; or that such connection is reasonably practicable or would produce sufficient business to justify its construction and maintenance.

"In view of the above findings no reason exists for an order requiring the Illinois Central to permit any additional use of its rails by the Marion & Eastern.

"Complaint dismissed."

Personals

T. R. John, general manager of the Bethlehem Mines Corporation, with headquarters at Reedsville in Preston County, was a business visitor at Fairmont, W. Va., early in April.

Recent visitors in the Cleveland market were **Guy Hartley** and **M. L. Taylor**, of the Morgantown Coal Co., with headquarters at Morgantown, W. Va.

Benjamin Bissell, general manager of the Century Coal Co., having headquarters at Baltimore, paid a visit to the company's mines at Century, Barbour County, and also to the Fairmont region early in April.

J. J. Ross, former president of the Logan Operators' Association, with headquarters at Logan, was a visitor in the Kanawha region during the early part of April.

George Wolfe, secretary of the Winding Gulf Operators' Association, and a director in the Tug River Operators' Association, has been elected a member of the county court of Raleigh County to succeed one of the commissioners removed. The appointment is regarded as an excellent one, as Mr. Wolfe has already devoted much time to public service and has always made a splendid public official.

J. C. McKinley, of Wheeling, president of the Richland Coal Co., has returned to his headquarters at Wheeling after spending some time in the capital working on tax matters affecting the state in general.

George B. Taylor, general manager, and **J. S. Amend**, auditor, of the Jamison Coal & Coke Co., both with headquarters at Greensburg, Pa., were visitors in the Fairmont region the latter part of April.

A recent visitor in the Baltimore market was **F. J. Patton**, of the Patton Coal Co., of Fairmont. Mr. Patton made the trip in a machine, having members of his family with him.

Jack Lewis, sales manager of the Buffalo Coal & Export Corporation, with headquarters in New York, spent a few days during the latter part of April at the general offices of the company in Huntington, W. Va.

B. L. Priddie, of Huntington, who is president of the Elkhorn Collieries Co., operating in Kentucky, spent a few days during the latter part of April at the company's plant in Kentucky.

L. C. Sherrill, for the past few years with the Lumaghi Coal Co., at St. Louis, has resigned his position to accept a similar one as general sales manager for the West Virginia Coal Co., of St. Louis. Mr. Sherrill succeeds **J. J. O'Donnell**, who has been with the West Virginia Coal Co. for a number of years.

W. A. Brewerton, president of the Sangamon County Mining Co., of Springfield, Ill., is in the hospital, having undergone an operation for stomach trouble.

Charles A. Owens, president of the Imperial Coal Co. and the Tidewater Coal Exchange, Inc., of New York, was a visitor recently at the Norfolk offices of his company.

W. A. Shea, manager of the Norfolk branch of Cosgrove & Wynkoop, went to New York recently to visit headquarters and to make an informal survey of conditions in the New York market.

J. G. Miller and **J. R. Christian**, of the Raleigh Smokeless Fuel Co., have been in New York calling on the trade.

E. W. Scheer has been made general manager of eastern lines of the B. & O., to fill the vacancy made by the resignation of Stanton Ennes on Jan. 1. **R. B. White**, formerly superintendent of the Baltimore division, succeeds Mr. Scheer as general superintendent of the Maryland District with headquarters at Baltimore. **F. G. Hoskins** has been superintendent of the Baltimore Terminal Division, to succeed Mr. White as superintendent of the Baltimore division.

The Bureau of Mines has appointed **L. F. Lumaghi** president of the Fifth and Ninth District Illinois Coal Operators' Association, as general chairman of the committee on arrangements for the Bureau's first aid and mine rescue meet at St. Louis next September. **W. K. Kavanaugh**, of the Southern Coal & Coal Co., has been appointed chairman of the program and arrangements committee.

J. B. Eby and **M. R. Campbell**, of the Geological Survey, are conducting field investigations in the coal regions of Wise and Russell counties, Virginia.

H. Clyde Elkins, mine inspector, of Connellsville, is taking a business and pleasure trip through the Southern States, including Tennessee, Virginia, Maryland and Georgia. While in Georgia he will inspect the old Durham mines where state convict labor was employed for years.

Director George Otis Smith, of the Geological Survey will address the convention of the Indiana Retail Coal Merchants' Association on May 6.

Edward J. Hackett, who has been seriously ill at his home for the past several days, is reported to be improving. Mr. Hackett is a prominent producer of Indiana and has retailing and jobbing connections in Louisville and New Albany.

A. H. Land, president of the Dickinson Fuel Co., of Charleston, was a recent visitor in Eastern markets.

W. F. Coale, president of Coale & Co., of New York City, has returned to his headquarters after spending several weeks in the Kanawha and New River regions.

Arthur F. Rice, commissioner of the Coal Merchants' Association of New York, who has been ill since January, has recovered sufficiently to be taken to California to recuperate.

Ezra Van Horn has been appointed general manager of the Clarkson Coal Mining Co., Cleveland, Ohio, vice **C. P. White**, resigned.

K. Baumgarten has been appointed as a mining engineer of the United States Bureau of Mines, attached to the Mississippi Valley Station at St. Louis, Mo. Mr. Baumgarten's professional experience embraces a period of some fourteen years spent in operations and examinations in this country and in Mexico.

Joseph J. Traher has resigned his position as mine superintendent of the Union Pacific Coal Co., in Wyoming, after twenty-two years of service, assigning ill health as the cause. He will take a long rest, going to Wilkes-Barre, Pa., where he will visit relatives.

Howard M. Raymond has been appointed acting president of the Armour Institute of Technology, to fill temporarily the vacancy caused by the recent death of Dr. F. W. Gunsaulus.

George P. Daniels, vice-president of the Smokeless Fuel Co., formerly located in Cincinnati, but now in charge of the New York office, visited the former city while on a Western trip and renewed old acquaintances.

Industrial News

Beckley, W. Va. — Secretary George Wolfe, of the Winding Gulf Operators' Association, has announced the opening of the new offices of the association in the Bair Building.

New York, N. Y. — Lima Locomotive Works, Inc. has removed its executive and sales offices from 30 Church St. to the National City Building, 17 East 42nd St.

New York, N. Y.—The Combustion Engineering Corporation announces its removal to its new building, Combustion Engineering Building, 43-45-47 Broad Street.

Chicago, Ill. — Roberts & Schaefer Co., engineers and contractors, announce their removal from the McCormick Building to the eleventh floor of the Wrigley Building.

Association Activities

West Kentucky Coal Bureau

The coal bureau held its regular business meeting in Birmingham on April 15. The bureau, which has no connection with the price or marketing of coal, but devotes its attention to matters of conservation, production and safety and welfare work, represents about ninety per cent of the tonnage produced in western Kentucky. Papers were read before the meeting on "Traffic," by C. F. Richardson, president of the Kentucky Coal Co.; "Conservation and Safety," by Edward Holt, Central City, Ky.; "Preparation and Cleaning of Coal," J. L. Rogers, president and general manager Rogers Brothers Coal Co., Pevier, Ky.; "Cost of Production," Monro B. Lanier, Birmingham, Ala., who operates the Norton Coal Co., in the Kentucky field. At the conclusion of the business sessions the visitors were tendered a banquet by a committee of Birmingham coal men, Monro B. Lanier, Morris Bush, George W. Connors, W. C. Adams, C. S. Bissell and S. L. Yerkes, and later visited industrial plants and mines in the district.

Obituary

James Stewart, superintendent of the Tennessee Coal, Iron & Railroad Co.'s Blocton division, died at Blocton April 18 as a result of an attack of heart trouble. Mr. Stewart was well-known and generally liked in mining circles and rose to the superintendency of the Blocton mines from the ranks, starting in as a greaser boy, having had supervision of these operations for several years.

William P. Plant, an official of the Midland Lumber & Coal Co., Minneapolis, operating a line of lumber and coal yards, died recently after an illness of several months.

Philip Groben, formerly a coal dealer of Buffalo, N. Y., under the name of Groben & Groben, died recently at his home in Long Branch, N. J., at the age of 69. He did a large coal business, but was perhaps better known as a raiser and trainer of fine horses.

Coming Meetings

Due to the impossibility of securing hotel accommodations for the annual meeting of the **Kentucky Retail Coal Dealers Association**, at Lexington, April 27, Secretary J. Crow Taylor, advises that the meeting has been postponed until May 11 and 12.

Mine Inspectors' Institute of America will hold its twelfth annual meeting at Charleston, W. Va., July 12 to 15. Secretary J. W. Paul, Bureau of Mines, Pittsburgh, Pa.

Illinois and Wisconsin Coal Dealers' Association will meet at Chicago, Ill., July 13 and 14.

Missouri State Retail Coal Merchants' Association will hold its annual meeting at the Planters Hotel, St. Louis, Mo., May 17 and 18. Commissioner E. J. Wallace, Pierce Bldg., St. Louis, Mo.

American Society for Testing Materials will hold its annual meeting at the New Monterey Hotel, Asbury Park, N. J., June 20 to 24. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

Illinois Mining Institute will hold its spring outing the early part of June on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on June 3 and returning on June 5. Secretary, Martin Bolt, Springfield, Ill.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The 24th annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

American Institute of Chemical Engineers will hold its spring meeting June 20 to 24 at Detroit, Mich. Secretary, Dr. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7 and 8. Secretary, G. H. Cushing, Woodward Bldg., Washington, D. C.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill., May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The National Coal Association will hold its next annual convention at the Waldorf Astoria Hotel, New York City, May 19 and 20. White Sulphur Springs hotel reservations have been cancelled. Secretary, W. B. Reed, Commercial National Bank Bldg., Washington, D. C.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Retail Coal Merchants Association will hold its annual meeting May 12, 13 and 14 at the Jefferson Hotel, Richmond, Va. Special rates on all railroads. Secretary, E. G. Gordon, Philadelphia, Pa.

Michigan-Ohio-Indiana Coal Association will hold its annual meeting June 15, 16 and 17 at Cedar Point, Ohio. Secretary, B. F. Nigh, Brunson Bldg., Columbus.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 19 NEW YORK, THURSDAY, MAY 12, 1921 Number 19

Growth of Coal Exports

THIRD place in point of value in exports from the United States in 1920 was taken by coal. Raw cotton and wheat were first and second, with automobiles and leaf tobacco following coal. Because the enormous increase in exports since the war—the total in 1920 was around eight billion dollars—is largely ascribed to the increase in unit values of the products sold abroad, the high position of coal is all the more noteworthy because in point of tonnage it represented such a large gain over all previous records. According to a compilation made by the U. S. Chamber of Commerce, in point of weight coal led the list of exports with nearly 40,000,000 tons—double pre-war figures and 74 per cent over 1919.

The importance of coal as an employer of ocean tonnage is indicated by the fact that nearly 23,000,000 net tons were shipped abroad, as compared with 6,500,000 tons of wheat and 6,000,000 tons of oils. Profitable employment of our new but languishing merchant marine will be easier if coal cargoes can in future be obtained on anything like the scale of 1920. But when France—so coal hungry in 1920—can export coal in 1921 to Great Britain, the prospect of an active demand for American coal in Continental Europe is not bright.

Looking beyond this year and to that period, perhaps not so far distant, when Europe has settled reparations and established credits and industry has again started its upward progress, there is every reason to expect a revival in the European market for coal. To what extent the foreign demand will develop in the next twelve months is a matter of as much uncertainty as the future state of the home demand, but we think growth is as inevitable in the former field as in the latter.

A Time to Exercise Intelligent Self-Interest

THIS week the National Retail Coal Merchants Association meets at Richmond, next week the National Coal Association will convene in New York, and finally the American Wholesale Coal Association will hold its annual conclave at Washington early in June. The officers of the several organizations are holding out tempting programs of general interest, and in one instance at least, promises of special entertainmen to induce members to attend. But, be not alarmed; all your time will not be taken up in listening to fine speeches or taking in the sights. Your officers have serious thoughts these days and you will be told of what is transpiring in a national way in the world of trade and legislation. You will be encouraged to give way to your feelings on the Frelinghuysen bills, the Calder propaganda, high freight rates and the general antipathy of coal buyers.

Attendance should be the largest ever. These three associations, representing the three phases of coal from mine to household and to industry, are products of the war, now going through the readjustment period with other business of the country and trying to justify their peace-time existence before the American people. It is only by the attendance of every man who cares a rap about his affairs that out of these gatherings can come a consensus of opinion and unity of thought that will see the coal industry and trade through what promises to be another year of trial.

How far should the coal industry go with the administration program of less government in business and yet more data on business in the Government? Since the people, through Congress, are resolved to have some legislation on coal, how far should the coal men go in helping frame the measure? How should the coal industry go about putting its case directly before the people of the country? Perhaps, as suggested by T. H. Watkins in his address at Atlantic City in April, the legislation proposed by Senator Frelinghuysen has sufficient merit to represent a base on which to build. Mr. Watkins again brought forth the Garfield plan, for he believes that "all operators are not opposed to discussing or considering constructive legislation in relation to the coal industry as well as to other industries."

The live subjects for discussion are almost limitless; all that is needed is a full attendance to make each of these annual conventions fruitful for the good of the industry and worth the while of the individual.

It Cannot be Done, but It Is Done

FROM the beginning of recorded history there have been those who stood on the side lines and loudly proclaimed "It can't be done," while others took off their coats and did it. Doubtless when the first iron boat was being put together, some local prophet was busy pointing out that iron is heavier than water and that the enterprise, therefore, was doomed to failure. Flying in a machine heavier than air was one of those impossible things—until the Wright brothers did it. Everyone is familiar with the exclamation of the man from the country who saw a giraffe for the first time—"Mariar, there ain't no such animal."

Not so long ago George H. Cushing, the executive head of the national association of the coal jobbers, made a voluntary report to Secretary Hoover on the general subject of coal. The burden of this 3,000-word letter report was that coal is not produced in equal monthly installments because it is not burned that way and it cannot be stored during periods of low consumption against the need in times of greater consumption because the producer and consumer cannot by any manner of means be induced to store it. By a truly marvelous process of reasoning—so devious as to daze the mind, but so conclusive because supported by such an array of statistics—Mr. Cushing shows that "the three parties in interest [consumers, railroads and government] shirk the responsibility," and that the cost of storage must therefore be borne by the producer.

Statistics are susceptible of becoming a habit, just like many other things. And when one gets the habit, he must have his statistics in spite of the eighteenth or any other amendment. If he can't get some with an official stamp on them he will set up his still or hop kettle and make home brew. In attempting to prove that coal cannot and will not be stored by the consumer Mr. Cushing has fortified every point in his argument with statistics, most of which must be good because they are his own make. For instance, the cost of storage is given as 75c. per ton and the interest on the coal and freight money as 24.51c. or a total not of about one dollar but of 99.51c. Again, "If we should try after April 1 to bring production always up to the average by storing that coal which is produced in excess of current demand—in 1920, for example, it would have been necessary to store 27,837,116 tons. . . . The total cost—exclusive of degradation or loss—peculiar to storage alone is $27,700,714.13." When he gets it down to 13c., one cannot fail to be impressed with his higher mathematics. Necessity, it is said, is the mother of invention.

Early in his argument Mr. Cushing makes the serious error of not differentiating between demand for coal and consumption of coal. He says that there are two causes for the fluctuations in coal production and that both "prove that the coal trade merely holds the mirror up to American life to reflect it." His conclusion, "It follows that when you see fluctuations in coal production, you may expect to find corresponding fluctuations in the use [consumption] of coal generally," does not follow, of course. From this point on to his final paragraphs, wherein he lays all the blame for variations in coal production on the farmer and the "preoccupation of the people—and the exhaustion of their money reserves—due to the Christmas holiday indulgences," Mr. Cushing argues on the false ground that coal is produced only as it is at once required for consumption, instead of as it is demanded for purchase.

After being so completely convinced by Mr. Cushing that the coal consumer cannot be induced to store coal, it is disquieting to one's peace of mind to have the government come out with a report showing that millions of tons of coal are stored and are now piled in reserve by consumers. According to Mr. Cushing in that hectic year of 1920 it would have required 27,837,116 tons of coal in storage to fill his requirements of the situation, but it could not be done. Nevertheless from June 1 to Dec. 31 there was put in storage by consumers the sum of about 25,000,000 tons of coal and the total stocks at the end of the year were around 45,000,000 tons.

The fact is that consumers have never refused to store coal when they thought they really needed it, and the cost never has been a deterrent. Whether the actual cost of unloading coal from cars into stock piles and taking it out again be 20c. or a dollar, and it certainly has that range, depending on size of operation and local conditions, it must not be forgotten that buyers paid premiums of $5 or more per ton last year for coal to put in storage. The cost of this coal and of the storage was of minor consideration in the mad desire to accumulate reserves. It seems fairly clear that the problem of stabilizing the bituminous-coal industry largely revolves around a diversion of intense consumer interest in coal at high prices to more interest in coal when it is to be had at lower prices, in order that there may not be the necessity for such high prices.

Lake Season Opens Late but Auspiciously

ALTHOUGH the tonnage of cargo coal dumped at Lake Erie ports this year up to May 1 has been the largest on record—1,176,508 tons, compared with 1,133,000 tons in 1919, the previous high record—the lake season is considered one of the slowest on record. Of the 22,408,000 tons of coal sent up the Lakes last season to American and Canadian ports, there remains in the hands of the American distributors on Lakes Superior and Michigan some 2,250,000 tons undelivered, if not largely unsold. This "carry-over" is reported to be three times as great as last year and to have been exceeded in recent years only by that on April 1, 1919, when the dock men had more than 3,370,000 tons left over from the receipts of 1918.

A severe instead of a mild winter would have resulted in much smaller stocks at the docks this spring, despite the lethargy of business. It is again the problem of the operators of the docks at the head of the Lakes to estimate almost a year in advance just what coal will be required by the Northwest and to take steps to get it up the Lakes while the weather permits and in advance of the need for the greater portion. No longer, however, can the docks expect to supply the total requirements of the Northwest, for all-rail coal from Illinois and Indiana has invaded this market in large and increasing degree in the past few years to add to the market problems of the old-time Lake distributor.

Dock operators were, more than any other section of the coal trade, caught at the end of last year with large stocks of "high-priced goods on their shelves" with a declining market. Coal bought during the summer of 1920 at the peak of prices and in part shipped up on the new high freight rates had to meet competition with cheaper Illinois coal and be sold when the demand had largely fallen off. The losses on this operation must of necessity have been serious, but as one of the fortunes of the Lake trade they have been faced quietly as part of the readjustment.

A new season has opened with conditions in some respects more favorable to the trade. In the first place there is no demand this year for pooling of coal, and there is therefore more opportunity to meet the exacting demands of consumers with particular grades of coal and for shippers to play up their individual product. The Ore and Coal Exchange, with Herman M. Griggs as manager, will be operated as a clearing house for the ore and coal trade in all respects similar to that in previous years save that of pooling. Under the leadership of Mr. Griggs the exchange has proved its value and established a place for itself in dull as well as active times. It is the one typical coal "exchange" in this country.

The present low prices of bituminous coal and the prospective higher prices next summer and autumn represent an incentive for prompt buying and storage that is certain, as in 1919, to be taken full advantage of by the coal men who know better than the industrials how to read the signs. Reduction in the freight rate to lower Lake ports and expected reductions in the rates from the upper docks to interior points are opportune in giving an impetus to the shipment of Lake coal. It appears that the greatest deterrent in sight is lack of boats in which to put the coal up the Lakes, due to the lack of ore and grain cargoes down. The lower Lake ore docks are better supplied with ore than the upper Lake docks are with coal.

Woodward Breaker Sizes and Prepares Six Thousand Tons of Anthracite Per Day

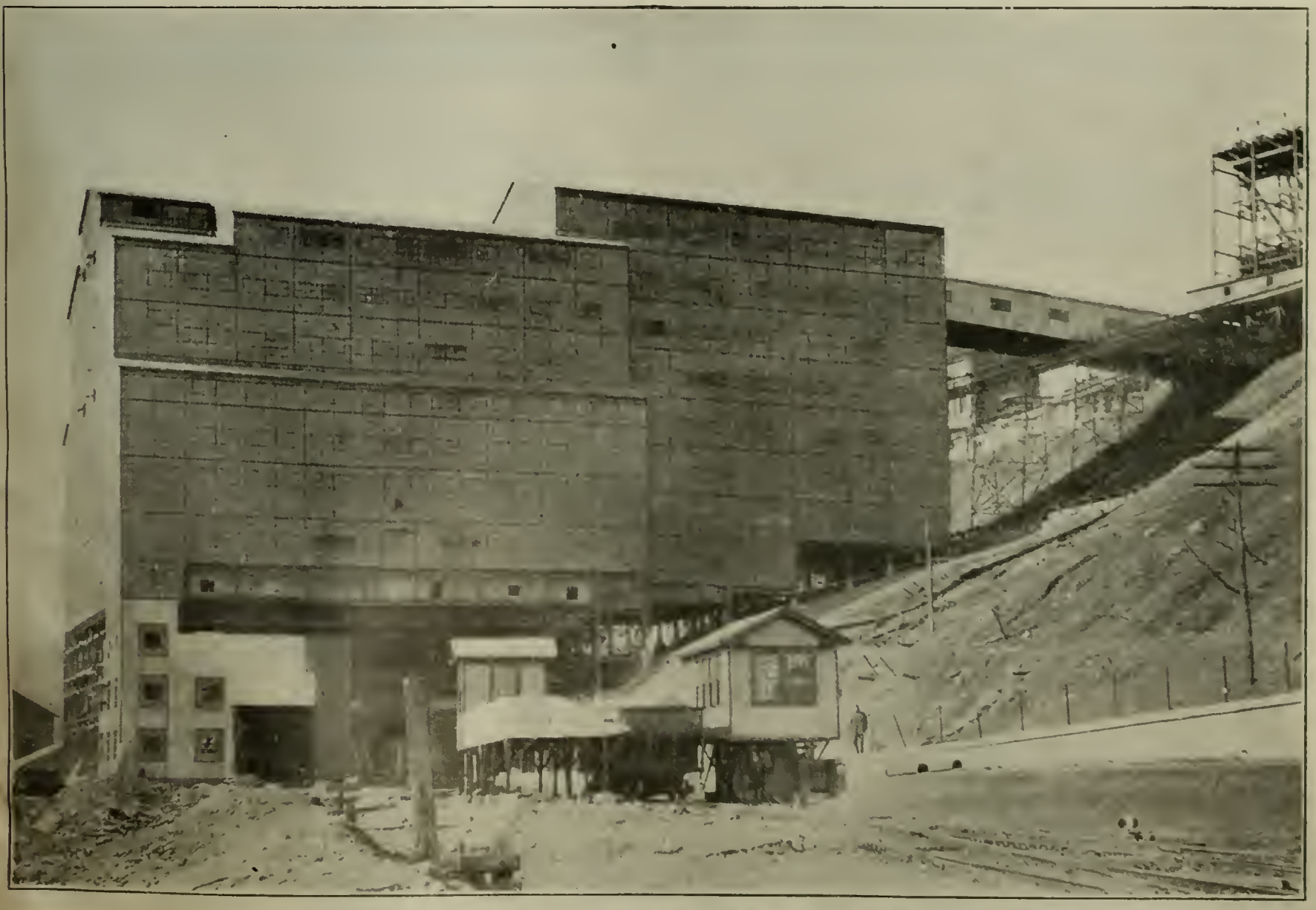
Million Dollars Expended in Its Construction Has Been Justified by Labor Saving Alone—Steel Frame and Glass Walls Render Interior Almost as Light as Outdoors—New Devices for Sprinkling Shakers and Guarding Shafts—Chestnut Washed in Two Sizes

By Dever C. Ashmead
Wilkes-Barre, Pa.

During the past two decades or thereabout a marked change has taken place in the methods of constructing buildings followed at the collieries of the anthracite region. How complete has been this reversal of practice is best attested by the type of breaker buildings now being erected. Formerly careful attention was not given to the external appearance of such structures. They were built to give a certain service, and if this was forthcoming nothing more was expected. An attractive exterior was not sought. The design followed was more or less of a temporary nature, and untreated wood was the material employed. This made the life of the building comparatively short and further replacements were frequent and repairs heavy.

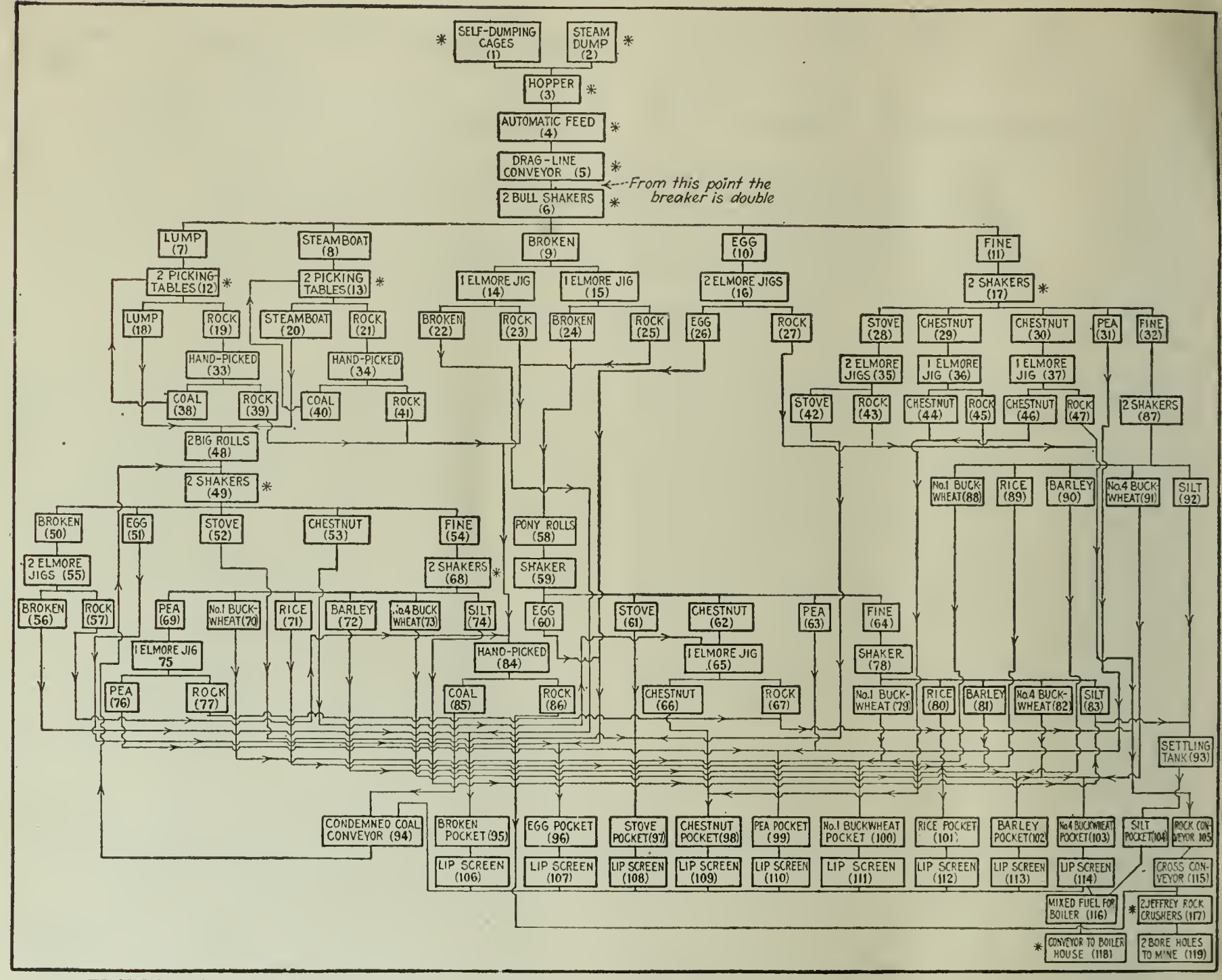
This is now changed. Steel and concrete enter largely into the construction of practically all present-day mine buildings, so that these structures are of a relatively permanent character. They are built sufficiently large to accommodate any growth that may be expected or logically anticipated. The danger of destruction by fire either to the building itself or the machinery it houses is materially lessened, and by the admixture of a small amount of artistic taste the whole installation is rendered more attractive and consequently a more pleasant place wherein to earn a livelihood.

It is but natural to expect that the newest of the new breakers in the anthracite region should show to what extent this change in ideas has progressed. It is the purpose of this article to describe the new Woodward breaker of the Delaware, Lackawanna & Western R.R., Coal Department, which is located at Edwardsville, Pa.



MILLION DOLLAR BREAKER OF DELAWARE, LACKAWANNA & WESTERN R.R., COAL DEPARTMENT AT EDWARDSVILLE, PA.

A steel, glass and concrete building, 213 ft. long, from 65 to 107 ft. wide and from 100 to 145 ft. high. It contains 3,000 tons of structural steel and 26,000 panes of double-thick ribbed wire glass



FLOW SHEET SHOWING PREPARATION METHOD AND FINAL DISTRIBUTION OF PRODUCT TO POCKETS, BOILER HOUSE AND MINES

From the point indicated the breaker is double and the parts named should be regarded as being representative of the equipment and product in each half. However, where an asterisk is placed at the side the two sides of the breaker use the equipment mentioned in common.

Originally the breaker at this plant was of the dry-preparation type. Because of the peculiarly bone-dry character of the coal which was treated in it it was impossible to devise any effective method of eliminating the dust. It is said that in parts of the old building the cloud of dust hung so thick in the air that a man could scarcely see his hand if held before his face.

When the old breaker proved too small to handle the output of the mine and it became known that the large quantity of dust was detrimental to the health of the employees the company determined to construct a new and better building. The first design provided for another dry breaker, and the steel work was purchased with this idea in view. It was later decided, however, to alter the method of preparation and to employ the wet process.

Steel, glass and concrete are the materials which make up the present breaker, which is of large dimensions. The building is 213 ft. long, one half of it being 65 ft. and the other half 107 ft. wide. It rises 100 ft. above the ground at its upper end and 145 ft. at its lower end. In its construction were employed 3,000 tons of structural steel, 26,000 panes of double-thick ribbed wire glass as well as several hundred bags of cement, this material being used in the roof as well as in the floors and foundations.

During construction the interior of this building appeared like a network of steel beams, girders and columns. It began to take shape, however, with the laying of floors, the building of chute frames and the construction of eighteen large pockets to hold the prepared product. In this work 1,500,000 ft. of 2- and 3-in. yellow pine planking and ceiling was employed. The chute linings required 375,000 lb. of sheet steel. Along the interior sides and ends of the structure are 41,000 ft. of various sizes of wrought pipe, forming a steam-heating system that effectively warms every nook and corner of the building. This insures the safety of the equipment during freezing weather as well as provides for the bodily comfort of the employees during the cold season.

All the machinery in this building is electrically operated, thirty-two motors being employed for this purpose. Each motor is provided with its own starting box and controller. A central switchboard is installed from which the entire operation of the breaker can be controlled. Fifteen thousand linear feet of conduit pipe was necessary for the wiring. The total installed power of the motors, which were all furnished by the General Electric Co., is 2,185 hp.

This breaker has a capacity of 6,500 tons of coal in eight hours and can easily treat the output of the mine.

amounting to 1,250,000 tons per year. The biggest day's work so far has been 5,900 tons of coal or 136 railroad-car loads. Already about 100 cars are shipped daily. As the preparation is a wet one an enormous quantity of water is required. This is obtained from the Susquehanna River, on the banks of which a pumping station has been built. Here two 4,000-gal. centrifugal pumps are installed.

The mine itself has three main openings—two shafts and one slope. The slope has a capacity of 268 mine cars per day. No. 2 shaft hoists 489 mine cars and the main shaft about 1,243 mine cars, making a total of 2,000 cars dumped on an average each shift.

Main Shaft Has Self-Dumping Cages

The main shaft is located at the breaker, the coal being hoisted in self-dumping cages and passing by a chute into a pocket which also receives the coal from the two other openings. These being at some distance, the coal from them is brought to the breaker by a surface tramroad, where it is discharged by a steam dump into the pocket just mentioned.

In order to understand the various processes through which the coal is put reference should be made to the accompanying flow sheet. Numbers shown in the text correspond to similar numbers on this flow sheet to aid the reader in following the various processes. From the hopper (3) previously mentioned the coal is fed automatically to the main horizontal dragline conveyor, which moves it about 140 ft. to the head of the breaker. This dragline discharges into a chute which divides the coal equally between, and feeds it to, two bull shakers (6) on each of which lump (7), steamboat (8), broken (9), egg (10) and fine (11) are made, the fine material passing through the lowest deck.

Coal Is Divided at Once Into Five Sizes

This is in reality a double breaker, similar operations being performed upon either side. This statement, however, is not strictly true, as in one or two instances where an insufficient amount of coal is obtained for duplicate operations the quantities made are combined and only one operation performed. Such points will be noted as they are reached in the following description:

The lump coal (7) from the upper deck of the shakers

CAR HAUL FOR EMPTIES OF NO. 2 SHAFT AND SLOPE
The main shaft has self-dumping cages but the cars from No. 2 shaft and the slope, numbering in aggregate 757 a day, are discharged by a steam dump. After being discharged they are dropped by gravity to the foot of the car haul and are then distributed by gravity to No. 2 shaft and the slope.

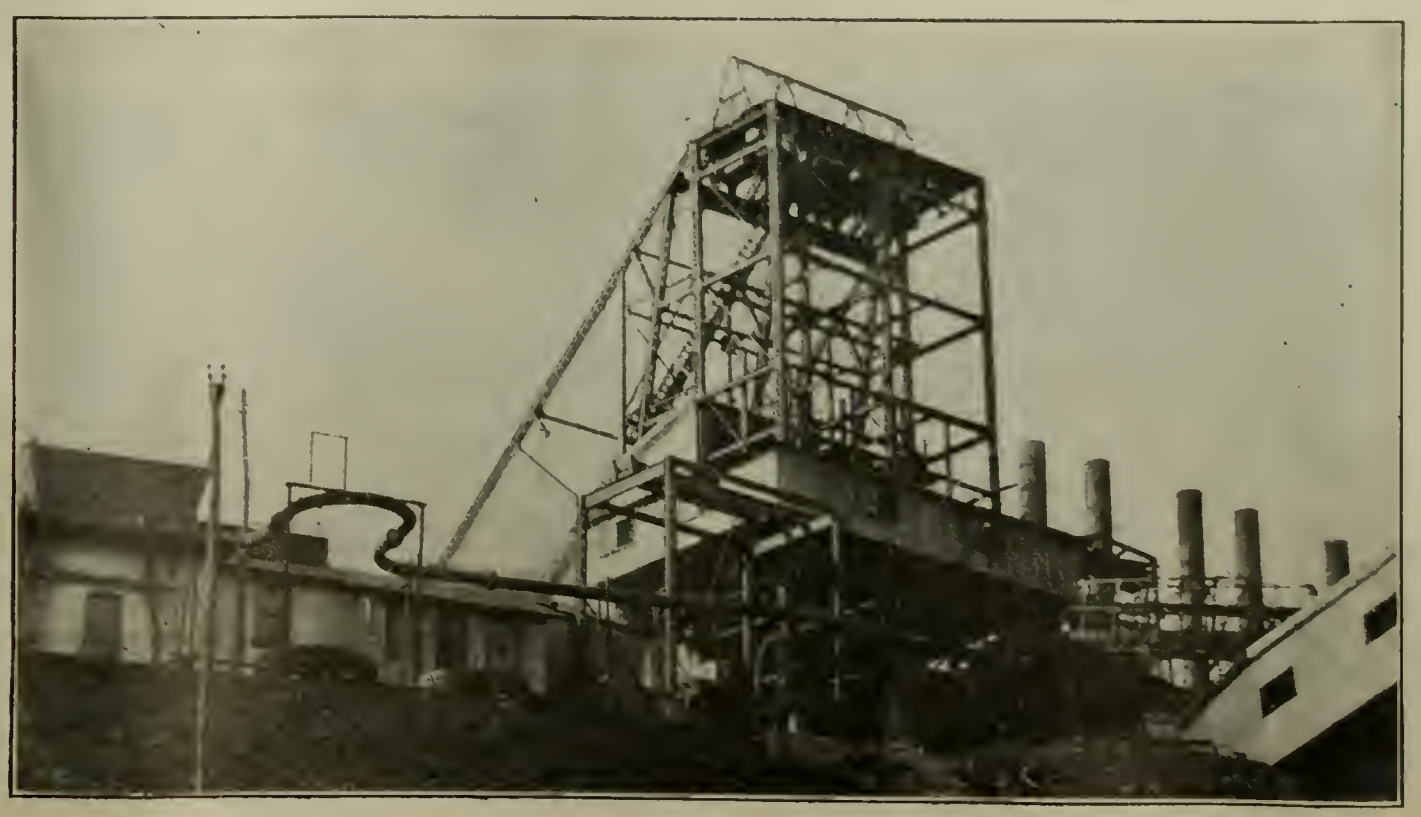
(6) passes onto picking tables (12) as does also the steamboat (8), which is separated on the second deck. Four of these tables are installed, two for the lump (12) and two for the steamboat (13). The construction of the rock chutes employed in conjunction with these tables is somewhat out of the ordinary.

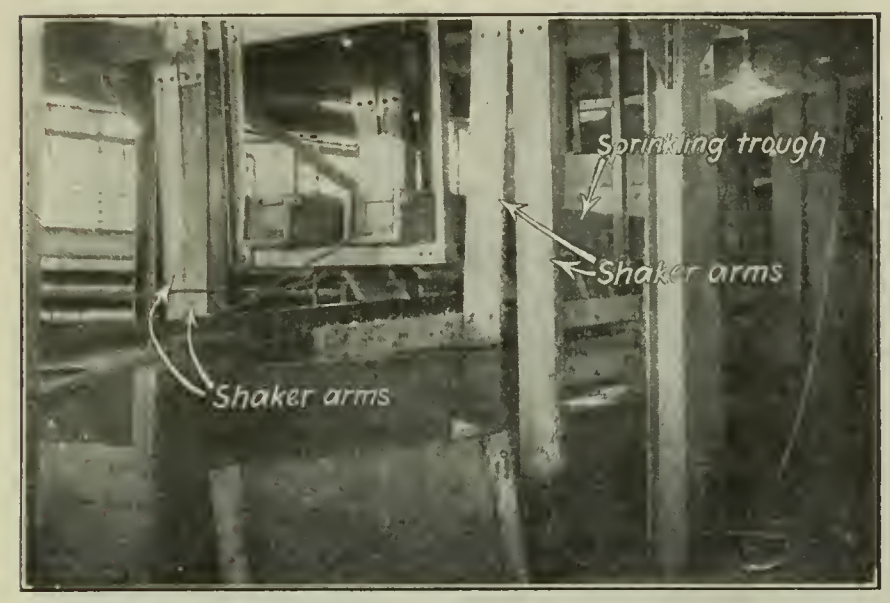
Instead of throwing the rock directly into chutes it is deposited upon flat-topped tables, where it is picked over a second time to see that no marketable coal is mixed with it. The very character of these tables requires that each lump of rock be handled a second time in order that it may be pushed to the center, where a hole permits it to pass to the rock chute. This hand-picking of the lump and steamboat rock is indicated on the flow sheet by items (33) and (34).

The hand-picked lump (18) and the steamboat (20) join and pass to two big rolls (48), where they are crushed. The coal recovered from the rock, as men-

Main Shaft

Hoists 1,243 mine cars daily. Self-dumping cages are used. The shaft has four compartments. A chute carries the coal to a hopper which feeds the main dragline conveyor, part of the housing of which can be seen on the extreme right.





FINE-COAL SHAKER FOR SMALL COAL FROM BIG ROLLS
Note the shaker arms and more particularly the sprinkling trough which is roughly sketched in an illustration on the next page.

tioned above, is thrown back onto the picking tables and also passes to these same rolls. These crushers have their own shakers (49), where broken (50), egg (51), stove (52), chestnut (53) and fine (54) coal are prepared.

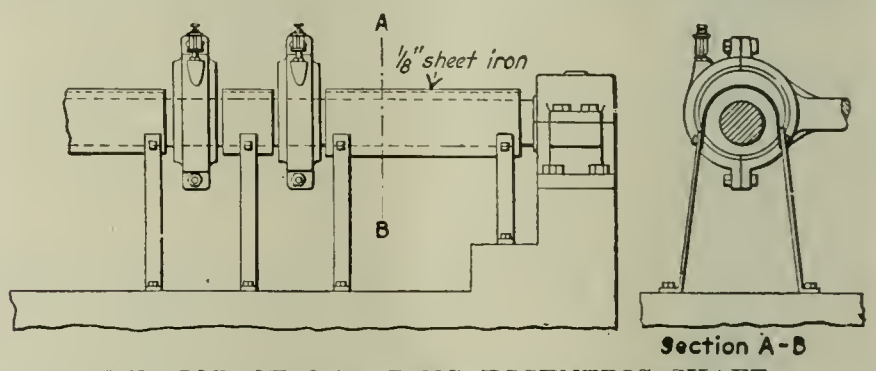
The broken coal passes to an Elmore jig (55), where the rock (57) is removed from it. The clean broken product (56) then goes to the broken pocket (95). The egg coal (51) and the stove (52) also pass to their respective pockets, (96) and (97). For the time being we will now leave the balance of the coal treated on shaker (49), as some of this material receives treatment in combination with that from other shakers, and will revert to the treatment of the other coals prepared on the bull shakers (6).

Some Broken Coal Made at This Breaker

The broken coal (9) passes to two Elmore jigs (14) and (15), where it is cleaned. From one of these machines (22) the coal goes to the broken pocket (95), while from the other it proceeds to the pony rolls (58). From the pony rolls the coal goes to a set of shakers (59), on which egg (60), stove (61), chestnut (62), pea (63) and fine coal (64) are separated. The egg and stove coals from this shaker pass to their respective pockets, (96) and (97). The chestnut coal (53) from shaker (49) unites with the same size (62) from this shaker and is treated in an Elmore jig (65). The cleaned chestnut (66) then passes to its pocket.

Pea coal (63) does not receive further treatment but is ready for its pocket (99). The fine coal (64) passing through the lower deck of shaker (59) goes to another shaker (78), where all sizes down to silt are separated. The No. 1 buckwheat (79), rice (80), barley (81), and No. 4 buckwheat (82) go to their respective pockets, (100), (101), (102) and (103), while the silt goes to the settling tank (93).

We will now return to shaker (49). The fine coal separated on this screen, which is the only size not previously discussed, passes to another shaker (68). Two of these screens are installed, one on each side of the breaker. On these pea (69), No. 1 buckwheat (70), rice (71), barley (72), No. 4 buckwheat (73) and silt (74) are separated. The pea coal is treated in an Elmore pig (75)—that is, this size from both shakers



METHOD OF GUARDING ECCENTRIC SHAFT
This form of guard does not interfere with oiling as would a fence. A photographic illustration at the bottom of the page shows the same device.

unites and is washed in the one jig. The other sizes are made pass to their respective pockets, except, of course, the silt (74) which joins that from the other shakers and goes to the settling tank (93).

Chestnut Washed as Two Sizes Sold as One

We will now turn back to the egg coal produced on the bull shaker (6). This is treated in two Elmore jigs (16), the cleaned product (26) going to the egg pocket (96). Fine coal (11) passing the lower deck of the bull shaker goes to other screens (17) where five sizes—stove (28), chestnut A and B (29) and (30) respectively, pea (31) and fine (32)—are made. The stove coal (28) is treated in two Elmore jigs (35), the cleaned product (42) passing to its pocket (97).

Two sizes of chestnut, for convenience here designated A and B, are made on this shaker. Each size joins with the corresponding product prepared on the other shaker and passes to the Elmore jigs, (36) and

Shaft Guard

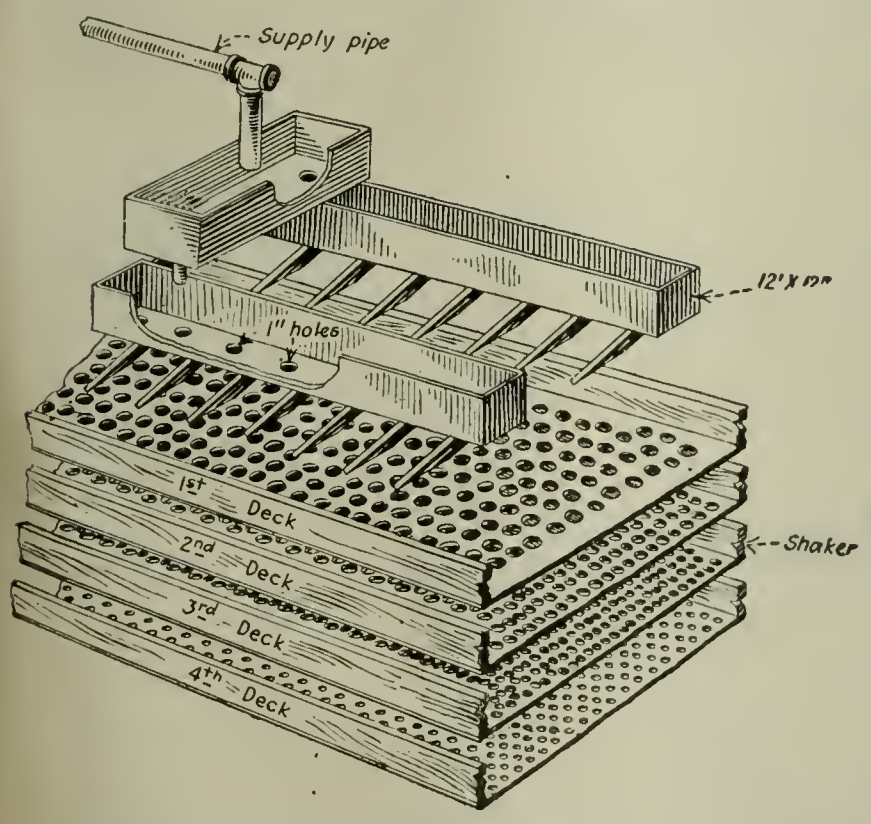
Here can be noted the eccentrics and their rods, the shaft guard and the method of support from below. The shaft revolves under this stationary hood.

(37). This permits of better jigging, as more satisfactory results are obtained when the sizes treated are nearly uniform. After the coal leaves the jig the two sizes combine, (44) and (46), and proceed to the chestnut pocket (98).

Pea coal from this shaker receives no further treatment but is ready for shipment and is accordingly sent to its pocket (99). The fine coal (32) goes to two shakers (87), where it is sized into No. 1 buckwheat (88), rice (89), barley (90), No. 4 buckwheat (91), and silt (92). None of these sizes receives further treatment, those marketable proceeding to their respective pockets, while the silt (92) goes to the settling tank (93). As soon as this silt has settled it is sent to its pocket (104). The silt and No. 4 buckwheat are mixed to form boiler fuel (116) and taken by a conveyor line (118) to the boiler house on top of the hill.

Rock Is Crushed for Flushing Into Mine

Coal from the lip screens (106 to 114) passes to the condemned-coal conveyor, by which it is taken back to shaker (49) for retreatment. Rock from the picking tables, (12) and (13), unites with that from the Elmore jigs, (14), (15) and (55), and passes through a chute to the small picking place (84) on its way to the rock crushers (117). All the rock separated by the various jigs likewise is collected by means of conveyors (115) and (105) and is brought to these same Jeffrey rock crushers, where all this material is reduced to the proper size for flushing back through boreholes into the mine as filling.



WOOD TROUGH AS SPRINKLING DEVICE FOR SCREENS

This gives a somewhat clearer idea than Fig. 5 of the manner in which the screens are sprinkled. No nozzles are used, as the water is extremely acidulous, metal work speedily corrodes and the orifices, in that event, are apt to clog. The water from the troughs falls on slanting boards and is broken into a spray.

As may be seen, the method of preparation is extremely simple. Arrangements are made so that in case any size for any reason should be dirty and require additional treatment a sufficient number of reserve jigs are provided so that this treatment can be given. As may be observed in the illustrations accompanying this article, adequate accessibility to all machinery is assured. Six jigs are held in reserve for handling an increased output or for use in case of a breakdown to any of the regular machines.

FEW PICKING CHUTES ARE USED IN WOODWARD BREAKER BUT THIS IS ONE OF THEM

Slate and rock are removed at this point from the broken and egg coal. The broken coal passes down the outside and the egg travels down the middle chute.

Several particularly interesting details in the make-up and equipment of this breaker should be emphasized. In the first place, the means provided for protecting the men from the danger of revolving shafting is somewhat different from that ordinarily employed. Railings are not built around the eccentrics, as is usual. Instead, the shafting itself is protected by semi-cylindrical sheet-iron covers, as shown in one of the illustrations. The other method has its own dangers, for it makes it necessary that the oiler reach through the guarding railing when lubricating the machinery.

Reserve Pockets Keep Chestnut Flowing

Another unusual detail is the provision of reserve pockets for chestnut coal. These are placed on the dirty or feed side of the jigs, so that in case there should be an insufficient supply of coal to feed these machines properly, the reserve may be drawn upon for the required amount.

The method in which water is fed to the screens also differs somewhat from usual practice. Ordinarily such water is sprayed onto the coal by means of special metal nozzles. As a result, if the water is acidulous these nozzles will rapidly corrode and possibly clog. In-

RESERVE POCKETS ALLOWING STEADY FEED TO JIGS

Steadiness of feed is needed if a jig is to give its best results, but this is hard to obtain with the varying conditions at a breaker, consequently at the Woodward breaker pockets have been built to store chestnut coal, which is fed to the jigs as their operation demands.

stead of employing iron pipe and nozzles of this character wooden troughs are used. These are provided with holes in the bottom, through which the water passes, striking against a slanting board and thus forming a spray.

As the side walls of this building are practically all glass it is almost as light inside the breaker as it is out of doors. By the construction of this building and the simplification of the methods of coal treatment a saving has been effected amounting to the services of sixty-three men. This saving in labor is enough approximately to pay the interest on the investment of $1,080,000 that was necessary to build and equip the breaker.

Petersburg Coal Hoist Is Electrically Operated and Controlled

THE electrically-operated hoist installed at the mine of the Pike County Coal Co., Petersburg, Ind., is of the single-drum three-bearing type. It is driven by a 60-cycle induction motor through an all-metal flexible coupling and single-reduction cut herringbone gears.

The hoist operates in balance with the following loads:

Weight of coal per trip	8,000 lb.
Weight of empty car	4,000 lb.
Weight of empty cage	12,000 lb.
Size of rope	1⅜ in.
Total lift	430 ft.

The duty cycle is as follows:

Acceleration to full drum speed	8 sec.
Full speed running time	36 sec.
Total retardation	6 sec.
Rest	7 sec.
Total cycle	57 sec.

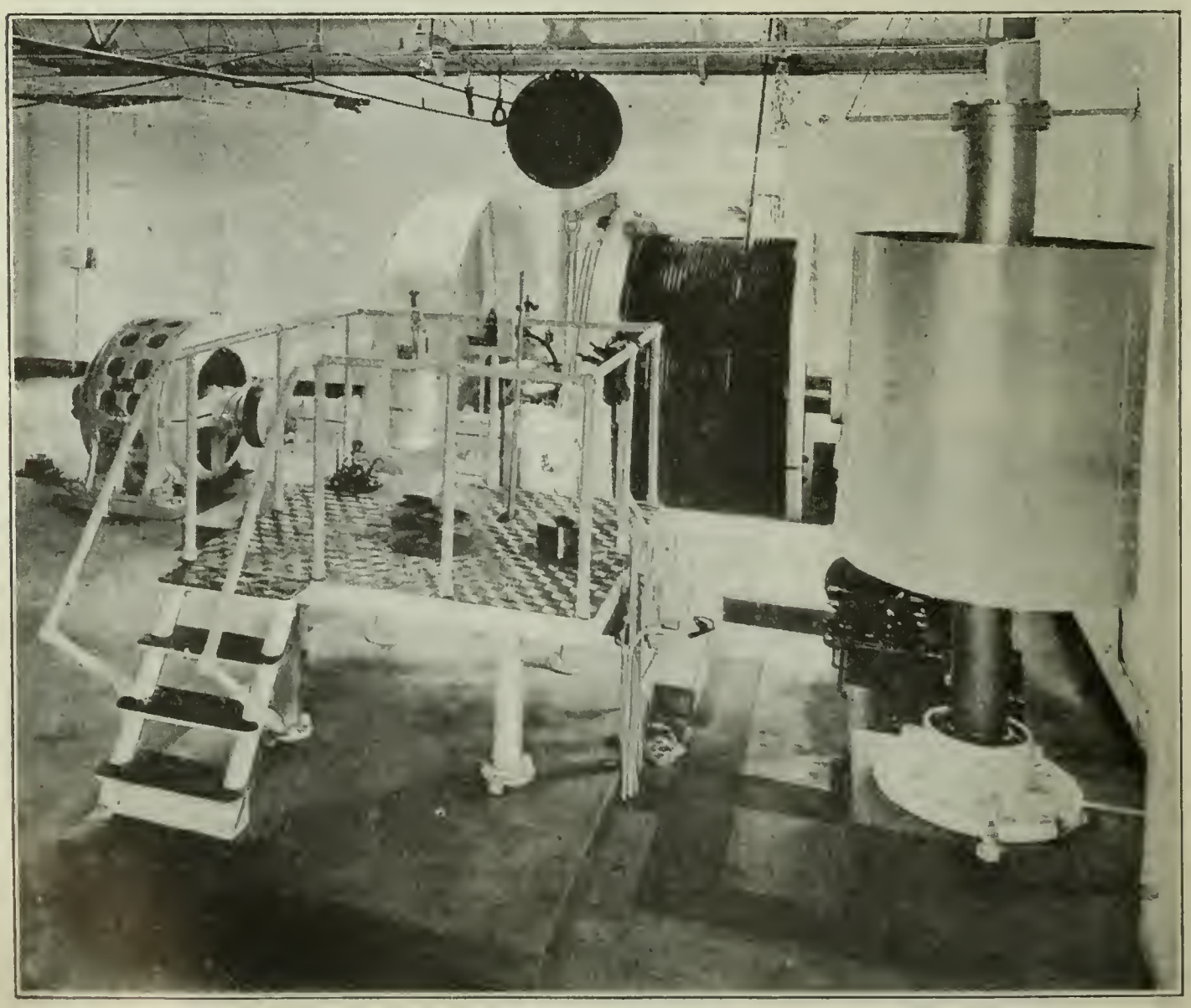
The hoist raises an output of 2,000 tons in eight hours.

At some future time it may be desirable to direct-connect a much larger motor to this hoist, thus speeding it up to accommodate a greater output. With this end in view the drum shaft has been provided with a flanged end. The drum is 8 ft. in diameter with a 48-in. face and carries machine-turned grooves for 1⅜-in. rope. One end of the drum is provided with a brake ring 9 ft. in diameter upon which operates a Nordberg parallel-motion post brake. This brake is applied by means of a dead weight and is released by a hydraulic thrust cylinder which is served by an accumulator of the loaded-plunger type. Oil is supplied to the accumulator by an electric pump, a duplicate machine being provided as a spare.

Thus the hoist is electrically self-contained and is in no way dependent upon air pressure for its operation. The hydraulic thrust cylinder for the brake is provided with balanced pop valves so constructed that it is impossible for both inlet and exhaust to open at the same time. These valves will be operated by a system of floating levers so arranged that the plunger of the thrust engine absolutely follows or obeys the motion on the operator's lever. Whenever this lever comes to rest the plunger also comes to rest and is securely locked in its position. In this way the hoistman has a control over the brakes as complete as if they were operated by hand.

The brake-thrust cylinder is provided with a solenoid-operated valve. During normal operation this solenoid is energized and the valve closed. In case of interruption to the current supply, however, the valve is opened and the brake thus applied.

A safety device will open the solenoid circuit and shut off power from the motor for any one of the following reasons:



Petersburg Coal Hoist

Lifts 4-ton cars through a total lift of 430 ft. and affords an output of 2,000 tons in eight hours. It is a wholly electrical hoist and is in no way dependent on air pressure for its operation. An 8-ft. drum with 48-in. face carries machine-turned grooves for a 1⅜-in. rope. The hydraulic brake-thrust cylinder is provided with solenoid-operated valve. The solenoid, so long as it is energized, keeps the valve closed, but should the current be shut off the solenoid loses its energy and the valve is opened and the brake applied.

(1) In case the hoisting speed exceeds normal at any point. (2) In case the operator fails to slow down the hoist at any predetermined and adjustable point, or fails to continue retardation between this point and the landing level. (3) In case of overwind. (4) In case the operator fails to reverse the hoist after the skip or cage has reached the landing or limit of travel. (5) In case power goes off the line for any cause.

One of the drum-shaft bearings is built to receive end thrust, thus taking up any pressure that may be exerted lengthwise on the shaft. All bearings are mounted on a bedplate of liberal size and of box section which entirely surrounds the hoist and the gear reduction.

This hoist is provided with a dial indicator driven by means of gearing from the drum shaft. An operator's platform is mounted in front of the machine. This is provided with hand railing and the control levers are placed upon it. The machine was built and installed by the Nordberg Manufacturing Co., of Milwaukee, Wis.

Hillsboro Wood Tipple Replaced by Steel While Shaft Is Hoisting Coal

A New and Complete Steel Tipple Was Constructed Over the Main Hoisting Shaft In, Through, and Around the Old Wooden Structure Without Interruption to Hoisting—This Required Much Scheming and a Resort to Many Expedients

By John A. Garcia
Chicago, Ill.

UNUSUAL difficulties were encountered in the design and erection of a new steel tipple for the Hillsboro Coal Co., in Montgomery County, Ill., to meet which highly interesting methods were employed in both drafting room and field in order to determine and solve each problem before actual installation was begun. There is nothing of special interest in the design itself. The new tipple is merely an ordinary steel structure, equipped with pendulum-hung three-track shaker screen, weigh pan, picking table, loading boom and the like. The main job, however, was to lay out this structure and build it in conformity with field conditions and the requirements of the operating company.

The Hillsboro Coal Co.'s mine is operating in the No. 6 bed, which is approximately 7 ft. thick and 500 ft. deep. At the time the new surface plant was constructed—in the winter of 1918-1919—the operation was producing about 1,500 tons per day. The mine is some thirty years old and the three-track wooden shaker-screen tipple to be replaced had been in service ever since the shaft was sunk. It had been braced and counterbraced during these years until it looked more like a pile of lumber or mine cribbing than a tipple.

FIG. 1.

Finished Tipple

With the old structure removed and with a boiler-coal conveyor showing in the rearground. This transfers screenings from the slack track to the boiler room. On the left may be seen the housing built over the picking tables and the projecting loft from which hang the loading-boom counterweights, all of which are brought together to this point—a new idea is counterweighing.

FIG. 2. OLD TIPPLE AND OFFSET SCREEN BUILDING
Fortunately the weigh pan discharged its contents in a direction parallel with the track, thus greatly assisting in the work of replacing the tipple. The cover of the chute by which the coal went to the screen house can be seen under the tipple building.

Rice Miller, general manager of the coal company, authorized the Allen & Garcia Co. to undertake the work of reconstruction in the autumn of 1918 with the positive and specific stipulation that the mine must be kept in operation throughout the entire building period and that this consideration was paramount to all others.

Examination of the site showed that the old structure was in imminent danger of collapse and could not be shored up or employed as a support for new steel because of the soft and yielding nature of the ground around the shaft. The surface landing was about 10 ft. above the railroad tracks and was retained by a crumbling wood and brick wall located between the first track and the shaft. The three loading tracks were so placed as to give about 18 in. of clearance between the cars, while the main line of the railroad was located just beyond the lump track with bare engine clearance.

This track layout presented a problem in itself, as all screening equipment and steel for its support and housing had to be spotted and put in position in this confined space during the time that cars were being dropped down from the loading chutes and the main line kept clear.

The old tower posts were from 4 to 6 in. out of plumb in two directions and could not be straightened to clear the new steel-tower columns. Fortunately the weigh pan of the old structure discharged at right angles to the center line of the shaker, and the coal flowed over a chute to the screens, which were located about 10 ft. uptrack. Thus the new shakers could be built on the center line of the hoisting shaft without interrupting the sizing of coal on the original screens.

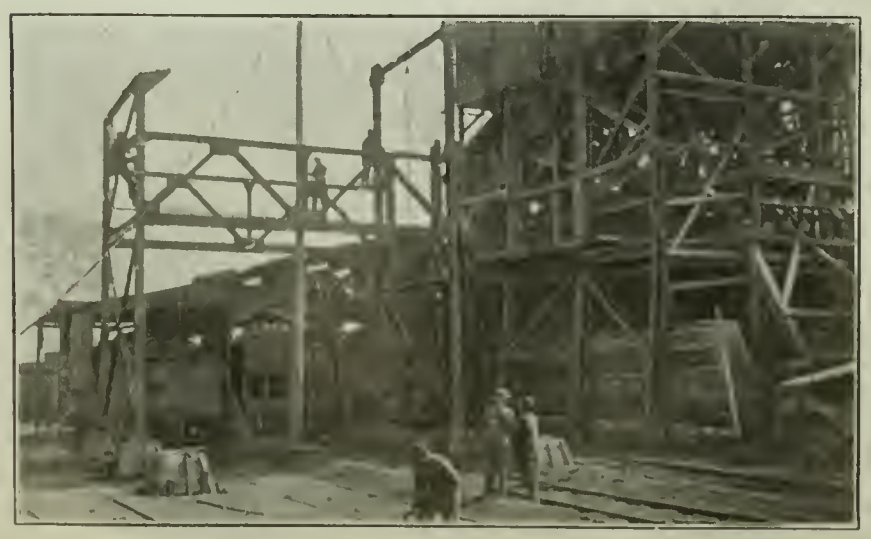


FIG. 3. SKELETON OF NEW SCREEN BUILDING
Particular attention should be drawn to the heavy wall alongside the track nearest the tipple. It is that marked "C" in Fig. 5 and is rightly regarded as the keystone of the structure.

The work was undertaken in the midst of the war, when skilled field labor and draftsmen were scarce, and all material had to be purchased under the rules of the War Industry Board and permits obtained from the Priority Committee. This resulted in much red tape and delay.

Care Taken Not to Disturb Old Structure

Accurate measurements and elevations were taken upon the old structure and the ground in the vicinity of the shaft. Photographs of important points also were made to assist the designers. The old tipple was plotted to scale and the new structure designed so as to interfere with it as little as possible, especially at the more important points. Places of unavoidable interference were detailed, and the field crew was instructed to frame around them with timbers before cutting for clearance. In some cases the steel was detailed in such a manner that part of a member would clear the old structure and carry the load until the old framework was removed, when the balance would be riveted on.

Fig. 2 shows the general design of the structure with the outline of new machinery and also the main supporting members of the original wood tipple. Fig. 3 gives a fair idea of the confined space available for

FIG. 4. SIDE VIEW OF THE OLD RICKETY TIPPLE
Some of the new construction can be seen, especially on the left, where the screen house is being built. The old tipple was 4 to 6 in. out of plumb in two directions.

construction purposes. It also shows the location of the old shaker structure uptrack from the center line of the shaft, which by its fortunate location permitted the new shaker to be built upon this center line while coal was being prepared over the old screen.

When the greater portion of the material had been delivered, the work of erection was placed in charge of H. B. Cooley, who was assisted by Otto Kerner and a crew of ten experienced men. Mr. Cooley selected points "A" and "C" as shown in Fig. 5 as initial places of attack on the theory that from these two fixed points he could work the steel up to point "B," completing a triangle on which to carry the hoisting load.

Pier *A* was easily built, as it was on solid ground and in the clear. Pier *C* required careful and painfully slow work, as the ground above the track level was loose, being retained by three old posts and some wood planking. The completed wall at *C* shown in Fig. 4, was built in short sections while the mine was operating. The crumbling ground was controlled meanwhile by short forepoles, cribbing and timber bracing. Fig. 6 shows a side view of the old tipple after the key piers were in and the structural steel for shaker supports were partly erected.

With piers *A* and *C* in place, the real job of steel erec-

tion began. Reference to Fig. 2 indicates the character of tower construction as designed to carry the hoisting load from *B* to *C*. The steel, from foundation to weigh-house floor, was placed with little difficulty except at several points of interference with the old structure, where framing-around was necessary. From the dumping point to the sheave deck, however, the columns of the old headframes were about 4 in. out of plumb. To meet this difficulty the vertical members of the upper portion of the tower had been built up of angles and plate so designed that a half section could carry the load with a fair safety factor. These columns were placed in this manner when necessary to clear the old posts. After the ropes were put upon the new sheaves and the timbers taken down the full section of columns was completed, but coal was hoisted for several days with only half-section columns.

Back Stay Built with Aid of Timber Brace

The lower chord of the engine brace was bolted to a gusset plate on the tower, as shown on Fig. 2. Its bottom end rested on pier *A*, a temporary timber brace being placed at its middle point. From this chord the entire lower portion of the engine brace was gradually built up This section was guyed with cables to prevent side swing and avoid trouble arising from vibration, communicated from the hoist while the balance of the steel was being added, one member at a time, up to the sheave deck, where connection was made with the steel that had been erected through the mass of wood timbers from pier *C*.

These two sections—the steel from pier *C* and that from pier *A*—were erected simultaneously by two gangs, the work being so regulated that both reached *B* about the same time. All the steel had been bolted in place and after the sheave deck beams were put in position all connections from the ground to point *B* were riveted up before the cables were lifted from the old sheaves and set on the new.

After the load was placed on the new structure the old tower was kept in service merely to carry the cage guides. A night shift gradually replaced these, working on a section at a time from the sheave deck to the ground. The thrust of the cages was transmitted through the steel framework to pier *C*, as shown in Fig. 5.

While the work on the tower was going on another gang was erecting the steel for the shaker-screen shed

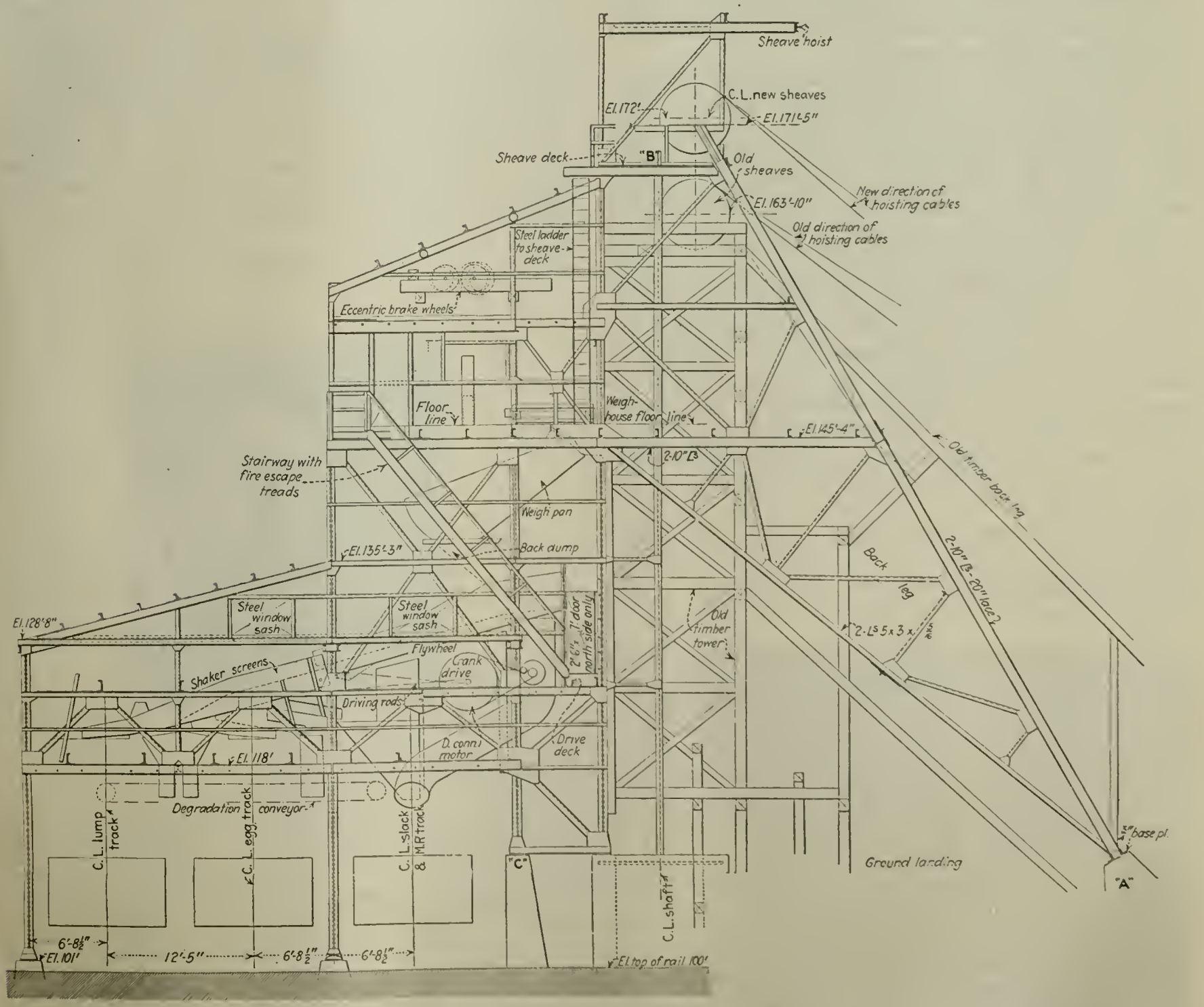


FIG. 5. ELEVATIONAL SECTION OF NEW AND OLD TIPPLES, SHOWING SCREEN-HOUSE DETAILS

Pier "A" was readily built in the solid ground so far beyond the old tipple that it could not disturb it, but pier "C," which was long and too close to the main structure for erection, gave much trouble. The old tipple was on ground that stayed in place by grace of three old rotted posts and some wooden planking, and digging around them was parlous work. However, once built, the skeleton "A," "B," "C," was erected upon it and upon the brace post "A," the rest of the tipple proper being added thereafter.

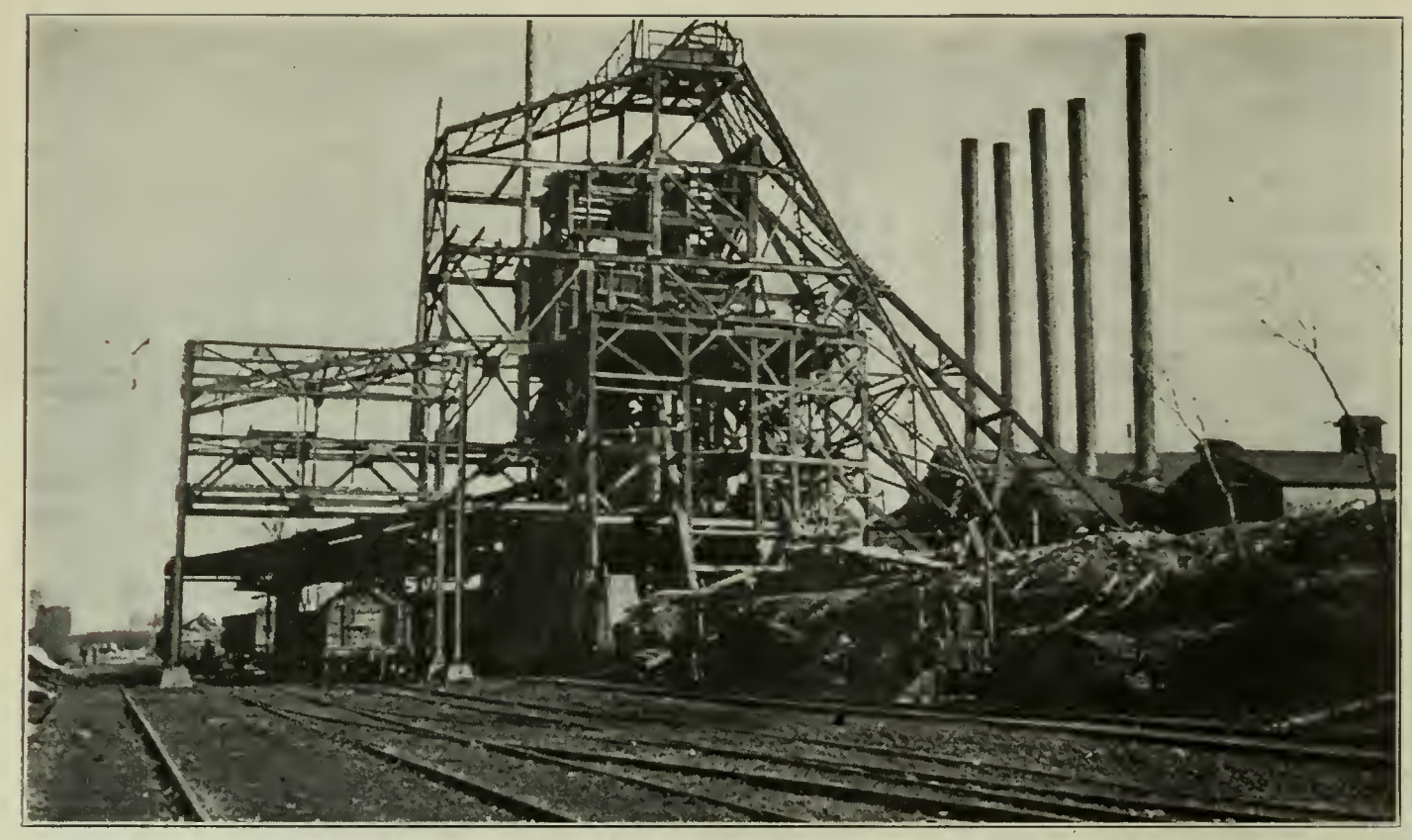


FIG. 6.

Steel Frame in Place

Much of the old structure still remained, to be dismantled during the night shifts. The old trestle sustained the cage guides, and the hoisting of coal continued. An idle day and a Sunday gave an opportunity to exchange weigh pans. The work was finished without a single personal injury or the loss of an hour's working opportunity.

and also placing the machinery. This latter was connected up with its drive and operated for several days as a test before the new weigh pan was swung into place and coal sent over the shakers.

In order to get the new weigh pan into position it was necessary to raise the cage dump irons to their permanent place and let the coal drop 7 or 8 ft. to the old weigh basket. This, however, lasted only about two shifts, when the new basket was swung into position and put in service. The change in dumping point and weigh pan could not be made while hoisting coal. Fortunately, however, the mine was idle on account of car shortage on the Saturday scheduled for this change, and the constructors were not charged with any delay.

The job of placing the crusher, loading booms, etc.; painting and covering the structure was more play than work after the nerve-straining experience of the tower erection. The entire job was completed in good shape without a single case of a personal injury and with no loss of time in hoisting charged to tipple construction.

The cost of the entire job, excluding picking tables, was as follows:

Equipment and material (steel, 207,198 lb.)	$25,348
Field labor, superintendence, drawings, shop details and engineering	18,125
Excavation and concrete	1,313
Chargeable to wrecking the old tipple	674
New cages	1,850
Total	$47,310

After the new tipple was completed and put into operation, excavation was made around the shaft curbing from the surface to rock (about 20 ft.) and a new concrete wall installed. To this the guides were fastened by means of steel brackets and the side framework of the steel tower bolted down to it. This completed the installation with the exception of the retail-coal conveyors and bins, which were put in place at a later date.

Fig. 1 shows the finished tipple with the old structure removed. Also, in the background may be seen the boiler-coal conveyor from the screenings track to the boiler room. This figure in addition presents a view of the housing for the picking tables, which were installed after the main job was completed. A new idea is here incorporated, namely, that of concentrating the loading-boom counterweights as shown in the foreground of this photograph.

Use of Peat Solves Railway Fuel Problem

CONSUL-GENERAL MURPHY at Stockholm reports that apparently the coal problem, so far as Sweden and the Swedish railways are concerned, has been satisfactorily solved by substituting peat for coal as fuel for locomotives.

Following long-continued tests, the Railway Board of Sweden has taken over a specially constructed plant at "Hasthagen" bog, near Vislanda. Here peat is reduced to powder or made into briquets. The plant, which cost 975,000 kroner (approximately $231,000), has a capacity of 30,000 tons a year. Production on a large scale can be maintained with only a small working force.

JOHN M. HUMPHREY

President of the Lehigh Valley Coal Co. by election of the Board of Directors April 13. He has been affiliated with the company for thirty-one years. Born in Philadelphia, he was educated at the Philadelphia public schools and Lehigh University. His first employment was on the engineering corps of the Lehigh Valley Coal Co. Subsequently he became division engineer, and later mining engineer of the company. Six years ago he was appointed chief engineer. Mr. Humphrey now resides in Dorrancetown, Pa. When the Supreme Court confirmed the order for the separation of the coal and railroad companies, Mr. Humphrey was made a director of the Lehigh Valley Coal Co. As the directorate largely resides in Wilkes-Barre, it is hoped that before long the room prepared by F. M. Chase, Mr. Humphrey's predecessor, for meetings of the directors will be eventually used. Five out of six directors now reside in that city.

Substation at Cordova Mine Has Operated Two Years Without Attendant*

Automatic Substations Not Only Reduce Wage Costs but Also Perform Services That an Attendant Cannot Perform—Troubles That Cause a Shutdown May Be Automatically Signaled to Headquarters

FROM A PITTSBURGH CORRESPONDENT

SUBSTATIONS that do not require the services of an attendant may be said to have passed the experimental stage, and today can be accepted as being a necessary part of the equipment of a mine. Without them the most efficient results cannot be attained. Though only a few have been built, their number is steadily increasing and it would seem that the time is not far distant when the services of a substation attendant will as a rule no longer be required. This will be particularly the case at mines operating upon purchased power and at those plants where booster equipment is necessary underground.

Labor cost is the chief item in the maintenance of substations. This is practically elminated by the automatic station. The average wage paid the substation attendant approximates perhaps $150 a month. If it must be kept going day and night, as is the case where pumps are worked continuously or where cutting is done on the night shift, this figure must be doubled. Thus the services of a substation attendant cost the company nearly $4,000 yearly.

This is a sum of appreciable proportions yet one that has heretofore been considered a necessary entry upon the payroll of every electrified mine. The time has not yet arrived when the power-plant attendants may seek employment in other lines of endeavor, but those now presiding over the machinery of the substation may be relieved of duty except, of course, for periodic visits when oil cups must be filled, the generating and control apparatus dusted off, the rooms swept out and the whole installation made generally shipshape.

*Graham Bright having written an article entitled "Nanty Glo Has First Coal-Mine Substation Equipped to Run Without Attendant" for our issue of April 7, a Pittsburgh correspondent was led to write this article, in which he declares that an automatic substation has been in use for two years. His remarks are printed entirely without prejudice as to the merits of the controversy.

Decreased labor cost, however, is not the only advantage to be gained from making a substation automatic. Such an installation holds no card in the United Mine Workers of America, and as a result when labor troubles beset a mine using purchased power the fan and pumps can be operated in much the same fashion as if the regular forces of the operation were on duty. Of course, if the mine generates its own power or distributes it from a central plant the various substations will be forced to suspend operations concurrently with the extinguishment of the fires under the boilers.

AUTOMATIC SUBSTATION RUNS FOR TWO YEARS

At the Cordova mine of the Mt. Carmel Coal Co., of Birmingham, Ala., located in the town of Cordova, a substation has been operated for nearly two years which requires no attendant. Power for the operation of the mine is purchased and delivered at 22,000 volts. After passing through outdoor transformers current becomes available for the station itself at 2,200 volts. For supplying operations underground with direct current a 100-kw. 275-volt generator is direct-connected to a 150-hp. 2,200-volt induction motor.

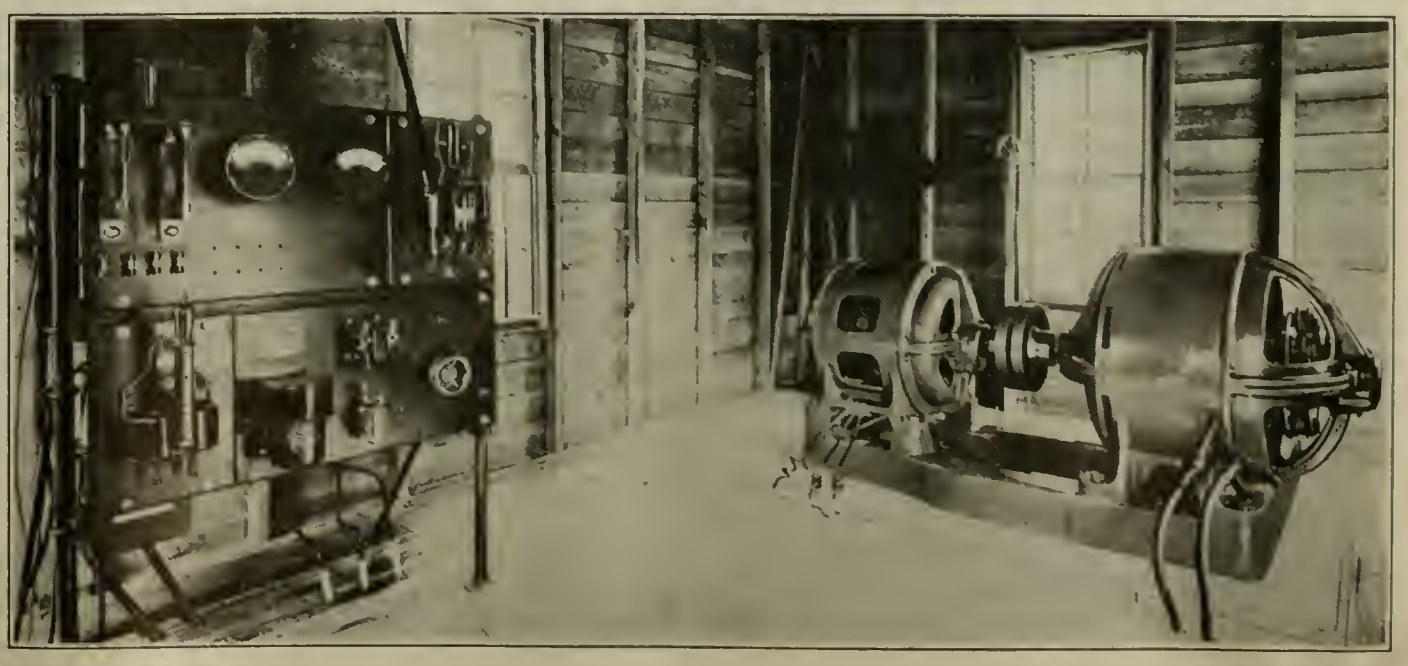
In this set the generator field is connected through a discharge resistance for starting. This calls for the installation of an additional relay on the switchboard for disconnecting this resistance and connecting the motor field to the generator after the machine is up to speed and is developing normal voltage. The only other electrical equipment within the building, as may be seen in one of the accompanying illustrations, is a self-operating panel switchboard. All the equipment here mentioned is housed in a frame building located on the surface.

With the exception of the automatic reclosing circuit breaker, all the control equipment on the switchboard

FIG. 1.

Automatic Substation

Cordova substation receives power from the lines of a public-service corporation at 22,000 volts which outdoor transformers step down to 2,200 volts, where it is converted into 275-volt direct-current.



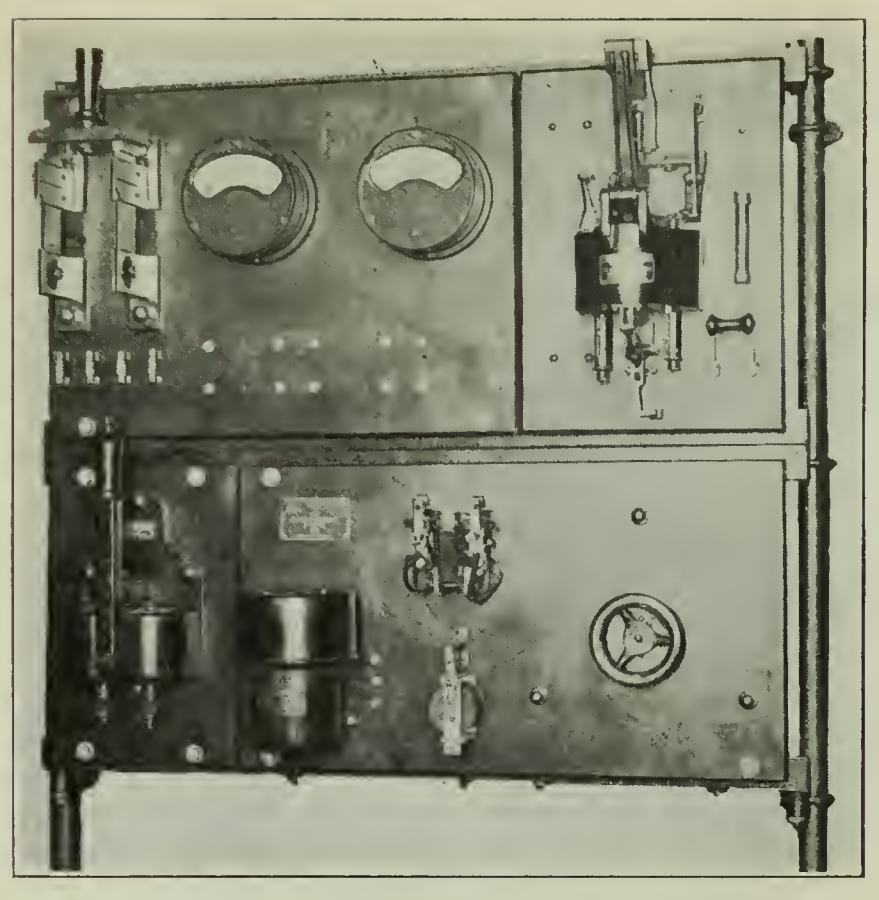


FIG. 2. FRONT OF AUTOMATIC SWITCHBOARD

One advantage of automatic devices is that, having to be actuated by the conditions which they must correct, they sometimes are able to discern what those conditions are better than an observer. The attendant at a substation will not even suspect phase failure till too late to correct it. The switchboard will scent it and recognize it before it has had time to do damage, and the switches will act accordingly.

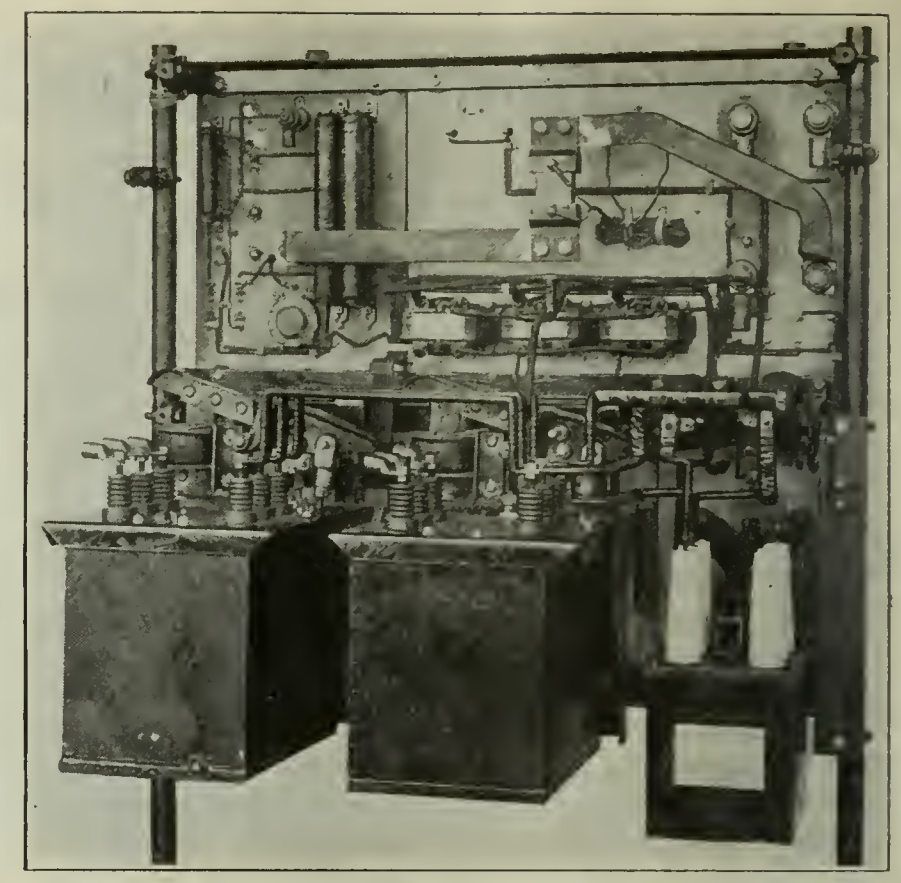


FIG. 3. REAR VIEW OF SAME SWITCHBOARD

The automatic devices on this board distinguish an overload from a "short" and act accordingly. After many attempts to close the circuit breaker the attendant of a non-automatic substation arrives at a conclusion which is possibly correct—that his line is short-circuited. He has no assurance, however, that he will not mistake a long-continued overloading for a short-circuit, and so may let the current be interrupted to no purpose.

was built by the Cutler-Hammer Manufacturing Co. The principal pieces of apparatus mounted upon the board are an oil circuit breaker equipped with overload release but without low-voltage release, a phase-failure and phase-reversal relay device, starting and running contactors; an alternating-current relay, two auto transformers (mounted separately), a two-pole main-line direct-current switch, a voltmeter, an ammeter, a field rheostat, a direct-current relay and an automatic reclosing circuit breaker.

May Be Started From Any Place Desired

The equipment is placed in operation by an automatic starter connected to the starting contactor through push-button controls. These may be located at one or several points of vantage about the plant. Thus one may be placed at the shaft bottom, one in the superintendent's office, one in the power house, another in the mine electrician's office, and so on. As an alternate proposition the substation may be controlled by a clock if operations in the mine are not prosecuted during the night. In such a case the whole installation becomes truly automatic in every sense of the word.

When it is desired to put the station into operation one of the starting buttons is pressed, throwing high voltage onto the board at the oil breaker through the starting contactor. The alternating current relay flies into place, closing the circuit to the three-pole oil switch which is employed in starting the motor. If the voltage is sufficiently high and the phases are in correct relation this switch will immediately close and connect the starting transformer to the line and the motor to the transformer. The motor will now gradually accelerate until the direct current potential has been built up to approximately 220 volts.

When this pressure is reached the direct current relay closes, cutting out the three-pole contactor, disconnecting the starting transformer and connecting the motor directly across the line. An interlock is provided on the other three-pole contactor, which completes the circuit to the closing coil of the automatic reclosing circuit breaker. If conditions on the mine circuit are suited to operation—that is, if no overload and no short circuit is present—the breaker will close and energy be directed into the mine.

At this particular installation no protection from heating is provided on the motor bearings. At some similar automatic substations "bearing thermostats" are placed on the motor shaft. The use of these devices is advisable. One type frequently employed, built by the Cutler-Hammer company, is of the latched design. This embodies a small tube filled with a liquid which vaporizes at a low temperature. Surmounting the tube is a spring bellows. At the first indication of overheating of the bearing—that is, when the motor-shaft temperature rises more than 2 deg. above normal (192 deg. F.)—the liquid in the tube begins to vaporize, expanding the bellows and forcing its extremity upward. After a short movement has taken place pressure is brought to bear on the contactor and the control circuit is opened. The latch on the outside of the hood then flies up as an indicator and remains in this position until the trouble has been remedied, after which this lever may be reset by hand.

It might well be asked here why is not the machine automatically put back in operation as soon as the bearing has cooled to normal temperature? To permit a resumption of operation under such conditions would defeat the purpose for which the thermostat was installed, namely, to attract attention to the bearing that oil may be applied if the shaft is dry or that dust and sand may be removed if these foreign substances are causing undue friction.

The rising latch on the thermostat, denoting trouble from hot bearings, may be connected electrically with some remote signalling device. Thus a klaxon may be

sounded or a red light energized at some point outside the building calling attention not only to trouble but indicating its exact nature. In this manner those on the surface know immediately that the cause of the difficulty does not lie in a short circuit.

If signalling devices of a nature similar to those enumerated are not utilized the electrician will be able to determine immediately upon entering the building where the trouble is located and can telephone the foreman accordingly. If the transformers are humming he will know that the trouble is the result of phase failure or reversal. If the latch on the thermostat is in an upright position he realizes that the motor is down as the result of a hot bearing. If the circuit breaker is in the open position and the generating equipment is in operation he may be reasonably certain that a short circuit exists within the mine. Whatever may be the cause of the difficulty, he can read its sign upon entering the door.

Can Attend Many Automatic Substations

Where a series of installations such as this has been made at mines obtaining their power from one central plant it has been found advisable to detail a man as attendant for all such stations. This man should so arrange his time that he can visit each building at least once every three or four days. In this manner the buildings may be periodically swept out, the oil cups filled and the switchboard and generating machinery dusted off. A semi-weekly visit to each station should suffice. By assigning one attendant to all the buildings the mine electrician's time at each separate plant need not be taken up by details that can be adequately attended to by an inexperienced man.

The advantage of the automatic substation is not limited to its dispensing with an attendant. It has the further advantage that it does its work more efficiently. Electrical engineers agree that about 70 per cent of the burnouts of alternating-current motors are the direct result of phase failure, yet against this the substation attendant is not equipped. It is true that when he starts up a set he may detect the failure in phase by the fact that the machinery refuses to run; but, unfortunately, phase failure seldom asserts itself except during the operation of the motor.

Heretofore phase failure has been detectable only when the motor began to give off smoke and then the attendant did not know whether failure or reversal of phase or hot bearings were the seat of the trouble, as the machine behaves in the same manner no matter which of the three difficulties is registering itself. To shut down cannot remedy the mischief that has been already done.

Another peril to the substation is lightning. The underground attendant cannot tell that a severe electric storm is raging outside. If he did he might be disposed to shut down till it was over, provided the work of the substation could be delayed, as can pumping, for instance.

Furthermore, when the direct-current circuit breaker flies open in a manually-operated station the attendant closes it as soon as he sees or hears it do so or as soon as he happens to notice that it is in the non-contact position. If he happens to be engaged somewhere else in the room or sunning himself at the door at the time the breaker opens, then the mine current will be down until he notices that the breaker is out. In most cases the breaker is opened by an overload on the mine circuit, but the attendant has no means of knowing to a certainty. He closes the switch and if it opens after each of several successive efforts to close it, he comes to the conclusion that the line has been short-circuited, though this may not be so at all. In the automatic substation the breaker remains open until the overload has been removed from the wires and then it recloses of its own accord, and, if a short circuit has caused it to fly open, it remains open until the mine circuit has again been made clear.

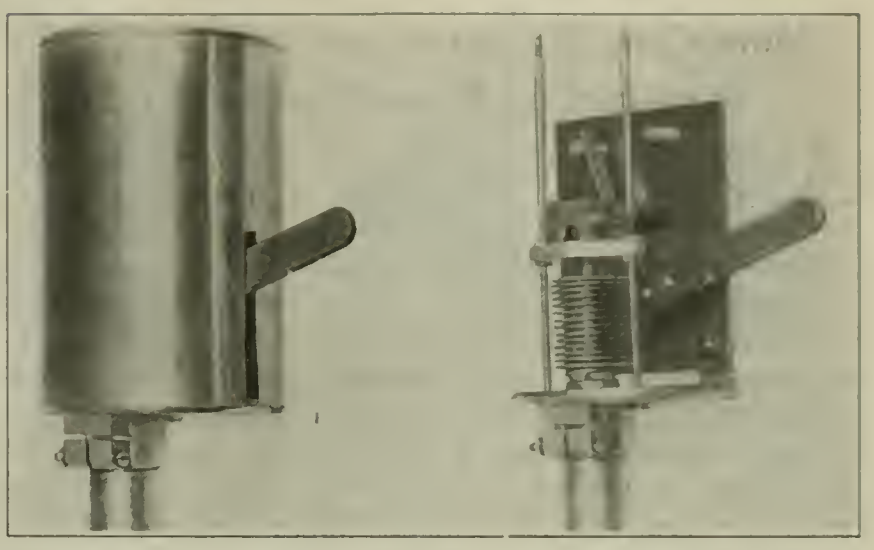


FIG. 1. TWO VIEWS OF BEARING THERMOSTAT

In the left-hand view the operating parts are shown hooded for protection against dust and dirt. The device is installed directly on the bearings of the motor shaft. At the slightest indication of overheating a liquid contained in the stem vaporizes, raising a piston which trips the contactor, shutting the current off. The device does not permit the motor to resume operations after the bearings have cooled, for the condition that its action indicates is a serious one and must be corrected before restarting.

In case of a short circuit in a manually-operated station the attendant keeps trying to close the switch until, wearied with trying, he concludes that the line is short-circuited. It is a poor way of finding out whether the line is overloaded or shorted but it is the best method available to the attendant.

With the mine equipped with an automatic station, the foreman does not call up the substation to discover if the negligence of the attendant has allowed the circuit breaker to remain out. He is sure that something more serious than an overload has occurred, for otherwise the current would be established, so he telephones to the electrician on the surface to look for the "short" and sends other men to do the same.

In some of the stations now being equipped, a klaxon is attached to one of the window frames of the building. When the direct circuit breaker opens and stays open for a predetermined time, a dry-battery circuit is completed which causes the horn to operate, sending its shrill signal over the plant. The mine electrician knows at once that there is a short-circuit within the mine, as the klaxon will not operate when the breaker has been opened by an overload—unless indeed, that overload is maintained on the wires for nearly a half minute—and he telephones the foreman, who institutes a search at once.

When a short-circuit occurs in a mine without an automatic substation, the attendant may mistake it for an overload and he may try to throw in the circuit breaker without first pulling the alternating-current switch. This will damage the entire installation and may severely injure the attendant.

South Africa claims the largest single coal deposit in the world is being developed south of Victoria Falls, on the Zambesi River. Engineers say that this one mine will yield six trillion tons of soft coal. Present production is at the rate of 30,000 tons a month.

Main Gear, Eccentric and Crosshead of Gathering Pump Run in Oil

A NEW type of gathering pump has been developed and placed on the market in western Pennsylvania. In this design all bearings and moving parts are self-oiling and unusual accessibility is provided.

The back-geared drive, or, rather, that portion of it external to the drive casing, which may be seen in the accompanying sectional illustration, is not, of course, an innovation. The shaft carrying the first back gear extends through what in most pumps would be the crankcase, within which it bears a pinion that meshes with the second back gear. This gear, which is of close-grained cast iron, carries upon its side and cast integral with it a large eccentric, motion from which is transmitted to the crosshead and thence to the piston.

The crosshead is of the piston type and reciprocates within a bored guide. In shape and external appearance it strongly resembles the piston of an ordinary gasoline engine, except, of course, that packing rings are entirely lacking. The pinion, gear, eccentric, eccentric rod and crosshead are all inclosed within the gear case and guide barrel. The piston rod passes through a stuffing box which effectually prevents leakage of oil outward or of water inward.

"Crank" Case Partly Filled with Oil

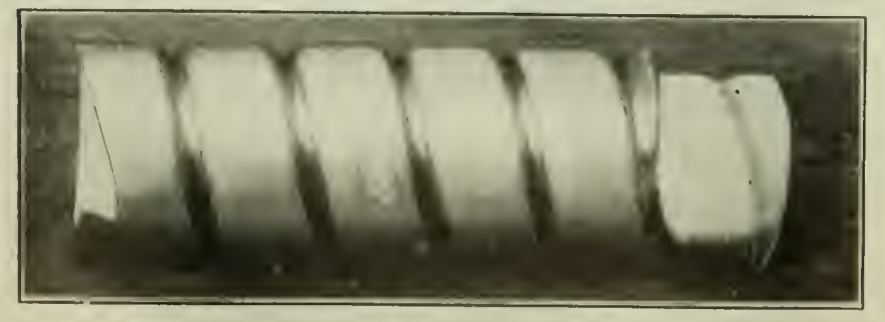
The "crank" case, which is provided with a hinged cover for purposes of access and inspection, is partly filled with oil. This is carried up by the gear to the pinion and thoroughly floods and lubricates not only the meshing teeth but also the gear and pinion bearings. Furthermore, oil thrown off by the pinion is directed through the cored passage, plainly visible in the cut, to the top of the crosshead. Here a groove around the crosshead effectually distributes it not only to the wrist-pin but also to the entire crosshead throughout its circumference. Suitable passages are provided which return the oil both from crosshead and bearings to the main reservoir. Thus not only are all wearing surfaces flooded with lubricant but this oil is used over and over again.

The cast-iron cylinder, which is of the overhung type, contains not only the piston barrel but the valve chamber also, these parts being cast integral. The piston is of cast iron fitted with square-braided flax packing and a follower plate. It is reciprocated within a cast-bronze cylinder bushing by a bronze piston rod which passes through an outside-packed stuffing box.

Suction and discharge valves are of rubber working upon bronze grid seats that are screwed into their respective decks. Access to either valve chamber is gained by the removal of a single nut and crab which hold down the valve covers. Standard construction includes an air chamber and companion pipe flanges.

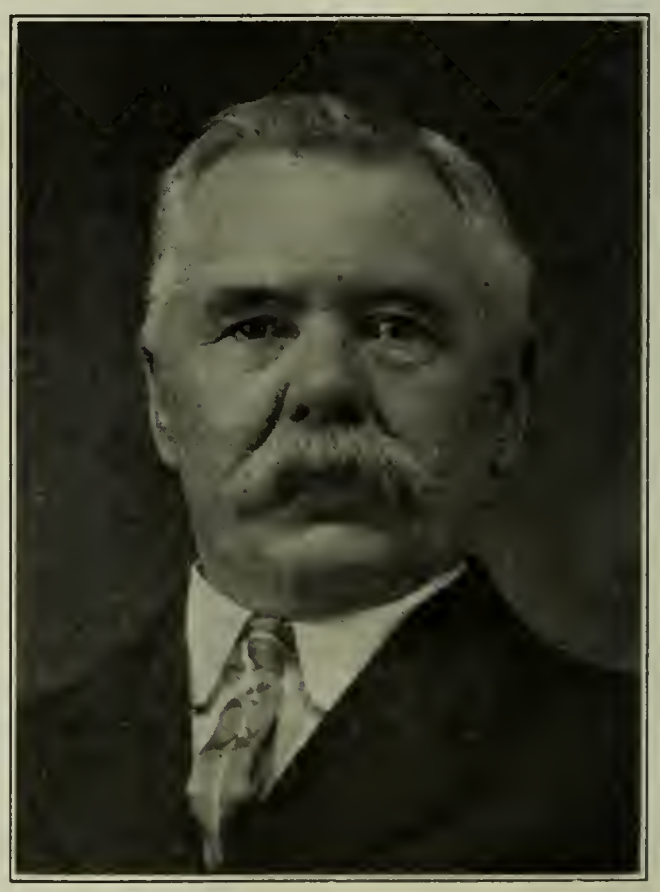
Another pump of the same type is built for belt drive. It is provided with tight and loose pulleys in place of the motor and first back gear. In either case the entire machine is mounted upon a substantial bedplate, which in the case of the electric drive, of course, carries the motor also. This bedplate may be mounted on wheels if desired.

In general this pump is of heavy design throughout. All rubbing surfaces are of generous dimensions and bearings not flooded from the crankcase reservoir are made self-oiling with renewable shells. All external moving parts are carefully guarded to prevent accident. The builder of the pump, the Deming Co. of Salem, Ohio, has endeavored to make it durable, reliable and easy of access.



PUMP FOR VOIDING WATER FROM SMALL SUMPS

Reciprocating motion is imparted by an eccentric and the crosshead is cylindrical. Both of these parts are incased like the cranks of an automobile and similarly run in oil. The case also houses the main gear and the pinion meshing with it. A passage from the pinion to the crosshead carries the oil from the former to the latter.



THOMAS P. THOMAS

New general manager of the Lehigh Valley Coal Co. has been forty-five years an employee of the Lehigh Valley Coal Co. He was born in Wales, where his father was a miner. At the age of ten he entered the mines, being a door tender in a Pittston mine. He filled various humble duties until reaching twenty-one years of age. His parents being too poor to send the boy to school, he had to study in the evenings on his return from work in the mines.

By the time he became of age he had saved up enough money to go to the academy of Bucknell University. From that he went to Lehigh and studied mining engineering for three years with the class of 1886. He returned to the Lehigh Valley Coal Co. about 1885 and was assigned to work with the engineer corps, in which he remained for several years. He was promoted in 1890 to the position of general superintendent of the Enterprise Colliery at Plains, a mine long since abandoned. The year following he became outside foreman at Exeter colliery, where he had worked as a boy.

In 1894 he became foreman of the colliery. In 1901 he became superintendent of the company's Lackawanna division and four years later was transferred to the superintendency of the Hazleton division. In 1907 he became superintendent of the Wyoming division, and in 1912 mining superintendent over all the Lehigh Valley collieries.

Problems of Operating Men

Edited by James T. Beard

Mine Inspectors' Difficulties

Large Territories, Great Responsibilities and Considerable Percentage of Tricky Mine Foremen Constitute Some of the Many Difficulties That Surround the Work of the Mine Inspector

MORE than once when reading *Coal Age* I have been reminded of the great responsibilities that rest on our mine inspectors. These men are placed under bond to insure the proper performance of their duties, which are varied and numerous.

Every mine inspector is required by law to visit each mine in his district once every three or four months, which he often finds it a practical impossibility to do and, at the same time, perform the other duties that the law requires of him.

What makes the inspector's work more difficult and requires him to be shrewd and cautious is the well known fact that, we might say, seven out of every ten mine foremen watch for the inspector's coming and prepare for that event. Occasionally, an inspector will drop in at a time the foreman is not looking for him; but this only happens when the inspector has reason to believe that his presence in that mine is needed.

Some Foremen Frequently Try to Hoodwink the Inspector

When a foreman is working one or more places that he knows do not fully comply with the requirements of the law and yet he is anxious to keep such places going for his own purposes, he is quite apt when the time arrives for the inspector to make another visit, to withdraw the men working those places and put them to work elsewhere, temporarily.

The over-anxious foreman is seldom at a loss to tell the inspector why such and such a place "is not working" and, unless the inspector is well on to his job, he will generally accept the statement of the foreman as a fact and pass on to places that the foreman is very desirous he should "examine closely." The actual intent on the part of the foreman, however, is to get the inspector away to a portion of the mine where he will find everything all right.

How is it possible to reduce the number of accidents occurring in our mines daily when a large proportion of the foremen will resort to tricks of this kind, hoping to hoodwink the inspector and believing that their employers will be well pleased if they are able to do this?

From my own experience and that of many other foremen, I have no hesitancy in saying that it is possible for the foreman of a mine to conduct the work of which he has charge, in a manner that he will never feel anxious about the coming of the mine inspector. In nine cases out of ten, a foreman who will deceive the inspector will play the same trick on his employer, whenever he is able to cover up his tracks and avoid the results that he very naturally fears will follow the discovery of his misdoings.

Night Schools Needed to Insure Competency

Speaking of certified mine foremen, it is my belief that if these men were compelled to take the examination over again, not forty per cent of them would pass. It would seem that a portion of the work that falls to mine inspectors is to get the foremen in their several districts together, for a meeting once a month or so, that they may become familiar with their views and methods regarding safety in the mines.

Mention was made in *Coal Age*, a short time ago (Jan. 27, p. 187), of a district mine inspector, in Pennsylvania, who realized the need of greater competency on the part of the foremen in his district and organized a night school for all who would attend.

While it is true that accidents often result from a superintendent pushing his formen too much and urging them to get out more coal, regardless of certain things that pertain to safety, it happens more often that the cause of these accidents are due to the laziness of many foremen.

Many Foremen Rely Too Much on Their Assistants

In large mines it frequently happens that the foreman relies too much on his assistants and firebosses, and does not give the same personal supervision to the work that he should as foreman. In that case, if anything happens the blame of course, falls on the foreman for his neglect.

It has been rightly said that to avoid accidents, greater discipline is needed. This applies all down the line from the inspector to the superintendent, mine foremen, assistant foremen, and bosses in charge. Every superintendent should go through the mine with his foreman once or twice a week, that he may know what is being done. This is as important as it is for the mine inspector to make his regular visits as required by law.

JOHN H. WILEY.

Oliphant, Pa.

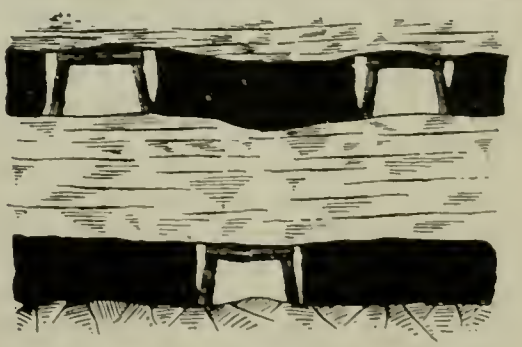
Working Contiguous Coal Seams

Numerous letters indorse the statement that the only safe method to adopt in the working of two seams of coal separated by a few feet of strata is to provide a continuous line of support by placing pillars over pillars in the two seams.

REFERRING to the inquiry of J. C. R. Taylor, *Coal Age*, March 10, p. 455, regarding the working of two seams of coal separated by 40 ft. of hard slate and shale, I agree fully with the idea expressed by the editor in his reply that the pillars in the upper seam must stand vertically over those in the lower seam.

It is hard to understand how any other plan could be contemplated. To my mind, should a pillar in the upper bed stand over a chamber in the lower bed the effect would be the same as when a wedge is driven over the center of a collar or crossbar of a set of timbers.

In the accompanying figure, I have attempted to illustrate what would take



PILLAR UNSUPPORTED CRUSHES TIMBERS IN SEAM BELOW

place where a pillar overlies an opening below. My sketch shows an entry pillar standing directly above a heading driven in the lower seam. Assuming there is any considerable roof pressure in the upper seam the strata intervening between the two seams will yield and break the timbers below.

The effect is bad enough in the case of headings where the cost of maintaining the roads and airways will be much increased, but the trouble will be far greater in the rooms where caving will result, causing a great loss of coal and making it impossible to draw the pillars, which will be badly crushed.

Some years ago while working both the "Checker beds" in the Pittston dis-

trict, I remember a very bad squeeze occurred and the roof collapsed over a large territory. Previous to the accident I had noticed that some of the pillars in the upper seam, while not set entirely over the chambers below, yet overlapped the pillar supports in the lower seam, at times as much as 12 ft.

Waching these pillars closely, from time to time, I made up my mind that they would eventually keel over into the chambers below, which was actually what took place in the collapse. In that case, the intervening strata ranged from 14 to 30 ft. in thickness, the rock being a hard sandstone.

In another section of the mine, however, we adopted the plan of leaving every eighth chamber to be mined at some time later. This provided a safety pillar of solid coal some 60 ft. in width and prevented further trouble. Allow me to say that the same plan can probably be used in the case mentioned in this inquiry.

Wilkes-Barre, Pa. Engineer.

ANOTHER LETTER

SPEAKING of working two seams with only 40 ft. of rock between them, my understanding has always been that the pillars in both seams should lie in the same vertical plane, one above the other, in order to have a solid line of support from the floor of the lower seam to the roof of the upper one. It would be interesting to know what argument could be advanced in support of any other plan.

The upkeep of mines is the first consideration. The cost varies from a comparative trifle to hundreds of dollars a day, whenever proper attention is not given to the study of the local conditions and the work laid out in a manner that will prevent trouble, later, in the development and operation of the mine.

While a large force of daymen is necessary in order to keep a mine in good repair where the conditions are unfavorable, this may often be required, also, under favorable conditions, because of the injudicious planning of the mine.

Sudden Development of Creep Brings Disaster

Those who have had experience with mine creeps will agree with me that everything may be working to satisfaction and the daily output of the mine growing when the miners are permitted to widen out their rooms and are taking too much of the pillar coal that should be left for the support of their rooms. Then, suddenly there comes a change.

Almost without warning the mine starts to creep. Coal falls from the pillars in slabs; the roof weights; timbers are broken and rock falls block the roads and many of the working places are rendered unsafe for work. As a result the daily output of the mine drops off and the cost-sheet begins to loom alarmingly.

Where formerly a large number of miners were at work and few daymen were employed to keep up the roads and timber the places, now a comparatively few miners are sending out coal and a large force of daymen are busy keeping the roads open and setting timber to counteract the effects of the squeeze.

Formerly, the men were mining cheap coal and drawing good money, which pleased the management whose eyes were blind to what was to come. Now, all their thoughts and energies are concentrated on keeping the mine open. There is little doing on the tipple and the small amount of coal sent out of the mine each day is mined at a high cost.

Results of Bad Management

Someone has blundered; but, as is invariably the case, many must suffer as a result. The miners lose their wages and the company's profits are cut off by the increased cost of daywork made necessary by reason of the squeeze.

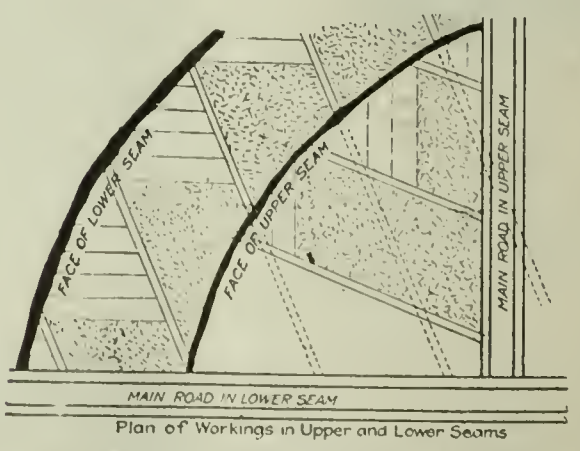
Allow me to remark, here, that anything done, or practice followed, in a mine that tends to produce creep or squeeze is not only a serious mistake but a crime. While it is possible to work continuous seams at one and the same time, without damage to each other, provided the seams are separated by a sufficient thickness and strength of strata, when this dividing rock is but 40 ft. in thickness, careful arrangement of the workings is necessary to avoid trouble. Nothing else will prevent disaster.

Stephen Davies.

Midlandvale, Alta., Canada.

THIRD LETTER

MY ATTENTION was recently arrested, in looking over *Coal Age*, by observing the inquiry in regard to work two coal seams, 40 ft. apart. The suggestion had been made



Plan of Workings in Upper and Lower Seams

ENTRIES DRIVEN AT AN ANGLE IN THE TWO SEAMS

to the inquirer that the pillars in the upper seam should stand over the openings in the lower seam. I wondered how such an idea could be held by anyone.

Of course, my preference is to drive all entries, rooms, and other openings in an upper seam directly over those in the seam below, so that all pillars will stand over and be supported by similar pillars in the lower seam.

However, another plan that has been advocated, at times, and has some promise of success under favorable conditions, is to drive the workings in the two seams at a considerable angle, say 45 deg., with each other, as indicated in the accompanying figure, which shows a long wall development on this plan, but can refer equally to a room-and-pillar development.

When working on the room-and-pillar system I would turn the rooms, in the lower seam, on 80- or 90-ft. centers and drive them up not exceeding 6 yards in width. This will provide pillars from 60 to 70 ft. wide and furnish a good support for the pillars in the upper seam.

When the pillars in the upper seam are vertically above those in the seam below, there is provided a continuous line of support that extends unbroken through both seams. Since the weight of the overburden acts vertically downward, it stands to reason that the pressure it exerts must be transmitted, without a break, to a solid foundation, which is the floor of the lower seam.

When drawing the pillars those in the upper seam should be taken out first before disturbing the pillars below. It is easy to understand that should the pillars in the lower seam be extracted first, the resulting cave would extend to the upper seam and the pillars in that seam would be lost beyond recovery. William Dickinson.

Whipple, W. Va.

FOURTH LETTER

REGARDING the working of the two seams of coal mentioned by J. C. R. Taylor, in a recent issue of *Coal Age*, and which he says are separated by only 40 ft. of slate and shale, I can say from my own experience that the only safe and practical method to adopt in the development of these seams is that recommended in the reply to this inquiry.

In my opinion there must be provided a direct line of support extending through both seams. In order to do this it is absolutely necessary to drive the main and cross-entries on the same bearing in both seams and in the same position vertically.

Pillars Must Stand Over Pillars. Rooms Over Rooms

For example, if the main entries are driven due north in the lower seam, those in the upper seam should be directly over them and driven in the same direction. Also, the cross-entries should be turned at the same points and driven east and west in both seams. In addition, the rooms should be turned off the cross-entries at the same distances, so that each room above will lie directly over one in the seam below.

If the work is well laid out by good engineers, in this manner, each pillar in the upper seam will stand directly over one in the lower seam. Let me say, here, that it is well to make the lower pillars somewhat wider and the rooms narrower in the lower seam

than those in the seam above, as that will give a greater protection against creep or squeeze, which may often occur under the best management.

In closing, may I suggest that it is well to build cribs at numerous points in the lower seam when the roof shows any tendency to cave, as that would give no end of trouble in contending with surface water and gas escaping from the strata. OSCAR H. JAMES.

Crawford, Tenn.

Fireboss' Warning Unheeded

Accident narrowly averted by quick action on the part of a watchful fireboss when an assistant foreman failed to listen to his advice to timber a roadway where the roof was ready to fall.

SOME time ago, I remember there appeared in *Coal Age* (Vol. 18, p. 943) an article entitled "Give The Fireboss a Fair Chance and You Will Get a Far Safer Mine," which I read with deep interest at the time.

Making the mine safer is again referred to in an excellent manner by James Ashworth, in the issue, Apr. 21, p. 716. But let me say that the question of making a mine safe naturally depends to a large extent on the faithfulness and intelligence of the fireboss and on his ability to act with decision.

How often it happens that firebosses know of dangers that exist in their section of the mine and which should receive immediate attention. But after reporting the condition, as they should and urging immediate action they are afraid to do more. Many a fireboss prefers to run the risk of the safety of the men in his charge rather than stand a chance of losing his job.

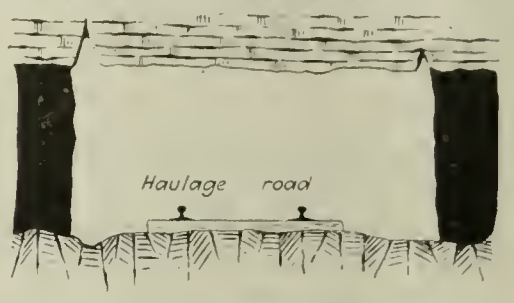
An instance occurred in my own experience as fireboss some years ago. In the section of the mine of which I had charge there was an entry where the roof was cutting badly on each rib, as I have shown in the sketch. On the morning in question I examined this condition carefully and found that, for a length of 60 ft., the roof was nearly ready to drop.

Having finished my second examination that morning, I sought the assistant foreman who had charge in that section of the mine and informed him of the condition of the entry, stating that unless immediate steps were taken to make the place safe, something was going to drop. His only reply was, "Let her drop," and he went off, giving me no satisfaction.

Realizing my own responsibility in the matter, I at once withdrew the men working in that section, including the drivers, and fenced off the place as a warning for all persons to keep out. This, of course, was the signal for trouble. The assistant foreman, ascertaining from the men going home that they had been "ordered out by the fireboss," reported the matter promptly to the foreman.

Now, it so happened that the foreman was with the inspector who was making his regular visit to the mine that morning and I met the three men coming in, as I was proceeding on my way to the bottom. I was only too glad to comply with their request to return with them to investigate the condition and decide what had to be done to make the place safe.

We stopped on the way to look at one or two places but finally reached the section that I had fenced off. What



ROOF CUTTING BADLY ON EACH RIB

we found there was a surprise even to myself. In the short interval of one hour and ten minutes from the time I had reported the danger to the assistant foreman the roof had fallen to a height varying from 8 to 12 ft., over a length of 115 ft. in that entry.

My gratification can well be imagined when I reflected what might have been the result had I failed to act so precipitously in withdrawing the men. There was not much to be said in condemnation of my action, which received the hearty approval and praise of the mine inspector.

This little instance is told here simply to show the importance of a fireboss acting promptly when he knows that danger exists. It will happen at times that a giddy-headed assistant foreman, anxious to show his own importance, will regard any advice given by the fireboss as unworthy of his notice and will even delay the work suggested to impress the fact on the mind of the fireboss that his interference is not desired.

In the present case the mine foreman and his assistant had much the same disposition. Every night they could be seen drinking together. While I was at that time a drinking man myself, I was not the foreman's right-hand man. I often contrasted conditions such as these with the rank and file of the H. C. Frick Co.'s men, where the company inspector, foreman, assistant foreman and firebosses all co-operated in the work of "making the mines safer."

Oliphant, Pa. JOHN H. WILEY.

Inquiries Of General Interest

Water-Gage Reading re Speed of Fan

Water-Gage Reading Varies With the Mine Resistance and Is Independent of the Speed of the Ventilator. Short-Circuiting the Air Current Ordinarily Reduces the Gage Reading

ONE question has puzzled me for some time past. It has reference to the water-gage reading taken on a fan drift. I have always supposed that, in order to increase or decrease the reading of the gage, it was necessary to likewise increase or decrease the speed of the fan. Observations taken recently, however, seem to show that when the fan is running at the same speed, it is possible to get different readings of the water-gage. I shall much appreciate seeing this explained in *Coal Age*. STUDENT.

———, Pa.

The reading of a water gage placed on the fan drift is an index of the unit pressure creating the circulation of air through the mine or airway. This unit pressure (lb. per sq.ft.) multiplied by the sectional area of the fan drift (sq.ft.) gives the total pressure producing the circulation and is equal to the resistance of the mine or airway.

It is a mistake, often made, to suppose that the pressure created by the action of a fan depends on the speed at which the fan is running. This is not the case, as the pressure may vary from a maximum to zero, while the speed of the fan remains constant, according as there is a greater or less resistance to the passage of the air current.

The pressure, as indicated by the reading of the water gage, is due to the mine resistance and varies in the same proportion. Cutting out the mine resistance or any portion of it, by short-circuiting the air current, will reduce the reading of the water gage if the speed of the fan remains constant. Likewise, increasing the resistance of the mine or airway, by obstructing the flow of the air or otherwise, will increase the gage reading for the same speed of the fan.

Less power is required to circulate a given volume of air under a reduced water gage; and this is accomplished, practically, by cleaning up the airways, removing all falls and other obstructions to the flow of the air, shortening the distance the air must travel and reducing the velocity of the air current by splitting or dividing the air one or more times. Each of these performances reduces both the mine resistance and the water gage and permits the circulation of the same volume of air with less power.

Examination Questions Answered

Examination, Foreman and Assistant Foreman, Twenty-Second Anthracite District

(Selected Questions)

QUESTION—*For what do the Anthracit Mine Laws of Pennsylvania generally provide and to what do they apply?*

ANSWER—The aim and purpose of these laws is to provide for the health and safety of persons employed in and about the mines and secure, as far as possible, the protection and preservation of the property. These laws apply to the mines, buildings and all equipment of tools, machinery and other appliances used in connection therewith, whenever the mine employs more than ten men.

QUESTION—*What is required by the mine laws of Pennsylvania to make a person eligible for the position of mine foreman and assistant mine foreman?*

ANSWER—A person to be eligible, under the law for these positions must be registered as holding a certificate of qualification or service under the Act; or have, in the judgment of his employer, qualifications that make him equally competent with a certified person. In order to obtain a certificate of qualification, the candidate must pass an examination before a duly appointed examining board and give satisfactory evidence of having had at least five years practical experience as a miner and have, besides, a reputation for good conduct, capability and sobriety.

QUESTION—*How and in what quantities shall the ventilating currents be conducted and circulated in a mine?*

ANSWER—All ventilating currents shall be conducted to and circulated along the face of each and every working place in the mine. The quantity of air in circulation, as specified in the law, must not be less than 200 cu.ft. per min. for each and every person employed in the mine, and as much more as the circumstances may require. The quantity must be sufficient to dilute, render harmless and sweep away the smoke and noxious or dangerous gases to such extent as to make all working places and traveling roads safe.

QUESTION—*What do you mean by the sectional area of an airway?*

ANSWER—The sectional area of an airway is the area of its average cross-section inside the timbers or other obstruction and is expressed in square feet.

QUESTION—*What is the rubbing surface in a circular shaft 15 ft. in in diameter and 1,200 ft. deep?*

ANSWER—The perimeter of this airway is $3.1416 \times 15 = 47.124$ ft.; and its rubbing surface is $1,200 \times 47.124 = 56,548.8$ sq.ft.

QUESTION—*What is the ventilating pressure, in pounds per square foot, when the water gage reads 2 4 in.?*

ANSWER—The unit pressure corresponding to a water gage of 2.4 in. is $5.2 \times 2.4 = 12.48$ lb. per sq.ft.

QUESTION—*With the same power how can you increase the ventilation in the mine?*

ANSWER—First, clean up the airways, removing all roof falls and other obstructions to the flow of the air. Having done this, shorten the course of air travel, wherever this is practicable, by conducting the air or a portion of it by a shorter route between adjoining sections on the same split. Also, cut out sharp turns in the airways where this can be done at small expense. Enlarge all crosscuts and breakthroughs where the air must pass and keep these clear of obstruction. Finally, wherever practicable divide the air into separate splits so as to reduce the velocity and decrease the resistance of the mine.

QUESTION—*What is the requirement of the mine law, in case it is found impracticable to keep the mine free from accumulations of water and gas?*

ANSWER—The anthracite law (Art. 10, sec. 5) requires that the mine inspector must be immediately notified when it is found impracticable to keep the entire mine free from such accumulations.

QUESTION—*There is passing through an airway 35,000 cu ft. of air per min ; what will be the velocity per second if the size of the airway is 7.5 x 5 5 ft.?*

ANSWER—The sectional area of this airway is $7.5 \times 5.5 = 41.25$ sq.ft. The quantity of air in circulation is $35,000 \div 60 = 583\frac{1}{3}$ cu.ft. per sec.; and the velocity of the air current is then $583\frac{1}{3} \div 41.25 = 14.14$ ft. per sec.

QUESTION—*In a mine that is being worked with open lights, describe what conditions may be encountered that would necessitate the use of safety lamps.*

ANSWER—An increased outflow of gas that would necessitate the use of safety lamps may arise from striking fresh gas feeders in the development of a section of the mine. A heavy roof fall in one section may release an unusual quantity of gas from the roof; or a fall of roof in large abandoned areas may drive out the gas accumulated in such places. It often happens that a squeeze or creep will cause a sudden increase in the volume of gas generated in a mine; or when passing through a fault there is frequently observed an increased generation of gas from the strata beyond the fault. In a mine having large abandoned areas that are not sufficiently ventilated, a sudden fall of barometric pressure will be accompanied by an outflow of gas into the live workings that would be unsafe where open lights are in use. Safety lamps should always be used when drawing pillars in a mine where the gas comes from the roof.

QUESTION—*Write a report such as you would do after making an examination of a gaseous section of a mine, assuming you are the fireboss of said section.*

ANSWER — Having completed the examination of the section of mine in my charge and on reaching the bottom of the shaft, I would enter the following report in the book kept for that purpose:

"I have this day examined all the working places, traveling ways, roads and air-courses in my section, and found the same to be free from gas and safe for work except at the face of Room 10, 3E—S, where I have marked a bad stone to be taken down, and placed a danger signal at the entrance of the room. I have withheld check No. 10 till said place is made safe for work.

Signed JOHN SMITH,
Fireboss.

QUESTION—*In which part of the workings of a mine is the greatest pressure required for the removal of firedamp?*

ANSWER—A firedamp mixture, being lighter than air of the same temperature and pressure, is prone to accumulate at the face of steep pitches and in rise workings, from which it is often difficult to be removed. A much greater pressure is then required than when the gas is generated at the face of dip workings, from which it has a natural tendency to rise and escape.

QUESTION—*What is the pressure per square foot and per square inch at the bottom of a water column that is 12 ft. above the bottom of a shaft 600 ft. deep, and which discharges 20 ft. below the top of the shaft?*

ANSWER—The total length of this water column is $600 - (12 + 20) = 568$ ft. The static pressure due to this head of water is $568 \times 0.434 = 246.5$ lb. per sq.in.; or $144 \times 246.5 = 35,496$ lb. per sq.ft.

QUESTION—*By what means is a ventilating current set in motion?*

ANSWER—It is a principle of ventilation that air always moves from a point of higher pressure toward a point of lower pressure. This difference of pressure may be due to a natural air column in a shaft, or in rise or dip workings, or it may be caused by the heat of a furnace at the bottom of a furnace shaft, or created mechanically by means of a steam jet or a ventilating fan. Wind cowls and waterfalls in a shaft have been utilized to create air currents where the conditions are favorable for the use of such appliances.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THE general situation as to trade and industry, according to the May report of business conditions issued by the National City Bank of New York, has shown some further improvement during the past month, although the fundamental difficulty, which is the disruption of the price level between raw products and manufactured goods, is yet far from overcome.

"According to government reports," the bulletin continues, "the level of the principal farm products declined 5.6 per cent in March, whereas the normal movement in March is upward, and over the last ten years has averaged 3.4 per cent. On April 1 the index figure of farm products was 58.3 per cent lower than a year ago, 48.6 per cent lower than two years ago and 27.6 per cent lower than the average on April 1 of the past ten years.

"Other primary products, such as lumber and the metals, as yet have made no recovery, while on the other hand manufactured products, especially at retail, freight charges and personal services generally have made no corresponding decline. Naturally the sale of manufactures has fallen off, railway traffic has declined and there is a large amount of unemployment.

"Nevertheless, there is bound to be more doing in the spring than in midwinter, and the industries are going much better than they were three months ago. The automobile industry naturally is stimulated by spring and good weather, and has come back strong. The tire industry has revived, and one of the biggest tire companies, which was in financial difficulties as a result of the sudden falling of business in the face of big inventories, has been successfully refinanced and started on its way. The tire industry is an important factor in the cotton-spinning industry, and the mills that are getting busy again on tire materials are no longer competing upon other cotton fabrics.

"The building industry is the one that should show the greatest improvement, as there is an undoubted shortage of houses everywhere, but building operations are held in check by the excessive costs.

"It is evident on every hand that the depression which exists is due to the unbalanced state of industry as regards the compensation received by important bodies of people. A great portion of the population suddenly has lost a large part of its purchasing power, and no longer is able to buy the products of the other industries as it has been accustomed to do. The people in the other industries, employers and employes alike, seem to have no definite idea about what has happened to them, but are sitting around, trying to cheer each other up, and watching the skies for better weather."

American Loco. Co. Gets Big Order

The Peking Kalgan Ry. of China is reported to have placed an order for forty-two locomotives with the American Locomotive Co. The value of the order is estimated at $2,600,000. The railroad ordering this new equipment is owned by the Chinese Government and the financing has been arranged jointly by the American Locomotive Co., and Mitsui & Co. Basis for the financing calls for payment by Mitsui & Co. to the American Locomotive Co. of 50 per cent cash upon completion of the order and the remaining 50 per cent in eight semi-annual installments. The contract calls for Pacific, Mikado and Mallet types of engines.

Pere Marquette Re-employs Men

More employees, it is announced, were reinstated in the Pere Marquette R.R. shops at St. Thomas, Ont., May 1. This has brought the shop staff almost to normal.

Hosiery Mills Work Full Forces

The Parker Hosiery Mills, in Portsmouth, Va., have resumed operations with a full force, according to an announcement May 5. The knitting department of the mills was closed since the early part of the year because of lack of orders. It is understood that another mill owned by the company in Maryland will soon resume operations.

Ingersoll Plant Working Again

That the watch plant of Robert H. Ingersoll & Bro., at Waterbury, Conn., which closed some weeks ago because of business depression, would reopen May 9, was announced last week. Nearly 600 employees were affected by the lay off.

Texas to Have Big Cement Works

A charter for a $3,000,000 portland cement manufacturing company has been granted to John J. Sharp and L. C. Ihnken of Castroville and W. S. Campbell of San Antonio, Texas, under the title of the Gulf Portland Cement Association. They also have secured raw material properties needed for the plant, which will be located within three miles of Castroville and the Southern Pacific Railway.

Wheeling Tinplate Mills Reopen

Officials of the Wheeling Steel Corporation announce that their tinplate mills at Beech Bottom and Yorkville, W. Va., resumed operations Monday, April 25. More than 1,000 employees are affected at the two plants. Officials said they believed that the revival of the tinplate business would enable them to continue operations indefinitely.

Two Yarn Companies Open Mills

The Grant Yarn Co. and the Fitchburg Yarn Co. at Fitchburg, Mass., reopened their mills Monday, April 25, on reduced wage scales. Details of the revisions were not made public. The mills employed about 800 hands before they closed last July.

Erie Railroad Shops Close

Orders were issued April 28 for the closing of all repair shops of the Erie R.R. between New York and Chicago for an indefinite period beginning Monday, May 2. At regional headquarters, Hornell, N. Y., it was said that more than 5,000 men would be thrown out of work.

D. & H. Shops Shut Down

The Delaware & Hudson Railroad shops at Colonie, Green Island and Oneonta were closed Wednesday night, April 27, for an indefinite period, it is announced by company officials. About 1,500 men are affected.

The Cost of a Ton of Coal

By George Otis Smith*

SOME years ago the present editor of *Coal Age* and myself, in discussing the cost of coal, explained the lively public interest in the subject as largely due to the fact that coal is one of the few raw materials which the average citizen buys directly. Iron and wool and wheat we buy in other forms, but we know the unit price of the coal we burn and we easily visualize the "coal barons" who are said to fix that price. We are convinced that our coal costs us too much, and we become zealous advocates of some form of price limitation whereby the profiteers may be kept within bounds, but with all this zeal we have few facts at hand on which to base any analysis of the items which make up the cost of the ton of coal delivered in our cellar.

The total production of coal in the United States is approximately six tons for each inhabitant, but about one ton of coal a year is the per capita consumption for heating and cooking; the other five tons or so which must be charged to every man and woman and child in the United States are paid for indirectly in the prices we pay for all the manufactured goods we buy and in our street car and railroad fares and electric light and gas bills. So one ton is the measure of the average individual's direct interest in the price of coal, though New England residents have a larger interest by reason of the larger consumption in that region.

The householder in the East, in thinking of coal, has in mind anthracite, not bituminous coal, and the domestic sizes, not the steam sizes. Too often mention in the daily press of a shortage or a surplus of bituminous coal is misunderstood by many readers, who think only of hard coal.

Separating Items of Cost of a Ton of Coal

Last winter full information came into my hands regarding a car of anthracite coal mined in Pennsylvania and sent by rail to northern New England and there delivered to individual consumers, my own household being among those consumers. Every item of expense from the mine face to the cellar bin is available and the cost of a ton of coal can be separated into its various items. It was egg coal mined in December, 1920, and delivered early in January, and the cost delivered is believed to represent average conditions, except that owing to inability to get the coal through dealers it was obtained direct, and therefore no wholesale or retail dealer's profits are included; only the local dealer's charges for services in handling the car on the siding and weighing the coal. All cost items have been reduced to the short or net ton, as the measure most familiar to the coal user.

The statement which follows shows that of the total cost of the coal—$15.17 a short ton—the mine price was $6.92; transportation cost, including tax, was $6.44, and local charges $1.81.

COST OF ONE NET TON OF ANTHRACITE COAL, EGG SIZE

Labor—Inside	$3.38	
Outside	.64	
Powerhouse and general colliery	.18	
Administrative	.07	
		$4.27
Material—Inside	.79	
Outside	.57	
		1.36
Reserves—Local taxes	.12	
Insurance, compensation and other hazards	.24	
Depreciation, depletion, obsolesence, etc	.33	.69
Cost to producer (total mine cost)		†$6.32
Selling expense		.08
Margin from which are to be paid Federal taxes and dividends		.52
Cost to buyer at mine		$6.92
Freight charges	$6.25	
United States tax on freight	.19	6.44
Cost to buyer, delivered at local railroad station in Northern Maine		$13.36
Yard and office expense of retail dealer		‡.22
Delivery in consumer's bin		1.59
Total cost to ultimate consumer		$15.17

† Allocated cost for egg size is approximately one-quarter higher than average cost.

‡ No other middleman's costs or profits included.

This cost analysis affords food for thought. That nearly half of the price the distant consumer pays for his coal is transportation cost may or may not be commonly realized, but that 19c. of that freight bill went to the U. S. Treasury may be a new idea to him. But before we declaim too loudly at the excessive freight rates it is well to compare the cost of the long railroad haul with that of the short local delivery haul; here it was about 1c. per ton mile on the railroad and several dollars per ton mile on the village streets. Another comparison of cost that suggests the need of focussing personal attention on the distribution end as well as of asking Congressional investigation of coal producers is found in the item of 8c. for selling expense at the mine, which includes cost of operating the storage yard, to which might be added the 7c. item for administrative labor in mine office, while the local dealer's charge for weighing the coal and arranging for its delivery was 22c. a ton. It should be remarked that no degradation or shrinkage charge was figured to offset loss in transit, for the excellent reason that the car arrived overweight.

Comparison of Mine Costs and Delivery Cost

Still another instructive comparison is afforded between the item for mine labor, $3.38, and that for local delivery, $1.58; the latter operation involved lifting the ton of coal twice by manual effort but under much different conditions. The miner had not only to load this ton of coal but previously he had to break it down from the working face, and the mining operation also involves the handling of half a ton of rock for every ton of coal mined, and this item of inside mine labor also includes such other "dead work" as is involved in timbering and ventilating and draining the mine, seven board feet of lumber, ¼ ton of air, and eighteen tons of water being stated as the average quantities involved in the mining of a ton of anhracite coal, as well as the underground haulage of the coal, doubtless for a much longer distance than is included in the local delivery from railroad siding to the consumer's home. Mine workers' wages are admittedly higher than ever before, but so are wages elsewhere, as is well realized whenever the city householder hires a husky laborer to carry coal from the curb to the coal chute. Two of the teamsters delivering this carload of coal earned each, with a helper, $18.50 and $19.50 for a day's work. The skilled mine worker far underground did not do much better than that. Again we do well to watch distribution charges probably while we talk of production costs.

Operator's Gain Not Large for Hazardous Investment

A glance at the depreciation, amortization and depletion item of 33c. suggests that in this respect this ton of coal costs less than much that is mined, since on Girard estate lands the royalty alone averages over $1. The margin of 52c. between mine cost and price f.o.b. mine includes federal taxes and the mining company's profit—that is to say, the federal taxes must be paid and deducted from this 52c. before the profits available for dividends can be determined. It should be explained, moreover, that the mine costs as figured in the table above are in terms of the higher-priced domestic sizes and are therefore correspondingly greater than for the average of all sizes, and the mine operator's margin indicated is a third larger than the average that holds for the total tonnage, which is less than 40c. to the short ton in December, and indeed was less than 36c. for the whole year of 1920—figures which are not suggestive of the profit that might reasonably be expected in a somewhat hazardous type of industrial investment.

The ultimate consumer of anthracite coal must face the facts that production costs have increased; royalty rates have at least doubled within the last decade, and the labor item is about twice what it was ten years ago; while the freight cost likewise has shown a tendency to multiply itself. Undoubtedly some mines may show a larger profit than that

*Director U. S. Geological Survey.

indicated above, but others report even lower margins between cost and realization, as must be expected where large royalties are being paid. Whatever these profits at the mine, it is doubtful if they equal the profits accruing to some of the wholesale and retail dealers that handle the same coal. It is a hopeful sign that in their meetings the coal dealers are giving attention to the subjects of cost-keeping and labor-saving, and it is surely in the public interest that more light be thrown upon the costs of coal distribution, especially as, with most of us, these costs can be a subject for short-range investigation.

Union Men Face Starvation in Alabama

BEING denied work by the operators, who have all the workers they need, and being refused support by the union, which urged them to strike, about 26,000 mine workers of Alabama are in abject poverty. The union support they received during the strike was so meager that it afforded them no more than a bare subsistence. When it was withdrawn, as it was when the strike was lost, it left them entirely without means.

They have tried to get work, but the mines are not running steadily, and the operators feel that they would not be justified in dropping or giving irregular work to those who stood by them during the strike in order to care for those who tried to prevent them from doing business. At Marvel, of the Roden Coal Co., one of the model towns of the South, where every endeavor was made before the strike to make the men comfortable, there are 634 destitute men, women and children.

Pratt City local has made formal demand on Governor Kilby for financial relief. The southwestern division of the Salvation Army has made a call on the Governor for help to supplement what it is doing. Governor Kilby in his strike decision declared that the union, which had fomented the strike for its own purposes, should itself provide for the care of the idle men, but this it declared it was unable to do.

River Coal Moving to Louisville, Retailers Stock Their Yards for Future Needs

LOUISVILLE retailers are beginning to stock coal, figuring that markets will advance and that they will make a profit on coal stocked, and that they will at least have fuel in hand later when demand is heavier. There is a movement among the leading retailers to stock about one-half or better of yard capacity.

There has been a heavy inbound movement of river coal to Louisville of late, the Atlas Coal Co. receiving its first river coal in four years, consisting of two barges of West Virginia lump, out of a purchase of ten barges. The Pittsburgh Fuel Co. is unloading fourteen barges, and the Volkman & Kerlin Coal Co., C. F. Snyder Coal Co., E. T. Slider Co., Dugan Coal Co., and some of the Jeffersonville and New Albany coal companies have barges that are being unloaded. More river coal is moving than at any time for many years past, as West Virginia operators need business and are in position to ship, while today there are more barges and better transportation facilities on the Ohio, which is promising to stage a comeback for coal movement.

The Atlas Coal Co. had not hoisted a ton of coal up its incline for four years, but had held its equipment intact. This company has fine dumping and hoisting facilities for handling rail coal. The company now is putting in a yard stock of 6,000 to 8,000 tons, and the Pittsburgh Fuel Co., Watson Coal Co., James Coal Co., Byrne & Speed Coal Co., and Scanlon Coal Co. also are stocking. The James Coal Co. has a connection with the R. C. Tway Coal Co., producers and jobbers, and the Tway company has been taking advantage of the dull market to fill up its two local yards to capacity, whereby the mines have been enabled to operate on a five-day basis, including other business on hand.

Operators with retail connections in several instances are taking advantage of the opportunity to stock the retail yards up at this time, feeling confident that future demand and movement will not give much opportunity to lay in surplus stocks.

Migrate from High- to Low-Wage Mines

THE mines in the Connellsville region of Pennsylvania, being non-union, have accepted wage reductions and are being operated, whereas the mines at Scotts Run, Monongalia County, West Virginia, being strictly union operations, have not been asked to concede a lower scale and are idle. In consequence, at least 500 miners have deserted that field in order to obtain work in the Connellsville section.

Operators point out that under the existing wage agreement in northern West Virginia wages cannot be reduced unless the mine workers are willing, but inasmuch as they have made no move in that direction, Monongalia County mines remain closed down. In other words, although the miners in the union field have been entirely unwilling to accept a wage reduction in the West Virginia mines, they are going to fields where wages have already been reduced.

Freight Rate on Salt Reduced to Avert Return of Cars Empty

IN ALLOWING a reduction of railroad rates on salt from Utah to San Francisco and intermediate points, the Interstate Commerce Commission has made it clear that it is in sympathy with such reductions where it is necessary to produce tonnage. The rates in question restore those which prevailed prior to the 40 per cent increase. The railroad does not contend that the lower rate is particularly compensatory but states that something will be left over the cost of transportation in addition to enabling the carrier to make use of equipment which otherwise would go to the coast empty. The case presents a situation which the commission holds in covered by the following paragraph of its increased rate order:

"Most of the factors with which we are dealing are constantly changing. It is impossible to forecast with any degree of certainty what the volume of traffic will be. The general price level is changing from month to month and from day to day. It is impracticable at this time to adjust all of the rates on individual commodities. The rates to be established on the basis hereinbefore approved must necessarily be subject to such readjustments as the facts may warrant. It is conceded by the carriers that readjustments will be necessary. It is expected that shippers will take these matters up in the first instance with the carriers, and the latter will be expected to deal promptly and effectively therewith, to the end that necessary readjustments may be made in as many instances as practicable without appeal to us."

Johnson and Gillham Demurrers Overruled. Coal Indictments Stand

DEMURRERS filed in behalf of George Johnson, of Johnson & Co., coal dealers, at 90 West St., New York City, and Charles A. Gillham, manager of the New York Steam Co., have been overruled by Judge W. H. S. Thomson, of Pittsburgh, Pa., who heard the arguments in the Federal Court in New York City. The indictments charge violations of the Elkins law by the misuse of public-utility priority orders, and were obtained on information gathered by William McMurtrie Speer, Assistant U. S. Attorney General. Other concerns indicted on similar charges and in whose behalf demurrers have been filed, will, it is believed, be affected by the ruling of Judge Thomson.

NOTICES THAT THE CITY OF INDIANAPOLIS will receive proposals for the annual coal contract soon have been sent out to both operators and retailers by City Purchasing Agent Dwight S. Ritter. The contract may be let to an operator for carload lots to be unloaded from cars and delivered in city wagons if the ultimate price is cheaper, Mr. Ritter said. Consumption of coal at the City Hall, asphalt plant, street cleaning barns, fire stations, police stations, police barns, Garfield greenhouse, recreation centers and city hospital totals 11,000 tons annually. The city has been buying coal at from $5.70 to $6.30 per ton, but expects a reduction of approximately $1.25 per ton on the new contract.

Plenty of Coal

This picture, taken on Jan. 1, 1920, shows about 300,000 tons of bituminous coal on the No. 2 dock of the Carnegie Dock & Fuel Co. at Duluth. The coal is being loaded into the cars in the center of the picture for delivery in the Northwest.

Four Months Later

Between Jan. 1 and May 1, 1920, when the second picture was taken, the supply at No. 2 dock had declined from 300,000 tons to 50,000 tons.

Cleaning Up

The same dock is shown in the picture on the left, practically bare of coal, on July 1, 1920. The picture above shows a street sweeper, requisitioned from the city, cleaning up the last vestige of fine coal from the board floor of the dock at the end of July, three months after coal for the next winter's supply should have been coming in. It was not until Service Order No. 10 pushed coal up the Lakes in August, September and October that coal reserves were accumulated on this and other docks in the Northwest.

Ore and Coal Exchange Begins Season of 1921; 1,222,568 Tons of Coal Loaded to May 1

THE Ore and Coal Exchange at Cleveland will not pool shipments as in recent seasons but the exchange will be continued with H. M. Griggs as manager, as a central point of contact between Lake coal-carrying railroads and Lake shippers, to avoid congestion at the ports and to expedite the movement and distribution of coal.

Mr. Griggs announced at the first daily meeting of the exchange, on May 2, that the total loading of Lake coal this season to May 1 had been 1,222,568 tons, of which 1,176,506 tons was cargo and 44,060 tons vessel fuel. These are the official figures up to April 23, the loadings during the following week having been estimated on car basis.

The following are the tonnages of cargo coal loaded up to May 1 in previous seasons as well as this season:

	Tons
1914	645,000
1915	556,000
1916	926,000
1917	651,000
1918	891,000
1919	1,133,000
1920	329,000
1921	1,222,568

The loading for 1921 up to May 1 is the largest in the past eight years, being 850,000 tons greater than to the same time last season.

The loading for the season to April 1 was as follows: In January, 1 cargo of 10,600 tons; in February, 12 cargoes of 103,377 tons and in March, 23 cargoes of 235,238, making total of 36 vessels loaded prior to April 1 with 349,215 tons, of which 335,913 were cargo and 13,302 vessel fuel. This is the earliest as well as the heaviest winter loading of which the exchange has any record.

The carry-over of bituminous coal on April 1, 1921, by distributing docks on Lakes Superior and Michigan is estimated by the Geological Survey at 2,250,000 net tons. In the season of 1920, when a late start was offset by heavy shipments under an Interstate Commerce Commission order establishing preference and priority of cars for the Lake trade, the total movement up the Lakes amounted to 22,408,355 tons of cargo coal. This, while smaller than the figures for 1918 or 1919, proved entirely adequate for the Northwest's requirements, due to an exceptionally mild winter and the low rate of industrial consumption.

HERMAN M. GRIGGS
Manager, Ore and Coal Exchange, Cleveland, 1918, 1919, 1920, 1921

Average Consumer Delays Coal Purchases

Northwest buyers are being urged to place their orders early. Dumpings for the season to May 1, 1921, are 1,176,000 tons, considerably more than for the same period during any of the four preceding years. However, this tonnage is mostly confined to affiliated dock and mine operators, as the average buyer has delayed purchasing because of the industrial sluggishness. Scarcity of bottoms may interfere with the continuance of this early rate of shipment. Down cargoes are as hard to obtain, as the ore and grain markets are slow. Charter rates effected so far are on the basis of last year's figures.

A decision of the Interstate Commerce Commission effective July 6, 1921, has brought about a general revision of interstate rates on coal from the Duluth and Superior docks. A virtual mileage basis is to be in effect in an attempt to remove inequalities in the interstate rates. Lowered rates are ordered to many points in North and South Dakota and in portions of Minnesota. In the western half of Minnesota, however, rates are quite generally raised. The effective date may add materially to the delay in getting coal forward, for no one will order coal for the interior until the lower rate can be obtained. However, buyers at those points which are to be increased probably will "shop early."

Early in May permission also was granted Eastern carriers to publish proportional rates on bituminous coal from the mines in Ohio, Pennsylvania, West Virginia, Kentucky and Tennessee to Lake Erie ports 28c. per net ton lower than present rates, to apply on Lake cargo coal consigned to west bank Lake Michigan ports north of the Illinois-Wisconsin state line and to Lake Superior ports west of Whitefish Point, including Port Arthur and Fort William. The new rates will expire by limitation at midnight Oct. 31.

The application was for a correction of a maladjustment in the rate situation which grew out of war-time advances in the rates and resulted in an alleged discrepancy of 58c. per net ton. Corresponding reductions from the Northwest docks to destinations tend to restore the ante-bellum rate relationship as between the Eastern mines and the mines of Indiana and Illinois in competition for the coal trade of the Northwest.

However, it is felt that with at least a part of the discrepancy removed by adjustment in the rates from mines to Lower Lake docks, shipments of cargo coal will be greatly stimulated and a healthier movement of the traffic will be evidenced, as contrasted with the lethargy that now prevails generally in the trade.

Anthracite stocks on the docks are very low. Buffalo loading has been brisk to the limit of vessels offered. More than 300,000 tons of hard coal were loaded up to May 1, although but few cargoes had cleared by that date. Apparently there will be a slump in this business, as the soft-coal ports are now taking all the available bottoms.

THE FINAL DAYS of the Minnesota Legislature saw the quietus to the resolution to have an interim committee investigate the coal business. The resolution failed by a vote of 28 to 48. Apparently its only excuse for existence was to provide access to public funds for certain of the "lame duck" variety of politician. There was nothing that could be reached by any Minnesota law, and this was practically admitted. What little might have been gained in the way of information should have been available already in an investigation made during the past year by a representative of various organizations, in which the State of Minnesota aided with funds. So after serving as a foundation for an outburst of oratory, the resolution was laid away to rest.

Government Co-operation, Not Interference, Essential To Functioning of Coal Industry*

By Thomas H. Watkins

NO ONE will question that the government already has a relation to our coal resources—at any rate the mine operator will not question it. If he did not fully realize it before the war, since then it has been brought home with a great deal of force; the subsequent activities of the Federal Trade Commission, Interstate Commerce Commission and various special Congressional committees have been sharp reminders of this fact.

The taking over of the conduct of the industry by the President of the United States, and the appointment of a Fuel Administrator to control production, prices and distribution, in order to successfully prosecute the war, was very definite evidence that the government has a relation to our coal resources.

The question does not imply that the government has no relations now, but is rather "what should these relations be?" The government is supposed to represent the public interests, or, in other words, the interests of the people as a whole, and not any particular class. The mine operator and miner are of the people; it is their government as much as anybody's. It is unquestionably to their interest to sustain it and, in a helpful and practical manner, to make it efficient.

Coal is the basic necessity of our present-day civilization, and those engaged in the industry, whether miner or operator, have a direct responsibility to the public at large. On the other hand, the public has its responsibilities to those engaged in production and distribution, which are not always recognized. It seems to be taken for granted at times like the present, when the industries of the country are partly paralyzed through a buyers' strike, that mines and miners should remain at the beck and call of the consuming public's pleasure as to when they will take in their coal supplies. They are, however, expected to keep their mines in order without a realization of the great fixed expense involved. Mine labor is asked to wait, ready to produce the coal without any income upon which to subsist in the meantime, until it suits the buyer to make his contracts.

Low Finances Prevent Increase of Railroad Stocks

Unfortunately, our greatest consumers, the railroads, are in a serious financial predicament. In place of laying in stocks, they are at the moment using up those that they have on hand. The great steel industries are almost prostrate, and they are among the largest consumers of coal. Factories are either idle or working only part time and using up their stocks on hand, many pursuing this policy through lack of funds; others through a belief that coal prices and freight rates must be materially reduced.

Unfortunately, operators and miners are both treated at this time by our prejudiced critics as if they were apart from the people—the operator being either a coal baron, robber or conspirator; the miner a striker, loafer or generally an undesirable citizen. As a matter of fact, both mine owners and miners are quite as human, quite as respectable, quite as patriotic, and, I might add, as unselfish as the average American citizen, and quite as willing to give and to sacrifice in order to protect our institutions from false theories of government as any other class of our people.

There probably was no other industry in the United States regulated and controlled so drastically or firmly as the coal industry during the war period. I question whether any other industry responded to such regulation as cheerfully and uncomplainingly as did the operators and mine employees. The co-operation given to Dr. Garfield, as Fuel Administrator, during that trying period by both operators and the miners' organization received the highest commendation from him, and furnished a wonderful example of how the government, representing the common welfare, the operators and miners, could co-operate to maintain the integrity of our form of government.

We have witnessed the disastrous result to England of the control of coal production by the strongest combination of labor that was ever created. A proper solution that would protect the interests of the people as a whole has not yet been found in England.

The country demands lower prices on all commodities; in many directions adjustments have been made. Food has fallen 22 per cent. Labor has fallen 15 per cent. The Department of Labor states that the cost of living made up on the same budget is now at the same point that it was in 1917.

Labor Wage Contracts Should Be Modified

The miners' organization has at times failed to live up to its agreements, or has forced modifications in its favor because of changed conditions. In some districts the United Mine Workers have been asked to consider a modification of the present agreement. Operators having contracts cannot honorably refuse to carry them out, but they can ask for a discussion and a modification of the contract, and are doing it, possibly with very little hope of success. If organized labor cannot meet the situation by a modification of the present contract the great body of the public will know who is to blame.

Operators generally have reduced their prices to very narrow margins, in many cases below the cost of production, so that they can offer no permanent relief in the way of reduced prices unless the wage agreements are modified.

One of the great problems connected with the mining of coal is caused by the intermittent demand, and the manner in which that demand is supplied. In many instances today we have collieries working full time supplying railroads with their fuel; some supplying public utilities; others supplying large consumers, while many collieries, whose trade is with varied industries and domestic consumers, are idle.

Many producers of coal today are selling it below cost in order to keep their miners partly employed, but expect to regain the losses they now are incurring from high prices in the fall. Somebody will be blamed for this condition, if it occurs, and it probably will be the coal operator, but the warnings that now is the time to contract and lay in a reasonable supply of coal are practically going unheeded. Mines and men are idle in every section of the country. It seems inevitable that if this hesitation continues two months longer, and coal does not commence to move more freely, our railroads will be unable to meet the slug of demand that will come for fall and winter requirements.

Conspiracy Indictments an "Outrage"

In connection with government activities in our coal situation, I would like to call your attention to the criminal indictments involving some two hundred and thirty-six individuals as mine owners and managers, together with many officers of the United Mine Workers. In these indictments the mine owners and miners' officials are charged with conspiracy under the Anti-Trust laws. To those who are familiar with the situation these indictments seem to be an outrage upon common sense in the direct attack on the principle of collective bargaining, which so far is the best-known method of making and enforcing wage agreements between employers and their employees.

Charges are made in the indictments that the operators

*Abstract of address before The United States Chamber of Commerce, April 27, 1921, at Atlantic City.

and miners have agreed together to restrict production in order that the price of coal may be maintained or raised. While the methods practiced by the United Mine Workers in many instances are subject to severe condemnation and need correction in the interests of the public, I do not believe it can be truthfully said that they ever agreed with the operators—or attempted through agreement with the operators—to restrict production. What has been done in that line has been done through strikes and failure to effect agreements, or to live up to agreements already made, and if the principle of collective bargaining is destroyed and prohibited under the Anti-Trust law, we may find other serious trouble while seeking for a proper method of arranging wage scales.

Speaking only for myself, I am not in favor of any action that takes away the right of men to organize. I am, however, distinctly of the opinion that labor when organized must submit to reasonable regulation. President Roosevelt once said large combinations of capital and of labor are inevitable, but that they both must come under government regulation.

Government co-operation—not government interference—is essential. We have seen our railroads and many of our public utilities regulated out of efficiency and out of credit. We have seen our commissions and our legislators ignore common sense and equity, responding to the clamor of groups that were supposed to have the vote. Suspicions of the motives of all of our captains of finance and industry were prevalent and co-operation was nil. Distrust must be replaced by confidence in our government relationship to our coal resources.

All Should Strive for Efficiency

Mr. Hoover appears to make it clear that many of our various Government departments need reorganizing, and we should all help in putting them on an efficiency basis, functioning for the common good, but we don't want them reorganized on a basis that will make it necessary for us to get a permit before we can sell a ton of coal, or buy a suit of clothes, or a loaf of bread.

None of us wish to spend all of our time in Washington, or to conduct our business from there, but we should insist on maintaining our trade associations, with headquarters in Washington—this Chamber of Commerce, our National Coal Association and others—and we should continue to use our representatives to help promote efficient government and wise legislation, and I think we should also insist on the union organizations maintaining their headquarters at Washington (although Mr. La Follette probably will see to that), but they should be there and subject to the same publicity of their practices and aims and expenditures, and with the same responsibility to the public for their actions and their contracts, as our associations.

Through the Department of the Interior we have an excellent illustration of government help and co-operation in connection with current coal production as well as our resources. The Bureau of Mines, with very limited appropriations to carry on its work, has been most efficient in the advancement of ways and means to secure the safety of the miners. Its rescue station and first-aid work, and its experimental work with dangerous gases has been invaluable. Its investigations into qualities of coal, and its testing stations for determining the efficiency of coals all have been excellent, although limited.

The Geological Survey branch of the Department of the Interior has furnished most valuable information as to our coal resources. The geological maps furnished by this department are invaluable in many districts. The work should be completed, covering all the coal fields throughout the United States. Statistics on coal production, which are now published weekly by the Geological Survey, should be continued.

I am sorry I cannot say as much for the Federal Trade Commission. If that department of the government were used only to get facts for publicity, it also could be made valuable, but, unfortunately, it has not been cleared from the suspicion that data are prepared for the purpose of bolstering up theories and policies with which it should have nothing to do. Picking out a few isolated instances to show low costs and high realizations has resulted in a spirit of distrust toward that commission on the part of coal operators generally. Co-operation between that department and coal producers is sadly needed. If that department is to function for the good of all it is absolutely essential, in order to prevent waste in the mining of coal, that no false impressions be conveyed as to costs. Proper allowances must be made for contingencies and, as we all know, averages are dangerous figures upon which to base conclusions.

Periodically, and principally because of some severe restriction of output and distribution of either anthracite or bituminous coal, there has been a public outcry for some sort of legislation leading up to the regulation of the coal industry. Our courts have been used to seek for illegal combinations in the coal trade; governmental and State Legislatures at various times have investigated the anthracite and bituminous industries. These industries are again confronted at this session of Congress with bills to regulate them; Senator Frelinghuysen has introduced a bill and Senator Calder has introduced a bill. It is in the minds of a great many people that the industry will be forced to come more or less under government regulation.

Government Regulation Likely to Become Virulent

It is important to the members of the Chamber of Commerce, and to all of the public of the United States, that any proposed legislation should receive the most careful consideration. If coal is to be regulated, the inevitable tendency will be for the government to take an active part in every other industry, and the steel industry, textile industry, in fact all industries, will sooner or later be affected by any legislation that is enacted to regulate the coal industry.

I think the sentiment of the majority of coal operators of the country is averse to any sort of legislation regulating the industry. Whether or not this sentiment is wise, I am not clear. I am clear, however, that we should have government co-operation, and not government hindrance. The varying qualities of coal, the varying costs of mining, transportation and distribution make it a most complex problem. In my judgment rigid rules or regulations will work nothing but disaster.

As I read the bills introduced by Senator Frelinghuysen I am inclined to think they might be helpful with some important modifications, such as representation by advisory committees of both operators and labor, who could assist in assembling correct information which should be treated without prejudice when given publicity.

We have had so many experiences as a result of our public officials giving out distorted statements, coloring the facts to suit their own theories, that I feel the industry, and the public as well, should be guarded from a repetition of these practices. I personally believe there can be no real objection to the government's ascertaining facts as to cost of production, investment, realization, etc., but there are so many views as to what is the proper way of ascertaining costs, and of how to arrive at the real investment, that it will require great care and honesty of purpose in arriving at the facts.

Some Not Opposed to Constructive Legislation

However, it may be interesting to you to know that all operators are not opposed to discussing or considering constructive legislation in relation to the coal industry, as well as that of other basic industries.

Directly following the armistice, in the early part of 1919, at the request of Dr. Garfield, a few individuals prominently connected with the production of coal, together with leading representatives of the United Mine Workers, met with Dr. Garfield and his staff for the purpose of considering whether some plan of government co-operation could not be recommended for meeting peace problems.

The benefits from the co-operation of the government, representing the public, the operators and the miners in the successful prosecution of the war, was the basis upon which the discussion took place. After some days of consideration, the following plan was adopted and submitted

to the various associations of operators throughout the country, as well as to the United Mine Workers' organization:

"A Plan to Promote the Public Welfare by More Effective Co-operation Between the Government of the United States and Industry.

"The following propositions are assumed to be true:

"(a) The underlying facts necessary to the consideration of any question touching industry, such as cost of living, cost of production, labor conditions, transportation facilities, must be ascertained and must be trustworthy.

"(b) These facts should be secured by government agencies, clothed with ample powers to examine and improve them, and the tabulated results should at all times be open to the inspection of the parties in interest.

"(c) The parties in interest in every industrial problem are the public, capital and labor, and no action affecting any of them should be taken until the proposal has been considered by their duly appointed representative. The most appropriate representative of the public is the government.

"(d) The determination of facts and the formulation of administrative policy are two separate functions and should not be performed by the same agency.

Would Commit Fact Finding to Permanent Departments

"Outline of proposed plan:

"(1) Commit the finding of facts to the permanent departments and commissions of government.

"(2) Create by executive order a limited number of administrative commissions, say seven, representing between them and properly grouped the basic industries of the country.

"(3) Each commission shall be composed of a director, to be appointed by the President of the United States, and an equal number of representatives of capital and labor engaged in the industries included in each group. The director shall be the chairman of the commission. Each commission shall meet upon call of its chairman or a majority of its members, at such times and places as may be designated. The function of each commission shall be to consider the problems of the industries included in its membership and to make recommendations to the President. The commissions shall be purely advisory bodies.

"(4) The several directors shall have such powers and authority as may be delegated to them by the President of the United States. Each director shall ex-officio serve as a member of the Industrial Cabinet.

"(5) The Industrial Cabinet shall be composed of the directors of the several commissions, and shall meet with the President of the United States at such times as he may designate. The function of the Industrial Cabinet is to advise with the President of the United States upon industrial problems and policies."

(The plan itself, the justification for it, and explanatory letters by Dr. Garfield, can be obtained at the offices of the National Coal Association in Washington.)

Apprehension as to Period of Reconstruction

It should be borne in mind that at the time of this conference, the coal and industrial situation of the country, following the armistice, was about in the condition that it is today, and fear was then, as it is now, in the minds of many people that we were facing a long period of readjustment and reconstruction, and that government assistance might be necessary in hastening the return to some sound business policy for peace times.

I believe there are some thoughts in connection with this plan which merit the attention and criticism of this group, and also of our administration and legislators. As a matter of information I must add that the plan was submitted in 1919 to groups of operators and various associations composing the National Coal Association, and failed to meet with general approval. It experienced the same treatment at the hands of the United Mine Workers.

This, however, was prior to the crisis of 1920, and the government's record in handling industrial affairs had not been such as to encourage the belief that a fair spirit of co-operation could be secured, or that a government relationship could result in anything but higher prices for the public and negligible returns to the investor.

In conclusion, I wish to state that the thoughts I have given out have been uttered with some degree of timidity, and wish it understood that I do not speak for any group of operators. Nevertheless, I feel safe in saying that when the government is willing to approach the subject in an open-minded, helpful and constructive spirit—when it is willing to investigate thoroughly and fairly the vast problems of production, transportation, storage and distribution, before proposing any radical cures—when it is willing to demand of organized labor the same responsibility for its actions and fidelity to its contracts that it demands of the employer—then it will not find the coal operator a stumbling block in working out an efficient relationship which will afford the desired protection to the public, without injustice to the miner or operator, or waste of an essential resource.

Hard Rock Miners' Wages Reduced

WAGE reductions affecting approximately 2,000 employees of mines and smelters in the Coeur d'Alene district of Northern Idaho were announced April 21. They amounted to 50c. a day for mine workers and 75c. for smelter men.

In addition to the Bunker Bill and Sullivan, the Caledonia and the Sierra Nevada companies, which announced reductions April 20, the Federal, Hecla, Hercules, Tamarack and Custer and Callahan zinc mines have posted similar notices. The three latter companies have been employing only a few men in development work, it was stated.

The reductions, which became effective May 1, brought the wages of miners to $3.75 to $4.75 a day, and those of smelter men to $3.50 to $5.25.

Payments made to the railroads under the Winslow Act totaled $125,122,990.05 on April 27.

The Post Office Department has requested a deficiency appropriation of $10,000 for fuel, due to increased costs.

F. W. WHEATON

Chairman of the Board of Directors of the Lehigh Valley Coal Co., having been appointed at the same time as John M. Humphrey, president, and Thomas P. Thomas, general manager. He was appointed local counsel of the company in 1879, being associated with E. P. and J. B. Darling. In 1901 he was elected judge of Luzerne County, in which position he served till 1907, when he resigned to become once again local counsel for the coal company. In 1910 he became general counsel.

Coal Men and Government Experts Will Meet to Agree on Information To Be Required by Frelinghuysen Bill

By Paul Wooton
Washington Correspondent

As AN outcome of the activities of the Interstate Commerce Committee of the Senate, looking to systematic fact-finding as to the production, transportation and consumption of coal, representatives of the interests concerned will meet in the near future with government specialists to agree upon a plan as to just what information should be collected. Senator Frelinghuysen, chairman of the sub-committee handling the proposed legislation, will be a party to the conference. The producers, the wholesalers, the retailers, the anthracite industry, the railroads and the public will be represented. The Secretary of the Interior and the Secretary of Commerce have been invited to participate in the conference.

The conference was suggested by J. D. A. Morrow, vice-president of the National Coal Association. On May 4 Mr. Morrow appeared before Senator Frelinghuysen's committee and opposed some features of Senator Frelinghuysen's bill. He declared that the National Coal Association is perfectly willing that there be practical, businesslike fact-finding. He showed where it is vital to the producing end of the industry. He asked that the Department of Commerce, charged with aiding industry, be allowed to gather the business facts, leaving to the Department of the Interior the collection of information having to do with the technological side of the industry.

Unanimous Decision to Report Favorably

For parliamentary reasons, the Frelinghuysen fact-finding bill is to be reported favorably to the Senate at once. The sub-committee on May 7 voted unanimously to report the bill favorably. As this is written, the full committee has not acted on the measure, but it is understood that the full committee will concur in the judgment of the sub-committee. As reported out of sub-committee, the original draft was amended so as to place the administration of the bill in the hands of the Secretary of Commerce. The appropriation was eliminated, as the committee is hopeful that the department has sufficient funds with which to carry on this work. The bill specifically provides that no deficiency is to be created as a result of the legislation.

Such changes in the measure as may be agreed upon at the forthcoming conference will be presented as committee amendments when the bill is taken up on the floor of the Senate.

A significant development of the hearing was the following declaration by Senator Frelinghuysen:

"Expressing my own opinion, I think regulation will create more confusion and will result in greater disorganization. Could not more be accomplished through co-operative effort than through regulation, arbitrarily established and temporary in character, which would disorganize the whole machinery of this industry?"

T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, spoke in support of the contention made by Mr. Morrow. He was examined at length by Senator Frelinghuysen on numerous phases of the coal situation.

Senator Elkins of West Virginia contributed considerable information. Most of the discussion had to do with facts leading up to the present situation and to the recital of information which is familiar to those who are in close touch with the coal industry.

Verbatim extracts from Mr. Morrow's testimony are as follows:

"It is the belief of the men who make up the executive committee of the National Coal Association that the current collection and publication of businesslike information as to some features of the coal industry, by a practical branch of the Government, can be very helpful to the coal industry itself as well as to the public.

Regulation of Coal Industry Not Necessary

"With the competitive conditions which exist in the soft-coal business—I speak only for bituminous coal—we have always felt that with such information and with the regulation of transportation under the emergency powers vested in the Interstate Commerce Commission, no regulation of the coal industry would be needed. We are opposed to regulation of the industry by the Government.

"If the facts had been available last summer and had been widely published, so that all producers and buyers could have been informed, it would have had a stabilizing effect on the situation. The individual consumer and the individual producer could have seen plainly that there was no warrant for $15 coal. That type of information we favor.

"This bill provides also for the collection of cost information. A little over a year ago the coal industry felt that the Federal Trade Commission had exceeded its power very greatly in attempting to obtain information of that character and that it was not merely asking for cost information but was attempting to regulate the entire method of cost accounting, bookkeeping and the keeping of office records under the guise of requiring these reports. In order to protect whatever constitutional rights we have, we felt it necessary to go into court and endeavor to enjoin the Commission from proceeding to enforce its orders.

Operators Seek Practical Co-operation

"The operators would be glad to co-operate with any department of the Government that is practical and reasonable to determine what constitutes right cost accounting. We tried to do that with the Federal Trade Commission and with the Treasury Department. The Treasury had one system and the Trade Commission had another. We did not want to keep two sets of books, yet we could not get those two governmental agencies together. Then it came to the matter of paying $100 a day fine if we did not do as the Trade Commission demanded, so we went into court to protect our rights.

"This bill contemplates the collection of certain commercial information, such as the current production of coal, the prices that are being obtained at the mines

and the stocks of coal in the hands of consumers. Such data are current business information as distinguished from scientific information. We believe the business information might well be collected by the Department of Commerce. This bill also provides for scientific and technical studies, such as better means of storing coal by consumers. The Bureau of Mines or the Geological Survey could study questions of that kind. We think it is desirable to separate the scientific from the commercial, and put the scientific part of the work in the Department of the Interior, if it requires any authority to do such things.

"If the coal industry could be satisfied that this is an honest and sincere effort to get uncolored facts, without a desire to use facts to bolster up some theory of regulation or control that someone may want to advance, I think the industry would welcome the collection and publication of practical business information."

Coal Men Move That Indiana Conspiracy Indictment Be Quashed

FOLLOWING a consultation between attorneys representing the coal miners, operators, retailers and corporations arraigned in the Federal Court at Indianapolis May 3, on a charge of violating the Sherman Anti-Trust law, it was announced to Judge Ferdinand A. Geiger that no definite data for oral argument on the motion to quash the indictments filed by counsel for the defendants had been reached. Attorneys for the defendants also filed pleas in bar, motions to quash service, demurrers and other legal processes, but only the motion to quash is to be considered until it has been passed upon by the court.

After the filing of pleas Judge Geiger suggested that a recess of several hours be taken in order that L. Ert Slack, Special Assistant Attorney General of the United States, and District Attorney Van Nuys might have an opportunity to check up the list of defendants appearing in court through their attorneys and confer with attorneys on a date for the presentation of the oral argument.

When court convened in the afternoon Mr. Slack suggested that more time be granted. This was done, and it is probable that no further steps will be taken until Judge Anderson returns to the bench. However, it may be agreed that Judge Geiger dispose of the motion to quash, and in case he should rule against the defendants the remaining motions would come before Judge Geiger or Judge Anderson at a later date. Attorneys for both sides freely predicted that it probably would be early in the autumn before the cases actually reach trial in the event that all the motions are overruled and the case is ordered to trial.

When court convened W. A. Glasgow, Jr., of Philadelphia, was admitted to the bar of the Indianapolis Federal Court in order that he might take the place of Charles Evans Hughes as chief counsel for the miners and mine union officials. Albert Fink, of Chicago, associate counsel with Messrs. Miller and Dowling of Indianapolis, also was admitted to the Federal bar in Indianapolis in order that he might appear in the case. Frank Dailey, of Indianapolis, entered the appearance of a large number of individuals and corporations, and filed pleas in abatement and motions to quash on behalf of his clients.

Mr. Glasgow, on behalf of his defendants, entered motions to quash and asked time for filing a brief in sustaining his motion. He also asked permission to present oral arguments in the case and entered demurrers and pleas in bar for his defendants. Charles Miller entered motions to quash for a number of individuals and corporations, and Clarence Nichols entered demurrers on behalf of the retailers. Mr. Fink also filed demurrers and motions to quash for a number of defendants.

The motions filed by the attorneys are based chiefly on the contention that the Sherman Anti-Trust Act was not in operation at the time the indictment was drawn, because of the operation of the Lever fuel-control act of 1917. The contention is made in the motion to quash that the "whole conspiracy alleged in several counts of these indictments was destroyed by acts of Congress and executive proclamations and orders of the United States Fuel Administration, and if any crime was committed it was in violation of the acts of Congress of Aug. 10, 1917, and was punishable under that act and could not be punished under the Sherman Anti-Trust Act."

It also is contended by the defendants that no offense was charged to have been committed within the jurisdiction of the Federal Court of Indiana, that the government had attempted to charge more than one conspiracy and that the indictments did not sufficiently inform the defendants of the charges against them. In the motion to quash filed on behalf of the retailers it is further contended that the indictment does not show that they had any connection with any conspiracy.

The following defendants appeared in court May 3:

Indiana Operators, Retailers and Officers of Coal Associations—George A. VanDyke, Indianapolis; Hulbert M. Ferguson, Clinton; John Chesterfield, Brazil; William J. Freeman, Terre Haute; Morton L. Gould, Indianapolis; Jacob O. Kolsem, Terre Haute; Edwin G. Logsdon, Indianapolis; Phil H. Penna, Terre Haute; Hugh Shirkie, Terre Haute; George R. Richards, Terre Haute; Homer B. Tally, Terre Haute; David Ingle, Oakland City; William H. Tobin, Indianapolis; William M. Zeller, Brazil; Edward Shirkie, Terre Haute; Robert J. Smith, Terre Haute; Archibald D. Spears, Terre Haute; Banus E. Neal, Indianapolis; Valentine Martin, Bicknell; Alfred M. Ogle, Terre Haute; Jabez Wooley, Evansville; William B. Zimmerman, Terre Haute; Walter W. Tally, Terre Haute; Warren F. Smith, Terre Haute; Millard E. Mogg, Indianapolis; Jonas Waffle, Terre Haute; Carl J. Fletcher, Indianapolis; Harry W. Little, Evansville; Henry P. Smith, Terre Haute; Bernard R. Batty, Indianapolis.

Miners and Union Officials—John L. Lewis, president United Mine Workers, Indianapolis; Philip Murray, vice-president, Pittsburgh; William Green, secretary, Indianapolis; Percy Tetlow, Indianapolis; Edward Stewart, Terre Haute; William Raney, Terre Haute; Ed Haverkamp, Terre Haute; William Mitche, Terre Haute; John Hessler, Terre Haute; James A. McKinney, Terre Haute; Harry Sutch, Shelburn; Charles Fettinger, Terre Haute; Harry Lentz, Evansville; Ulysses G. Hall, Terre Haute.

Retailers—William Morris, Logansport; Charles W. Grant, Logansport; Roy A. Yeagley, secretary Indiana Retail Coal Merchants' Association, Indianapolis.

West Virginia Coal Tax, Computed on Gross Sales, Will Be Effective July 1

AFTER July 1 of the present year the coal industry of West Virginia will pay a privilege tax on the production of all coal, amounting to two-fifths of 1 per cent computed on gross sales. A bill levying such a tax was passed in the closing hours of the Legislature and was passed largely through the influence of the coal people of the state. The tax on the industry is only a part of what is known as a gross sales tax bill or law, the bill having been drafted by Captain M. G. Sperry, of Clarksburg.

In its original form the bill prescribed that a tax of one-fourth of 1 per cent should be levied on the gross sales of all persons engaged in the mining of coal. Afterward the bill was amended so as to provide for a rate of one-third of 1 per cent. In order to insure the passage of the measure, however, it became necessary in the closing hours of the legislative session to change the rate for the coal, oil and natural gas industries to two-fifths of 1 per cent. The tax imposed is really a production tax but a production tax computed on the basis of gross sales instead of upon a tonnage basis or a barrel basis. All measures proposing an outright production tax computed upon the unit of production were defeated. Governor Morgan made a personal appeal to the Legislature on the last day of the session for the passage of the sales tax.

The new law further provides that if any person liable for any tax under the provision of this law shall ship or transport his products or any part thereof out of the state, and before making sale of such products, shall further manufacture, transform or consume the same, the value of the products or articles in the condition or form in which they existed when transported out of the state shall be the basis for the assessment of the tax imposed.

Frelinghuysen Would Continue Assigned Cars Till Better Way Is Found to Insure Railroads' Coal Needs

SENATOR FRELINGHUYSEN believes the Interstate Commerce Commission should continue to have the power to allow railroads to use assigned cars until means have been perfected to stabilize the distribution of coal. He expressed this opinion when George S. Brackett, secretary of the Northern West Virginia Coal Operators' Association, appeared before the Frelinghuysen sub-committee to urge the discontinuance of the assigned-car practice. Mr. Brackett declared that even in emergencies an absolutely equal distribution of cars among the mines equipped to handle them efficiently would be preferable to the continuance of the assigned-car plan. In the course of Mr. Brackett's testimony, Senator Frelinghuysen said:

"Does not the question resolve itself, in the last analysis, to a question of equal distribution and the utilization of facilities at all times of the year? Is not that our problem, rather than the taking of powers away from the Interstate Commerce Commission? The railroads must be kept running at all hazards and at all costs. That is essential both to your industry and to the welfare of the people. Even if it does increase the cost of coal to others, and even if it makes for inequitable conditions, is it not essential for some governmental commission to have the power to direct the car supply so that the railroads can be kept in operation? If the railroads cannot get coal, everybody suffers.

"I myself have felt that the railroads were favored and that it was somewhat unfair to favor the railroads in the matter of car supply. I have felt that it was unfair to seize contract coal that belonged to industries. I have felt that there should be legislation prohibiting such seizures of coal, but when I realize that unless the railroads have coal, everything stops and that the country will starve, it seems to me that we must bear with that situation until we can pass some legislation that will bring these industries closer together in a co-operative effort to equalize the distribution of coal."

Mr. Brackett declared that the assurance that the railroads have of being able to obtain assigned cars encourages them not to buy in the summer time. Senator Frelinghuysen admitted that there should be some means of inducing the railroads to buy and handle their coal during the periods of the year when they can carry it at the least expense.

Senator Frelinghuysen deplored the practice of buying 500,000,000 tons of coal every year on practically a hand-to-mouth basis, when weather conditions or a strike would place the country face to face with starvation. He declared that it was obvious that the government should take steps which would make it the economical thing to do to carry reasonable surpluses.

Allen and Baker Exonerated of Fraud Charges by April Grand Jury

CHARLES S. ALLEN, secretary of the Wholesale Coal Trade Association of New York, Inc., and Gibbs L. Baker, counsel to the association, on May 4 were completely exonerated of the charges of fraud made against them by Armin W. Riley, ex-head of the government "flying squadron."

U. S. Attorney F. G. Caffey requested Judge Learned Hand to dismiss the indictment. He told the court he had resubmitted the testimony to the April Grand Jury, at the request of the Attorney General, and that the jurors found there was no evidence of fraud, and consequently no reason for the indictment.

The indictments against Messrs. Allen and Baker charged that they had procured fees on the promise of being able to "fix" the Department of Justice and upon Mr. Baker's statement that he had a strong influence with William McMurtrie Speer, then a Special U. S. Attorney.

Messrs. Allen and Baker jointly contended that the indictment by the February Grand Jury in New York was instigated as a result of their efforts to prevent profiteering in bituminous coal in the East, the result of which work they said won them enemies among a certain class of coal men in the local field. It is understood that Mr. Speer appeared before the April Grand Jury and told of actual co-operation given him by Messrs. Allen and Baker. Mr. Riley had charged that only "lip co-operation" was given. Mr. Riley's witnesses, on whose testimony the indictment was found, also were recalled before the April Grand Jury.

Mr. Allen in a statement issued May 4 predicted that the work started by the association and halted by the indictments would now bear fruit.

Pennsylvania Legislature Passes Mine-Cave And Anthracite Tax Bills

IN THE scramble which marked the closing sessions of the Pennsylvania Legislature the Senate reversed itself and gave approval on April 28 to the Fowler and Kohler mine-cave bills, which are duplicates of measures previously defeated in the Senate. It is expected that the Governor will approve, as Senator Crow, the administration leader, came out in favor of the bills, and the Scranton campaign for cave legislation thus ends in complete achievement.

The Kohler bill prohibits coal companies from causing collapses or subsidences affecting public buildings, churches, schools, hospitals, streets, railroad rights of way, dwellings and cemeteries. Mayors, burgesses and township supervisors receive rights to supervise mining operations, and the penalty for violators is $5,000 fine and or imprisonment for one year.

The Fowler bill is a compensatory measure, and coal companies accepting it are exempt from certain sections of the Kohler bill. Those which accept are to set aside annually 2 per cent of the value of their coal at the mines, this fund to be administered by a commission of three, appointed by the Governor. This commission will have supervisory power over mining operations and will be authorized to repair properties damaged by subsidence.

The anthracite tax bill, as amended, was passed finally and will be approved by the Governor.

The House accepted the bill of Senator Smith, of Dauphin, providing for the appointment of a board of examiners to pass upon applicants for the office of anthracite mine inspector.

The Dawson bill, granting aggregate increases of $8,700 a year in Department of Mines salaries, after being defeated by the House, was reconsidered, passed, and then approved by the Senate. It is now in the hands of the Governor, but as appropriations far exceed income, its fate is not certain.

SEVERAL OF THE SPEAKERS who will address the New York meeting of the National Coal Association have announced their subjects. A. W. Douglas will speak on "When Will Business Revive?" John J. Cornwell will speak on "The Relationship of the State to the Coal Industry." "Better Coal Salesmanship" will be the subject of Dr. Stanley L. Krebs, while James A. Emery will speak on "Business Organization and Its Problems." Due to the fact that Senator Cummins will have to preside at the railroad hearing during the time that the convention will be in session, he will not be able to speak, as he had hoped.

THE NATIONAL COAL ASSOCIATION has reduced its assessment from one mill per ton for January, February and March to one-tenth of a mill per ton.

British Strike Continues Unbroken, But Non-Union Men Unload Foreign Coal

A WEEK without conference between mine owners and mine workers gives the British public an idea how far the contending parties are still apart. The British Parliament has been trying to arrange another conference and to take matters out of the hands of the administration as successfully as it did a few days back, but it seems that it is no more successful than Lloyd George. It was reported on May 5 that the striking mine workers were willing to accept arbitration if they could name as the arbitrator Sir Arthur Duckham, the man of their choice. He was a member of the Sankey Coal Commission, which itself was quite unreasonably favorable to the mine workers' claims. That Sir Arthur submitted a minority report asking for more than the commission saw fit to grant is sufficient evidence that he is by no means fitted for the office proposed. The Ministry failed to be in any way impressed by the offer, if indeed it ever was made.

The public takes courage from the fact that the weather has been uncommonly mild and is likely to be even milder in the future and that non-union men protected by military and police are unloading shipments of foreign coal. The government is arranging that the coal shall be delivered at several ports, so as to reduce the difficulty of obtaining non-union men to unload it and also to lessen the amount of transportation needed.

Continental Miners to Prevent Exports to Britain

On May 2 a conference was held between Robert Williams, general secretary of the transport workers, and Edo Fimmen, president of the International Transport Workers' Federation, after which Mr. Williams said that Mr. Fimmen had given every guarantee that the Dutch, French, Belgian, German and Austrian mine workers were determined to prevent the export of coal to Great Britain. "Any attempt," said Mr. Williams, "to introduce foreign coal will lead to entire stoppage of work, and the National Union of Railway Men will refuse to handle any coal brought from overseas." Belgian coal however, has been arriving, and French officials have been conferring in London relative to such shipments from France.

On May 7 a manifesto was issued by the Transport Workers' Federation and the National Union of Railway Men announcing that the dockers have been instructed to refuse to handle in any way coal imported from abroad and that a call has been sent to the railroad men to refuse to move such coal if it is landed by "black-leg" labor. Bristol has placed an order in America for 80,000 tons of coal per day. The Glasgow docks are not handling a ton of sea-borne coal but not far away 100 men have been busy unloading coal from Wales, mined before the strike. This fuel was for the Caledonia Ry. When the railroad started to move the coal the signalmen refused to operate the switches.

On May 4, J. H. Thomas, general secretary of the National Union of Railway Men, left to attend the American Federation of Labor Convention as a fraternal delegate of the British Trades Union Congress. His departure does not appear to strengthen the idea that the Triple Alliance expects to function in this strike. He is reported to have declared that he expected the strike to end in a week.

While labor in general seems little disposed to back the mine workers, feeling doubtless that they are trying to get their rate of pay from a source denied to other workingmen —the National Treasury—the Joint Committee of the Labor Party, the National Labor Party Executive and the Parliamentary Committee of the Trades Union Congress on May 3 issued a manifesto urging organized labor to "defend its own future by rallying to the miners now."

The House of Commons on May 4 by a large majority adopted a resolution extending the government's regulatory powers and making new regulations for the restriction of the services of tramroads, pleasure steamers and lighting, and providing, if it seemed desirable, which apparently it is not, to change the daylight saving provision by putting the clock forward one more hour.

Breweries are no longer allowed coal, though some have enough on hand to run for some weeks. A shortage of beer, with rationing of the precious fluid, is predicted. Six weeks of idleness at the mines has made unemployment general. On April 20 1,865,800 men were already on the Labor Exchange register, and the number is increasing. Train service is reduced to one half; dining cars and pullmans run no longer; trains run slowly and make more stops; permits are needed for travel to the Continent; social functions are being cancelled, private rooms at hotels are without their genial fires, street lighting is curtailed, electric advertising signs are dark and the public is asked to save water because it takes coal to pump it.

The King has given coal to the poor from his cellars at Windsor and those who are well-stocked are imitating his example. Factories run two or three days a week and then close down for lack of coal or raw material. Department stores lack important merchandise and cannot replenish it because the factories in many lines are idle. Trade unions' funds are rapidly being depleted by the granting of non-employment pay. To prevent revolution the defense force is being maintained, and to meet an extension of the strike the files of the emergency transport service are being kept open for additions.

Sewalls Point Coal-Analysis Plant to Begin Operation May 20

THE chemical analysis plant of the Sewalls Point Coal Exchange, said to be the largest and most comprehensive of its kind in the world, is almost ready for operation, officials of the exchange have announced. It is expected to be open for work by May 20.

J. S. Burrows, consulting engineer, is in Norfolk supervising the finishing touches on the installation. H. A. Goodman, representing the U. S. Bureau of Mines, will work in the plant and have charge of the chemical analysis. Tests will be made of coal coming from every mine served at this exchange, to determine whether or not the coal actually measures up to the specifications of the pool to which it has been assigned. If the product of any particular mine fails to meet the requirements its coal will have to be moved down to a lower grade.

This system has been in process of installation at the Virginian Ry. plant at Sewall's Point for several months. It will do away with the cumbersome methods of judging coal which have been heretofore in vogue, and will place coal classifications on a strictly scientific basis, leaving no possibility of doubt as to the qualifications of the commodity represented in the various pools.

Senator Elkins Urges Buying of Winter Fuel Now to Avert "Coal Famine" Later

IN A FORMAL statement, issued May 7, Senator Davis Elkins, of West Virginia, urged the public to lay in its winter supply of coal now instead of waiting until the cold months again are at hand. He said that upward of 200,000 miners were out of employment because of the lack of demand for coal and that their dependents were in distress.

Senator Elkins also declared that a sudden restoration of a market and an attempt to crowd the hauling of the bulk of the nation's coal into the autumn and winter months would place upon the railroads a burden which they were admittedly unable to discharge.

"That will simply mean," he added, "a repetition of the so-called 'coal famine' of last year, which was, *per se*, a car famine."

Operators and mine workers of Washington State met in Seattle, April 26, to discuss plans for a settlement of the mine strike, the invitation which brought about the meeting being extended by Ed. Clifford, director of the new State Department of Labor and Industries. The operators declare that they will revert to the rate of pay in force before the recent increase and for seven weeks the mine workers have refused to accept the rate offered. The latter naturally deny that they are on strike, it being the operators and not the mine workers who are trying to change the scale.

Industry's Stock of Coal, Though Diminishing, Remains At Safe Margin Because of Reduced Consumption

ADVANCE figures on stocks of railroad fuel compiled for the Geological Survey's preliminary report on consumers' stocks were published last week in *Coal Age*, page 834. Additional returns since received by courtesy of the American Railroad Association, which has undertaken to assemble the figures, confirm the preliminary results. The following table summarizes the reports for 319 railroads, which have been received to date, including some but not all of the large systems. It will be seen that from Jan. 1 to April 1 these 319 roads reduced their stocks by only 92,000 tons—barely 1 per cent. The stock remaining on April 1 was sufficient for three weeks' and three days' operation at the rate of consumption prevailing in the first quarter of the year. It therefore appears that while railroad fuel-coal purchases have seemed to the coal operator disappointingly small, the actual acceptances by the carriers have been sufficient to meet their current requirements, in view of their present reduced rate of consumption. It is clear, however, that railroad stocks are considerably below those in the latter half of 1918, or early 1919.

STOCKS, RECEIPTS AND CONSUMPTION OF BITUMINOUS COAL BY 319 STEAM RAILROADS, JAN. 1 TO APRIL 1, 1921

(In net tons)

Stocks on hand, Jan. 1, 1921:		
In cars	3,314,000	
In stock piles, etc	4,801,000	
Total stock, Jan. 1		8,115,000
Receipts, Jan. 1—March 31		29,820,000
Consumption, Jan. 1—March 31		29,912,000
Stocks on hand, April 1:		
In cars	3,091,000	
In stock piles, etc	4,932,000	
Tota stock, April 1		8,023,000

STOCKS OF SOFT COAL AT 2,303 INDUSTRIAL PLANTS, OTHER THAN STEEL AND BYPRODUCT, JAN. 1 AND APRIL 1, 1921

(In net tons)

(Includes only those plants for which reports had been received by the U. S Geological Survey up to April 26(*a*)

State	Number of Plants Reporting	Weekly Consumption, Jan. to March	Tons on Hand(*a*) Jan. 1	Tons on Hand(*a*) Apr. 1	Week's and Day's Supply at Current Rate (*b*) Jan. 1	Week's and Day's Supply at Current Rate (*b*) Apr. 1
Maine	27	13,247	178,068	156,964	13-3	11-6
New Hampshire	34	3,930	99,235	65,607	25-2	16-5
Vermont	37	1,892	34,161	24,816	18-1	13-1
Massachusetts	278	46,067	838,828	578,948	18-1	12-4
Connecticut	75	17,526	351,991	255,330	20-1	14-4
Rhode Island	56	6,564	120,980	69,825	18-3	10-5
New York	159	66,618	800,777	647,559	12-1	9-5
New Jersey	106	33 635	439,895	359,284	31-1	10-5
Pennsylvania	120	87,258	65,745	529,933	6-3	6-1
Maryland	31	8,850	53,103	35,658	6-0	4-1
Delaware	25	3,079	34,102	29,827	11-1	9-5
District of Columbia	10	1,023	7,336	5,167	7-2	5-1
West Virginia	43	15,717	39,904	40,758	2-4	2-4
Ohio	127	62,035	435,727	291,559	7-1	4-5
Indiana	102	56,806	372,017	328,318	6-4	5-5
Illinois	136	97,584	485 257	309,686	4-6	3-1
Michigan:						
Northern Peninsula	19	15,065	380,709	197,834	25-2	13-1
Southern Peninsula	92	32,049	410,991	279,884	12-6	8-5
Wisconsin	80	27,600	325,791	211,131	11-6	7-4
Minnesota	59	13,219	105,256	47 692	7-6	3-4
Iowa	29	14,976	58,798	45,447	3-6	3-1
North Dakota	6	883	1,956	1,169	2-1	1-2
South Dakota	2	1,195	4,148	4,610	3-3	3-6
Nebraska	11	6,323	17,206	14,705	2-5	2-2
Virginia	33	10,483	106,427	71,251	10-1	6-6
North Carolina	48	7,300	78,767	59,033	10-6	8-1
South Carolina	41	4,229	41,562	35,168	9-6	8-2
Georgia	31	4,559	50,384	32,296	11-1	7-1
Florida	7	287	2,254	2,578	7-6	8-6
Kentucky	28	7,925	35,343	40,966	4-3	5-1
Tennessee	62	10,750	73,337	63,269	6-6	5-6
Alabama	35	4,890	52,728	40,061	10-5	8-1
Mississippi	23	1,100	8,993	5,561	8-1	5-1
Missouri	81	36,972	181,957	110,091	4-6	2-6
Kansas	41	12,137	40,134	28,653	3-2	2-3
Oklahoma	16	938	34,808	26,591	37-1	28-2
Arkansas	21	1,256	8,889	8,566	7-1	6-6
Louisiana	2	129	714	812	5-4	6-2
Texas	39	4,079	12,203	4,170	2-6	1-1
Colorado	31	6,905	36,438	26,465	5-2	3-6
New Mexico	4	1,903	27,299	19,153	14-2	10-1
Arizona	7	2,614	20,058	14,580	7-5	5-4
Utah	27	7,470	54,305	41,508	7-2	5-4
Nevada	9	2,862	13,298	8,673	4-5	3-1
Wyomin	4	85	625	477	7-2	5-4
Montana	13	10,375	72,817	50,976	7-1	4-6
Idaho	14	604	5,392	3,920	8-6	6-3
Washington	14	2,997	26,877	16,773	8-6	5-4
Oregon	5	364	8,002	4,139	21-6	11-3
California	3	14	215	118	15-2	8-3
Grand totals	2,303	776,369	7,155,807	5,247,559	9-1	6-5

The preceding table showed stocks in terms of weeks' supply at the present rate of consumption. It is likely to be misleading to make comparisons of weeks' supply on two different dates because of changes in the rate of consumption. The following table, prepared by F. G. Tryon, compares the actual tonnage on hand at 2,209 industrial plants (other than steel and byproduct) with the tonnage which the same plants had on three other dates.

TONS OF SOFT COAL ON HAND AT 2,209 INDUSTRIAL PLANTS, APRIL 1, 1921, COMPARED WITH WHAT SAME PLANTS HAD IN 1919 AND 1920

(In Net Tons)

State	Number of Identical Plants	Tons in Stock April 1, 1921	Increase or Decrease, April 1, 1921, as Compared with (*c*) Jan. 1, 1921	June 1, 1920	April 1, 1919
Maine	24	156,059	— 20,343	+ 65,393	— 4,922
New Hampshire	33	65,437	— 33,209	+ 37,429	— 25,574
Vermont	37	24,816	— 9 345	+ 13,551	— 3,481
Massac usetts	261	557,049	— 254,747	+ 283,768	— 155,741
Connecticut	70	255,044	— 96,181	+ 165,382	+ 1,318
Rhode Island	55	69,781	— 50,759	+ 17,245	— 53,885
New York	148	587,298	— 152,380	+ 325,334	—116,670
New Jersey	98	353,139	— 76,934	+ 133,723	+ 22,647
Pennsylvania	114	522,459	— 34,708	+ 207,881	+ 68,988
Maryland	30	35,418	— 17 485	+ 1,829	+ 1,494
Delaware	24	29,636	— 4,275	+ 9,458	+ 3 888
District of Columbia	10	5,167	— 2,169	+ 3,470	— 430
West Virginia	44	40,758	+ 854	+ 2,803	— 6,744
Ohio	121	288,076	— 142,935	+ 45,309	— 81,400
Indiana	100	319,361	— 41,690	+ 119,430	+ 32
Illinois	134	304,839	— 172,197	+ 58,526	—155,989
Michigan:					
Northern Peninsula	19	197,834	— 182,875	+ 4,467	—290,309
Southern Peninsula	85	267,321	— 120,564	+ 135,632	+ 9,998
Wisconsin	79	158,479	— 106,286	+ 69,481	— 21,209
Minnesota	58	46,416	— 57,519	+ 2,674	— 360
Iowa	28	45,260	— 12,638	+ 11,164	— 16,810
North Dakota	6	1,169	— 787	+ 180	— 801
South Dakota	2	4,610	+ 462	+ 1,517	— 819
Nebraska	11	14,705	— 2,501	— 3,163	— 2,178
Virginia	31	65,342	— 30 555	+ 11,351	— 26,243
North Carolina	48	59,033	— 19,734	+ 13,647	— 28,108
South Carolina	41	35,167	— 6 395	+ 7,727	— 6,459
Georgia	28	25,416	— 5,524	+ 10,639	— 5,793
Florida	7	2,578	+ 324	+ 1,084	— 691
Kentucky	26	20,778	— 2,765	+ 3,315	— 1,010
Tennessee	60	58,119	— 7,591	+ 22,346	— 927
Alabama	33	39 811	— 12,547	+ 11,151	— 196
Mississippi	23	5,561	— 3,432	— 34	+ 246
Missouri	79	110,008	— 71,797	+ 22,788	— 22,057
Kansas	39	28,439	— 11,122	— 13,785	—10,937
Oklahoma	15	26,591	— 8,217	— 554	— 2,080
Arkansas	21	8,566	— 323	+ 3,908	+ 2,720
Louisiana	2	812	+ 98	— 546	+ 32
Texas	36	4,170	— 8.033	+ 203	— 997
Colorado	31	26,465	— 9,973	— 12 292	— 28,911
New Mexico	4	19,153	— 8,146	— 3,474	— 13,276
Arizona	7	14,580	— 5,478	— 1,683	— 1,687
Utah	27	41,508	— 12,797	+ 5 670	— 5,345
Nevada	10	8,673	— 4,625	— 3,248	— 16,565
Wyoming	4	477	— 148	— 4,990	— 316
Montana	13	50,976	— 21,841	— 19,150	— 9,334
Idaho	14	3,920	— 1 472	+ 1,404	+ 718
Washington	14	16,773	— 10,104	+ 3,939	— 8,509
Oregon	3	81	— 56	+ 6	— 5
California	2	81	— 79	— 155	— 247
Total	2,209	5,023,309	—1,853,543	+1,771.750	—988.252

(*a*) As this table includes ninety-four plants not included in the list of 2,209 identical plants, the figures differ slightly from those in the following table.

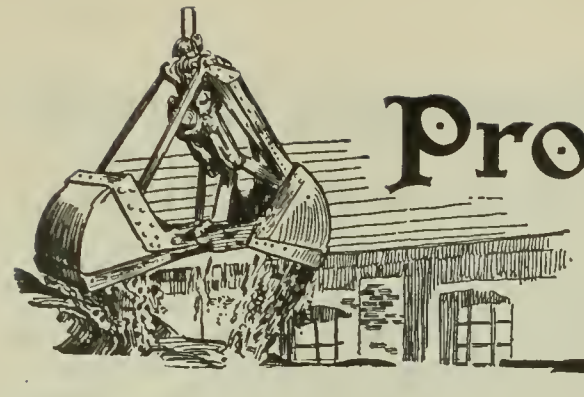
(*b*) Calculated at average rate of consumption during January, February and March, 1921. As consumption was perhaps 22 per cent below normal during this period on account of the business depression, the figures of weeks' supply appear larger than they would if business were ative. At the average rate of consumption in March, April and May, 1920, the stock on hand Jan. 1, 1921, would have been 7 weeks 2 days, and on April 1, 1921, 5 weeks 2 days.

(*c*) Plus sign denotes increase; minus sign, decrease.

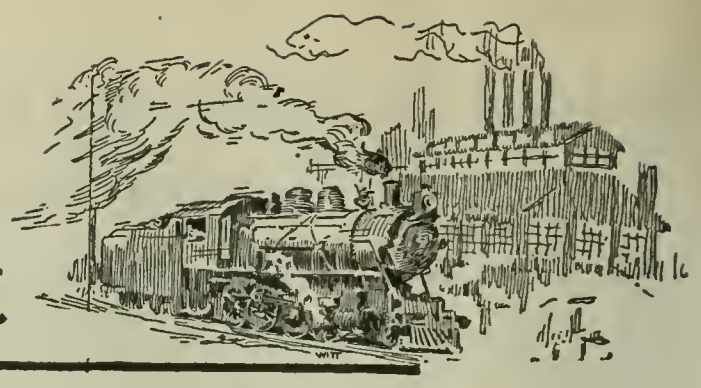
Judge Gives Long Sentences to Dynamiters Of Coal Property on Willis Branch

JUDGE EARLY, of the Circuit Court of Fayette County, West Virginia, disregarded the jury's recommendation of clemency and gave Lee Donnel, Clarence Donnel, Robert Ratliffe and John Kidd terms of seven years in the state penitentiary. On April 30 they were found guilty of having in January dynamited the property of the Willis Branch Coal Co., at Willis Branch, W. Va.

The jury had recommended the minimum sentence, which is two years. When the Court pronounced sentence, attorneys for the defendants announced that they would ask for a new trial. Some of the defendants have long been regarded as ringleaders in the trouble at Willis Branch, which has covered a period of two years.



Production and the Market



Weekly Review

IS THERE another bituminous coal shortage impending? It is rather significant that in the same week C. H. Markham, president of the Illinois Central R.R., and Senator Elkins sound warnings of a coal shortage to come. Mr. Markham is putting out his good money for advertising space in the newspapers in the Middle West, warning the public of an impending coal shortage, because, he says, "as one of the largest coal-carrying roads in the Middle West" he considers it a duty to sound this warning. He plainly says the country is headed for a serious bituminous coal shortage. At the same time Senator Elkins, in a statement issued from Washington, is emphatic in his declaration that "sudden restoration of the market, and an attempt to crowd the hauling of the bulk of the nation's coal into the autumn and winter months will place upon the railroads a burden which they are admittedly unable to adequately discharge."

Individual Action Only Can Avert Shortage

Sober thought indicates that this "impending coal shortage" will materialize in just the degree to which industry suddenly begins to hum. There is not the least excuse in the world for the manager of any industrial plant to suffer from a lack of coal this year. He has but to buy his coal and maintain a storage sufficient to give him ample protection, which may be sufficient for but a week if he is within sight of the coal mines and it may be five months if he is in Wisconsin or northern Maine. Collectively the country can do nothing to prevent a shortage. Individual action alone will prevent trouble.

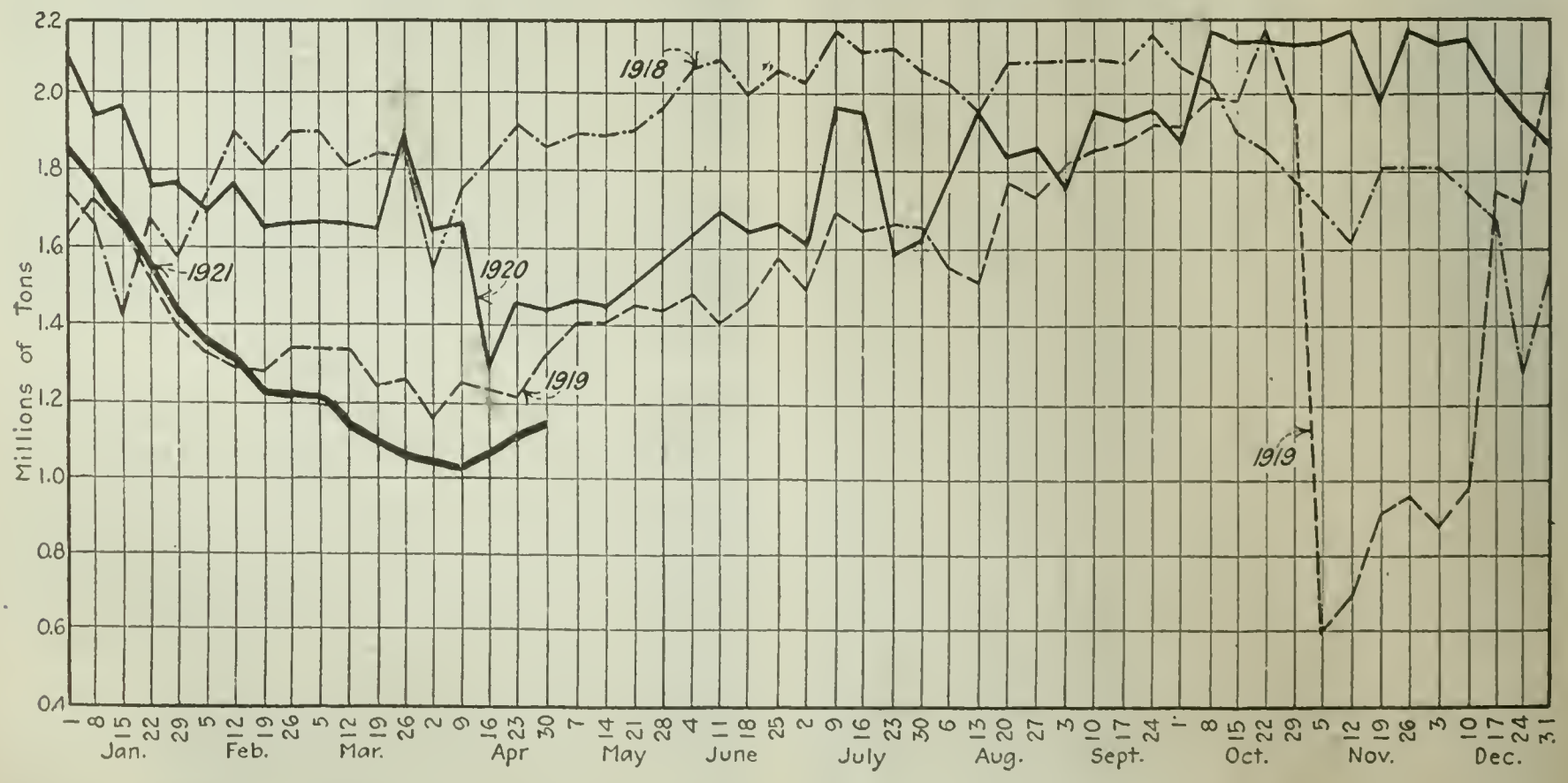
Coal Age Index Is Unchanged

Production of bituminous coal is still continuing to increase. Prices are practically stationary. *Coal Age* index is 104, unchanged from the preceding week. Better prices in some sections are offset by a slightly increased amount of distress coal, or by sales which are being urged on buyers at figures somewhat lower than have prevailed recently. Larger production and better domestic demand are softening the steam market, and extremely attractive prices are being quoted to move immediate lots of "resultant" coal.

The contract market is still dormant, as the quotations are too far above spot figure to interest the buyers. Producers hold firm to their prices, however, and refuse to close on yearly business unless granted a figure which carries some profit at least.

Additional reports to the Geological Survey of the stocks of soft coal held by the railroads on April 1, 1921, practically confirm preliminary figures reported

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

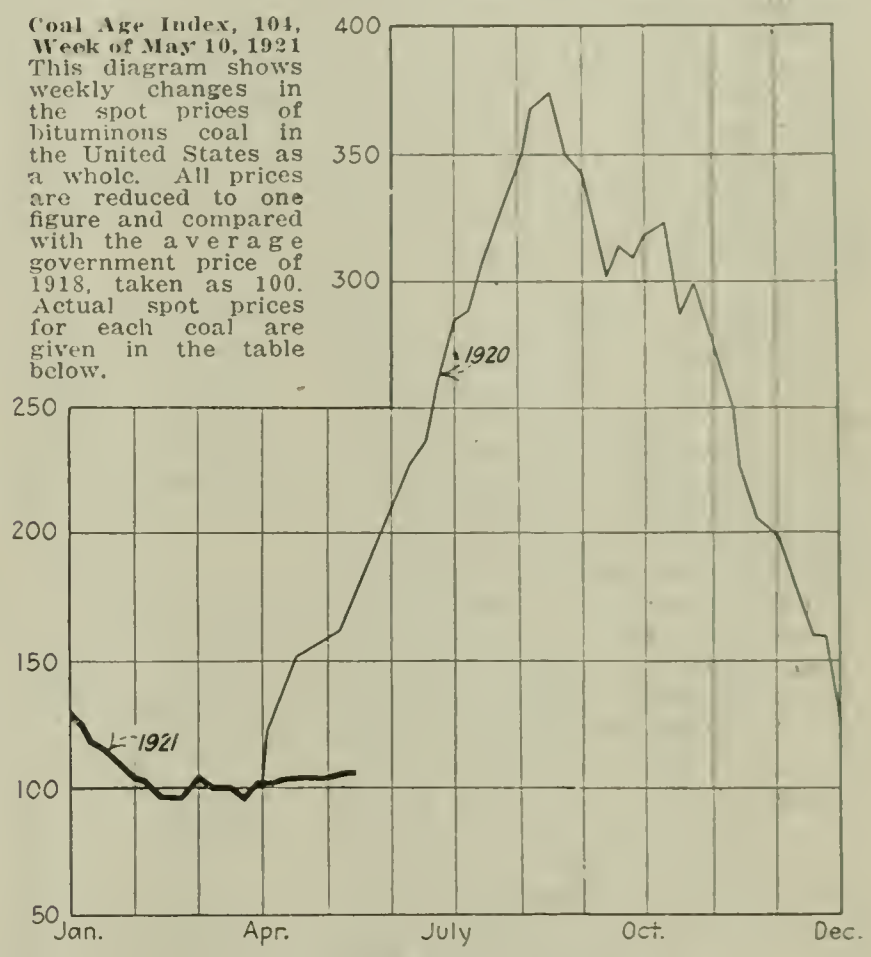
last week. From Jan. 1 to April 1 this year railroads reduced their stocks from 8,115,000 net tons to 8,023,000, only 92,000 tons, or barely 1 per cent. April 1 stocks were sufficient for twenty-four days' operation at the consumption rate prevailing during the first quarter of 1921. Bituminous stocks on hand April 1, 1921, at 2,303 industrial plants other than steel and byproduct plants were 5,247,559 tons, a decline of over 1,900,000 tons from stocks held by the same plants on Jan. 1, 1921. Calculated at the first quarter's consumption rate, the tonnage on hand April 1 was equivalent to requirements for six weeks and five days. With the lowered rate of current consumption these appear larger than they would if business were more active. Any upturn of industrial activity would soon render these stocks uncomfortably small.

Lake's Demurrage Tariff Is Restored

Reduction in rail freight rates on Lake cargo coal is some stimulus to those fields shipping to the lower ports. Large tonnages have gone forward recently to such an extent that in the eastern Ohio field a slight car shortage has occurred, caused by so many cars being held under load at Lake Erie ports. Early in the month there were some 12,500 loaded cars awaiting dumping. The Lakes Demurrage Tariff, which was taken off at the start of the season to stimulate Lake coal shipments, has just been restored, and demurrage penalties therein will cause a decline in movement of Lake coal from the mines, at least until vessels become more plentiful. At present, the iron ore and grain markets are in no shape to provide return cargoes down the Lakes and it will probably be some time before boats will be available in sufficient numbers to satisfy coal producers.

The Northwest trade is none to anxious to receive heavy shipments for storage, and the head of the Lakes docks are reflecting this attitude in their orders to the mines. The trade is sluggish reviving, even with reduced freights—all-rail receipts are dwindling and a poor season seems to be in prospect. While early dumpings for the season have been heavier than for several years, the large part of this tonnage has gone to the storage docks of mine affiliations and actual outright purchases have been light. Duluth cargo receipts, season to April 30, were 197,500 tons—85,000 anthracite and 112,000 bituminous. April shipments to the interior from the Duluth docks were only slightly more than one-half of those for April, 1920.

Anthracite production is being sustained by a healthier domestic demand and steam sizes are also in bet-



Coal Age Index, 104, Week of May 10, 1921
This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table below.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

	Market Quoted	Mar. 1920	Apr.12 1921	May 3 1921	May 10 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$3.35	$3.35	**$3.50**
Pocahontas lump	Columbus	2.60	5.50	5.40	5.25@ 5.50
Pocahontas mine run	Chicago	2.35	3.85	4.00	3.50@ 4.50
Pocahontas lump	Chicago	2.60	5.00	5.00	4.50@ 5.50
*Smokeless mine run	Boston	....	6.00	6.00	**6.00@ 6.25**
Clearfield mine run	Boston	2.95	2.35	2.35	2.00@ 2.65
Somerset mine run	Boston	2.95	3.05	2.95	2.25@ 3.60
Pool 1	New York	2.95	3.40	3.65	3.50@ 3.75
Pool 1	Philadelphia	2.95	....	3.40	*3.25*
Pool 1	Baltimore	2.95	3.15	3.20	**3.25**
Pool 9	New York	2.95	2.80	2.65	**2.75@ 3.00**
Pool 9	Philadelphia	2.95	3.25	2.85	**2.90**
Pool 9	Baltimore	2.95	3.00	2.95	**3.00@ 3.15**
Pool 10	New York	2.95	2.35	2.55	*2.80@ 2.60*
Pool 10	Philadelphia	2.95	2.75	2.65	**2.70**
Pool 10	Baltimore	2.95	2.50	2.45	**2.50@ 2.60**
Pool 11	New York	2.95	2.15	2.10	**2.00@ 2.25**
Pool 11	Philadelphia	2.95	2.15	2.30	**2.45**
Pool 11	Baltimore	2.95	2.25	2.30	2.25@ 2.35
Pool 71	New York	2.95	3.15	2.85	**2.85@ 3.15**
Pool 71	Philadelphia	2.95	3.15	3.00	3.00
Pool 71	Baltimore	2.95	3.00	2.95	**3.10@ 3.15**
High-Volatile, Eastern					
Pool 34 (54-64)	New York	2.50	1.85	2.15	*1.80@ 2.15*
Pool 34 (54-64)	Philadelphia	2.50	1.85	1.95	**2.00@ 2.15**
Pool 34 (54-64)	Baltimore	2.50	2.10	2.05	**2.05@ 2.15**
Pittsburgh mine run	Pittsburgh	2.35	2.25	2.25	*1.90@ 2.25*
Pittsburgh sc'd gas	Pittsburgh	2.35	2.85	2.85	*2.50@ 2.75*
Kanawha mine run	Columbus	$2.70	$2.25	$2.00	**$2.25**
Kanawha lump	Columbus	2.95	3.50	3.25	**3.50**
Hocking mine run	Columbus	2.50	2.25	2.00	**2.10@ 2.25**
Hocking lump	Columbus	2.75	3.25	3.05	**3.25**
Pitts. No. 8 mine run	Cleveland	2.35	2.25	2.20	2.15@ 2.25
Pitts. No. 8 lump	Cleveland	2.60	3.50	3.25	3.10@ 3.40
Midwest					
Franklin, Ill., mine run	Chicago	2.35	3.40	3.40	3.25@ 3.50
Franklin, Ill., lump	Chicago	2.55	3.55	3.75	3.65@ 3.85
Central Ill., mine run	Chicago	2.35	2.25	2.95	2.75@ 3.15
Central Ill., lump	Chicago	2.55	3.00	3.25	3.00@ 3.50
Ind. 4th Vein mine run	Chicago	2.35	2.65	3.25	**3.00@ 3.75**
Ind. 4th Vein lump	Chicago	2.55	3.15	3.50	3.25@ 3.75
Ind. 5th Vein mine run	Chicago	2.35	2.65	2.95	*2.50@ 2.95*
Ind. 5th Vein lump	Chicago	2.55	3.00	3.25	3.15@ 3.40
Standard mine run	St. Louis	2.35	1.90	1.80	**1.90**
Standard lump	St. Louis	2.55	2.25	2.40	2.25@ 2.50
West Ky. mine run	Louisville	2.35	2.40	2.10	*2.00*
West Ky. lump	Louisville	2.60	2.90	2.60	**2.75**
South and Southwest					
Big Seam mine run	Birmingham	2.45	3.05	2.95	2.85@ 3.10
Big Seam lump	Birmingham	2.75	3.60	3.70	3.40@ 4.00
S.E. Ky. mine run	Louisville	3.00	2.65	2.60	2.50@ 2.75
S.E. Ky. lump	Louisville	3.25	3.60	3.75	**3.75@ 4.00**
Kansas mine run	Kansas City	3.50	4.40	4.40	4.25@ 4.50
Kansas lump	Kansas City	4.00	5.00	5.00	5.00

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	May 3, 1921 Independent	May 3, 1921 Company	May 10, 1921† Independent	May 10, 1921† Company
Broken	New York	$7.20@$7.50	$7.20@$7.75	**$7.45@$7.75**	$7.20@$7.75
Broken	Phila.	....	7.35	7.35	7.35
Egg	New York	7.20@ 8.00	7.20@ 7.75	**7.45@ 8.35**	7.20@ 7.75
Egg	Phila.	....	7.35	7.60	7.35
Stove	New York	7.50@ 8.00	7.50@ 8.10	**7.70@ 8.35**	7.50@ 8.10
Stove	Phila.	....	7.70	7.85	7.70
Chestnut	New York	7.50@ 8.00	7.50@ 8.10	**7.85@ 8.35**	7.50@ 8.10
Chestnut	Phila.	....	7.65	7.85	7.65
Pea	New York	5.25@ 5.75	5.75@ 6.15	*5.25@ 5.50*	*5.75@ 6.10*
Pea	Phila.	....	....		$6.00
Buck No. 1	New York	$3.25@$3.75	3.50	*3.00@ 3.75*	3.50
Buck No. 1	Phila.	3.25@ 3.50	3.50	*3.25*	3.50
Rice	New York	2.50	2.50	2.50	2.50
Rice	Phila.	....	2.50	2.50	2.50
Barley	New York	1.50	1.50	*1.15@ 1.50*	1.50
Barley	Phila.	....	1.50	1.25	1.50
Birdseye	New York	....	2.50	2.50	2.50

† Advances over previous week shown in **heavy type**, declines in *italics*.

ter position. Adherence to the increased schedule for May has apparently warned householders that hopes for lower prices are futile and in some sections the storage program is almost normal. Independent production is being maintained, if not increased, although the premium obtained over company circular is small.

BITUMINOUS

Soft coal production continued to climb slowly during the last week of April. According to the Geological Survey 6,921,000 net tons were mined, an increase of 101,000 tons, or 1.5 per cent, as compared with the preceding week. Loadings on Monday, May 2, were 22,710 cars, which is a decline from the figure for the preceding Monday, probably due to the miners' observance of May Day.

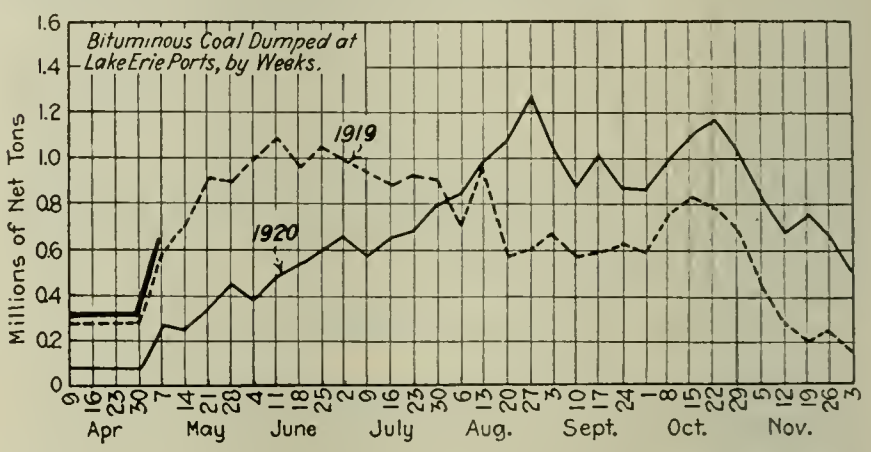
In spite of the improvement in production, the rate of output is still lower than for any period since April, 1914, except during the strike of 1919. Consumption and exports are doubtless in excess of the current production of 6,900,000 tons weekly, therefore it is apparent that the draft on consumers' stocks still continues. This draft amounted to 8,000,000 tons during the first quarter of 1921.

Buy-Early Campaign Stimulates Domestic Market

Production has been much improved in the Middle West section, where an active campaign, to stimulate domestic buying for storage has been going on. Weekly production in the northern and middle Appalachians has shown a steady improvement; from the beginning of April the output climbed from 3,216,000 net tons for the week ended April 2 to 4,062,000 for the period ended April 23. "No-market" losses for the country as a whole stood at 55.8 per cent of full-time capacity for the week ended April 23, an improvement of about 3 per cent over the preceding week.

One encouraging sign has developed in the last few days —while buyers are not taking an appreciably heavier volume of coal they are displaying more interest in quotations, both spot and contract. This is only natural, as the decline of consumers' stocks, while very gradual, is causing the buyer to keep more actively in touch with the market. Some consumers apparently are withholding the making of purchases in the unfounded hope that freight rates are due for an early reduction. There is no authority for this belief, but even if reduction were contemplated they could hardly be put into effect in time to care for any tonnage before the expected autumn rush may develop.

Lake coal dumpings during the week ended May 9 are reported by the Ore and Coal Exchange at 595,825 net tons of cargo coal and 19,255 tons of fuel. Combined dumpings for the season now stand at 1,835,080 net tons, as compared with 594,121 tons for the same period in 1920.



There was a distinct export revival as April came to a close. Hampton Roads dumpings for that month for all destinations were 1,230,000 gross tons, 300,000 tons more than during March. Dumpings for foreign accounts during the last week of April amounted to 322,169 net tons, nearly three times as much as during the week ended April 2 and at a weekly rate greater than at any time since the autumn of 1920, when foreign business was very heavy. The prolongation of the British strike is causing England's stock of coal to diminish rapidly, and American business is benefiting thereby. Bunkerage markets are active, as ships are now coaling with American fuel for the round trip. British dockers have just been instructed to refuse to handle in any way coal imported from abroad and instructions have been given British railroad men to refuse to move such coal, if it is landed. Strict adherence to this union order may have some effect on the exportation of American coal to Great Britain.

New England all-rail shipments for the week ended April 30 were 2,474 cars, 10 per cent more than during the week preceding. A better trade feeling is apparent in that section; buyers seem to be getting over their indifference although the volume of new business, either spot or contract, is still very light. The effect of the seamen's strike is reflected in the position of smokeless coals in that locality, as not much coastwise trade is now moving.

ANTHRACITE

Production for the week ended April 30, as estimated by the Geological Survey, was 1,945,000 net tons, an increase of 42,000 tons over the preceding week. Retail buying is proceeding satisfactorily in the Middle West and there is some activity in the Northwest. Baltimore reports a sluggish domestic market, while in New York the trade is brisk. New England business is picking up slightly and receipts also are improving.

Independent prices are limited to within about 50c. of company schedules and all sizes are in fair demand with the exception of pea, which at times is sold at slight concessions in order to move the coal promptly.

COKE

Beehive coke production in the week ended April 30 was 72,000 net tons, a decrease of 2,000 tons from the preceding week. The depth of the present depression is indicated by the fact that the week's output was hardly 20 per cent of that of the corresponding period of 1920. Cumulative calendar year production is 2,846,000 net tons, about 38 per cent of that of 1920. The Connellsville market is practically at a standstill and most operations are idle. Spot furnace is quoted at $3.50 and foundry $5@$5.50. With the recent announcement of the Steel Corporation that it would reduce wages it is expected that its subsidiary, the Frick company, will soon put into effect a reduction of wages in the Connellsville region.

Estimates of Production

From the Weekly Report of the Geological Survey

(Net tons)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
April 16 (b).....	6,528,000	115,271,000	7,563,000	153,553,000
Daily average...	1,088,000	1,284,000	1,261,000	1,701,000
April 23 (b).....	6,820,000	122,090,000	8,523,000	162,076,000
Daily average...	1,137,000	1,274,000	1,420,000	1,683,000
April 30 (c).....	6,921,000	129,012,000	8,928,000	171,004,000
Daily average...	1,154,000	1,267,000	1,488,000	1,672,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
April 16 (b).....	1,885,000	26,497,000	1,249,000	24,710,000
April 23.....	1,903,000	28,400,000	1,663,000	26,373,000
April 30 (c).....	1,945,000	30,345,000	1,841,000	28,214,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

BEEHIVE COKE

Week Ended April 30	Week Ended April 23	Week Ended May 1	1921 to Date	1920 (c) to Date
1921 (a)	1921 (b)	1920		
72,000	74,000	359,000	2,846,000	7,374,000

(a) Subject to revision. (b) Revised from last report. (c) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Reports From the Market Centers

New England

BOSTON

Industrial Conditions Show Faint Improvement—No Genuine Contract Call—Slight Increase in Oversea Business—Strike of Marine Workers a Factor in Smokeless—Domestic Size Anthracite in Good Request.

Bituminous—In textiles and certain special lines there are beginning to be much better sales and it is apparent there is more confidence industrially than a month or two ago. Consumers who were flouting the idea of buying fuel are now mildly interested and in some cases are querying whether after all this may not be an advantageous time to buy. Shippers have made every inducement they dare offer throughout these dull weeks, and it may be we shall soon see a turn in the long hard road we have been traveling since last fall. There is a better trade feeling, and more than likely there will be quiet buying later in the month.

Thus far, however, little business has developed on contract. The consumers feel there is still far too much spread between spot quotations and those for extended delivery, but producers show no sign of modifying their position in this respect. Interests, who after most strenuous efforts to sell coal, have been able to operate but one or two days a week decided long ago the minimum basis on which they could afford to run. A great many operations are completely shut down. It is surprising to see the number of large enterprises that decided definitely not to mine coal unless the output could be sold to advantage. This is one among several reasons why the contract market lags.

The continued labor trouble in England is having more effect upon the seaboard market. Liners and other steamers are coaling on this side for the round trip, and while the tonnage is not heavy, it amounts to something in a month's time and may well be a factor in turning the scale.

The strike of engineers, firemen, oilers and deckhands on tugs and steamers has given more or less concern the past week. The centre of the difficulty seems to be at Hampton Roads, although crews have left ships at other ports. Few believed the trouble could be at all serious in the present posture of shipping, with so many marine workers unemployed, but already it has made a difference in the receipts of smokeless. Several boat owners have been able to keep their craft in operation with pickup crews or by having some special understanding with their men.

Anthracite—There is no pronounced change in the demand for domestic sizes. Egg, stove, and chestnut are all in good request, with the accent on stove, but on the steam sizes there is practically no demand whatever. The marine strike is being used as an argument with the public and the retailers are beginning to swing into their usual spring stride.

The expected advance in prices May 2 was so well discounted that it occasioned almost no comment. Retailers have about concluded it is prudent for them to take on coal as fast as they can store it, for there are ample possibilities of upset between now and fall. The advances in all-rail rates effective this month and on June 1 applying to Boston points is an additional reason for hurrying coal forward to the large number of dealers in the Boston metropolitan district.

A mild sensation was caused early last week by the announcement that the Hudson Coal Co. from May 1 would deal directly with retailers along the line of the Boston & Maine east of Fitchburg, Mass., who for a great many years have purchased through one of the important Boston factors. From present indications the producing company is relinquishing a certain trade it has had via the Edgewater, N. J., piers along the coast to New England points and will doubtless turn a part at least of this tonnage into all-rail territory.

Tidewater—East

BALTIMORE

Export Situation Improves Despite Shipping Strike—Home Demand Still Drags—Anthracite Continues on Old Selling Basis.

Bituminous—After a dead half month at the outset of April there was a spurt in export movement and the month saw a total loading on foreign account of 98,442 tons cargo and 10,536 tons bunker. It is of note that three of the cargoes went to English ports. Italy took the largest total, some 40,000 tons cargo. The shipping strike did not hit the situation to any degree as there has recently been little coal exporting in American bottoms.

The home demand is still draggy. There is no increase in the matter of contracting, despite the repeated warnings of both coal and transportation men that business is inviting disaster and high prices for coal this fall by refusing to distribute the movement under at least a partial buy and order early plan. Best gas and steam coals are still available at $3@$3.25 in the spot market, and $3.15@$3.50 on contract over the year. Failure of these figures to tighten shows how the market lags. In spot selling there is even a greater cut in bunker business, the amount of free coal at times encouraging sharp competition.

At the B. & O. piers at present are daily reserves of some 900 cars; at Canton some 400 cars, while the pile-up at the new Western Maryland pier at Port Covington is now around 700 cars.

Anthracite—Lack of orders and appreciation on the part of the public continues. The only change for dealers is in the jump in wholesale prices, which the trade has decided to absorb for the present.

The company advance for May of ten and fifteen cents on some grades, and independent advances ranging 15 to 40c., caused a meeting of the retail exchange to consider the situation. The result is that the retail trade will absorb the wholesale advance this month, unless other increases force a change of attitude.

NEW YORK

Anthracite Domestic Orders Heavy—Steam Coals Easier—Rumored Freight Cut a Factor in Bituminous Situation—English Strike of Little Interest—Demand Easy.

Anthracite—The market has settled down and operators find their books well filled with orders for all the egg and stove they can produce. Chestnut and pea, which nearly always have been hard to move in this market, are causing some worry to many shippers. The large companies are not finding it so difficult to move these coals but some independents find it necessary to make concessions when desirous of reducing their supply of pea coal.

The present heavy demand is expected to continue throughout the month and well into June. Wholesale dealers are well booked ahead and many of the individual operators have reopened their mines. Dealers are satisfied with their present business but dislike to talk of what might be expected next fall and winter unless the public takes in its winter fuel this summer.

Independent producers advanced their mine prices 25c.@75c. for egg, stove and chestnut on May 1. They are heavily booked for stove and egg and so far have had little trouble in keeping chestnut on the move.

The increase in the number of collieries working has resulted in the market becoming burdened with steam coals. Buckwheat is holding firm, and rice is fairly strong, while barley is slipping. Some shippers are receiving inquiries regarding contracts for barley. Current quotations for company and independent coals, per gross ton, are reported in the Weekly Review.

Bituminous—Buyers seem to be marking time and operators are looking forward to a more active market shortly. Inquiries have been notably in evidence regarding contracts for ship-

ments from July 1, 1921, to April 1, 1922. Operators are not taking much notice of these, preferring to take chances with the open market, many of them having booked orders for shipments ranging over long periods.

The rumor that there is to be reduction in freight rates will not down and many buyers, who it is believed would under ordinary conditions take advantage of the present quotations, are said to be holding off in anticipation of a cut.

Bunker demand is a trifle more active. So far there has been no considerable delay because of the marine strike. Vessels have sailed for the most part on time, no delay being attributed to the lack of coal.

Industrial consumers have not returned to the buyers' market. Some intimate that they will not be ready to buy for six months, but it is expected many will be running to cover before that time. Coal at the piers is quoted at a wide range, about as follows: Pool 1, $6.25@$6.40; Pool 9, $6.10@$6.25; Pool 19, $5.75@$6; Pool 71, $6.15@$6.25; Pool 11, $5.25@$5.50, and Pool 18, $5.25@$5.40.

BUFFALO

Shippers Bidding Against Each Other —Bituminous Still Seeking Lower Price Levels—Anthracite About Normal.

Bituminous—Shippers complain that they are bidding against each other, just as consumers were during the bulge last fall. One shipper undertook to sell a block of smokeless to a new customer, but the shipper who formerly had the business at once cut the price and he had to meet it. Then, when he tried to make a further sale, he was told that the other man had cut still lower. So the problem whether to run or not continues. In fact, as the market slackens the difficulty as to going on increases.

The manufacturing world does not show any new activity. A certain percentage of the factories move at a slow pace while many are idle. Some hopeful shippers are looking for a stir in the demand by June, but the rule is to give up all prediction and wait till the change comes.

Prices are hardly as high as formerly. About $3.25 is high enough for Youghiogheny gas lump and while Pittsburgh steam lump may still be quotable at $3, No. 8 is down to $2.75 and Allegheny Valley mine run $2.50. Slack has been a trifle stronger on account of little lump being made, and is quotable at $2.25 for gas and $2 for steam.

Anthracite—Shippers and retailers are uniting in local advertisements, urging consumers to lay in their supplies now to avoid a shortage next winter, unless the mines are kept at work steadily.

The fact that the Lake trade is taking care of a large amount of coal and that all the lake-shipping companies are active, with at least one that does not often go into it, shows that coal is plentiful, though the general output is about on the average. Loading to the Lake trade is brisk, the amount cleared for the week ended April 30 being 125,521 net tons, of which 55,221 tons were for Chicago, 28,500 for Duluth and Superior, 26,000 for Milwaukee, 9,000 for Sheboygan and 6,800 tons for Waukegan. The rate of freight has not yet been made.

Coke—Jobbers report that the market is off a trifle and advise a reduction of at least 25c. on quotations.

HAMPTON ROADS

Revival in Exports — Prices Not Advanced—Seamen's Strike Fails to Halt Loadings.

Dumpings for the month of April reached a total of 1,230,000 tons, an increase of 300,000 tons over the previous month. Much of this increase was due to dumpings during the last few days of the month, when vessels cleared with feverish haste in anticipation of the seamen's strike.

One of the unusual features of the increased activity, however, has been the steadiness of the market. Prices have not advanced noticeably over the $6.50-mark for Pools 1 and 2, although in isolated cases coal reached $6.75. Some coal was sold at $6.25.

Coal continues to be poured into Gibraltar "for orders," taken to mean that it will ultimately either reach England or England's dependencies. Accumulations at Tide have increased, while vessel tonnage has noticeably decreased. Ships are getting easy dispatch, many of them entering the port and departing with cargoes in the space of twenty-four hours.

Activities at the piers for the week ended May 5 were as follows:

C. & O. piers, Newport News—	
Cars on hand	2,207
Tons on hand	110,010
Cars dumped month of April	5,992
Tons dumped month of April	321,683
Cars dumped May 1 to 4 incl.	1,493
Tons dumped same period	80,825
Tonnage waiting	24,020
N. & W. piers, Lamberts Point—	
Cars on hand	1,235
Tons on hand	64,122
Cars dumped month of April	6,321
Tons dumped month of April	550,000
Cars dumped May 1 to 4, incl.	785
Tons dumped same period	50,190
Tonnage waiting	9,125
Virginian Ry. piers, Sewalls Point—	
Cars on hand	1,238
Tons on hand	52,300
Cars dumped month of April	8,470
Tons dumped month of April	423,490
Cars dumped May 1 to 4 incl.	1,169
Tons dumped same period	58,460
Tonnage waiting	55,100

PHILADELPHIA

May Anthracite Prices Increased — Retail Prices Unstable — Steam Sizes Unimproved — Bituminous Quiet — Inquiries Increase — Spot Prices Unchanged.

Anthracite—Both company and individual producers, having fully settled on May prices, the consumer has become more convinced that these are at the lowest level for the season and ordering continues good. One of the biggest producing companies still maintains its position in not having made any spring reduction and at this time its prices are about on a level with the more conservative independent shippers.

Cut prices on the quiet are the rule and the eagerness displayed for business was shown in prices quoted for school coal, awards of which were made this week. For the past several years the big companies took this business direct, but this time they were shut out by the lower bids of the retailers. Some of the low prices were as follows, per gross ton delivered in cellars: Pea $8.38, egg $11.01 and buckwheat $6.88. How deeply the margin of profit was cut can be seen when it is considered that the quoted retail price of pea to the consumer is $11 and egg $13.50.

Stove continues to be the storm point of all demand and it is simply out of the question for the dealers to expect to get all they want of this size. With the independents there has been some indication of slowness at times with nut, but this is not at all serious. The real troublesome size is pea coal. Dealers' yards continue to show fair stocks, especially of pea, and many of them are taking this in more to assure a supply of the larger sizes than from any present need.

Steam sizes are slow, although buckwheat with the companies is moving in fair volume. Mine prices per gross ton are shown in the Weekly Review.

Bituminous—The trade, while quiet, displays some signs of improvement, principally in a slight increase of inquiries. The buyer seems now to be shopping around, as the greater number of inquiries fail to produce business. Some of the larger users are seeking blocks of from 10 to 30 cars of coal and often a price 10c.@25c. lower than the market is quoted.

There has been no appreciable increase of the amount under contract, but the fact that the producer is standing firm on his prices would seem to have spurred the consumer to take in more coal at the market. At this time it seems that many a large consumer is going to try to go through the season with only about a third of his needs under contract, feeling that the average at the end of the year will actually show a saving.

Spot prices, in the Weekly Review, show little or no change, and for that reason the very first real boom in buying is certain to move them upward. There has been some little demand for Pool 18 around $2. Greensburg mine run has been offered $2.25@$2.50.

Business at Tide is less than ordinary, being confined principally to bunkers. The British strike has thus far failed to affect this port.

Northwest

MILWAUKEE

Coal Market Slows—Anthracite Cut—No Change in Soft Coal—Coal Coming In Freely.

A reduction of 40c. in the price of anthracite and 25c. in the charge for carrying coal from the curb are the

latest developments in the coal market. Prices will be restored at the rate of 10c. per month for the coming four months.

Anthracite egg now sells at $15.55; stove and chestnut $15.80. There is no change in the soft coal schedule as yet, but it is expected there will be some changes as soon as freight rates are adjusted. The market is slow, demand being small. Dock men are urging early buying so that they may make the most efficient use of their storage facilities.

Milwaukee's coal receipts during the month of April aggregated 197,683 tons, of which 43,100 tons were anthracite and 154,583 tons soft coal.

The State of Wisconsin is taking steps to purchase at one time all the coal necessary for state institutions. In the new plan the chief state engineer will advertise specifications on the B.t.u. basis, and bidders may make offers on any part or on the whole lot.

MINNEAPOLIS

All-Rail Trade at Standstill as Freight Cuts Restore Dock Trade—Demand Is Quiet.

Those who have flouted the admonition to buy coal early at the best price available, rather than take any chances, are in the position of the small boy who establishes his point in an altercation with a mate, for the ground of refusal to buy early has been the hope of lower prices. Now comes the Interstate Commerce Commission with an order reducing the freight on soft coal, to be shipped to the Northwest via Lake and rail, by 28c.

Now the question is, what will be the effect and how soon will there be a change in the matter of buying, for there are some other possibilities held forth as involving further freight reductions. It is not to be denied that it will be for the benefit of all concerned if there could be some early buying of coal for the Northwest. There is something of a resentful spirit that implies opposition to the move, as calling upon the Northwest alone to take the advance step in buying. Despite this feeling the move itself is a good one. The more coal that is moved early to the Northwest the surer the coal trade here will be of being free of trouble in the fall when others will be having their difficulties.

But it is equally true that there should be some greater inducement than has yet been held forth to urge upon the people of the Northwest to ship early. The ten-cent cut in hard coal per month or the 25c. cut in soft coal from the Illinois fields is not sufficient to justify carrying coal through the summer, if it cannot be sold until fall. And the consumers simply will not stock early, so there is little reason to hope for moving coal until toward fall to the man who is to use it.

The all-rail trade is about at a standstill. There seems to be considerably less activity than usual at this time, although it is often a quiet period at best. It is a question what the all-rail trade will do to meet the new situation caused by the reduction in freights. From previous performance the rail trade is inclined to be very aggressive and to fight to hold what trade has been secured. It has pushed its selling area further into the field of the dock interests during the past few seasons.

DULUTH

Dock Trade Is Slow—Receipts Heavy—Anthracite Prices Cut.

Coal shipments from the Duluth-Superior docks throughout the Northwest during April were the smallest for any month in more than ten years. They aggregated only 5,831 cars, as compared with 10,400 last year, and 14,009 cars during April, 1919.

That the coal trade has been in the doldrums during the last four months is brought out in the fact that shipments from the docks from Jan. 1 to April 30, 1921, aggregated only 29,848 cars, as compared with 87,787 cars during the same period last year.

An unusual situation has been created in trade circles through the delay of dealers in issuing new prices for the season. With a reduction of 28c. in the freight rate from the mines to Lake Erie docks and a reduction in the wages of coal dock workers just put into effect here, it is expected that retail prices of lump Youghiogheny, Hocking and Splint bituminous coal will be around $9.50, as compared with $16.25 at the beginning of last winter.

The new retail prices on anthracite, as announced by dealers, are 80c. and $1 lower than the figures in effect last winter. Retailers had at one time been hopeful that anthracite quotations for this season would open up about $2 lower than last season's basis, but their calculations were upset on the receipt of dock figures from their Eastern headquarters. Comparative retail prices are as follows:

	1921	1920
Egg	$14.85	$15.70
Stove	15.10	15.90
Nut	15.10	16.00
Pea	13.10	14.10
Buckwheat	11.00	11.25

An advance of 10c a month will be made up to and including September.

Receipts of coal at Duluth and Superior docks from the opening of the navigation season to April 30 aggregated 197,500 tons; 85,000 tons of hard coal and 112,000 tons of bituminous, as compiled by the Tomlinson Co., vessel agents.

Inland West

CHICAGO

Anthracite Buying Is Active—Bituminous Demand Slumps Despite Many Shortage Warnings—Contract Market Is Quiet.

The only activity is in the present demand for anthracite. Dealers are continuing to concentrate on hard coal and are taking in shipments at a rapid rate. One or two cargoes have already arrived, but the docks have not started making shipments as yet, as practically all hard coal coming into Chicago has moved all-rail. We understand the policy of the dock owners is to load their docks up on anthracite and hold this coal for winter shipment.

Sales agents declare that conditions show absolutely no signs of improvement as far as bituminous coal is concerned. The demand for the prepared sizes dwindled considerably after the first of the month and steam coal is now weaker than it has been for some time. If there is any sign of an industrial revival, it is only on the part of the packers, who appear to be enjoying good business.

Various operating companies and sales agencies are going to the trouble of spending considerable money and energy in sending out circulars to the entire trade, giving them facts and figures in regard to the car situation. As conditions exist today, it is very difficult to find either an operator or jobber who is not firmly of the opinion that there will be a drastic car shortage later on in the season. A week ago, we understand, there was a very slight car shortage in the southern Illinois field. The buying public, as a general rule, are disregarding the warnings sent out by the operators, as they look upon these as only a propaganda to stimulate sales.

The contract season is going to be pretty late this year as but few agreements of any importance, outside of one or two large pieces of railroad business, have been closed so far. Manufacturers buying large quantities of coal are showing a tendency to delay, or if they are contracting, are only buying a relatively small proportion of their tonnage, preferring to rely upon buying the major portion of their coal on the open market.

CLEVELAND

Lake Loadings Set New Record—Output Slightly Better—No Gain in Steam Demand—Anthracite Prices to Rise.

Bituminous—No increase in the demand for steam coal has been noted in this district in the last week, small contracts with railroads providing virtually the only activity. However, production figures are showing some increase, possibly due to greater Lake movement. Last week the output jumped from 45 to 51 per cent of capacity in the eastern Ohio mines. No price changes have been reported for spot coal.

Anthracite and Pocahontas—Dealers are conducting an active advertising campaign to arouse interest on the part of consumers in purchasing coal now. A new rise in anthracite prices is promised as a result of the advance in mine prices of 10@25c. in the May circular. A shortage of lump sizes of Pocahontas is predicted by dealers later in the year.

Lake—All records were shattered by loadings of coal for the season up to May 1. The total was 1,222,568 tons of which 1,176,508 tons were cargo and

44,060 tons vessel fuel, according to the report of H. M. Griggs, manager of the Ore and Coal Exchange. This record is the largest in eight years and tops 1920 by 850,000 tons.

No retail price changes. Receipts of bituminous coal at Cleveland during the week ended April 30 amounted to 1,128 cars, divided; industrial 764, retail 364, as compared with a total of 852 cars the preceding week, indicating an increase of a little less than 300 cars.

CINCINNATI

Distress Screenings Appear — Reduced Lake Rates Disturbs Market — Smokeless Advances.

Reduced railway freight rates to the Lakes was the disturbing element to the coal market here this week. The Kentucky rates from the Hazard and Harlan districts to Toledo were reduced from $2.11 to $1.83 with an approximate reduction of 14 per cent on shipments from West Virginia points to Ashtabula, Sandusky and other ports.

The immediate effect of this was an increase in the output of West Virginia mines and a resultant surplus of screenings being laid down here. A reduction in price was immediate. Nut and slack dropped to $1.50 and some coal dangerously near demurrage had to be sold under that figure. Some sales, however, were made up to $2. Mine run also suffered from the drop, $2 being the average price for spot sales. Spot block coal was affected. some in distress selling $2.50@$2.75. Little prepared coal of this sizing is now being offered on contract.

Smokeless prepared coals showed a little vigor, some of the operating companies holding egg and lump as high as $5.75, this graduating down to $5, which is the circular price. With a better seaboard demand little mine run in excess is coming this way so that the price held firm at $3.50.

Retail prices have been jiggled around a little. Better grades of Pocahontas lump are firm at $10 though some New River and off-grades were sold around $9.50. Mine run is $7.50 @$8. Bituminous lump is $7.50@$8, mine run $7@$7.50, and screenings $6 @$6.50.

DETROIT

No Interest in Bituminous Market— Shipments Are Light and Little Free Coal Is on Track.

Bituminous—Consumers of steam or domestic are maintaining their attitude of aloofness, apparently not yet having become impressed with the fact that it would be easier to fill their requirements now, than it is likely to be later in the year.

Wholesalers and jobbers are doing very little business. There is a large proportion of the users of steam coal who seem to be deriving their present supply from storage piles. Some of the jobbers indicate there is a very slight improvement in demand.

Jobbers are now quoting West Virginia lump at $3.50, 3-in. lump $3, mine run $2.50; nut, pea and slack $2. Ohio 3-in. lump is $3.25, ¾-in. $3, mine run $2.25, nut and slack $1.90. Smokeless lump and egg is offered at $5.50, mine run $3.50, nut and slack $2.25.

Anthracite—Demand is very sluggish, consumers evidently hoping that by delay they will be able to purchase more cheaply. Retailers are quoting egg $14.25@$14.50, and stove and chestnut $14.50@$14.75.

ST. LOUIS

Domestic Situation Improves — Steam Prospects Are Not Good — Country Business Unusually Slow and Railroad Tonnage Light.

There has been considerable activity the past week in domestic circles, especially for the better classes of coal. Nearly all of this is for prompt delivery and if the users of the other grades would begin buying like the Carterville users are, everything would indicate an easy situation next fall.

Mt. Olive orders are coming in fairly well but are not in the volume that they should be. The Standard situation is a bad one. A few storage sales are being made at $4.50@$4.75, whereas the regular retail domestic price is $5.50. The steam situation is extremely bad. Very few plants are going and they are using a light tonnage. There is no demand at all from the country districts. Locally screenings are selling for $1.50 from the Standard field and lump is as low as $1.85.

The St. Louis public school bids were opened recently and the lowest bidder was the Boehmer Coal Co. with Standard coal at $4.37½. This calls for 35,000 tons, 25,000 of which are to be put in in June and July. Another big piece of business expected to be closed is 75,000 tons of Standard screenings for the Laclede Gas Light Co. This is expected to go at a price of about $2.10.

COLUMBUS

Buying Still Restricted to Present Needs — Slack Is Becoming Heavy — Contracting Sluggish.

The trade is in statu quo as far as prices and output goes. Little improvement is looked for until the Lake season is under full swing and until small sizes are purchased more freely.

Although few contracts for Lake tonnage have been closed, producers are in receipt of many inquiries, but the uncertainty of the screenings situation is holding up agreements. At present there is very little demand for slack. Until some provisions are made for taking care of the slack, few Lake contracts are expected.

Steam trade continues slow in every locality. Following a slight spurt in the demand for steam sizes in the Michigan market, that section is again quiet. More activity is shown in the industrial centers of Ohio, however. Prices on steam grades show no improvement, and if anything, they are lower than the previous week.

The best customers at present are public utilities. Railroads are also taking some tonnage but this does not improve the market to any degree. Production is around 20 per cent of capacity in the various fields.

An effort to secure early buying on the part of householders has not helped to any extent. Retail stocks are sufficient for present needs and there is no disposition to increase them. Retail prices are stable at previous levels. Some anthracite and Pocahontas is being stored by householders.

South

BIRMINGHAM

Steam Trade Extremely Quiet—Good Grade Domestic in Fair Demand, but Supply Is Short—Prices Without Material Change.

The Birmingham coal market has been dull and practically lifeless the past week, so far as inquiry for steam fuel goes, there having been comparatively little business offered. Such orders as were booked were for a few cars to meet immediate needs, there being no disposition to provide for requirements very far ahead. Quotations are as follows:

	Lump	Mine Run	Washed
Pratt	.....	$3.35	.....
Carbon Hill	$3.60@3.85	3.15	$3.35
Big Seam	.....	2.85@3.10	3.20@3.25
Black Creek	4.60@5.15	3.75	4.25
Cahaba	.....	3.75	4.00
Corona	.....	3.35	4.00

While there is a fair demand for Cahaba and Black Creek and other good grades of domestic, much more of this business could be secured if the coal were being produced or there were any definite ideas as to when increased output would be available. As long as the steam trade remains stagnant the domestic supply will be sharply restricted.

LOUISVILLE

More Interest Being Shown — Production of Prepared Sizes Increasing — Screenings Are Weaker.

One of the chief drawbacks to more active business is a belief by many consumers that lower freight rates will be made effective if they hold out. There is more inquiry for contract prices. Reduction in Lake freights resulted in movement becoming far more active and many Hazard mines are now operating at about capacity, while production throughout southeastern Kentucky is up to 45 or 50 per cent.

The movement of prepared sizes to the Lakes is resulting in weaker screenings prices, but is not affecting mine run to any extent. Although general quotations show higher prices, there have been some good grades of southeastern Kentucky coal, including Harlan gas, quoted as low as $2 for mine run, although right now the average spot quotations are closer to $2.50. Movement is now better, and not much distress coal is being offered.

Quotations show mine run at prices ranging $2.35@$2.60. Screenings are weaker, $1.50@$2. Block coal is fairly steady, $3.50@$4.

Southwest

KANSAS CITY

Prices Firm — Demand Increases — Oil Competition Is Strong.

Operators report more orders being received at the present time than for several months and it looks like the upward turn has come. The press has spread the information that there is no prospect of immediate reduction in freight rates and in the event any change is made it will not be in time to care for this season's business.

Oil competition in the Southwest has driven coal out of a great deal of Texas, Arkansas, and southern Kansas territory. When fuel oil wants a market coal has to take a back seat, as it is impossible to meet oil competition under such conditions.

Arkansas smokeless lump for May shipment is $6.25, mine run $4.50, slack $3.50; Kansas lump and nut $5, mine run $4.25@$4.50, mill $4, slack $3.75; north Missouri lump $4.50, mine run $4, washed slack $4.05.

West

DENVER

Production Increases — Wyoming Coal Brought In to Compete with Colorado Price Cutting.

Output is increasing each week, in the face of the fact that some Denver retailers are getting a semi-bituminous coal from the Rock Springs and Hanna fields in southern Wyoming, something that is resorted to only as a means of saving the gross margin at the retail end.

Wyoming coal is cheaper by at least 50c., and while the freight is a little more in some instances there is a larger gross margin than can be realized from the Colorado coal producing company prices. The shipping of coal from Wyoming to Denver follows the effort of one of the Colorado producers to hold the mine price to $5.50 and to retail coal through its own department at $10.50—at least $1 less than other retailers hoped to get.

Production for the week ended April 23 was 155,000 tons of a possible full-time output of 261,000 tons. April, however, is believed to show a better tonnage for the month than March, when 617,549 tons were mined as against 1,072,068 tons in March, 1920.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Good Domestic Demand — Production Increases—Bills Passed May Seriously Affect Industry.

There is practically no change in the number of mines working. Among the larger companies the demand for coal is almost normal. Were it not for the fact that independents cannot meet the company schedules they would almost be working at capacity.

The Pennsylvania Legislature has passed the mine cave bill and the anthracite tax bill. If the Governor approves these bills it will mean an increase in the price of prepared sizes to the extent of 2½ per cent. If the mine cave bill is approved it is intimated that a number of companies particularly in the upper field will cease operations, as the cost of production will be too great. Of course any predictions on this score are problematical.

PITTSBURGH

Some Lake Coal Moving Since Freight Rate Reduction — Byproduct Coal Heavy — Prices Slump with Quiet Market.

The 28c. reduction in rail freight on Lake cargo coal caused a slight increase in mine operations, but there has been so little disposition to buy Lake coal, and there is so little vessel tonnage available, that not much can be done. The district expects, however, to secure its former share of the total Lake business, now that the adjustment has been made.

The prompt market continues quiet, while there is practically no contract market. Sales of prompt steam coal at under $2 are even more frequent than formerly and must be recognized as making the market price in part, while quotations above $2.25 are simply nominal asking prices. Gas coal continues at a margin over steam, but the margin is reduced. Byproduct as such is almost going begging, as there is scarcely any demand. The recent sale of a high grade of Connellsville byproduct to a furnace and byproduct interest at Canton, Ohio, was at $2.50, the buyer having the option of stopping the arrangement at any time. Some other Connellsville byproduct coal has been offered at under $2.

Operations continue to average under 40 per cent of rated capacity, and with no immediate prospect of any improvement. We quote spot coal at $1.90@$2.25 for steam mine run, $2.25@$2.50 for gas mine run and $2.50@$2.75 for high grade screened gas.

CONNELLSVILLE

No Means of Stimulating Production—Most Operations Idle—Frick Interests Will Also Reduce Wages.

With production at a low ebb, demand light and producers in no position to do anything that would improve the situation, the coke trade continues uneventful. Price is not a consideration at all, since consumption would not be materially increased if coke were offered free of charge. There are only two ways of reducing the cost of production by any considerable amount. One is to reduce wages, and that has already been done, to the extent of about 30 per cent. The other is to have a full operation, and this is impossible.

The iron and steel industry has the lightest operation, in point of tonnage, since 1908, and the lightest operation, in percentage of capacity, in all history. Only about 18 per cent of the merchant furnace capacity of the country is in operation.

The Portsmouth, Ohio, furnace, which recently bought 500 tons of furnace coke a day for five weeks at $3.50 has made a fresh purchase from the same producer for a 30 or 60-day supply, at the reported price of $3.40.

One or two operators who were quoting foundry coke at above $5.50, making their price practically nominal, have reduced to $5.50, while one has reduced to $5.25. The ordinary grade remains at $5. We quote spot and prompt furnace coke at about $3.50 and spot foundry $5@$5.50.

The *Courier* reports production in the week ended April 30 at 26,050 tons by the furnace ovens and 22,660 tons by the merchant ovens, a total of 48,710 tons, a decrease of 2,870 tons.

At this writing the H. C. Frick Coke Co. has not posted notices of a new wage scale, but it is assumed that wages will be reduced by something like the amount of the April 1 reduction by the independents, since the Steel corporation has announced that it will reduce wages generally, effective May 16.

UNIONTOWN

Wage Cut Coming—Consumers Sounding the Future Market.

As yet no definite information is available as to the specific effect of the United States Steel Corporation's wage reduction upon the employees of the H. C. Frick Co. However, all indications show that the wage scale of these employees will revert back approximately to the scale in effect Dec. 1, 1919, a 20 per cent reduction.

Independent operators are now using the scale of Nov. 10, 1917. The scale which the Frick company will in all probability put into effect in the immediate future pays the miner 37c. more per hundred bushels of coal mined than the scale now being used by the independents, who pay $2.29 per hundred bushels.

Tightening of production has created a somewhat apprehensive attitude on the part of coal buyers. A few weeks ago steady consumers were content to supply their immediate needs from the spot market but now they are sending out feelers upon the basis of one and two months delivery. The development is an indication that consumers are looking forward to the time when their stocks will be depleted and are feeling out the market to replenish them.

There has been no noticeable change in coal quotations. Some byproduct tonnage has sold as low as $2. Foundry coke is quoted $4.50&$5 with some tonnage moving. Some operators are willing to quote a price of $3.75@$4 for standard coke.

The coal market is nearer the point of inactivity at this time than it has been during any period of readjustment. The consumer, apparently, is unable to entertain any price views above those that the market is quoting and the operator does not seem inclined to get the tonnage out at that price.

CENTRAL PENNSYLVANIA

Production Decreasing to Danger Mark —Wage Reductions Quietly Accepted.

Reports for the month of April show a decrease in production from March. Figures show a total of 48,015 cars with a total of 2,656,514 tons. The March figures were 56,800 cars with 3,152,400 tons. The average operation of the mines was from one to three days a week. According to reports filed in Altoona, 30 per cent of the operators in the district have reduced wages to the 1917 scale of $1.01 for pick mining and $5 per day. In making this reduction, none of the mines experienced any trouble.

It is predicted that two more months at the present rate of output will create a fuel famine this fall. There are many inquiries regarding contracts but this business is light. There is a slight increase in demand for bunker coal which is attributed to the strike in Great Britain.

Prices prevailing are: Pool 1, $3.50 @$4; Pool 9, $2.75@$3; Pool 10, $2.60 @$2.75; Pool 11, $2.25@$2.40; Pool 14, etc., $2@$2.10.

EASTERN OHIO

Production Stimulated by Lakes Trade —R.R. Contracting — Lake Demurrage Tariffs Restored.

Output during the week ended April 30 was greater than that for any week since the middle of January. Tonnage produced amounted to 322,000 tons, an increase of 47,000 tons over the preceding week and 51 per cent of potential capacity. Railroad fuel loading continues at a minimum of about 35 per cent of production. The spurt was due principally to Lake coal and also to some improvement in spot demand from manufacturing concerns.

Association mines worked 40 per cent of possible work time, as compared with 35 per cent the preceding week, and production for the week averaged over 50 per cent of the rated capacity. A 15 per cent car shortage existed on the W. & L. E. because of a large amount of Lake coal being held under load both at dock terminals and along the line. There are now 12,500 cars under load at the ports, awaiting dumping, and 2,000 cars in transit.

Demurrage tariffs, the operation of which were suspended on Lake cargo coal to stimulate early shipments, were restored May 1, and after the usual five-day free time period demurrage charges now accrue. It is expected that dock clearances will be speeded up on this account.

While market conditions continue rather sluggish there has been considerable contracting during the week on the part of Ohio railroads and the price at which contracts have been closed is said to have been shaded slightly under $3. The range of spot prices remains firm as quoted last week.

Dealers say that there is no inclination to buy and store on the part of householders, notwithstanding reports that a shortage of screened sizes is anticipated before many weeks.

UPPER POTOMAC

Production Still Light—No Demand— Operators Favor Future Spot Market.

No change was observed in conditions as April came to a close, mines either being operated very irregularly or else being shut down entirely. This was particularly true as to mines along the Western Maryland.

Producers are showing no inclination to rush into contracts, even where having an opportunity to do so, preferring to await a revival of demand. There was so little call for coal that in some instances it could be secured at almost any price.

FAIRMONT AND PANHANDLE

Production Again Slumps — Prices Weak — Lake Shipments Await New Rates — Contracting Is Sluggish.

Fairmont

Recent increased production has proven a mere flash in the pan and conditions are again very unsatisfactory. With demand still dormant, prices are on the same level as during preceding weeks. The number of mines in idleness average about 250 a day.

Tidewater shipments are very irregular. Few contracts are being placed by railroads as these companies are instead making agreements in the Connellsville region at prices ranging $2.50 @$2.75.

Northern Panhandle

Progress toward more normal conditions was stopped as April came to a close. With the exception of a few mines producing a small volume on contract most of the operations are shut down. There are no longer any shipments to the Lakes, operators desiring to wait for the date the readjusted Lake freights go in before resuming.

Middle Appalachian

HIGH-VOLATILE FIELDS

Sluggish Market Continues — Production Gains in Logan and Thacker— Lake Loading Is Light.

Kanawha

Production dropped during the week ended April 30, and demand was virtually at a standstill. A small volume was going to Tide but no tonnage was being shipped to the Lakes. If anything, less coal was being shipped on contract than usual and no new agreements were signed.

Logan and Thacker

Logan production increased to about 30,000 tons daily. However, only a small proportion of the output was actually sold, the remainder being stored, as was the case during preceding weeks. The C. & O. was moving a good tonnage to Lake points, where it is being held for future sales.

Further gains in production were recorded in the Thacker field, Williamson output being increased to 88,000 tons. "No market" losses showed a material reduction, being cut down to 100,001 tons for the week ended April 30, indicating that new business was developing.

Northeastern Kentucky

Neither demand nor prices were conducive to a large production in the last week of April. Even in the most exceptional cases mines were not operating more than two days and production reached only 53,000 tons or 25 per cent of potential capacity.

Virginia

Conditions remained virtually unchanged during the last week of the month. There was no new business of any kind to stimulate production and not more than 50 per cent of potential capacity was mined. Price was no inducement to buyers and consequently the spot market was inactive.

LOW-VOLATILE FIELDS

Demand Increases—Tidewater Business Grows — Slack Coal Sluggish — Contracting More Active.

New River and the Gulf

With demand increasing there was a most decided upturn in New River production for the week ended April 30. The additional demand was confined largely to Tidewater and the South. Western shipments of prepared sizes were also slightly increased. Some producers were sacrificing slack and this break had some influence on the price for prepared sizes. Egg and lump were therefore quoted under $5.

Production in the Winding Gulf increased to 50 or 60 per cent of potential capacity. However, the dumpings at Sewalls Point for April were not any larger than for the month of March.

The Virginian Ry. had a large accumulation of loads. Indications are that the dumping of coal at the piers will be rapidly increased. The price for Inland contracts remained about $3.50, with spot coal at the piers running $6.

Pocahontas and Tug River

Pocahontas production was still below 50 per cent of normal, with mines working less than half the week. There was less Tidewater coal in evidence, and as a result seaboard demand was growing. It is estimated that between 40 and 50 per cent of the average production is now under contract. The spot market was dull. An accumulation of slack has lowered the price for this grade, as in other smokeless fields.

Middle Western

MIDWEST REVIEW

Production Increases with Better Domestic Market — Industrial Situation Unchanged and Steam Becomes Heavy — Timely Warnings of Impending Shortage.

Mines in Illinois and Indiana are now enjoying better running time than they have experienced for some time. A number of railroad contracts have been let and this, together with a renewed interest on the part of the buying public, has lead to steadier working time at most of our mines. It is said that the retailers in Michigan, Indiana and eastern Illinois are purchasing coal in greater volume than heretofore, in fact, some operators claim that business on domestic sizes at this time is just about normal as compared with other years. The situation in the West, however, is not so good. The rural population of western Illinois, Iowa, Minnesota and the two Dakotas is still holding back and only purchasing enough coal to last from day to day. The situation is especially aggravating so far as the two Dakotas are concerned. The explanation is that the population of the western districts of the Middle West is much more agricultural than the population of the eastern half, and as all farm products have been affected by reason of the depression, these experts claim that it is only natural that this depression should be reflected by the trade.

The question of railroad coal is occupying the center of the stage in the Middle West coal market. The railroads are however, not united on their policy for purchasing coal. Some of the biggest roads have placed contracts or are about to do so, whereas other roads, just as important and prominent, claim they are planning on purchasing their coal on the open market, and will place no contracts until such time as mine labor is reduced. The policy of the roads which are purchasing on the open market is considered to be a fairly dangerous one, as the best brains in the coal industry in the Middle West all believe there will be a scarcity of cars a little later.

C. H. Markham, president of the Illinois Central, issued a statement broadcast, urging retailers, manufacturers and public utilities to buy their coal as soon as possible and have it on hand before the fall season. The principal argument used in this statement was that there was a very decided probability of a car shortage. This publicity work has met with very widespread approval from the coal men, as Mr. Markham has brought several facts to the attention of the public, which would have been looked upon askance had they been set forth by the coal operators. The ancient prejudice against those engaged in producing coal still exists.

The current market on steam coal is poor, in fact, the demand today is about as bad as it has been at any time since Jan. 1. Whether it is because the industrial situation remains practically unchanged, or whether it is because more steam coal is being produced on account of the better demand for domestic sizes, remains an open question. It is very easy to get advocates for both sides of the question. Many operators claim they fail to see any improvement whatsoever in industrial conditions, as some say that the situation is more unsatisfactory today than it has been since the break. Others claim they see signs of improvement all over the country and that from now on conditions will mend rapidly.

WESTERN KENTUCKY

Business Improving and Outlook Better —Lake Movement from Other Fields to Help.

Producers say that the outlook is improving. There is a slightly better demand for prepared sizes as some retailers are beginning to stock and some big industrial concerns are now figuring on contracts. Some buyers are still out of the market, only interesting themselves when distress coal can be secured.

A number of railroads are contemplating buying. The Illinois Central, in sounding a warning of an impending coal shortage and urging early buying, would indicate that it will start purchasing early, which may result in orders from several of the Harriman group roads.

Movement to the Lakes from other fields is now getting into fairly active swing, which is resulting in some districts not having much coal for the open market. This is causing better inquiries for western Kentucky fuels from the Chicago and other Northern districts. So far Southern business has been poor.

Louisville business for the western Kentucky operators is being affected somewhat by heavier movement of river coal at lower freight rates from West Virginia.

Right now there is a much better movement from L. & N. mines than from the Illinois Central operations, but this may switch somewhat, with Northern business improving. Spot quotations are shown in the Weekly Review.

SOUTHERN ILLINOIS

Domestic Market Increases — Shortage Seen as Steam Sizes Accumulate — Standard Field Conditions Are Poor.

There is considerable activity in Williamson and Franklin counties, as far as lump and egg are concerned, and there is some anxiety as to what is going to become of nut and screenings. For the first time in many weeks some few mines worked full time and others are getting as much as 4 and 5 days. On the other hand, several mines are idle because they cannot move steam sizes. The demand for domestic is growing faster than for steam and it is only a matter of time until the shortage on domestic sizes is going to become so great that the operators will have to stop taking orders.

Railroad tonnage is light, everything considered, whereas it should be moving well at this time. Independent prices are as low as $3.25 on lump and egg, most of them charging as high as $3.50, with nut as low as $3, mine run $2.75 and screenings $2.

In the Duquoin field somewhat similar conditions exist and the same prices prevail as with the independents in the Carterville field. Working time shows some improvement over last week, but some mines have not resumed operations as yet and steam sizes are slow. Some little railroad tonnage is moving. The Mt. Olive district shows considerable improvement in domestic coal. This was noticeable in the St. Louis market, as well as the Northwest and the North. The St. Louis price on domestic sizes is $3; on outside shipments, $3.25. Screenings are moving slowly, but are being sold to operators having washeries, the washed product going to the Northern market.

In the Standard district there is no improvement to speak of. The steam situation has everything blocked off. Screenings are selling for $1.50, lump or mine run as low as $1.90, and nut and egg $1.90@$2. The general average, however, is about 25c. per ton higher than this.

West

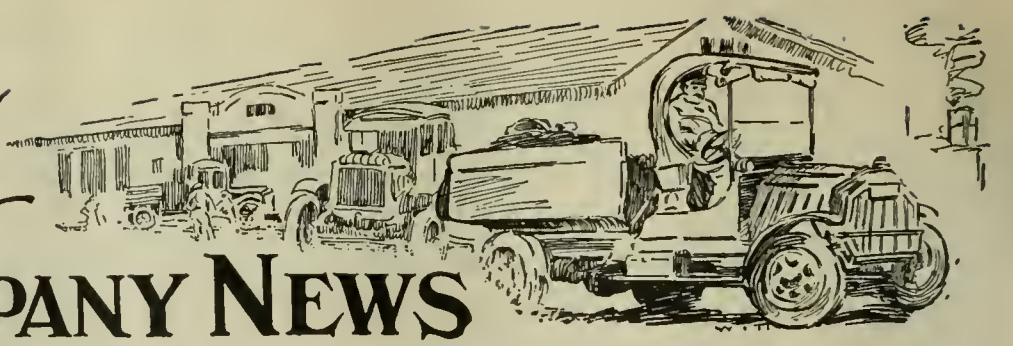
UTAH

All Markets Inactive — Production at Low Ebb—Prices Unchanged.

The coal business here seems to have had the bottom knocked out of it. "Rotten!" or "There is none!" is the reply of some of the leading producing companies when asked how business is. The storms and rather chilly weather of late have helped the retail business some, but there is nothing substantial in the way of improvement at this end.

Consumers cannot believe that prices will remain where they are much longer and everyone is buying from hand to mouth. In the opinion of some of the producers, it will be July before business picks up, others are looking for it to come in June. The coast trade as well as the local trade is quiet.

MINE And COMPANY NEWS



ALABAMA

James Bowron, president of the **Gulf States Steel Co.**, recently retired from this position and was elected chairman of the board. Mr. Bowron became associated with the Southern Iron & Steel Co. in 1910 and assisted in the reorganization of the properties under the name of the Gulf States Steel Co. The company has steel mills and furnaces in Gadsden and coal and ore mines in Jefferson and adjoining counties, consuming the major portion of its mineral output at its own plants. Chas. A. Moffett, now vice-president and general manager of the corporation, was elected to the presidency and also will continue to serve in directing the management of the physical properties.

ILLINOIS

The Peerless Coal Co., of Chicago, operating a large colliery near Springfield, has recently installed a new re-screening plant. Included in the equipment is a 30 x 12 in. double strand flight conveyor, 90-ft. centers, which travels at the rate of 100 ft. per minute. The structure is also equipped with picking-tables and the three steel bins have a capacity of 200 tons. A device which was worked out by F. J. Devlin, superintendent of the plant, consists of a rope attached to the switch which controls the motor, and the rope is so arranged to be accessible from all the walkways and platforms throughout the plant so in case of danger or accident the plant could be shut down instantly from any point in the building.

The mine of the **Carbondale Coal Co.**, at Carbondale, has been purchased by **Robert Forsyth**, a coal operator of Marissa, who is well known in the district.

The Wallace Coal Co. of St. Louis has been appointed sales agent for Kathleen coal by the **Union Colliery Co.** for Illinois, south of Mattoon and west from Champaign to Clinton, Pekin to the Mississippi River, for Missouri the territory south of Hannibal to Chillicothe, to Carrollton, Marshall, Sedalia, Clinton and west, also for all southern states on both sides of the river.

INDIANA

The name of the **Ferguson-Spears Coal Co.** was officially changed to the Ferguson Coal Co. in the Circuit Court, at Terre Haute recently.

The Rowland-Powers Collieries Co., of Terre Haute, is opening up a new field north of Linton, where 500 acres of coal land have been acquired. A large portion of the land will be stripped to the No. 4 vein. A force of men is at work building a switch from the Southeastern R.R., at a point near the North Linton mine switch to the new mine, a distance of one mile.

A $10,000 damage suit against the **McClelland Coal Co.** was filed in Superior Court No. 2, at Terre Haute, recently, by John M. Wilson. Wilson was an employe of the Shourds-Stoner Co., who had been employed to do some engineering work for the coal company. While in the mine Wilson was overcome by bad air and poisonous gas, the allegation being made that his lungs and entire breathing system were poisoned and permanently injured.

KENTUCKY

The Kosmos Portland Cement Co., Louisville, operating a large cement mill at Kosmodale, 15 miles from Louisville, has recently filed amended articles of incorporation, reducing the capital from $1,500,000 to $925,000, and changing the charter to permit the company to deal in salt and coal.

F. B. S. Coal Co., of Island, capital $250,000, has been chartered by I. Fruhlinger, of Portage, Pa., George C. Buzski, Island, and Michael Silagi, Gary, W. Va.

The R. C. Tway Coal Co., producer and jobber of Louisville, which also operates the **James Coal Co.**, as a retail organization, is using some very good advertising, in which it states: "Idle coal cars by the thousands fill the railroad sidings. Now they should be moving the winter coal supply to the markets. Later thousands of consumers, rushing in with their orders, will face disappointment."

Work has been started on a coal byproduct plant five miles east of Somerset by the **Kentucky Coal & Electro Chemical Co.**, a New York syndicate, which owns a large coal acreage that it has been working for some time. A pike will be built from Somerset to the plant and the output will be hauled to the railroad in huge trucks.

The Stephens Branch Coal Co., Prestonburg, capital $50,000, has been chartered by S. C. Ferguson, E. Ferguson and Cal Clark.

The Elkhorn Coal & Timber Co., Elkhorn, capital $5,000, has been chartered by K. B. Elswick, P. M. Elswick and T. L. Hughes.

The Black Blue Gem Coal Co., Gatliff, capital $2,000, has been chartered by T. H. Black, C. D. Clark, Jr., and G. M. Castle.

MICHIGAN

Word has been received that **Mine Rescue Car No. 10** of the United States Bureau of Mines will visit the mines of Upper Michigan this month, and will remain in that section until July 29. R. V. Ageton, car engineer, has arranged an itinerary which will bring the car to the larger mines for demonstration.

OHIO

For the third consecutive year, the Columbus Board of Education has awarded the contract for furnishing approximately 10,000 tons of lump to the **Colonial Coal & Supply Co.**, Columbus. The price was $5.19 per ton delivered at the various buildings. The work of delivering the coal will be started at once.

The Columbus office of the **Pittsburgh Coal Co.**, announces that it drilled in a 50-barrel oil well on its property near Murray City. The company is arranging to drill other oil wells on its property in that section.

Papers have been filed with the secretary of state increasing the authorized capital of the **Elmer Miller Coal Co.**, from $50,000 to $100,000.

The capital of the **Cub Mountain Coal & Coke Co.**, has been increased from $25,000 to $140,000 by papers filed with the secretary of state. H. W. McGinnis is president and L. L. Bechwats, secretary.

The authorized capital of the **Bethesda Coal Co.**, has been increased from $50,000 to $100,000. A. C. Peters is president and George C. Saarosy, secretary.

OKLAHOMA

The Kincaid-Corrigan Coal Co., which more than a year ago sunk a shaft one mile and a half from railroad accommodations, have built a motor haulage tramway road from the mines to the Frisco railroad, and are running their own coal train from the underground track direct to their tipple on the Frisco track. This tramway in a coal field is a new innovation that is attracting much attention among the operators having coal lands at a distance off steam railway connections and is looked upon as one more advance for greater development of the Henryetta-Dewar field.

The Wadsworth Coal Co. is making extensive improvements in the No. 2 mine, which will shortly be fully equipped with motor haulage, and additional car equipment.

One of the largest veins of coal yet found in the Okmulgee field has just been uncovered in the new mine of the **B. & A. Mining Co.**, just west of the townsite of Schulter. The Frisco R.R. is now laying a new track more than a mile long to reach the mine and to serve two other mines which are to be opened up in the Schulter district. The B. & A. Co. will install electrically operated mining machinery and expects to have an output of several hundred tons of coal daily by next fall.

The Pittsburgh Coal Mining Co., with general offices in Kansas City, has just completed extensive improvements at its Mine No. 12 near Henryetta. The improvements cost in excess of $60,000 and include a modern tipple and electrical hoists and other coal handling facilities.

The Warden-Pullen Coal Co. will open an entirely new shaft on additional acreage recently secured.

PENNSYLVANIA

Property, valued at more than $1,000,000, is involved in a suit instituted by the **Pennsylvania R.R.**, the **Mountain Water Supply Co.**, and the **Dunbar Water Supply Co.** against twenty-eight coal companies and forty-six individuals having mining operations in the Indian Creek Valley. It is alleged that discharges from the mines, principally of sulphur, render the water of Indian Creek unfit for use. The Pennsylvania has a large reservoir in the district, as do the other plaintiffs.

Indications are that a record will be established in sinking the two shafts for the new coal operation of the **Northwestern Mining & Exchange Co.**, at Cramer which began recently. The plant will be electrically equipped and modern in every respect. The daily output will be equal to the largest operations in this section and will give employment to several hundred men. A large town will be built by the company and all will be located within ten miles of DuBois.

A Pennsylvania charter has been applied for by **M. B. Cortright & Co.**, wholesale bituminous operators, Franklin Bank Building. M. B. Cortright will be the president of the incorporated company.

J. W. and R. W. Campbell have associated themselves in business under the firm title of **Campbell Coal & Coke Co.** They have taken a suite of offices at 922-24 Real Estate Trust Building, Philadelphia.

The Dealers and Consumers Coal Co. has recently been organized. W. F. Dodge, for many years consulting engineer has been elected president. Offices are at Wilkes-Barre for the present. The operation will be in Schuylkill County, near Tuscarora, where the company has purchased 220 acres of coal land. It will at once begin the erection of a modern breaker and will sink a slope.

TEXAS

The Smithville Lignite Coal Co. has been organized at Smithville for the purpose of developing extensive leases of lignite lands in that part of the state. The company is capitalized at $20,000 and the incorporators are R. D. Kercheval, A. J. Overton and Emil Buescher.

The Big Lump Coal Co. has been organized at Rockdale, with a capital stock of $25,000. The incorporators are: M. C. Meyer, E. B. Phillips and C. K. Stripling. This company will mine lignite in the Rockdale fields.

UTAH

The Salina Canyon Coal Co. with a capital of $10,000 has just filed articles of incorporation. The incorporators are J. G. Ryan, R. M. Leham, B. Kenner, B. E. Matsson and L. E. Cluff. The company will open a mine about 16 miles up the Salina Canyon.

The Utah States Securities Commission has granted the **Mutual Coal Co.** permission to sell 25,000 shares of stock at $10 per share for the first 10,000 shares, $12.50 for the second block of 5,000 and $15 for the remainder for which application had been made a long time since. This gives the gross receipts from the sale of stock as $312,500 and the net receipts after deducting the 15 per cent com. allowed, as $265,625. The application was hotly con-

tested on the ground that the company, which is trying to sell coal at "cost," was insolvent and could not open and operate a mine on the money asked.

VIRGINIA

A special meeting of stockholders of the **Southern Coal & Iron Corp.** has been called for May 21 at Roanoke to act upon the proposed amendment to the company's charter authorizing an increase of its capital stock from 300,000 to 500,000 shares.

WEST VIRGINIA

Plans have been completed by the **Consolidation Coal Co.** for the erection of a new tipple at what is now known as Mine No 63 at Monongah. The tipple will be of most modern type, and equipped with shaker screen and all other equipment necessary to the preparation of coal.

The Soper-Mitchell Coal Co., which has several mines in the Scott's Run section of Monongalia County, is preparing to resume operations at its various plants within the very near future, giving employment to about 500 miners.

Following the organization of the **McCreery Central Pocahontas Coal Land Co.**, Beckley, capitalized at $500,000, this being a holding company, acreage owned by the company, aggregating about 15,000 acres in all, will be leased to operating companies for development purposes, contingent upon railroad development.

The Raleigh Coal & Coke Co., with principal operations in Raleigh County, is making preparations to put in another plant on Piney. The company has under present conditions a production of 600,000 tons per year and expects to be able to increase this production through the new plant to three quarters of a million tons in all. John M. Wright, of Cincinnati, is the president of the company and Ernest Chilson is the general manager.

C. M. Lilly and associates, who are identified with coal development of Raleigh County, have organized the **Pack's Branch Coal Co.** to develop coal lands on Pack's Branch in the Raleigh field. This company has a capitalization of $100,000, its headquarters being at Beckley. Leading figures in the new concern, in addition to Mr. Lilly, are: H. Stansbury, C. L. Calloway, Fred Stansbury and W. J. Penders, of Beckley.

Many of the mines in the Winding Gulf region are undergoing repairs as if in preparation for an unusually good season. At a great many plants new equipment is being placed and provision is being made for the employment of more miners by the construction of additional dwellings for miners. The dull season of the last few months has afforded many operators an opportunity to put their mines in shape for long and steady runs. Finishing touches are being put on the new plant of the **Pemberton Coal & Coke Co.**, at Phillips. This company is making preparations to build another plant on Laurel Fork. As indicating the use of more miners, the **Gulf Smokeless Coal Co.**, the **Gulf Coal Co.**, the **Wyoming Coal Co.** and the **Morris Smokeless Coal Co.** are all building additional houses at their several plants. All of the above named companies are in the Tams group, of which W. P. Tams, Jr., is president. **The Winding Gulf Colliery Co.**, with a plant at Winding Gulf, contemplates the erection of additional houses at its scene of operations.

Work has been started on the new operation in which C. E. Hutchinson of the **Hutchinson Coal Co.**, of this city and others are interested, in Costa Rica, this being known as the San Jose operation. At the present time the headings are being driven but machinery has not been secured and installed. However the company expects to be in a position to begin production before long. **The Dodge Coal Co.** has been organized with a view to operating in Harrison County. This company is capitalized at $50,000. General offices of the company for the time being are to be in Clarksburg. Largely interested are: L. W. Garrett, F. K. McClure, Clara M. McClure, J. W. Barnard, D. Bruce Mason, all of Clarksburg, W. Va.

NOVA SCOTIA

The Dominion Coal Co. has commenced shipping coal to Montreal, the first consignments having already been received. The St. Lawrence market was lost to Nova Scotia coal, partly owing to the profitable market for bunkering on the Atlantic coast, and partly through the high freights and scarcity of shipping for the trade. These conditions have changed with the return of the company's ships by the government and the general scaling down of freight charges. The Dominion Coal Co. proposes to ship about 1,000,000 tons of Montreal this season, and has already made contracts with a large number of manufactures. The pre-war consumption of Dominion coal in the Montreal district was about 1,800,000 tons annually, but owing to the slackness of industrial conditions the demand will be much lighter this year.

Traffic News

In the case of the **Alabama Co. the I. C. C.** has received an examiner's report recommending that the rates during federal control on coal and coke from and to certain points in Alabama were not unreasonable.

In the case of the **West Kentucky Coal Bureau** an examiner recommends that the rates on bituminous coal from mines in western Kentucky on the Illinois Central and Kentucky Midland railroads to points in the southern peninsula of Michigan are not unreasonable but are prejudicial to operators in western Kentucky and preferential to operators on the Illinois Central in the southern Illinois group, to the extent that they exceed on a joint basis by more than 25c. a ton the rates from mines on the Illinois Central in the southern Illinois group to the same destinations.

Theodore A. Leber of Port Reading, N. J., complains against unreasonable rates on anthracite coal from St. Clair, Pa., to Port Reading.

The Perry County Coal Corporation of St. Louis complains against unreasonable rates on coal from its mines in Illinois to points in the St. Louis and East St. Louis districts.

The Hood Coal Co., of Shinnstown, W. Va., complains against unreasonable rates on bituminous coal from mines in West Virginia on the Monongahela Valley Traction Co. to destinations in Maryland, Delaware, New Jersey, New York, Pennsylvania and other States by reason of the absence of joint through rates applicable from competing mines on the B. and O. and Western Maryland railroads.

In the complaint of the **Harlan County Coal Operators' Association**, the commission decides that the rates on bituminous coal from mines in groups 1, 3 and 4 on the L. & N. in Kentucky to Toledo for transshipment by Lake are not unreasonable.

The recent decision of the commission to reduce rates for Lake shipments from all Ohio fields is expected to stimulate the lake trade. The former rate was $1.83. Under the new rate this will be $1.55. From the inner crescent of West Virginia the former rates were $2.11 which goes to $1.83 while the rate from the outer crescent was $2.26 and is reduced to $1.98.

The Hewitt-Wilcox Coal Co. and others of Auburn, N. Y., have complained to the I. C. C. against unreasonable rates on anthracite coal from points of origin in Pennsylvania to New York destinations, and request reasonable rates.

The I. C. C. has authorized the Coal Trade Bureau of Illinois to intervene in the complaint of the **Central Illinois Light Co.** and the **Sharon Coal Co.**, involving rates on soft coal from mines in Illinois to Peoria.

Freight rates per net ton from the mines to Chicago, exclusive of War Tax, are as follows:

Southern Illinois (Franklin, Saline and Williamson Counties), $2.17.
Central Illinois (Springfield District), $1.72½.
Central Indiana (Clinton Field), $1.78.
Southern Central Indiana (Knox County), $1.92.
Southern Indiana, $2.01½.
Hocking (Ohio) District, $3.18.
Eastern Kentucy, $3.43 to $3.94.
West Virginia, Smokeless Field, $3.58.
Pennsylvania, Anthracite, $5.62.

Personals

V. H. Campbell, vice-president of the Kentenia Coal Co., of New York, was in Norfolk recently.

J. D. Wheeler, of the Hughes-Butterly Coal Co., Oklahoma, is making an extended trip among the eastern trade.

H. M. Rea, treasurer of the Southern Gem Coal Corporation of St. Louis, Mo., has been elected a director of the National City Bank of St. Louis, a new institution now being formed in that city.

S. L. Matz, president of the Matz Coal Co., whose plant is at Raven, W. Va., was in Cincinnati on business early in April.

W. H. Wright, president of the Raleigh Coal & Coke Co., whose plant is located at Raleigh, W. Va., has returned to his Cincinnati office after spending the greater part of the winter in Florida.

Edwin Ladlow, president, and **Bradley Stoughton**, secretary of the American Institute of Mining & Metallurgical Engineers, were in Seattle recently on a tour of the Pacific Coast.

W. P. Tams, Jr., president of the Gulf Smokeless Coal Co., the Gulf Coal Co., the Wyoming Coal Co., the Morris Smokeless Coal Co. and other companies in southern West Virginia, who has been sojourning in South America, London and China is reported as having started for home and is expected to reach his headquarters at Beckley about June 1.

Colonel James Elwood Jones, vice-president and general manager of the Pocahontas Fuel Co. and originator of the McDowell Dental Clinic idea, which is spreading throughout West Virginia, was a visitor in Charleston, W. Va., recently.

C. D. Cudworth, manager of anthracite sales for H. N. Hartwell & Son, Boston, visited Philadelphia houses recently in the interest of his company.

W. H. Clemmency, of Clemmency, Hammer & Co., has been visiting that concern's customers in the New England district during the past several weeks.

F. M. Heffelman has been made manager and treasurer of the Valley Camp Coal Co. of Canada, Ltd., with offices at Hamilton, Ont. Mr. Heffelman was formerly in the general office in Cleveland.

C. L. Straub has been named secretary of the Straub-Atkinson Coal & Coke Co., Pittsburg, the appointment being effective April 25. **A. A. Straub**, formerly of Connelsville, is general manager.

Charles A. Owen head of the Tidewater Coal Exchange, Inc. and president of the Imperial Coal Corporation, spent a few days recently in the vicinity of Johnstown on a mine supervision trip. Returning to New York, he was a passenger on the Pennsylvania train which was wrecked near Horse Shoe Bend.

W. C. Schroeder, of the Nason Coal Co., of Chicago and for eight years connected with the Rutledge & Taylor Coal Co., has resigned to accept the position as sales manager of the Union Colliery Co., of Chicago, with headquarters in St. Louis. In joining this company he succeeds **Harry A. Lawrence** who has been with the company for a number of years.

Dr. George Otis Smith, director of the Geological Survey, addressed the Indiana Retail Coal Merchants' Association at Indianapolis May 6, on "What the Coal Business Means to Us."

David White, chief geologist of the Geological Survey, addressed the mining department of the state college of Pennsylvania on April 29, on "The Deposition of Fossil Fuels."

J. D. Sears, C. P. Ross and a geological party representing the United States Geological Survey, will leave the middle of May to do coal classification work in the Gallup and Zuni basins of New Mexico.

F. A. Wyant, who has for the past four years been connected with the engineering department of the Hillman Coal & Coke Co. in different capacities, has been appointed engineer in charge of construction of the new Warwick Mine, the construction of which has just been started by the Diamond Coal & Coke Co., of Pittsburgh, a subsidiary of the Hillman Co. This mine is planned for an output of 1,500 tons daily.

George J. Patterson has been elected president and general manager of the Scranton & Lehigh Coal Co., of Brooklyn, to fill the vacancy caused by the death of Thomas V. Patterson, his brother. Mr. Patterson has been in the coal business a number of years, having been associated with his father, the late Thomas J. Patterson, and his brothers Stephen J. and Thomas V. Patterson.

Industrial News

Chicago, Ill.—The local office of the Uehling Instrument Co. of New York, manufacturers of fuel saving equipment, was moved May 1 to the Great Northern Building, 20 West Jackson Boulevard. Walter C. Lange has been appointed manager.

New York, N. Y.—The Ross Heater & Mfg. Co., Inc., of Buffalo, announces the opening of a branch office at 2 Rector Street.

New York, N. Y.—The Iron Trade Products Co. is now located at 1416, 30 Church St., being the Cortland Building of the Hudson Terminal, having removed from 1714, 30 Church St.

Pittsburgh, Pa.—The Keister-MacQuown Fuel Co. has moved its offices from the Century Building to the Union Arcade, larger quarters being necessary to take care of rapidly increasing business.

Philadelphia, Pa.—The Seaboard Fuel Corporation have removed to their new offices at 1610 Spruce St.

Association Activities

Western Kentucky Coal Operators' Association

E. W. Holt, Central City, was elected president of the association at the annual meeting of that organization. He succeeds J. A. Smith, Central City.

The business meeting, held in executive session, was preceded by a dinner at which about thirty-five persons were present.

Clarence M. Martin, Greenville, was elected vice president, and George Baker, Central City, was re-elected secretary.

Members of the Executive Committee, named last night, are: F. D. Rash, Earlington; F. P. Wright, Bevier; W. W. Bridges, Drakesboro; W. G. Duncan, Jr., Greenville; Mr. Smith and W. B. Mix, Central City.

Southern Appalachian Coal Operators' Association

The executive committee of the association met recently in Knoxville to conduct routine business. The regular quarterly meeting was also held on April 29. A successor to E. C. Mahan, Tennessee's representative on the board of the National Coal Association was chosen, Mr. Mahan's term expiring on May 19. A successor to J. C. Layne was also chosen, representing eastern Kentucky.

Charleston Tidewater Coal Exchange

The committee of the exchange met in Knoxville April 29 when organization was perfected and G. L. Baker of Washington was authorized to go ahead with the incorporation of the company.

The Southern Ry. is expected to submit a tentative contract for carrying coal to Tide, and J. E. McCoy, secretary of the Southern Appalachian Coal Operators' Association, who is also secretary of the Tidewater campaign, was authorized to arrange with the Bureau of Mines for the testing and classification of coal under the various pool numbers used in Tidewater exchanges.

Application for charter for the Tidewater exchange bears the names of L. C. Gunter, chairman; John E. Patten, Chattanooga; John L. Boyd, Knoxville; R. E. Howe, Middlesboro; E. C. Mahan and Guy Darst, Knoxville; G. W. Stephenson, Chattanooga; K. W. Dyas, Sterns, Ky., operators, and I. L. Graves, Knoxville, representing the carriers; H. M. Payne, New York, transshippers, and J. E. McCoy as directors. Mr. Payne is an interlocking director. A discussion was held on the advisability of a sales policy to develop permanent export business.

Denver Coal Merchants' Association

Greater efforts to get back to an economic basis of distribution, with prices leveled to pre-war figures or nearly so, in the event wages and overhead expenses are cut in proportion, were outlined at the annual meeting of the merchants' association. An aggressive campaign, including the consideration of all grievances first by an executive committee, to do away with needless squabbles, is one step in a new policy inaugurated by E. H. Coykendall of the Bundy Coal Co., the new president, and reaches out to grapple with economic problems.

Others elected for the year were: George A. Levy of the Liberty Fuel Co., vice-president; Karl Koch of the Great Western Fuel and Hardware Co., secretary-treasurer; Edgar Hopper, commissioner. W. E. Greenwald, vice-president, presided in the absence of A. P. Smith, the retiring president.

Directors elected were: E. H. Peterson, Rio Grande Fuel and Feed Co.; H. B. Madsen, Globeville Fuel and Feed Co.; Theodore L. Shaw, Shaw Coal Co.; Louis Schraga, Great Northern Fuel Co. Directors (wholesale): Thomas F. Eagan, Federal Coal & Timber Co; P. M. Peltier, Big Four Coal & Coke Co. and W. B. McDonald, Rocky Mountain Fuel Co.

Trade Catalogs

Fixed Resistance Charging Panels—The Automatic Electrical Devices Co., Cincinnati, Ohio. Bulletin 620. Describing their use for industrial trucks and locomotive service.

Unipanels—The Automatic Electrical Devices Co., Cincinnati, Ohio. Bulletin 621. Illustrating the various types for charging storage battery locomotives, etc.

Building Mixers—The American Cement Machine Co., Inc., Keokuk, Ia. Pp. 8; illustrated. Showing various types of concrete mixers.

Rands Patent Traveling Coaling and Cinder Plant—Roberts & Schaefer Co., Chicago, Ill. Bulletin 40. Pp. 15; illustrated. Describing a portable structure for locomotive coaling, coal storing, and cinder handling.—Advertiser.

C-H Brakes—Cutler-Hammer Mfg. Co., Milwaukee, Wis. Publication 850 Pp. 16; illustrated. Describing C-H electrically operated brakes.—Advertiser.

High Speed Induction Motors and Frequency Changers—General Electric Co., Schenectady, N. Y. Bulletin 41521A. Pp. 24, illustrated. Description of installation of high speed motors, with tables and drawings, ratings and methods of ventilation.—Advertiser.

Manometers and Engine Indicators—Bachrach Industrial Instrument Co., Pittsburgh, Pa. Pamphlets G and M, illustrated.

G-R Multiscreen Filter—The Griscom-Russell Co., New York City. Bulletin 615. Pp. 7; illustrated. Describing the filter, which is a redesign of the Reilly Multiscreen Feed Water Filter and Grease Extractor.

Type "C" Roller Bearings—American Roller Bearing Co., Pittsburgh, Pa. Bulletin 1005. Pp. 27.; illustrated. Describing heavy duty and standard types.

"Rollsright" Car Tipple—The Wellman-Seaver-Morgan Co., Cleveland, Ohio. Bulletin 59. Pp. 8; illustrated. Describing patented rotating car tipple for handling mine car loads.—Advertiser.

W-S-M Standard Mine Hoists—The Wellman-Seaver-Morgan Co., Cleveland, Ohio. Bulletin 58. Pp. 28; illustrated. Describing the smaller sizes of electric mine hoists to which special attention has been given to standardization.—Advertiser.

Mechanical Stokers—American Engineering Co., Philadelphia, Pa. Pp. 45; illustrated. Describing experiences of various users of the Taylor Underfeed Stoker.

Electric Hoists—Allis-Chalmers Mfg. Co., Mining Machinery Dept., Milwaukee, Wis. Bulletin 1819. Pp. 71; illustrated. Cuts and data, giving information to those interested in mine hoisting equipment.—Advertiser.

Recent Patents

Mine-Ventilating Appliance. James F. Gamille, Fredericktown, Pa., 1,372,500. March 22, 1921. Filed May 7, 1919. Serial No. 295,318.

Rail Fastener. Jacob Kordyl, Carnegie, Pa., 1,372,519. March 22, 1921. Filed Nov. 24, 1920. Serial No. 426,152.

Mechanical Coal Feeder. R. G. Miller, Pittsburgh, Pa., assignor to the W. R. Miller Co., 1,372,765. March 29, 1921. Filed Dec. 17, 1919. Serial No. 345,477.

Apparatus for Burning Pulverized Fuel. W. W. Conard, Norristown, Pa., 1,370,091. March 1, 1921. Filed July 15, 1916. Serial No. 109,477.

Mining Machine. Robert C. Osgood, Claremont, N. H., 1,370,477. March 1, 1921. Filed June 23, 1916. Serial No. 105,498. Renewed June 26, 1920. Serial No. 392,046.

Loading Machine. Norton A. Newdick, Columbus, Ohio, assignor to James Ellwood Jones, Switchback, W. Va., 1,370,904. March 8, 1921. Filed May 8, 1919. Serial No. 295,609.

Miner's Bit. Henry J. Albers, Breese, Ill., 1,371,137. March 8, 1921. Filed April 29, 1918. Serial No. 231,493. Renewed Jan. 3, 1921. Serial No. 434,787.

Mining Machine. N. D. Levin, Columbus, Ohio, assignor to the Jeffrey Mfg. Co., Columbus, Ohio, 1,371,314. March 15, 1921. Filed Nov. 21, 1916. Serial No. 132,681. Renewed Feb. 4, 1921. Serial No. 442,593.

Shoveling and Loading Machine. John C. Brackett, Chicago, Ill., assignor to Middlemiss and Brackett, Milwaukee, Wis., 1,371,345. March 15, 1921. Filed May 15, 1917. Serial No. 168,692.

Miner's Lamp. Green Turner, Fort Screven, Ga., 1,371,823. March 15, 1921. Filed Oct. 27, 1917. Serial No. 198,863.

Mine Switch. Louis Petroff, Burgettstown, Pa., 1,373,147. March 29, 1921. Filed July 24, 1921. Serial No. 313,071.

Coming Meetings

Mine Inspectors' Institute of America will hold its twelfth annual meeting at Charleston, W. Va., July 12 to 15. Secretary, J. W. Paul, Bureau of Mines, Pittsburgh, Pa.

Illinois and Wisconsin Coal Dealers' Association will meet at Chicago, Ill., July 13 and 14.

Missouri State Retail Coal Merchants' Association will hold its annual meeting at the Planters Hotel, St. Louis, Mo., May 17 and 18. Commissioner E. J. Wallace, Pierce Bldg., St. Louis, Mo.

American Society for Testing Materials will hold its annual meeting at the New Monterey Hotel, Asbury Park, N. J., June 20 to 24. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

Illinois Mining Institute will hold its spring outing the early part of June on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on June 3 and returning on June 5. Secretary, Martin Bolt, Springfield, Ill.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The 24th annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

American Institute of Chemical Engineers will hold its spring meeting, June 20 to 24 at Detroit, Mich. Secretary, Dr. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7 and 8. Secretary, G. H. Cushing, Woodward Bldg., Washington, D. C.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill., May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The National Coal Association will hold its next annual convention at the Waldorf Astoria Hotel, New York City, May 19 and 20. White Sulphur Springs hotel reservations have been cancelled. Secretary, W. B. Reed, Commercial National Bank Bldg., Washington, D. C.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Retail Coal Merchants Association will hold its annual meeting May 12, 13 and 14 at the Jefferson Hotel, Richmond, Va. Special rates on all railroads. Secretary, E. G. Gordon, Philadelphia, Pa.

Michigan-Ohio-Indiana Coal Association will hold its annual meeting June 15, 16 and 17 at Cedar Point, Ohio. Secretary, B. F. Nigh, Brunson Bldg., Columbus.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 19 NEW YORK, THURSDAY, MAY 19, 1921 Number 20

How You Can Put More Business in Government

SOME surgery on the executive branch of our government is in order. As usual, doctors disagree—major operations are recommended by some and others think that a few minor transfers are all that are necessary. Pure theorists have proposed that the departments should be recast, some of them renamed, and bureaus and functions thrown about with violent disregard for the feelings of those affected. One of the proposals that has been most generally aired is that of dismantling the Interior Department and creating a Department of Public Works. In this scheme the Bureau of Mines and the Geological Survey, with which the coal industry is most interested, are to be in the new department. Without going into detail, suffice it to say that these bureaus of the present Interior Department would be as out of place in a Department of Public Works as advocates of the change conceive them now to be in the Interior Department. The latest move proposed is contained in the Frelinghuysen coal-stabilization bill, which would take from the Geological Survey the work on coal statistics and place it in the Department of Commerce.

Aside from these more direct points of interest in the reorganization of the executive branch of our government the coal industry as a taxpayer is concerned in the movement because it promises to cut the cost of government and to promote better service. Assertions that such sums as $300,000,000 can be saved each year by relocating bureaus cannot be substantiated; more reasonable persons place the possible economies at less than 5 per cent of that figure, and it is probable that in the long run appropriations for the departments will show no decrease. The benefit to come is in better service to the public, in greater value per dollar of cost. Our government machine is huge and it is no wonder that inconsistencies have been permitted to develop. The Congress that creates new bureaus and passes out the money for specific tasks is as much to blame as those in the departments who have the more direct responsibilities.

The past score of years has seen recorded several ambitious attempts to reorganize the government departments and to make the government more efficient. Each attempt in turn has been strangled and thrown out of the window by the tremendous active opposition and the passive inertia of official Washington. In the present instance we have a commission composed of Walter F. Brown, who, according to the *Washington Star*, has been long a personal friend of the President, having acted as his floor manager at the Chicago convention last year, who is to be the representative of the President, and of Senator Smoot and Representative Treavis. This joint commission, under the McCormick bill, is to investigate and report to Congress on reorganization of the executive departments. Hearings are to be begun at once, it is reported.

It is significant that aside from Secretary Hoover, none of the department heads is on record as favoring such an investigation and any changes. Secretary Hoover, in the terms of the mining man, has a likely looking prospect from which a few "pockets" of good ore have been taken, but the proposition needs development. An organization must be built up, a system of mining determined upon best suited to the deposit, transportation to market—that is, avenues of publicity—constructed, and the product, "Aids to Industry," sold to the people of the United States. Plain enough, in the present department over which he presides there is not much that excites the envy of any other secretary, but in other departments there are services that, if taken over, will help him make of his work a success. Mr. Hoover has nothing to lose and everything to gain in reorganization. He is going to get little real support from the other departments and a great deal of open opposition and much that will be political and, therefore, not open. When he really starts he is going to have a real fight on his hands, one for which he has had no training and, we surmise, little liking. There is no precedent for a fight in the open on such matters.

Business and industry have much at stake in the Hoover plan to make of the Department of Commerce a real factor. Business has no other direct representation in the Cabinet of the President, while labor and agriculture have their advocates. We suspect that it was more to get Herbert Hoover, with his wide knowledge of foreign affairs, annexed to the administration that Mr. Harding made the selection, than because of any well-defined idea of making something real out of the Department of Commerce. In other words, despite the campaign slogan of "More business in government and less government in business," it may have been more or less of an accident that Hoover is secretary of the particular department in which he finds himself. But being there, he is going to make something worth while. Business needs what he wants to give it, but he can never get to first base without the support of business.

Two matters are of fundamental import to the success of his plans. One of these is reorganization within the executive departments that will give Commerce the duties, responsibilities and opportunities for service that are her due, and the other is money. We have already appraised the difficulties that beset the first and have only to mention the wave of economy in governmental expenditures to give a perspective on the second. But the difficulty of the task is not going to cause to falter the man who fed Belgium, then the Allies and finally Europe. Making a mine from an

abandoned prospect is a job for a successful mining engineer. Financial backing is a prerequisite, however, and in this instance the money must come from the public treasury, and the men in Congress must feel the pressure from back home before they loosen up even to the extent of giving the Department of Commerce as many dollars as would maintain one battalion of troops for one year, which is the amount Mr. Hoover has just asked of Congress.

We recognize that before any man in the coal industry—it is going to be a matter for individual action—urges and continues to urge his representatives in Congress to appropriate even such a comparatively small sum, that coal man must be convinced that he wants Hoover to have it and that it is going to help him and his business. Half-hearted support will get us nowhere. There must be enthusiasm arising from a vision of American business, and the coal industry in particular, in a new relation to the public through the government. The men of the coal industry are shy of anything that partakes of the fingers of government in its business, and it is important, therefore, to point out at the beginning that Mr. Hoover is plainly and completely on record as opposed to each and every form of regulation of business. Mr. Hoover is as much a man for business as ever "Billy" Wilson was the man for organized labor.

Take the blinders off and step up to this proposition with full appreciation of the situation. The urge for coal legislation is here and something is going to be put on the statute books this year. That the public is not buying coal as fast as it can be mined is no indication that they have lost interest. It is almost a sure thing that prices are going to take a sharp upturn before the end of this year, and it were better to have legislation now when high prices are in retrospection than later when they are again an actuality.

A rare opportunity is offered to the coal industry not only to have a hand in shaping its own destiny but in learning at first hand that a new deal is being opened for business. A business man in the President's Cabinet and a business man from the Senate are going to do, with the help of the coal men, what the coal men have not been able to do for themselves—namely, get that sort of recognition in Washington which is their due and get started on the road to a place of confidence in public esteem. The immediate discussions, however, will lead nowhere unless each man takes up the cudgels when he gets back home. There are two things he must back with all his might: Reorganization of the government's departments and more money for the Department of Commerce. There is just one way to push these to fruition: Tell your representative in Congress that you want them accomplished, and tell him often and vigorously. You and not Congress originate public opinion.

Too Successful by Far

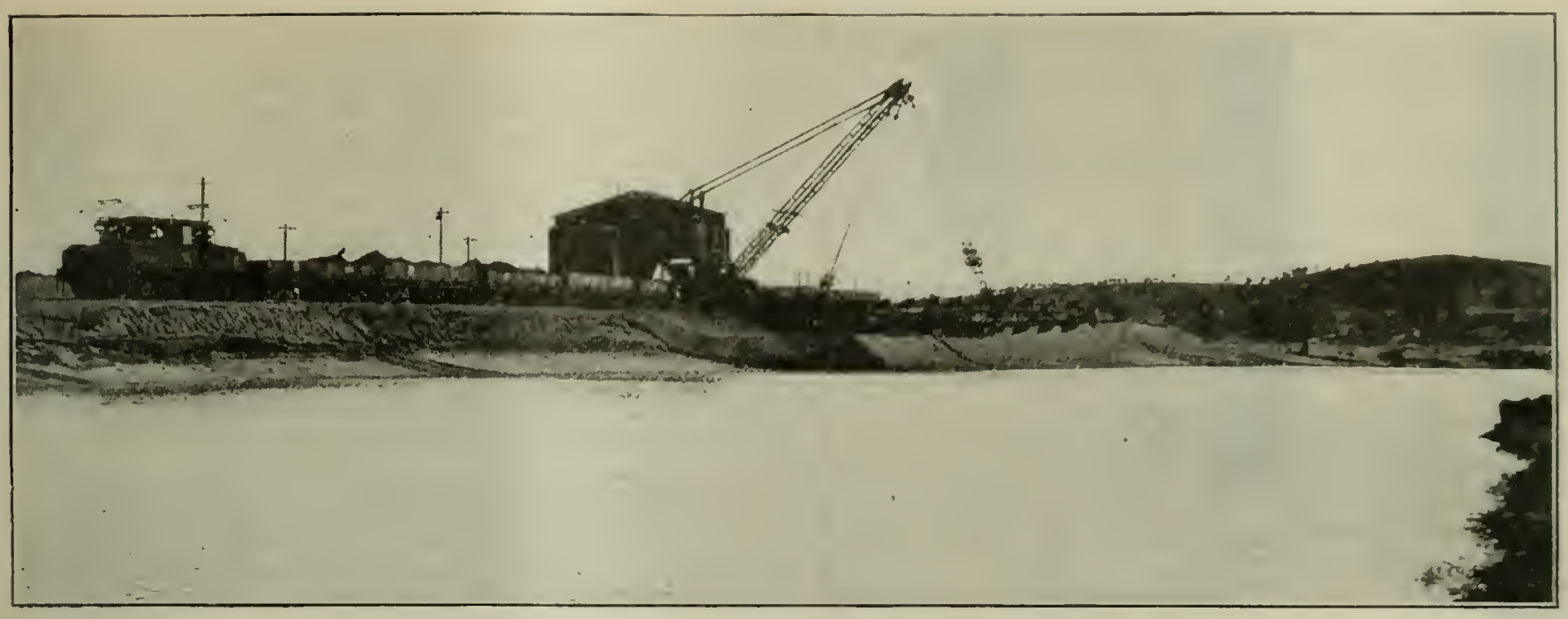
IN THE recent mine-cave legislation public clamor in Scranton has at last triumphed over justice, unless indeed the Governor intervenes and decides that the triumph is one of words and not of facts and therefore clearly against the interests of those for whom the legislation was passed. Over large parts of Scranton the owner of a property worth less than $5,000 was protected by the pledged and vindicated word of the coal companies, who promised to repair such structures when damaged. But that was not enough for the Scrantonians. Laws must be passed by which representatives of the state would receive funds adequate, and perhaps more than adequate, to offset injuries which, while extremely real, are the natural outcome of having bought properties over coal which is owned by the companies under deeds that give them the right to recover all mineral without any responsibility for surface support.

An attempt was made to compel the operating companies to accept the Fowler bill in order to escape the penalties of another instrument named after Representative Walter W. Kohler. The purpose was to make the coal companies sign away their rights or become criminally liable for the exercise of them. The companies refuse to be beguiled into any such a surrender, preferring to shut down their mines, as far as second mining is concerned, thus escaping the operation of both bills. Doing so, they will undermine the city financially by not removing coal as surely as they are undermining it physically by continuing to remove it. The value of the properties will be more surely destroyed than they could ever be by mining.

All the fine arguments of the casuists to the effect that to own a property implies the right to surface support, whether the deed calls for it or not, will by these acts be made of no avail. No one will want to live where no livelihood can be obtained. Scranton is beginning to see that the coal must be taken out of the ground if the city is not to be deserted. It has lived on the proceeds of the extraction of the coal. By leaving it in the ground the houses may be preserved, but no one will be desirous of using them as habitations.

The coal companies have been accused of being extremely careles sof human life and property, but what shall we say of those who have erected buildings where the right to remove all the coal from under them has already been sold? Is not a man lacking in a sense of duty to wife and family when he deliberately signs away his right to support and erects a building on ground for the undermining of which provision has been made in his deed? Is he not lacking in a sense of justice and equity when, having accepted such an instrument, he insists that it be regarded merely as a "scrap of paper" and that its provisions cannot be held as legal and binding?

Unfortunate indeed it would be if 15,000 to 20,000 mine workers and an unnumbered company of working men dependent on the general prosperity of the community were laid idle till the Kohler bill was duly tested. Regrettable, truly, would be loss of anthracite tonnage now derived from the fifteen collieries in the Scranton-Dunmore area alone, not to speak of those in other districts, for the amount of hard coal now available is altogether too small to supply the public needs. Unhappy, without question, it will be for the 800 property holders who were looking confidently to the companies to repair their buildings to find that nothing can be done till the operating concerns ascertain whether if they repair the damage done they will still be liable to payments under the Fowler bill. Mr. Mattes, who wrote the bills, and the lobbies which supported them may yet be indeed sorry that their zeal in company baiting has brought Scranton, its house owners, its mine workers and the coal-consuming public to such a sorry end.



LOADING SAND BY DRAGLINE EXCAVATOR FROM THE HUN RIVER, MANCHURIA, FOR SAND FILLING IN FUSHUN MINES

Manchurian Plant with Seam in Places Four Hundred Feet Thick Uses Sand Filling

Koreans Have Mined Fushun Coal for Six Hundred Years—Eight Underground Mines and Two Strip Pits Produce About Twelve Thousand Tons a Day—Deposit of Coal Contains Billion and a Quarter Tons—Sand for Flushing Taken from Rivers and Quarries

By N. Yamaoka*
New York City

PEACE between Japan and Russia was concluded at Portsmouth, N. H., in September, 1905, the treaty provisions giving to Japan control of the Kwantung Territory, which previously had been leased by China to Russia. They also put into the hands of the Japanese the southern portion of the Manchuria Ry. as far as Changchun. In the following year the South Manchuria Railway Co. was founded by imperial decree. This company took over the railway lines and subsidiary properties as well as the rights and privileges acquired from Russia. Reconstruction of the Antung-Mukden railway to standard gage was begun in 1909 after an agreement had been reached with the Chinese Government. Another agreement concluded with China confirmed the company's railway right in South Manchuria and Inner Mongolia.

Controls Many Activities Other Than Mines

The total length of the railway lines in operation is about 700 miles. The rolling stock consists of about 330 locomotives, 300 passenger cars and 4,800 freight cars. Freight, chiefly agricultural products, in 1919 amounted to about 10,000,000 tons with a revenue yield of 52,500,000 yen (roughly $26,250,000). Much of this freight was made up of soya beans, the great staple product of Manchuria, and its derivatives bean oil and bean cake.

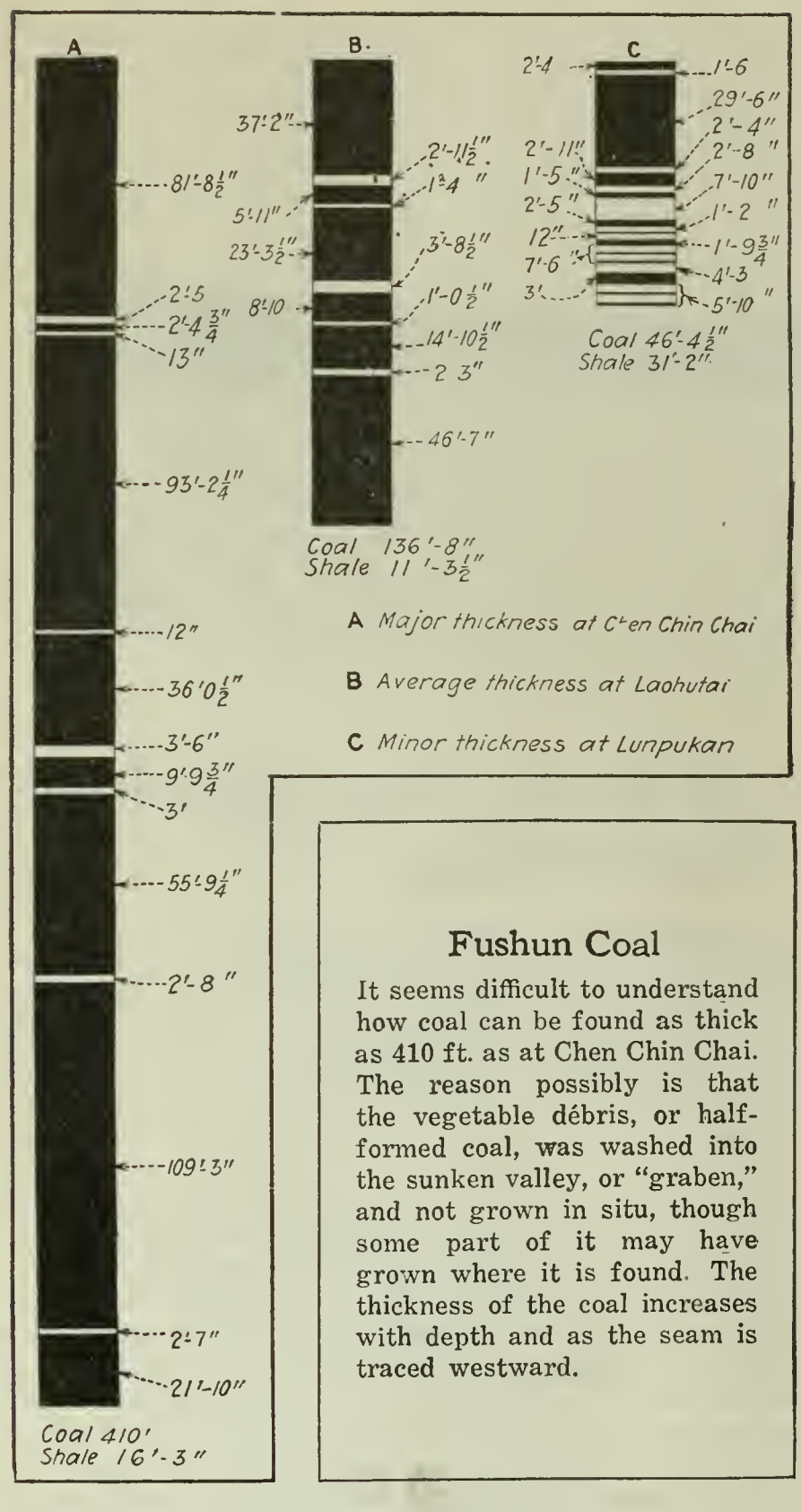
Obviously the activities of the company cannot be measured by its track mileage alone. This is insufficient to account for its large authorized capital stock of 440,000,000 yen ($220,000,000). In fact, the company's enterprises are manifold, embracing every phase of economic life in Manchuria. They include harbor administration, shipping, hotel establishments, coal mining at Fushun and Yentai, steel works at Anshan, electricity and gas supply, city building and administration as well as the organization of education and the maintenance of sanitation and a bureau of research. In addition to the railway lines owned by the company it has been intrusted with the management of the entire system of state railways in Chosen (Korea), having an aggregate length of about 1,000 miles.

From the inception of the company up to the end of 1919 369,000,000 yen ($184,500,000) had been invested in Manchurian enterprises. The assets are at present computed at 1,400,000,000 yen ($700,000,000) and compare favorably with the above figure. The gross revenue for the past administrative year amounted to 153,000,000 yen ($76,500,000). The employees of all ranks now number 45,000. These figures are self-explanatory and afford abundant proof of the vast extent of the company's business and its financial prosperity. An analysis of the foregoing will make it clear that the South Manchuria Ry. has accepted a large responsibility for the proper administration of Manchuria.

Fushun Field Worked for Six Hundred Years

The Fushun colliery with its abundant supply of coal is regarded as the source of power and wealth that will make profitable and practicable the large work undertaken by the South Manchuria Railway Co. This operation, a semi-bituminous coal mine, noted for its unrivalled thickness of bed, is situated about twenty-two

*Electrical engineer, South Manchuria Ry., 111 Broadway, N. Y.



Fushun Coal

It seems difficult to understand how coal can be found as thick as 410 ft. as at Chen Chin Chai. The reason possibly is that the vegetable débris, or half-formed coal, was washed into the sunken valley, or "graben," and not grown in situ, though some part of it may have grown where it is found. The thickness of the coal increases with depth and as the seam is traced westward.

miles as the crow flies east of Mukden. The field extends west to east for about ten miles parallel with the River Hun, which lies to the north. The field dips northward from 20 to 30 deg. and is one and one-half miles wide. During the last fifteen years the field has been well drilled and the condition of the coal is well known. At Suchiatun Junction, on the main line of the railway, a point 236 miles from Dairen and ten miles from Mukden, a branch line thirty miles in length leads off for Fushun. By railway Fushun is 266 miles from Dairen, 193 miles from Antung and 202 miles from Yingkow.

Coal in the Fushun district was first worked by the Koreans some six hundred years ago, being used by them in baking earthenware. On the occupation of this region by the Chinese, which took place about two hundred years ago, mining was entirely suspended by edict of the Chinese Government, Fushun being located in the vicinity of a suburb of Mukden, where stands the mausoleum of Tai-tsu, an emperor of the Li dynasty. During the Russo-Japanese War the mines were worked on a small scale by the Russians, but not until 1907, when the property was transferred to the South Manchuria Railway Co., was mining undertaken on a large scale.

On April 1, 1907, the company acquired from the government the coal mines at Fushun, Yentai and Chatzuyao, near Wafangtien. Again in July, 1907, in accordance with the Russo-Japanese railway protocol, the coal mines at Shihpeiling and Tachiatun were transferred to the company from the Russian Government. Of the above mines, only two, Fushun and Yentai, are being worked by the company, the operation at Chatzuyao being entrusted to private Japanese management, while those at Shihpeiling and Tachiatun were transferred to the Nanman Kogyo Kaisha (the South Manchuria Mining Co.) on April 8, 1918.

Japanese First Sink Shafts in Year 1911

At the time of acquisition of the collieries by the company, the mining equipment was of a temporary nature, with a daily output of only 360 tons in the aggregate from Chen Chin Chai, Yangpaipu and Laofutai pits. Consequently Dr. Matsuda, the first director of the Fushun colliery, conceived the plan of sinking two shafts, one at Chen Chin Chai and the other at Yangpaipu. These were completed in April and in June of 1911 and were named Oyama and Togo shafts respectively.

In 1914 an inclined shaft was opened at Wantau, the operation at this point being named the Wantau pit. In the same year open-cut working was started at Kuchengtzue, and in 1917 the Lumpo pit was opened for the purpose of supplying coking coal to the oven plant of the Anshan Iron Works. In the following year Hsingtun pit was opened at a point between Lumpo and Wantau pits.

The Fushun field is divided into five districts and worked by one stripping, two shafts and six pits, as follows, enumeration being made from west to east: Open cut working, Oyama shaft, and Chen Chin Chai pit in Oyama district, the Togo shafts and Yangpaipu pit in Togo district, Laofutai and Wantau pits in Laofutai district, and the Hsingtun and Lumpo pits also in Laofutai district.

The daily output of all the collieries on April 15, 1920, was approximately as follows:

	Tons		Tons
Kuchengtzu open cut	1,638	Laofutai pit	1,344
Chen Chin Chai open cut	1,179	Wantau pit	684
Chen Chin Chai pit	1,519	Hsingtun pit	135
Oyama shaft	2,033	Lumpo pit	516
Togo shafts	999		
Yangpaipu pit	1,693	Total	11,742

ANNUAL OUTPUT OF FUSHUN COLLIERY

(In Thousands of Tons)

Year	Open cut No. 1	No. 2	Chen Chin Chai	Oyama	Togo	Yangpaipu	Laofutai	Wantau	Hsingtung	Lumpo	Total
1907			103 3			64 5	65 5				233.3
1908			238.8			127 3	124 6				490.7
1909			324 1	0 1		176 1	192 7				693.2
1910			370 4	14 4	17 4	217 8	279 0				899.2
1911			404 9	186 4	146 6	301 6	285 0				1,324.5
1912			384 8	359.5	252 0	219 2	261 5				1,471.1
1913			579 5	421 1	414 9	290 7	473 0				2,179.2
1914	2 1		683.6	235 0	472 2	381 8	420 1				2,149.8
1915	102 7		623 1	301 6	430 4	471 8	179 4	53 4			2,162 6
1916	173 5		572 3	305 2	170 8	499 1	257 8	65 6			2,044.4
1917	272 3	0 2	602 7	135 7	291 4	598 0	295 5	110.7		5 1	2,311 4
1918	260 7	66 8	486 0	328 2	319 5	501 5	393 7	157 0		74 5	2,521 2
1919	231 3	300 4	307 6	406.4	319 3	454 7	405 0	164 7	18 1	155 2	2,762.7
											21,243 3

The Fushun coal field covers about fifteen square miles and extends, as stated, about ten miles in an east-west direction along the valley of the River Hun. The

main coal bed consists of only one measure that reaches like a belt across this boundary. The thickness of the bed varies from 50 ft. upward, increasing with depth and to the westward. It averages about 150 ft. At the western end of the property it expands greatly, becoming as much as 430 ft. thick with only 30 ft. of partings. A conservative estimate puts the potential wealth of these coal mines at 1,200,000,000 tons. In fact, the occurrence of such a big deposit of coal in a relatively small area like the Fushun field has hardly a parallel in the world.

The most ancient rocks in the field are granitic gneiss, on which tuff, regarded as of lower Cambrian period, has been deposited. In the eastern portion of the field red and green tuffs with porphyrite sheets cover the gneiss unconformably, tufaceous sandstone and shale overlying them. These are considered to be Mesozoic.

Coal Occurs on Sunken Land Between Faults

The Tertiary formation in which the coal seams are interbedded was deposited on the "graben"* running from east to west and generally dips north 30 deg. east. By fossils discovered in the shale the formation has been proved to belong to the Miocene. It may be divided into the lower and the main coal-bearing series.

The lower coal-bearing series consists of tufaceous sandstone, conglomerate and shale, in which two coal measures are interbedded. The lower of these lies near the basement gneiss and is rather thin. The upper one is several feet above the lower. It has a maximum thickness of 20 ft., an average thickness of 10 ft. and carries many partings. These beds are worked on only a small scale by Chinese.

The main coal-bearing series consists of shale. That immediately overlying the coal is thick and the portion near the bed is bituminous in nature and brown in color, containing about 57 lb. of tar and producing about 730 cu.ft. of combustible gas per ton. It is expected that this will prove an important source of creosote in the future.

A broad fold with numerous faults is found between Yangpaipu and Laofutai whereby the beds seem to have been shifted about 2,400 ft. Basalt crops out on the southern hills of the field, occurring as sheets, particularly between the lower and the main series or in the lower series The effects of contact metamorphism are seen in the shale and coal beds of the lower series, but not in the main series.

Lustrous Pitch-Black Bituminous Coal

Fushun coal is bituminous and possesses a fine pitch-black lustre. Coal from the western portions of the field will not coke but the coking quality evidently grows steadily toward the east until the Lumpo district is reached. Here the coal makes a coke suitable for metallurgical purposes.

The following are analyses of Fushun coal made on several samples at different times:

	Percentage
Specific gravity	1 229 – 1 342
Moisture	2 240 – 7 186
Volatile matter	38 371 – 48 758
Fixed carbon	45 340 – 60 465
Ash	1.440 – 9 340
Nitrogen	1 100 – 2 307
Sulphur	0 338 – 1.738
Calorific value { B.t.u	11,100 – 13,850
Calorific value { Calorie	6,160 – 7,700
Color of ash	Commonly a light brownish grey

The ash contains silicic acid, alumina, ferric oxide, sulphuric acid, calcium and a small percentage of phosphoric acid and magnesium.

At these mines the coal was first worked by the pillar-and-stall system with 105-ft. pillars and 8-ft. rooms driven 6 ft. high, levels being 35 to 60 ft. apart. As operations progressed, however, the many difficulties commonly experienced in mining thick beds were encountered. The fallen coal in the entries and galleries,

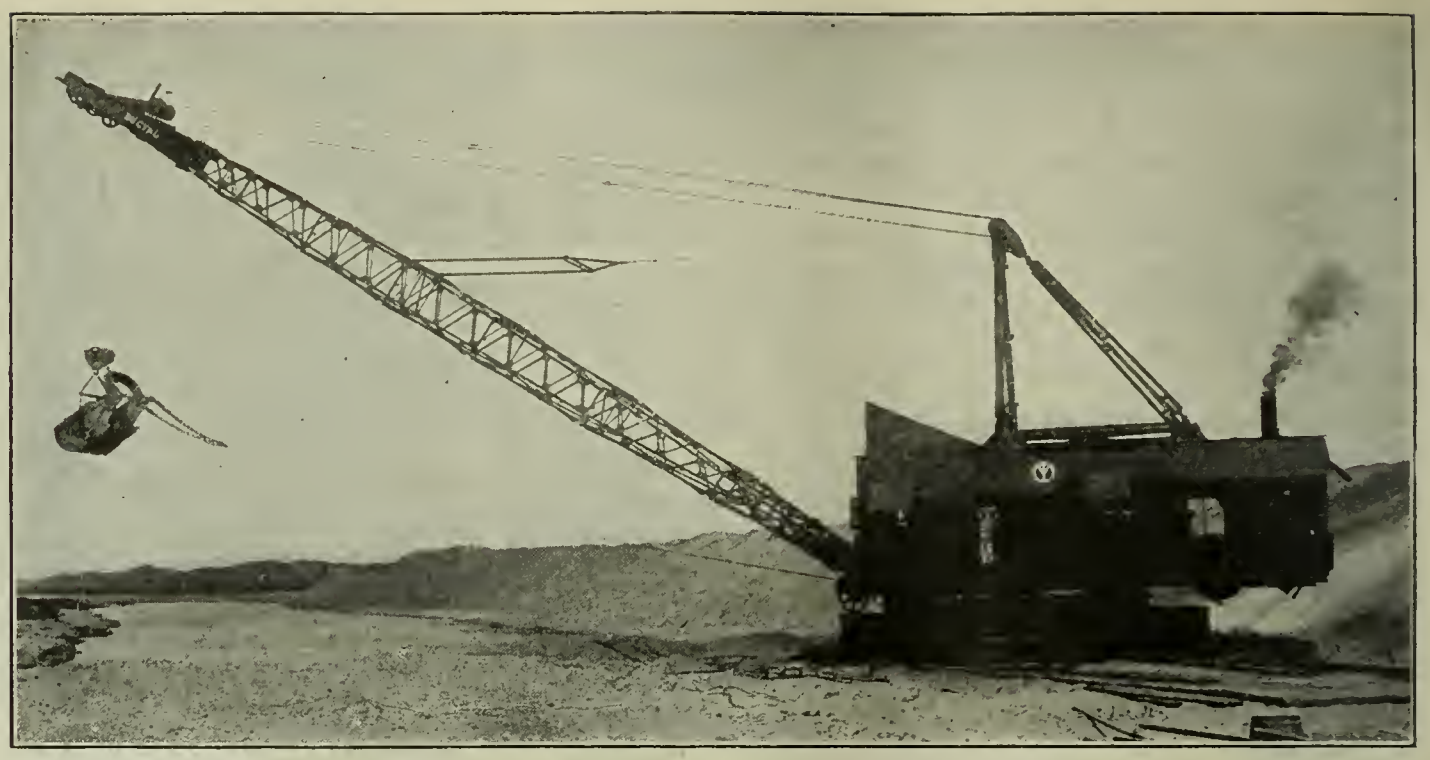
*A tract of land depressed between two faults—that is to say, a valley between two rifts.

Sand Filling

This is a comparatively high room. In many places 6 ft. is the preferred height; at others, where the conditions are favorable, the room is made 20 ft. high. The pipe is placed close to the rib side, so that when the next cut is made it will be possible to recover the sand-submerged pipe. However, this picture is not a typical one. In an ordinary case the end of the place is stopped with boards or mats, and there is no place for spectators.

Dragline Excavator

Another of the large machines used to obtain sand filling. In the winter the sand, having its interstices completely filled with water, freezes into a solid mass. Consequently sand is dug in the summer and stored for winter operation. A 42-mile electric railroad has been built for hauling the sand to the mines.



moreover, was subject to spontaneous combustion. To this was ascribed many fires and the disastrous coal-dust explosion at the Oyama shaft in 1918, when about 900 lives were lost.

Because of the frequent falls of coal it became necessary, in order to prevent slacking, to line the walls of the main haulage road and even those of the shaft bottom, which for the most part were located in the coal. As the length of roads aggregated at one time as much as 200 miles it is easy to realize what a large expenditure the lining of entries might ultimately involve. Moreover, a careful investigation showed that not less than 70 per cent of the total quantity of coal would have to be left underground unless more efficient methods were introduced.

All the Pits Are Now Sand-Flushed

Meanwhile, at Yangpaipu pit the sand-flushing or hydraulic-stowage system had been installed, yielding exceedingly gratifying results. Accordingly it was decided to apply the hydraulic-stowage system to the rest of the pits. By 1920 almost all the equipment necessary for carrying out this plan had been completed.

Before the World War the coal was mined cheaply by Chinese laborers, coming chiefly from the Shantung and Chihli districts of North China. During the war, however, great difficulties were experienced in obtaining a sufficient number of workmen owing to the fact that many of them had gone to France. The increased labor cost also was accompanied by a greater indirect expense, arising out of the necessity of providing accommodations for such as were available.

These circumstances made it profitable to introduce machine mining, and engineers began an investigation to determine the machines best adapted for cutting and conveying the coal under the actual conditions prevailing. Two Mavor and Coulson Pick Quick bar cutters, electrically-driven, and twelve Siskol coal cutters, driven by compressed air, are now under test. In addition two Goodman and two Sullivan shortwall machines have been ordered for trial.

Sand Dug by Excavators and Shovels

To provide material for hydraulic storage, two dragline excavators, one Bucyrus and one Marion, of 6 cu.yd. capacity each, also one Bucyrus shovel of 2½ cu.yd. capacity, are installed on the bank of the River Hun, which is located a half mile north of the field. One Lubecker bucket excavator of a capacity of 260 cu.yd. per hour also is employed for this purpose. This is equipped with a 120-hp. induction motor and operates on the bank of the River Yangpaipu, a branch of the Hun.

Six Bucyrus and two Marion shovels, each equipped with 2½-cu.yd. buckets, also are at work at well-weathered sandstone hills near Yangpaipu pit and Oyama shaft. Forty-two miles of standard-gage electric railway laid with 80-lb. rail have been constructed and seven 50-ton electric locomotives, four German and three American, have been put in service with 320 20-yd. sand cars for transporting stowage materials.

This sand usually is dug in the summer and stored for winter use, as it is found that the rivers freeze hard during the winter and that the gravel is hard to dislodge. The same is, in a degree, true of the material being dug out of the sandstone hills. About 10,000 cu.yd. of sand is flushed into the underground workings every day.

Three Sand-Filling Plants at Each Mine

Speaking generally, at each mine three complete sand-filling units are installed, each consisting of a sand bin, an unloading plough hoist, a hydrant room, two revolving screens, two mixing pans, regulating gates for sand and a shaft with hoist for taking out stones of larger size which refuse to pass through the screen. This equipment at or immediately below the surface is connected with the underground workings by a vertical shaft some 16 or 20 ft. in diameter and from 100 to 300 ft. deep. Below that depth inclined galleries usually are available. In each of these passageways several 6-in. steel pipe lines are laid.

Over the sand bin two tracks usually are laid and the area below them is covered by screens which hold out the larger stone. The sand bin is constructed of concrete and is in the shape of a frustum of a cone with the smaller end downward. The bottom of this frustum is turned into a hydrant room which resembles a gallery. It has a semi-cylindrical roof of about 12 ft. diameter. This roof of this gallery has four openings to the sand bin measuring 24 x 24 in.

Each opening is provided with a nozzle delivering water from centrifugal pumps at 180-lb. pressure, which flushes down the sand into a duct built on the floor of

the gallery. The sand is carried by the water to a revolving screen, the oversize being picked up by a conveyor and delivered to a hoist, by which it is carried to the surface.

The management of the colliery is well aware that this is not exactly the ideal way of handling the coarse material. It would be better, if possible, to reject the larger stone at the Hun or the Yangpaipu, but the fact that the excavator or shovel is moving makes it difficult to provide screening facilities. The Lubeker Maschinenbau Gesellschaft, of Lubeck, Germany, manufactures a kiesbagger (gravel digger) that screens sand as it loads it. It is the intention to purchase one of these, and, if it prove suitable, to install more, and to depend on these rather than on the screen below the tracks and the revolving screen above the mixing pans for the elimination of coarse material.

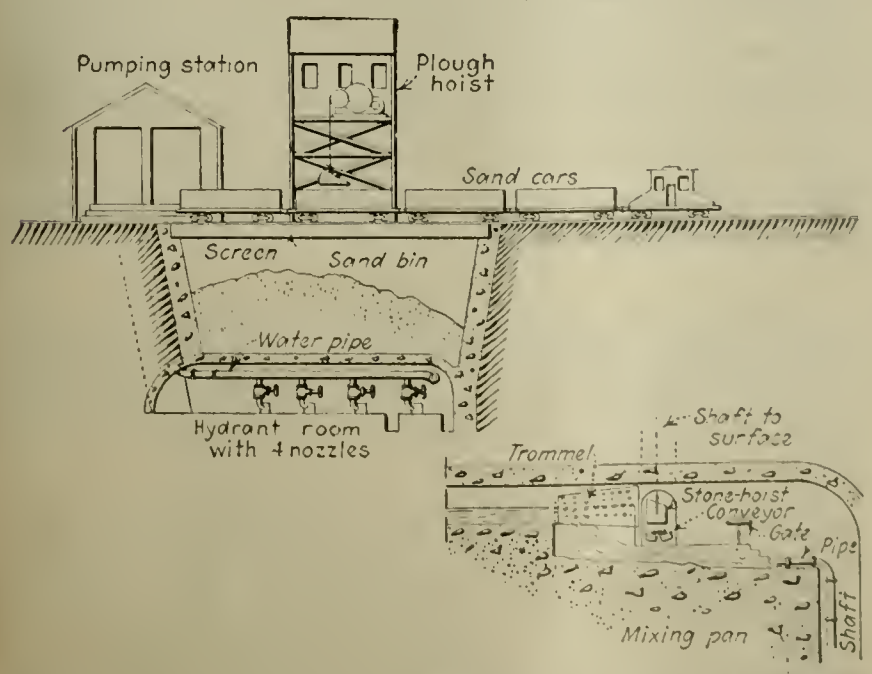
Most of the sand, of course, is fine and goes to the mixing pan, where more water is added, if it be necessary for the easy descent of the sand through the pipes to the working face. Controlling gates are placed in the mixing pan near each pipe entrance. The quantity of water needed for carrying the sand is one to one by volume or about one to three and sometimes one to five by weight, according to the density of the sand.

The coal under heavy cover naturally gives more trouble than that which is shallower. In parts where the coal is 1,000 to 2,000 ft. below the surface the roof and walls tend to buckle and fall, and no standard method of working can be outlined, as the system varies from place to place in the mine. The coal is mined by slicing, however.

Sand-Filled Room Rib of Next Room Driven

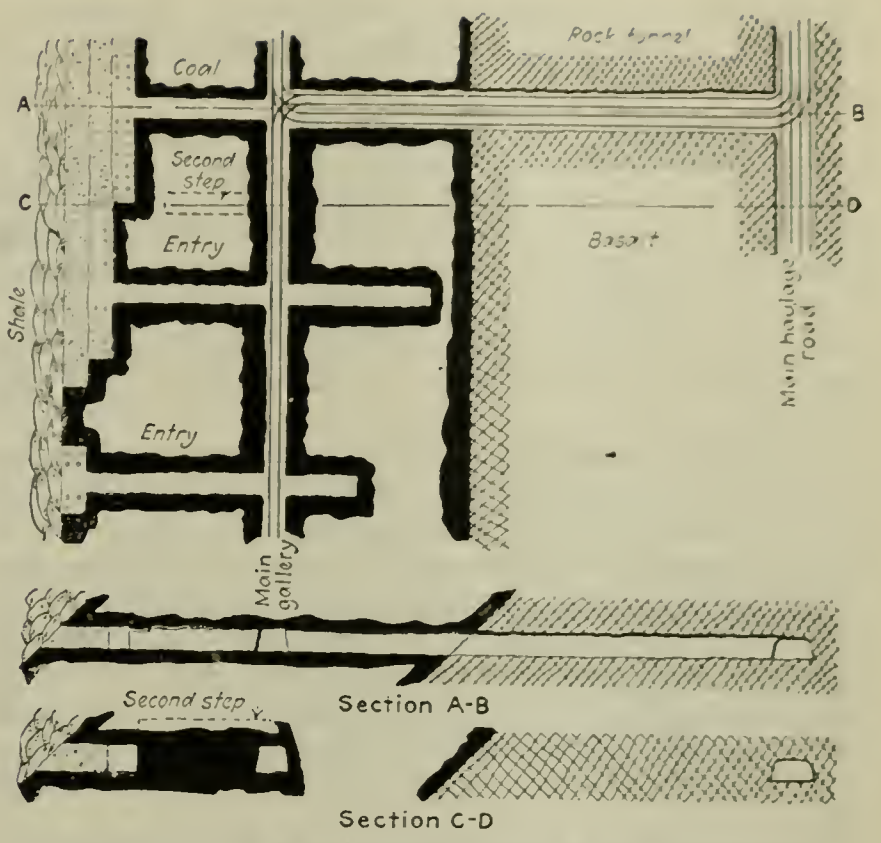
In the Oyama shaft a main level haulage road 1,234 ft. below the surface is driven in the basalt. Here an endless rope haulage is installed, but the rope soon will be replaced by 5-ton trolley locomotives. Crosscuts each provided with two roads pass through the basalt and enter the center line of the bed where it joins a level main gallery which is driven like the main haulage road on the strike but measuring only 6 x 6 ft.

From this main gallery several roadways or entries are driven in opposite directions, toward footwall and



PREPARING SAND AND DELIVERING IT TO PIPE SYSTEM

The mixing pan in the lower right-hand corner lies at right angles to the hydrant room shown in the upper left-hand corner. The sand cannot be conveniently sized at the river where it is excavated, so it is passed through a screen at the dump and through a trommel, or revolving screen, near the mixing pan, the material failing to pass through the trommel falling on a conveyor belt and being carried to a bucket, by which it is hoisted to the surface.



METHOD OF MINING AND HYDRAULIC FILLING

The main haulage road is in the basalt footwall, rock headings being driven to a main gallery in the coal. At intervals entries are driven both to footwall and hanging wall. Rooms are driven at the ends of the entries. As soon as completed they are filled with sand, other rooms are started without a pillar between them and the sand-filled room, and so on till the coal in that lift has been replaced by sand, when other entries (labelled in the cut "second step") are driven into the seam over the top of the lift. The recovery is almost complete, all the pipe and much of the timber being saved.

headwall, at points between 100 and 200 ft. apart. They are driven until they meet the basalt in the footwall or the shale in the headwall. When these have been reached the place is widened out right and left, forming what is known as a room. It is usually 6 ft. high, 8 to 12 ft. wide and 50 to 100 ft. long.

Where conditions are favorable, the room may be driven as high as 20 ft., 12 to 16 ft. wide and 100 ft. long. As the mining continues the room is temporarily supported by timbering, and when the work is finished the pipe line for introducing the sand into the room is laid close up to the coal rib remote from the footwall or headwall, as the case may be. This wall will be next in turn to be mined, and the pipe, being close up to it, can be salvaged when this room is completed.

To return to the first room, the opening is closed up with wood boards and sometimes by mats made by weaving the stalks of Kaolian corn, which can be obtained at little cost in the Fushun district. When a room is ready for sand packing a signal is sent to the outside pumping station and sand is flushed down the hundreds of feet of pipe from the surface, filling the room compactly in a few hours. After the room is drained, the next room is started in the adjoining rib, extended, timbered and flushed like the first. Later, half way between adjacent entries a second entry at a level just above that of the first series is driven, and the process of room driving commenced, the new rooms resting on the sand filling of the rooms below. Some of the material used in the timbering of the lower room can be recovered when working the rooms above.

The method of sinking shafts and driving main haulages in the basalt has not been generally adopted, but it is the intention to develop it as soon as possible. Shaft landings will be provided at 200 to 400 ft. intervals, these being connected with the working places by rock crosscuts. This may be expensive construction, but it renders possible the recovery of large quantities of coal

which otherwise would necessarily be left underground as safety pillars for the shaft and the main haulage roads.

In accordance with this new plan two new shafts, one downcast and one upcast, are now in course of excavation in the Lumpo district. They are expected to reach a depth of 2,000 ft. The excavation of similar shafts then will be started in Laofutai and Oyama districts successively. In the Oyama shafts the main haulage road in the rock has been completed already, and a similar excavation has been started at the Togo shafts.

Two 320-hp. electrically-driven Sulzer air compressors of 1,500 cu.ft. capacity have recently been installed, one at the Lumpo pit for sinking new shafts and one at the Togo operation for excavating the main haulage road in the rock. These machines are in addition to six Ingersoll air compressors of smaller capacity. Several Sullivan rock drills have been ordered for use in the Lumpo working and a dozen Atlas Cyclops rock drills are now in operation on the Togo roadways together with a similar number of rock drills of the Flottmann type.

After the completion of these shafts and working by the hydraulic-stowage system, it will not be difficult to remove 70 to 80 per cent of the total quantity of coal in the Fushun mine. In the shallower part of the beds stripping, similar to that conducted in various parts of America, will be followed upon a large scale.

Steel Gauzes Versus Brass or Copper

IN DISCUSSING the "Relative Safety of Brass, Copper and Steel Gauzes in Miners' Flame Safety Lamps," L. C. Ilsley and A. B. Hooker, in a bulletin of that name published by the U. S. Bureau of Mines, say:

"At normal atmospheric temperature, steel oxidizes considerably. Gauze manufacturers recognize this fact and provide for it by giving the gauze an anti-rust coating to protect it until it is put in service. After this coating is removed, oxidation undoubtedly occurs under all kinds of atmospheric conditions, but probably much more readily when the lamp is out of service than when burning. If the unused lamps are allowed to stay in damp rooms for a long time the gauze is seriously oxidized.

"During the test of such lamps under conditions below red heat no serious oxidation seemed to take place, and none of the test conditions affected the gauzes, for in none were they subjected to a temperature anywhere near the melting point of steel. Under the severest conditions imposed upon them during our investigation, they retained their rigidity, and though they showed some flaking of metal, mechanically their safety was in no sense impaired.

"Steel-gauze fabrics undoubtedly undergo a process of slow, continuous oxidation that limits their safe life. The extent of the present investigation was not such as to show any serious deterioration. All failures obtained were due to subjecting the gauze in unbonneted lamps to moving air mixtures. Such failures were caused by the 'passage' of flame through the openings in the gauze without rupture of the material and showed a lack of cooling action under the prevailing conditions rather than any mechanical breakdown of the gauze material.

"Brass gauzes, if made of a quality of brass such as was used in the present investigation, do not oxidize to any appreciable extent at normal atmospheric temperatures. At temperatures up to bright red heat, a smooth grayish-black oxide is formed that adheres tenaciously to the wires. Gauzes thus oxidized showed a slight increase in weight, and probably under this condition were slightly safer than when new.

"At bright red heat a fuzzy deposit of white zinc oxide is formed. As the temperature at which this occurs is very near the fusing point of the metal, it is difficult to determine just how far oxidation affects safety. In some of the tests, where failure occurred by rupture, a small hole appeared in the gauze. Many of the wires fringing the hole became oxidized and wasted away until only a barely visible thread of wire remained. At other points actual fusion of the material was evident, and still farther from the hole were areas covered with zinc oxide. If the temperature of the gauze reached the melting point of brass, the gauze fused and failure occurred before much oxidation took place.

"Copper gauzes do not oxidize to any degree at normal atmospheric temperatures, but they oxidize freely at a temperature below a bright red heat. At a dark red heat large flakes of copper oxide form which scale off easily, leaving the wire smaller in diameter and in an annealed state. At a point near this temperature the gauzes, if handled, lose their rigidity, becoming limp and shapeless. At a bright heat the oxidation is further increased and the wires become brittle and break out when the gauze is jarred.

"The tests made to determine relative oxidation showed copper to be inferior either to steel or brass. Under applied heat copper seriously oxidizes over a wide range of temperature. The material after such heating is mechanically unsafe and its rigidity is unsatisfactory. In our experiments copper gauzes failed by both passage and rupture."

The bulletin goes on to say "Monel metal and nickel have been proposed for use as flame-lamp gauzes. As these materials have a higher melting point than steel, have about the same heat conductivity, and resist oxidation at atmospheric and at high temperatures, they should be investigated."

Another conclusion the authors arrive at is that the safest type of lamp is the double-gauze bonneted lamp, the next in descending order is one that is bonneted but has only a single gauze. Next below it is the double-gauze unbonneted lamp, and the least safe is the single-gauze lamp without bonnet, the common Davy. The Hailwood combustion-tube lamp is as safe as that with two gauzes and a bonnet.

FRENCH MEASURES which Premier Briand will communicate to Lloyd George at the Lympne conference, it is said, will include a new tax of from fifty to seventy francs per ton on coal mined in the Ruhr district, which will be placed under the supervision of French mining engineers.

BRITISH COLLIERY OWNERS are declining to discuss prices while the miners' strike is in progress, but express a desire to quote delivery terms after work is resumed. Production in the week ended April 2, at which time mining came to a standstill, was placed at 1,950,000 tons, compared with 3,660,000 in the week preceding and 5,240,000 tons during the week of March 19.

C. J. NEEKAMP HAS BEEN ELECTED secretary of the Northeastern Kentucky Coal Operators Association. Mr. Neekamp has been assistant secretary of the Logan Coal Operators Association.

How an Induction Motor "Motes" and Why

Revolve a Horseshoe Magnet Over a Compass and the Compass Needle Will Rotate Also—In Like Manner the Armature of an Induction Motor Revolves Within the Rotating Magnetic Field Produced in the Machine

By H. H. Startzman*
East Pittsburgh, Pa.

FOUR general types of alternating-current motors are now manufactured—the synchronous, the induction, the repulsion and the series. Of these the induction type is by far the most extensively used for power purposes.

The operation of the induction type of alternating-current motor is strikingly different from that of a direct-current machine because there is no electrical connection between the armature (usually called "rotor" or "secondary" in a motor of this type) and the source of current supply. The motion of the armature or rotor of an induction motor is dependent upon a rotating magnetic field. It is this peculiar field which is characteristic of the induction motor.

If a permanent magnet, like those made up for toys in the form of a horseshoe, is brought near a compass the needle will move until its north pole is closest the south pole of the permanent magnet. Rotate the magnet about the compass and the needle will follow. In an induction motor the alternating current is made to produce a rotating magnetic field similar to that produced by the moving permanent magnet. The rotor of the machine, like the compass needle, then follows this field.

Magnetic Poles Move in the Fixed Stator

The magnetic part of the machine in the induction motor does not move, and is therefore called the stator, because it stands still. Though the stator is stationary the magnetic polarization moves, and the rotation of the rotor results from its tendency to follow the movement of the poles.

With direct current the electromotive force is constant, but with alternating current the electromotive force, or difference of potential, changes every instant. The straight horizontal line of Fig. 1 shows how the value of a direct-current electromotive force remains constant regardless of the time as plotted along the base of the co-ordinates. Fig. 2, on the other hand, shows how an alternating-current electromotive force (e.m.f.) varies from instant to instant. At *a* in Fig. 2 the e.m.f. is zero, at *b* it has reached a maximum in a positive direction, at *c* it is again zero, at *d* it has reached a maximum in a negative direction and at *e* it has again become zero, is tending in the same direction and has the same value that it had at *a*. Having gone through a complete set of values, arrived again at the same value and having the same tendency as at the start, the e.m.f. is said to have gone through a "cycle." The number of cycles through which it passes in one second is called the "frequency."

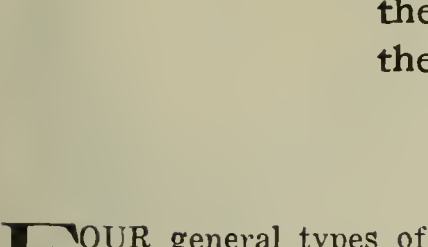


FIG. 1

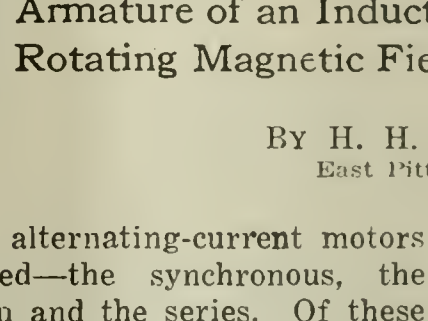


FIG. 2

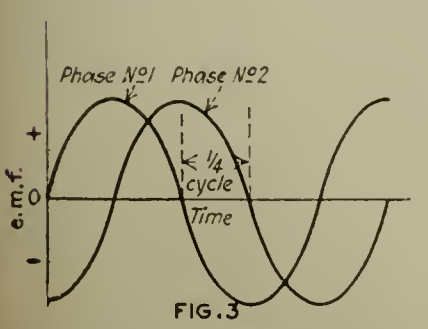


FIG. 3

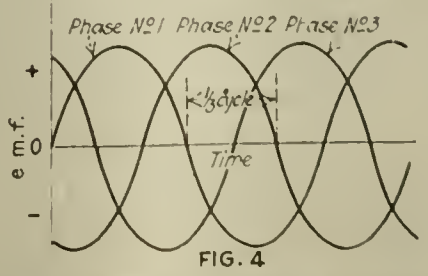


FIG. 4

FIGS. 1 TO 4. COMPARE DIRECT CURRENT WITH ALTERNATING AND SINGLE-PHASE WITH THREE-PHASE

Fig. 1 shows the relation of electromotive force to time with a direct current—a straight line because of the uniformity of voltage and current. Fig. 2 shows the variation in electromotive force of a single phase of alternating current and the length of a cycle. Fig. 3 shows a two-phase current, the two currents being one-fourth cycle apart. Fig. 4 shows a three-phase current, the currents being one-third of a cycle apart.

Fig. 5 is a sketch of an iron ring wound with wire from which taps are taken at three equidistant points—*A*, *B* and *C*. These are connected to a source of three-phase current, the graphs of the e.m.f.'s of which are shown in Fig. 6. Consider now the instant when the time is zero as at position *o*. The e.m.f. of phase *A* is now maximum in a positive direction, *B* and *C* both being one-half maximum in a negative direction.

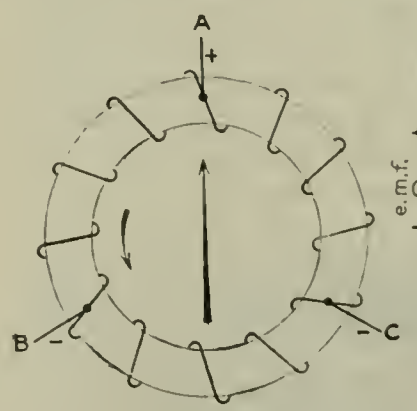


FIG. 5

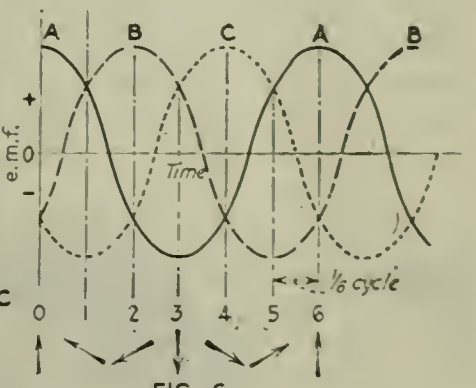


FIG. 6

FIGS. 5 AND 6. ROTOR WITH THREE TAPS

A, B and C are connected to a source of three-phase current, the graphs of which are shown in Fig. 6. The small arrows below the graph show successive positions of needle.

*Engineering department, Westinghouse Electric & Mfg. Co.

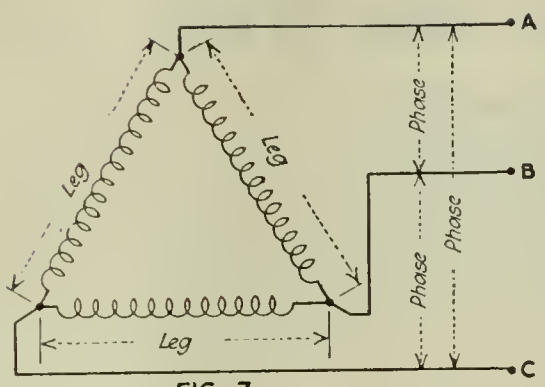


FIG. 7

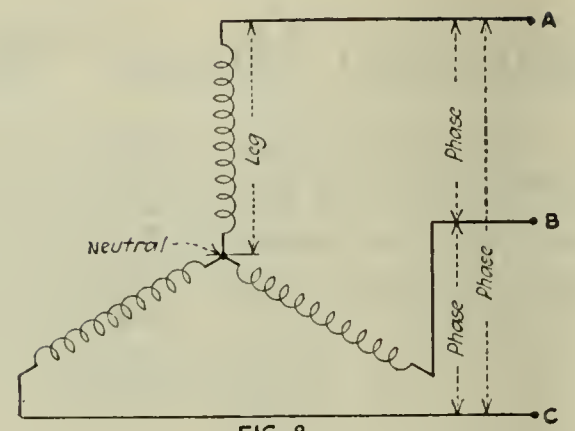


FIG. 8

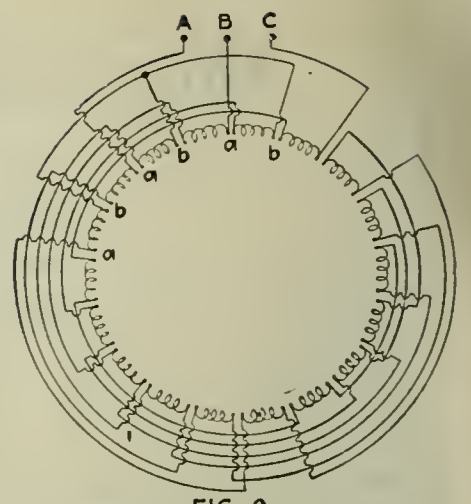


FIG. 9

FIGS. 7, 8 AND 9. ILLUSTRATING THE DELTA, OR MESH, AND STAR, OR Y, CONNECTIONS
The method of joining the wires known as a delta connection is that shown in Fig. 5 and illustrated diagrammatically in Fig. 7. Each section of the winding, commonly known as a "leg," is connected to the ends of the two other legs and each point of junction is connected to one of the three phases of the circuit. Figs. 8 and 9 refer to the star connection, one end of each of the three "legs" being connected to a common point called the neutral.

If a compass needle were to be placed in the center of the wire-wound ring of Fig. 5 the needle would point toward tap *A* as indicated. One-sixth of a cycle later—a cycle being a period of time, be it remembered, and not an interval of space—the conditions become those shown on the line marked *1* in the graph. *C* is then at its maximum in a negative direction, and *A* and *B* are each one-half of maximum in a positive direction.

With these conditions the compass needle would move so as to point half way between taps *A* and *B* in Fig. 5 and as shown by the arrow under line *1* in Fig. 6. One-sixth of a cycle later the conditions become those shown on the line marked *2* in the graph, wherein *B* is at maximum positive direction and *A* and *C* each one-half maximum in a negative direction. The compass needle now would point toward tap *B*, or as shown by the arrow under line *2* in Fig. 6.

One-sixth of a cycle later, or one-half of a cycle from the original position *0*, the conditions become those shown on the line *3* in the graph, *A* being maximum in a negative direction and *B* and *C* each one-half maximum in a positive direction. The compass needle then would point in a position half way between taps *B* and *C*, or just one-half of a revolution from its original position, the direction being shown by the arrow under line *3*. Simultaneously the e.m.f.'s have gone through one-half of a cycle.

Pole and Needle Return After Full Cycle

In a similar manner for every one-sixth of a cycle (see lines *4*, *5* and *6*) the compass needle would rotate one-sixth of a revolution until at last when line *6* in the passage of time is reached the e.m.f.'s have gone through one complete cycle and the compass needle again stands in its original position. It has thus made one complete revolution while the e.m.f.'s have experienced a complete cycle of changes of polarity. If any two of the three connections, *A*, *B* and *C*, were transposed the direction of rotation of the magnetic field would be reversed and the needle caused to rotate in the opposite direction.

Diagrammatically the winding on the iron ring of Fig. 5 is connected as shown in Fig. 7—that is, each section of the winding, usually called a "leg," is connected to the ends of the two other legs, each point of junction being connected to one of the three phases of the circuit. This method of connecting a three-phase winding where all three legs are joined in series and then to the line in such a way that each leg is across a "phase" of a three-phase circuit is called a "delta" or "mesh" connection and is represented by the symbol Δ.

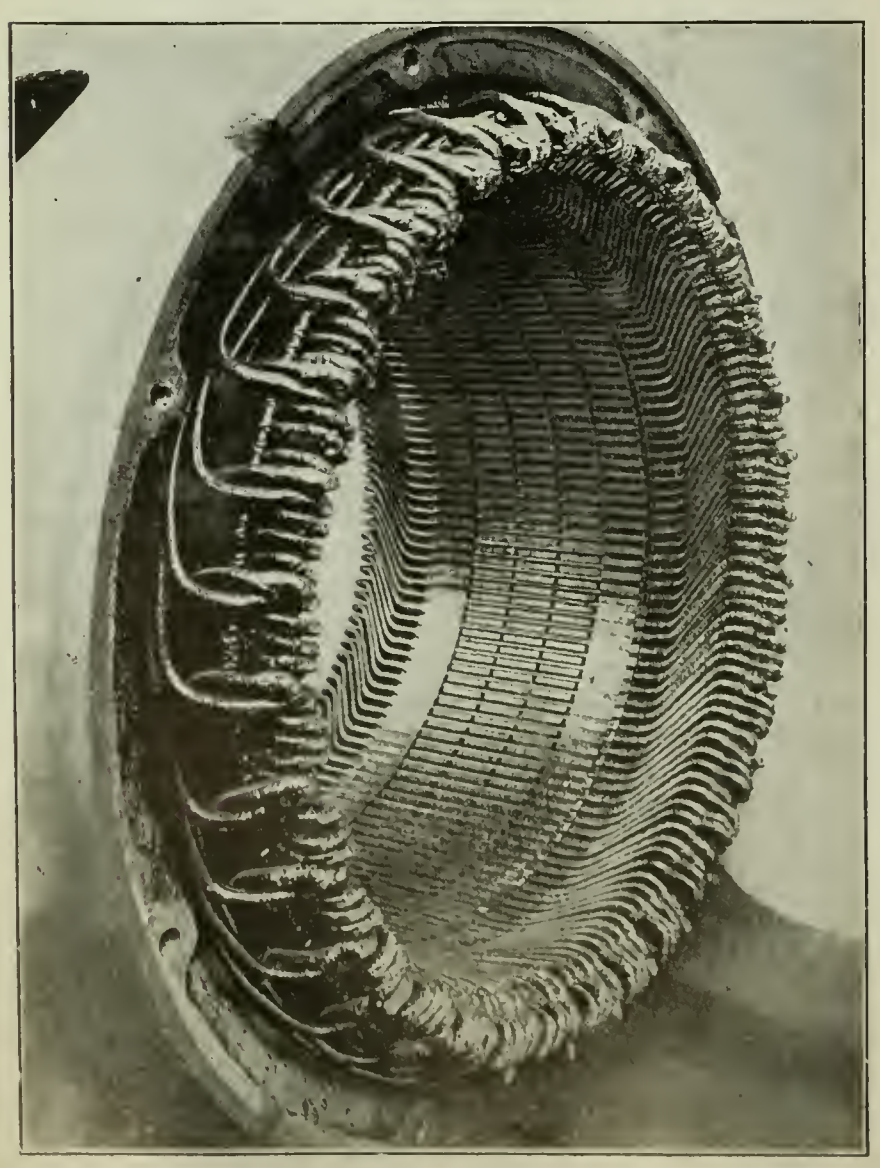


FIG. 10. STATOR WINDINGS OF LARGE INDUCTION MOTOR
It will be noted that each phase has five coils per pole. These groups of five coils with the cross connections coming out from between groups can be readily distinguished.

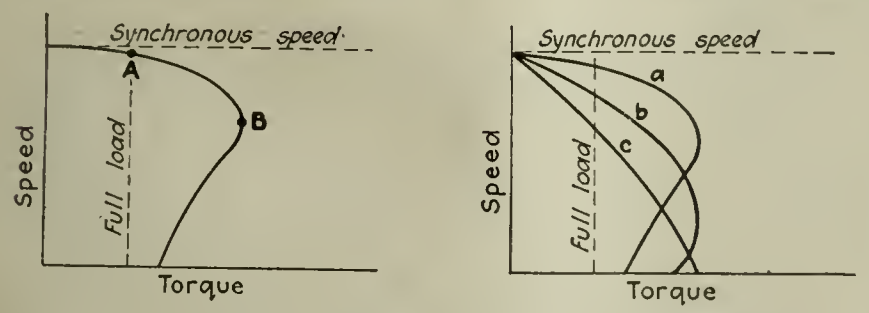
In Delta Leg Voltage Equals Phase Voltage

A second and more usual method of connecting three-phase motor windings is shown in Fig. 8. This is called the "star" or *Y* connection and is represented by the symbol *Y*. One end of each of the three legs is connected to a common point called the "neutral," the three free ends being connected to the three line wires. In the delta connection the leg voltage is equal to the phase voltage but the leg current is equal to the phase current divided by the square root of three. In the star connection the leg current is equal to the line current but the leg voltage is equal to the line voltage divided by the square root of three. In two-phase four-

wire windings there are two legs, each shunted across a pair of line wires between which a phase exists. The voltage and current in each leg are the same as those in the phase to which it is connected. Two-phase three-wire windings are similarly connected, one line wire being common to both phases. The current that flows in the common wire is the resultant of the currents of the two phases.

The field (usually called "primary" or "stator") windings in an induction motor consist of coils imbedded in evenly distributed slots on the inside surface of a laminated steel cylindrical shell. The total number of coils are divided into groups which form the poles. The pole groups are subdivided into elements which represent the groups of coils per phase per pole. The coils within a group or the groups within a leg may be connected in series or in parallel. The legs can be connected in star or delta if it is a three-phase winding. By changing the series and parallel connections of the coils in a group or the groups in a leg a motor often can be reconnected to operate on another voltage.

A schematic diagram of the connections of a six-pole three-phase star-connected stator is shown in Fig. 9. The elements *a* and *b* on the diagram represent the coil groups per phase per pole. Fig. 10 is a photograph of the



FIGS. 11 AND 12. GRAPHS SHOWING RELATION OF SPEED TO TORQUE

In Fig. 11 note the fact that at *A* there is a satisfactory torque, or turning effort, combined with suitable speed. After *B* is reached the speed decreases rapidly and the torque, which has been increasing, is on the point of declining. This is the "pulling-out point." Fig. 12 shows speed-torque characteristics of a wound-rotor motor under three different resistance conditions.

stator windings of a large induction motor. Five coils per phase per pole are shown. These groups of five coils with the cross connections coming out from between groups can be distinguished easily.

Rotor Does Not Keep Up With Pole Motion

The rotating compass as described illustrates the operation of a polyphase "synchronous" motor, as the rotor revolves in "synchronism," or exactly in step, with the rotating magnetic field. If the compass needle is replaced by a laminated steel cylinder wound with conductors in a manner similar to that employed in an ordinary direct-current armature except that these conductors are short-circuited, it is found that this also will revolve, but at a speed slightly less than that of the rotating field. This arrangement then forms the induction motor.

As the rotor travels at less than synchronous speed it really moves backward with respect to the revolving field. Thus the short-circuited conductors, or "cage windings," on the surface of the rotor have an e.m.f. induced within them which causes a circulating current to flow. It is the force arising from the interaction of this circulating current with the synchronously revolving field that causes the rotor to turn. The difference in speed between the rotor and the revolving field is called the "slip" and usually is expressed in per cent of

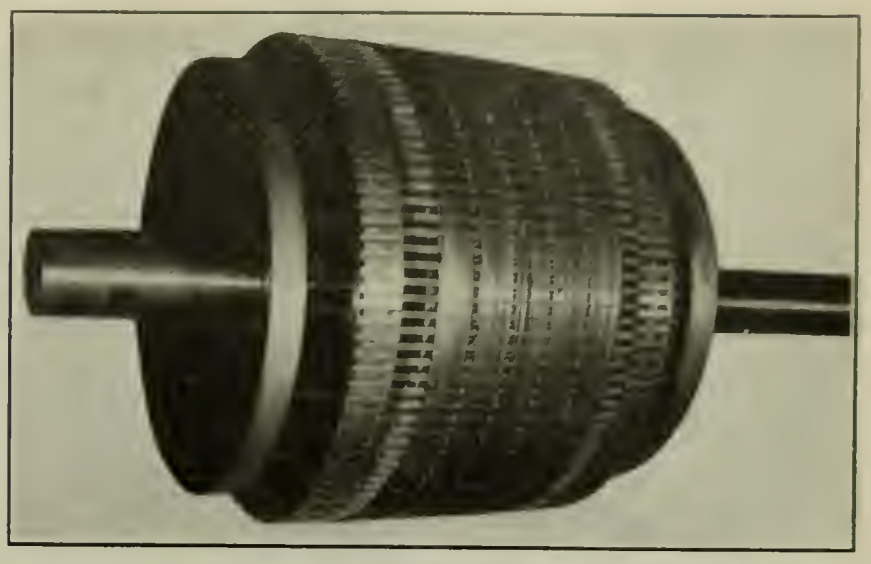


FIG. 13. ROTOR OF CAGE-WOUND INDUCTION MOTOR

The cage winding consists of a number of bars driven through partly inclosed slots, the extremities of the bars being brazed or cast to end rings.

"synchronous speed." The synchronous speed of the rotating field in revolutions per minute is equal to sixty times the frequency divided by the number of pairs of poles.

"Pull-Out Torque" Must Exceed Need

As the load comes on an induction motor the slip increases, causing a larger circulating current and a greater torque. This, however, does not go on indefinitely because of the resistance, reactance and magnetic leakage of the windings. Consequently at some point represented by *B* on the speed-torque curve in Fig. 11 any further decrease in speed causes a falling off in the torque. The point *B* is called the "pulling-out point" and represents the maximum torque that can be obtained from the motor. Point *A* represents the full load, showing approximately the relative values of full-load and pull-out torques of a standard cage-wound induction motor. In the application of these machines it is necessary to know the pull-out torque of the motor, which always must be greater than the maximum-load torque expected.

How Speed-Torque Curves Can Be Modified

By changing the values of the resistance, reactance or magnetic leakage the induction motor can be made to have different shaped speed-torque curves to meet the requirements for different applications. Because of manufacturing methods and similar causes the secondary resistance is the factor most easily changed. Fig. 13 shows a rotor of a cage-wound induction motor. The cage winding consists of a number of bars driven

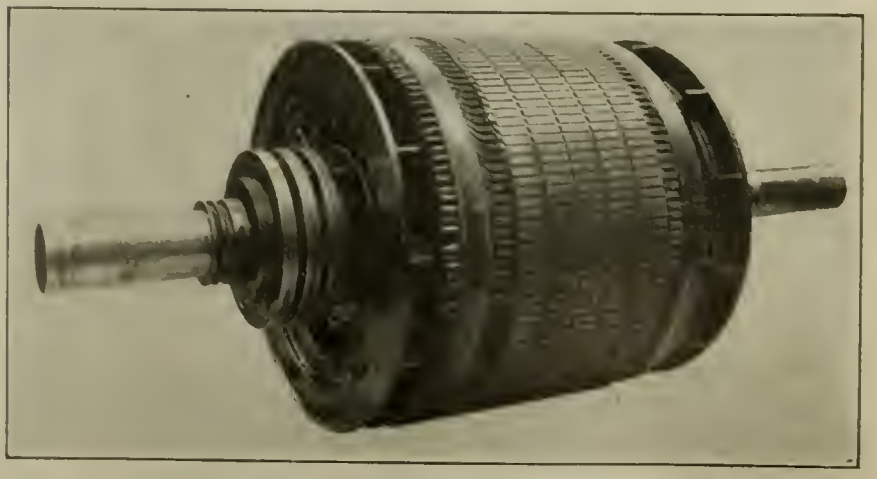


FIG. 14. WOUND ROTOR FOR INDUCTION MOTOR

This is wound in the same way as the stator, Fig. 10. The terminals are connected by means of slip rings and brushes to an external resistance, by which the rotor circuit losses can be altered and the speed controlled.

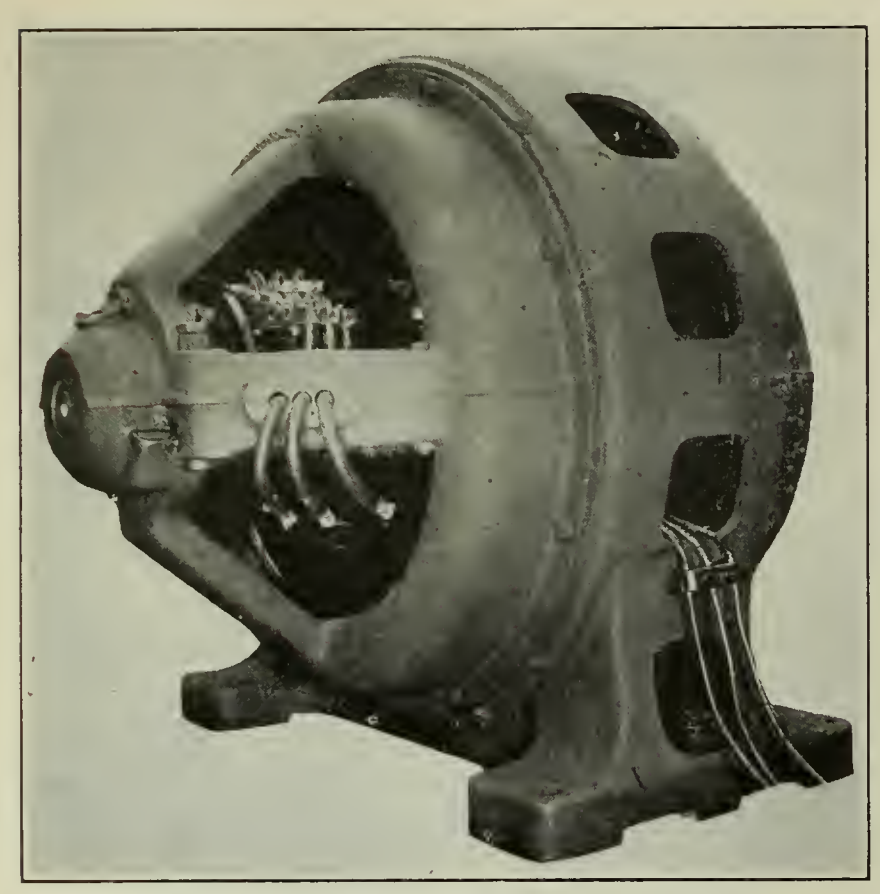


FIG. 15. LARGE WOUND-ROTOR MOTOR
This motor is intended for use under variable speed conditions.

through partly-enclosed slots, the extremities of the bars being brazed or cast to end rings.

By using different metals or alloys in the end rings or in the bars the motor may be so designed as to have different secondary resistances. A motor with a low secondary resistance will deliver maximum torque at a small slip and will have low resistance losses in the secondary. If the motor has a high secondary resistance it will deliver maximum torque at a high slip and have high secondary resistance losses. The induction motor with secondary of low resistance corresponds in general characteristics to a direct-current shunt motor and a high-resistance secondary induction motor corresponds to a direct-current compound motor.

If, on starting, full line voltage were thrown on a cage-wound induction motor, from five to nine times normal current would flow through the windings. The large rush of current possibly would injure the insulation and in addition cause excessive voltage fluctuations on the supply circuit. To limit the starting current to a reasonable value, cage-wound motors are, with the exception of the smaller sizes started on reduced line voltage.

Compensators Reduce Line Voltage at Start

The most convenient method of reducing the line voltage is by means of "compensators," which are "auto" or single-coil transformers provided with taps. A set of taps giving about 50, 60 and 80 per cent of line potential are used ordinarily on compensators for starting service. As the torque of an induction motor varies directly as the square of the applied voltage, reducing this voltage is not a particularly satisfactory method of speed control. Starting on reduced potential causes the motor to develop a low torque.

The slip of an induction motor at a given torque varies as the secondary copper losses. Hence if the rotor resistance per phase winding is doubled, the slip for any given torque will be increased 100 per cent; if the resistance is increased to three times its initial value, the slip will be increased 200 per cent, and so on. As the secondary resistance can be made to set the speed for any given torque, motors are built with "wound" rotors. A wound rotor is shown in Fig. 14. This winding is similar to the one on the stator, the terminals being connected by means of slip rings and brushes to an external resistance. By varying this external resistance the rotor circuit losses can be altered and the speed controlled. By placing sufficient external resistance in the rotor circuit, maximum torque can be made to fall at about 100 per cent slip or at start.

External Resistance Used at Starting

External resistance is used not only to control the speed of a wound-rotor motor but to start it as well. Fig. 12 shows the speed-torque characteristics of a wound-rotor motor with a two-step external resistance. Curve *c* is the torque curve with all the external resistance in the circuit and represents starting conditions. Curve *b* is the torque characteristics when one section of the external resistance is cut out, and curve *a* is the torque curve when no external resistance whatever is in the circuit. Fig. 15 shows a large wound-rotor motor built for variable-speed applications.

The speed of an induction motor can be controlled also by varying the frequency of the supply voltage, the number of motor poles or by cascade connection. To increase the speed range, combinations of these methods are adopted.

Cage-wound motors are used where it is desirable to obtain speed that is practically constant, and rugged construction, provided that a relatively low starting torque is not objectionable. The quality of the finished product of textile machinery depends on the uniformity of speed of the driving motors. This makes cage-wound induction motors preferable to direct-current machines.

Line shafting, pumps, fans and constant speed wood- and metal-working machinery, cement mills where the dust would cause slip rings to wear rapidly, are all examples of applications to which cage-wound induction motors are well adapted. Special high-resistance cage-wound rotor motors are used for light shears and punch presses, small cranes and the like.

For variable-speed service, such as hoists, large cranes and heavy starting-duty applications, the only alternating-current motor available at the present time is the wound-rotor induction machine.

German Figures on Mine Locomotives

INTERESTING statistics on the use of mine locomotives in Germany are given by the Boiler Insurance Co., of Dortmund, which made inquiries into coal transport in mines. The cost per metric ton-kilometer in marks should be multiplied by 34.747 or 2.204 to obtain the cost per short ton-mile in cents, according as the value of the mark is figured at 23.8c., the pre-war rate, or 1.151c., the present value.

Type of Locomotive	No. in Service	Coal Hauled, Metric Tons	Ton-Km. per Locomotive	Cost per Ton-Km. 1919, Marks	Cost per Short Ton-Mile in Cents	
Trolley	881	26,748,979	87,840	0.452	15 71	1.00
Compressed air	624	14,983,629	44,482	0.794	27 59	1 76
Gasoline	715	13,826,248	31,954	0.843	29 30	1 86
Storage-battery	25	1,326,006	68,058	0.966	33 57	2.12

GERMAN COAL EXPORTS to Italy are assuming very large proportions, a fact which is noticed with satisfaction by the Swiss railroad authorities. During the last few years the Swiss Federal Railways have been operated at a considerable loss. From 220 to 230 cars loaded with coal and coke, chiefly from the Ruhr district, pass over the Swiss railway lines each day. This is carried over the Lötschberg-Simplon Electric Railway line, on the mountainous sections of which the trains are divided and new heavy electric locomotives are used to haul the trains over the Alps.

Mine Fan Is Driven by a Uniflow Engine

AN INTERESTING fan installation is that at the No. 4 colliery of the Kingston Coal Co., of Kingston, Pa. The fan is a Vulcan 20 x 8-ft. machine direct connected to a 25 x 30-in. right-hand uniflow engine. The fan under test produces 196,000 cu.ft. of air per minute against a water gage of 3 in. The steam pressure at the throttle is 109 lb. gage and 27 lb. of steam is consumed per horsepower hour. This was determined by a flow meter, the total indicated horsepower being 126.6.

The fan and engine are housed in a reinforced-concrete building. This structure is lighted by heavy wire-insert glass, the window frames being of steel, as are likewise the doors. As is customary at many anthracite collieries two independently-operated fans have been installed, the spare to be used in case of emergency. The second fan in this case is driven by a corliss instead of a uniflow engine.

A particularly interesting feature of this uniflow engine is the trouble that the Vulcan Iron Works had with its construction. This firm procured from Germany just previous to the war an engineer who came to this country to design this type of engine. Just as he had completed the plans for the engine proper and before he had designed the governor the war broke out. This engineer, being a reservist, therefore returned to Germany immediately. Consequently, a "uniflow" governor was never designed. The manufacturers accordingly attempted to equip the engine with a standard type of governor, but this did not give satisfaction. After a number of trials the mechanical engineers planned and built a governor that gives satisfactory results.

After the armistice the engineer who designed the original intimated that he would like to return and take up his work where he had dropped it. His overtures, however, fell upon deaf ears.

UNIFLOW ENGINE BY WHICH FAN IS DRIVEN

This engine operates non-condensing but consumes only 27 lb. of steam per horsepower hour. The uniflow engine carries still further the old but still important principle that distinguished Watt's from Newcomen's engine, namely: Cool the cylinder of the engine as little as possible during evacuation.

CONCRETE FAN HOUSE AT KINGSTON NO. 4 COLLIERY

Fan delivers 196,000 cu.ft. of air per minute against a 3-in. water gage. A second fan driven by a corliss engine is provided for use in an emergency.

Something perhaps should be added at this point as to the principle on which the uniflow engine operates. The steam travels in the cylinder in one direction only —hence the name, which is an abbreviation for "unidirectional flow."

Uniflow Engine Reduces Heat Loss in Exhaust

Heat carried into an engine cylinder with the steam may be utilized or dissipated in any one or more of three ways—in radiation, in work and in the exhaust. In a well-jacketed cylinder, losses occasioned by radiation to the air are small indeed; the heat converted into work can be readily accounted for and the balance of the steam consumed must necessarily go into the exhaust. In the ordinary engine, heat is given up to the inner cylinder surfaces during admission and part of the expansion stroke, while during the balance of the expansion stroke and all of the exhaust the transfer of heat is in the opposite direction—that is, from the cylinder walls to the steam which is eventually pushed out at the exhaust port. Any means then that will tend to decrease or nullify this transfer of heat from the steam to the cylinder walls and back again to the steam, especially during the exhaust, will also tend to lessen the heat consumption of the machine.

In the ordinary steam engine the steam enters and leaves the cylinders from the ends, thus the working fluid after heating up the cylinder walls and then cooling off during expansion again picks up the heat which it has imparted to the cylinder and piston and carries it out by the exhaust port. In so doing it not only cools off the cylinder head and walls but sweeps away the water there condensed, which otherwise would be re-evaporated during compression.

Exhaust Made in Center of Cylinder

In the uniflow or una-flow engine the path of the steam lies from the end of the cylinder to the center, exhaust being made at this point. The convex surfaces of the cylinder walls are lagged with heat-insulating material and the cylinder heads are either similarly covered or are steam-jacketed. This type of engine has no exhaust valve. The ports left in the center for this purpose are arranged circumferentially around the cylinder. These take the form of slots equal in length to about one-tenth the full cylinder length. The piston in such an engine is much longer than that employed in

the ordinary machine, being nearly equal in length to the crank, or one-half the length of the cylinder.

The cycle of operations of such a machine is approximately as follows:

High-pressure steam is admitted to the cylinder during a fraction of the stroke. After cut-off this steam operates expansively until, roughly, nine-tenths of the stroke has been completed. At this point the piston begins to uncover the exhaust ports and release takes place. On the return stroke after the exhaust ports have been covered compression begins and if the engine is properly designed the steam filling the clearance space when the end of the stroke has been reached is at the same temperature as that admitted from the boiler.

As the exhaust takes place at the middle of the cylinder, steam having been admitted at the end, this direction of flow is constant and the admission ports, passages and valves are not cooled down to the temperature of the exhaust. This results in a decided saving in heat and consequently in the cost of fuel.

One characteristic of the uniflow engine is that it is nearly as economical at light loads as it is when the loads are normal or excessive. The reason for this lies in the fact that a smaller proportion of the heat in the steam is carried out with the exhaust than is the case with the ordinary type of engine. Ordinarily the most economical results are attained when the cut-off takes place at approximately one-fourth stroke. With the uniflow cutoff may be made anywhere and approximately the same amount of steam be consumed per horsepower as would be the case if the cutoff were made at one-fourth stroke.

Loading a Culm Bank by Means of Breasts

Where Culm Bank Was Located Too Far from Breaker for Dragline Conveyors and Hydraulicking Was Disadvantageous by Driving Breasts Into the Pile and Sliding the Material Down Sheet-Iron Plates 20 Tons Per Man-Day Could be Loaded

By Dever C. Ashmead
Wilkes-Barre, Pa.

IT MAY seem a misleading statement to say that a culm bank may be loaded out by means of breasts, but when one sees the work actually being prosecuted this title seems fitting and appropriate. Of course, when the openings into the culm bank have been widened and connected much of their resemblance to underground rooms will be lost. During their earlier stages, however, this similitude is striking.

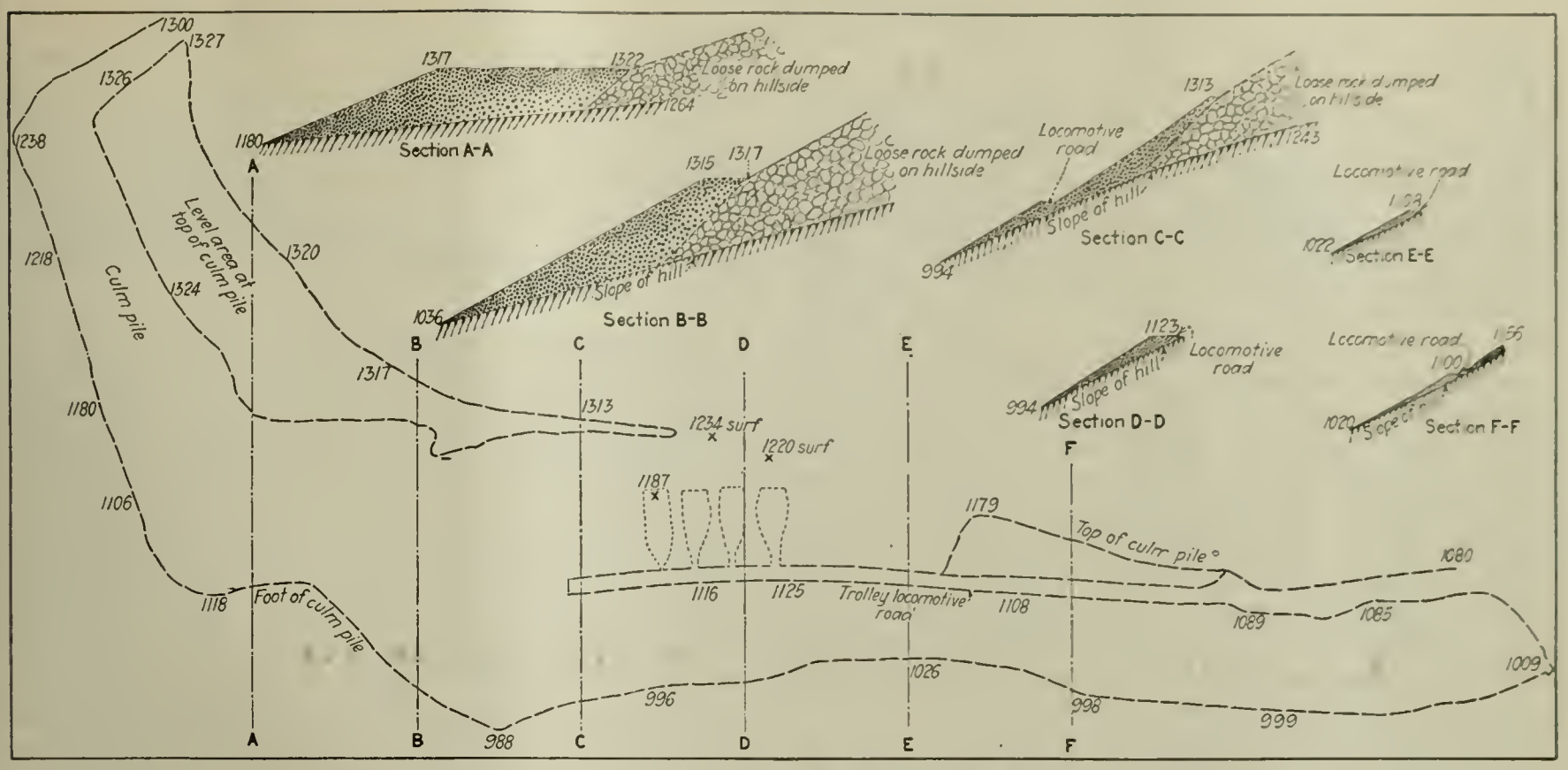
At the Susquehanna Collieries Co.'s Cameron colliery, near Shamokin, Pa., the culm bank now being reclaimed lies on the side of the mountain fully half a mile from the breaker. This is rather too great a distance to permit of the transference of material by means of dragline scrapers. The bank also lies in such a position that a steam shovel, if it could be used at all, could be operated only with difficulty. Furthermore, hydraulicking the materials into cars was open to the objection that it would be apt to wash the material onto the tracks of the Pennsylvania R.R. at the foot of the dump.

With a dragline conveyor no advantage could be taken of the natural slope of the ground, and it seemed advisable to utilize as far as possible the slope of the mountain side.

This slope was, of course, insufficient to permit the coal to slide unaided. Upon sheet iron, however, the material would normally travel with ease. Accordingly,

Mine Breasts on Surface

Conditions being similar to those underground the Susquehanna Collieries Co. has opened breasts in the culm piles at the Cameron colliery. Note the chutes and the gates that fill so large a place in underground workings. Steel plates are used for linings to the chutes.



PLAN AND ELEVATION OF THE CULM PILES AT CAMERON COLLIERY

Illustration shows the slope of the mountain and of the culm bank, the general shape of the "breast." Sheet iron is run up the center of the breast, down which it usually runs by gravity, though sometimes coal will fail to run and help from a shovel is needed and given.

a tramroad was built along the mountain side with a slight grade in favor of the loads. Upon the upper side of this road chutes fitted with gates at their lower ends were constructed.

Into these chutes the coal was loaded by hand until the sheet iron could be put in place. After this was done the men mined the coal in such a manner that it would flow or roll naturally to the sheet iron and thence slide to the chutes. All that it was necessary to do was to remove some of the material from the toe of the slope, whereupon the coal higher up, seeking its natural angle of repose, flowed downward to the sheet-iron runway and thence to the chutes.

Of course in the winter, when the culm freezes in place, it is necessary to loosen it with explosives. Also at times or rather in certain places the angle of the sheet iron is not sufficient to induce movement of the coal and it becomes necessary to "buck" this material to the chutes, precisely as underground.

In this manner, however, twenty-nine men are now enabled to load as much as 600 tons of culm-bank material in one day. A single trolley locomotive hauls this culm to the breaker for preparation. One of the chief advantages of this method of handling is that the material arrives comparatively dry, thus permitting it to be unloaded from the cars without difficulty or delay.

Experts Inquire Whether the Super-Power Plants Should Be Placed at Mines

INVESTIGATIONS conducted by the Geological Survey are revealing certain difficulties, inherent but not by any means insuperable, in the use of coal for the super-power project that has been proposed for the electric supply of the region between Washington and Boston. One is that there will be a lack at the power plants of sufficient low-temperature water for the operation of condensing engines if these plants are located at the mines. It develops that the rivers in the bituminous and anthracite coal fields of Pennsylvania do not provide necessary facilities. The streams are either too small to provide the water required or the waters are so contaminated with corrosive substances carried down by drainage from the mines as to damage the boilers or plants.

It is estimated that 800 tons of condensing water is necessary for each ton of coal burned beneath a boiler. A river after receiving heated water from a plant must be allowed time to regain its natural temperature before the water from it can be used again. This may have a tendency to reduce the number of plants that can be established along the rivers. It is said that the water of the eastern branch of the Susquehanna River is too badly contaminated with sulphur from the mines to be suitable for use. The alternate discharging and storing of water by reservoirs in the Delaware River is an objection, as it would cause an irregular stream flow. Furthermore run-of-mine anthracite being too valuable to be burned under boilers, only culm or waste could be used for the steam raising, and it is feared that modern mining methods will soon reduce the proportion of culm to mined coal, so that at any single mine the power plant could not obtain sufficient culm for its needs. Transportation of coal from other mines would defeat the purpose of the plant, which is to save transportation as well as to reduce the consumption of coal. Another factor against power plants at anthracite mines is alleged to be the greater ease with which run-of-mine bituminous coal can be used for power plants.

DUTCH COAL MINE OWNERS have decided to reduce the wages of the miners by 16 florins per week, stating that otherwise they will be obliged to shut down the pits, according to a report from Amsterdam.

A FRENCH ENGINEERING COMMISSION has arrived in this country for the purpose of studying the water-power system of America with a view of conserving 40,000,000 tons of coal annually in France by the electrification of its railroads.

Powdered Coal as a Fuel

JUDGING by the sheaf of letters to be answered and the number of inquirers who invade the offices of *Coal Age*, the matter of pulverized coal is quite a lively one. So far, however, coal men seem to be less keen about the possibilities of that product than consumers, yet the manufacture of pulverized coal ought to be done at the mining plant and not at that of the consumer. To C. F. Herrington, a mechanical engineer, whose book entitled "Powdered Coal as a Fuel," D. Van Nostrand Co. has just republished with additions by the same author, pulverized coal is something that is, so to speak, "home brewed"—that is, made where it is used. Nothing appears in his volume about the transportation and marketing of powdered coal and nothing about its availability for steam-heaters in apartment houses, offices, schools and public buildings. One would not realize that it is now a vendible article and is being extensively sold in the West and Middle West.

It is not to be assumed, however, that the coal operator will not find this an intensely interesting publication. He will be able to see what coal is best suited to be used as pulverized material. He will learn that while ash as high as 52 per cent may not prevent the combustion, in boiler furnaces, of coal containing such a large percentage of impurity, it will create difficulties in the disposal of the refuse, part of it leaving by the stack to fall all over the surrounding neighborhood and part of it falling into, and blocking, the back connection. Should it slag, the fused ash will coat the cold surfaces of the water tubes and the linings of the furnace chamber.

There is like trouble metallurgically. There is apt to be slagging in the combustion chamber, slagging in the hearth and in the flues. The accumulation of slag in the hearth can be removed with the other slag; that in the combustion chamber by arranging to have it deposited on loose ashes. Slagging in the flues can be prevented by keeping the temperature so low that the slag cannot collect, all of which suggests that low ash is a great advantage and a non-slagging ash is to be preferred to one which fuses readily.

Poorly Dried "Home-Brewed" Powdered Coal

Returning to the "home brew" it seems that the cost of installation is so high that some companies are dispensing with driers, and to save first cost are using coal as received. From this practice the low efficiency attained does not deter them. Coal in Iowa was so wet and frozen that it was dynamited loose from the car. The coal was then thrown into the snow and elevated, snow and all, to the coal hoppers, where it was pulverized. The plant was operated without difficulty nor was there any failure to maintain the flame in the furnace, but the results were uneconomical, about 20 per cent more coal being used than if proper drying facilities had been available and utilized. Moreover it took more power to pulverize the coal by about 50 per cent.

It is clear that this way of operating would not do at all if conditions were always as bad as outlined. It could not have been maintained had not the moisture been usually far less. Mr. Herrington emphasizes the fact that the coal should be conveyed so that it cannot get wet and should be dried before pulverization. Grinding at the mines would obviate, especially where the mines are dry, the use of wet coal, thus saving a large percentage of the drying expense. Properly conveyed in closed tanks or cars it will arrive at the point of consumption dry and ready for use in its most economical form. At the same time the large first cost of building mills for each of the many plants is largely saved by a good milling center where the cost per ton of output will be greatly decreased. The time has long passed when each family grinds the flour it needs for its own table.

Powdered Coal Half as Costly as Fuel Oil

Those who would seek to enter the pulverized-coal business to supply the material for industrial purposes will find this book of 338 6 x 9-in. pages exceedingly useful. It shows the first and operating cost of a fuel-oil installation, of one burning water gas, of one installed with the screw-conveyor system of distributing powdered coal, and of one with an air-distributing system using coal of that character. The table may be thus summarized, with fuel oil as unity: As to first cost, fuel oil 1.0; water gas, 4.4; powdered coal (with screw conveyor) 4.0; powdered coal (with pneumatic distribution), 2.6. As to operating cost when interest on investment is considered the figures are: Fuel oil, 1.0; water gas, 0.9; powdered coal (screw conveyor), 0.8; powdered coal (pneumatic distribution), 0.6.

The book treats of the preparation of powdered coal, its use in cement plants, in metallurgical furnaces, under boilers, for locomotives, for annealing furnaces, air furnaces, anode furnaces, core ovens, continuous-heating furnaces, car-wheel furnaces, lime kilns, clay kilns, cathode and copper-reverberatory furnaces, forge furnaces, rivet making, sheet and pan furnaces, tin pots and tire furnaces. The firm that would sell coal for such purposes can learn from this book where powdered coal might be and is being placed though likely to overlook the non-industrial uses which have already been developed.

Communistic tumults in Germany have had considerable influence upon coal production in the Ruhr district. During March the production decreased by about 2 million tons, chiefly in the mines situated on the left side of the Rhine. Negotiations with the miners regarding the reintroduction of voluntary extra shifts have not as yet been taken up again. These extra shifts formerly furnished about one million tons a month, or nearly half of the "reparation coal." It is expected that as soon as the new state laws fixing the working time for the collieries is passed by the Diet, the extra shifts will be taken up again.

The British Board of Trade shows that the new companies registered in the United Kingdom during 1920 totalled 11,011, of which 425 were coal, iron and steel companies with a nominal capital of £38,375,641. During January and February of the current year 355 British companies increased their nominal capital. Of these, one, a colliery company, increased its capital £3,174,925.

Anthracite coal rates from Pennsylvania mines to Philadelphia are declared unreasonable in a complaint to the Interstate Commerce Commission by the George B. Newton Coal Co., of Philadelphia.

In an article entitled "At Plumville Coal Is Dumped in Mine and Carried by Apron Conveyor to Tipple," the fact that the installation was made by the Fairmont Mining Machinery Co. was overlooked. To describe the machine without naming the maker is only one remove from quoting an author without giving him credit and *Coal Age* tries not to deprive anyone of his rights in this particular. The article appeared in our issue of April 21 on pp. 699 to 703.

Problems of Operating Men

Edited by James T. Beard

Building Chutes in Pitching Seams

Inclination of Chute Dependent on Nature of Coal and Its Condition—The Pitch Must Be Sufficient That Coal Will Slide Readily, but Not So Steep as to Unduly Break the Coal

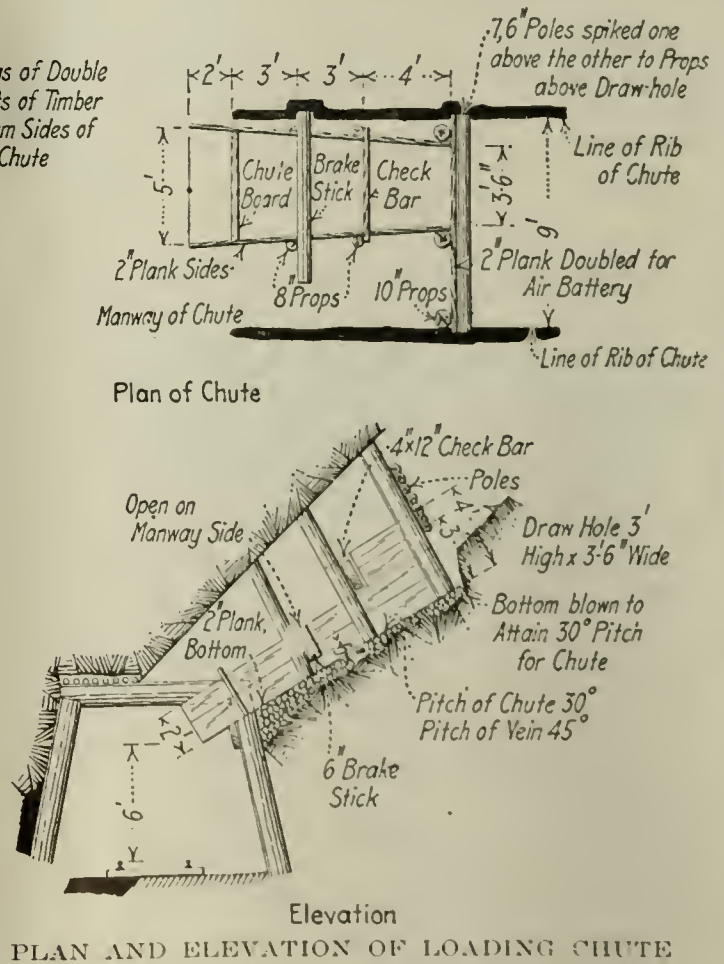
READING the inquiry of an engineer, asking the proper inclination of a chute for bituminous coal, *Coal Age*, Dec. 2, p. 1141, leads me to offer a few suggestions in regard to building a chute in a pitching seam, where the requirements are somewhat different from the building of a chute on a tipple, referred to in the reply to this inquiry.

As was stated in that reply, the proper inclination of a chute depends very largely on the nature of the coal to be handled and its condition, whether wet or dry, and the size to which it is broken. This applies to all chutes whether on the tipple at the surface, or underground. In the mine, many chutes are constructed on the natural floor of the seam, particularly if the bottom is hard and smooth. In that case, it has been my experience that the chute must be given an inclination of 32 deg., in order to have the coal slide freely and cause no delay in loading cars on the gangway. On the other hand, if the bottom is soft or irregular better results are obtained by lining the chute with sheet iron, in which case the inclination of the chute can be much reduced. In the reply given to the inquiry an inclination of 26 deg. was recommended for chutes lined with sheet iron when loading large lump coal, dry. Lining the chute gives cleaner coal and there is less breakage than when the coal is made to slide on the floor of the seam.

Frequently it will happen that the pitch of the seam is too great to permit the chute to be built in the floor in the usual manner. For example, a seam having an inclination of, say 50 deg. would cause an undue amount of breakage in loading if the chute is given the same pitch.

In order to overcome the difficulty presented on steep inclinations, therefore, it is necessary to excavate the bottom of the seam so as to permit the chute to be built with a suitable inclination and afford easy and safe loading. To make this clear I have prepared a sketch showing the plan and elevation of a loading chute in a steep seam. The pitch of the seam is shown as 45 deg., while the incline of the chute is only 30 deg.

What is important in building a chute of this kind is to provide check-bars supported by posts set in the seam in such a manner as to resist a great rush of coal. The chute is shown as lined with 2-in. planks on the bottom, which requires a somewhat greater inclination than in the use of sheet iron for that purpose.



PLAN AND ELEVATION OF LOADING CHUTE

Having had considerable experience in building chutes in mines, both in France and Belgium, permit me to refer to a few of the details employed in that region. One point was to give a good clearance between the top of the car and the lip of the chute, which avoids much delay in loading, as it permits the coal to fall free of the end of the chute and the movement of the loaded car is not obstructed.

As shown in the plan in the figure, the excavation at the lower end of the chute is made wide enough to permit the loader to pass up the chute a short distance, for the purpose of operating the brake-stick that controls the loading of the coal. The sides of the chute proper are widened toward the bottom to prevent any clogging of the chute, which would often occur if the width was uniform throughout.

Construction of Battery to Insure Safety in Loading

A strong battery of heavy logs or poles is constructed just above this loading space and a manway is built up one side of the breast to enable the miner to reach the face of the coal. This construction provides a safe means of loading the coal mined on steep pitches. Under no conditions should a miner be permitted to enter a chute that has become blocked. He must dislodge the coal by working from the side of the chute. Many a miner has lost his life by crawling into the mouth of a chute to dislodge the coal.

The work of building a chute must be entrusted only to reliable and experienced men, and the work performed with as much care as building an overcast, setting up a mine door, or timbering a shaft. In mining coal on steep pitches a self-acting incline will often be found more profitable than to load the coal from chutes. In the latter case it is almost impossible to avoid breaking the coal and producing much slack.

Chute mining, however, possesses the advantage of allowing smaller roads or gangways and requires less brushing of the roof and lifting of bottom. The method is much used in mining seams of coal on steep inclinations.

Gaston F. Libiez,
Peru, Ill. Face Boss.

Qualified Shotfirers

Shotfiring a dangerous occupation, calling for the same qualifications, when performed in a gaseous mine, as those required of a competent fireboss in mines of the same character.

ATTENTION is called, in the excellent letter of R. W. Lightburn, *Coal Age*, Feb. 10, p. 276, to the growing need of examination and certification of men employed as shotfirers. This is a timely question and cannot fail to appeal to those acquainted with the work.

No one who has been exposed to the dangers of shooting coal will deny that the men selected to perform the duties of the shotfirer must be competent and capable of doing the work with safety

to themselves and the mine. I fully endorse the suggestion that these men should be examined by an authorized board of examiners and certified as to their competency.

We demand that a fireboss shall possess certain qualifications that will fit him for that work. The firing of shots in mines is equally dangerous with the examination of working places for gas, and most men will agree that the shotfirer belongs in the same category with the fireboss.

If this is true and we require the rigid examination of candidates for the position of fireboss, why should not our mining laws demand the same of the men who are to act as shotfirers in mines? While this work is dangerous, there is no doubt but that it can be made safe if proper precautions are taken to insure the competency of the men selected for the task.

Requirements of Colorado Law Regarding Shotfirers

In Colorado, the mining law (Sec. 40) requires the examination of shotfirers by the chief or deputy inspector when either of these officials visits the mine where the candidate is employed. The law further permits the mine foreman and fireboss of a mine to question the man they select for the work of firing shots and, having satisfied themselves as to his fitness, to employ him in that position until the next visit of the inspector to that mine.

While this may serve well enough in a non-gaseous mine, I believe that where a mine is generating much gas the requirement in respect to shotfiring should be more exact. Before a man is permitted to perform that work in a gaseous mine, it is my opinion his competency should be determined by a strict examination before a properly constituted examining board.

The mine where I am employed is classed as a gaseous mine, although the working places are not generating gas in dangerous quantity. The greatest trouble in this mine is experienced where pillars are being drawn and gas accumulates on top of the falls where it is difficult to remove.

Safety Precautions Taken in C. F. & I. Co.'s Mines

The mine is equipped with electric cap lamps of the Edison type. Only permissible powder is used in blasting and all shots are fired with an electric hand battery, after the men have left the mine. Taking these precautions, we have not had an accident here in the past five years.

The mine is owned and operated by the Colorado Fuel & Iron Co. It is visited every sixty days by the deputy state mine inspector. The company mine examiner makes a visit to the mine every ninety days, and, under the regulations of the Rockefeller Industrial Plan, a Safety and Accident Committee also go through the mine every ninety days.

I believe I am safe in saying that, owing to these frequent visits and careful examination of the workings to discover and eliminate any dangers that may be found, this mine is one of the safest mines in the state. My wish is that all mines were equally well safeguarded.

Farr, Col. Robert A. Marshall.

Precautions in Shotfiring

Eliminate bad practices if shotfiring in the mine is to be made safer. Establish a good set of rulings and live up to them.

THE suggestion offered by R. W. Lightburn, that shotfirers should be compelled to pass an examination before they are allowed to fire shots in mines, is well put. It is the first expression of this kind that has come to my notice, though it has been my opinion for a long time.

While the examination of candidates for shotfiring is a great factor in securing safety, there are other precautions that should be taken to avoid the accidents that so frequently occur in the firing of shots. My observation shows that one frequent cause of these accidents arises from defective firing cables. In the rough usage to which the cables are submitted in the mine, it is almost impossible to keep them in perfect condition and safe for use.

Use of an Automatic Winding Spool in Blasting

To avoid danger from this source, let me say that every shotfirer should be equipped with an automatic spool by which the cable is wound up under the action of a spring. In the use of such a device the cable need never be left to lie along the road while the shotfirer is making the connection with the detonator at the face.

There is no safety when a shotfirer is compelled to approach the coal face and make this connection when the cable is lying back on the road with no certainty but that it is in contact with a return rail at some point.

When using a spool, however, the shotfirer carries the cable with him, makes the connection with the shot to be fired and retires in safety, allowing the spool to unwind as he goes. The cable is thus kept in good condition and its life lengthened.

It can be said that practically all of the accidents that occur from shotfiring in mines are due to carelessness or lack of judgment on the part of the man firing the shot. It is bad practice for a shotfirer to work alone. Always two men should be employed and they should work together, though I only know of one mine where that plan is followed.

The mine is opened in a 5-ft. seam and employs from thirty-five to forty men. Electric cap lamps are used exclusively and all shots are fired by two shotfirers after the men have left the mine. One of these men has mine foreman and fireboss papers, while the other is a practical miner.

The first man examines and charges the holes, while the second man follows a short distance behind and fires them, using for that purpose an electric firing battery. They start the work from the return side and are thus constantly in fresh air, which is the safest practice.

By this plan all caps and powder are in the charge of and handled by one man and there is no danger from possible contact of these explosives with the firing cable or battery. The second man has the cable, the battery and the key in his possession. Though the miners all use electric cap lamps, these shotfirers use Wolf lamps in performing their work.

Safety Requires Strict Rules and Regulations Enforced

I understand that this mine is operated under strict rulings and everything is closely watched by the mine foreman. If these precautions can be taken in one mine the question is, Why should they not be equally effective in other mines?

There are numerous operations where the miners call every morning at the powderhouse and are given all the powder they want. They carry this together with the caps into the mine, store it away where they please and give it no particular attention until they are ready to shoot. No one will deny that this is bad practice. Miners should never be allowed to handle explosives, much less to use them.

While looking through some old scrap books of mine recently I found a set of rulings that were made by T. Mullen, who was then company mine inspector for the H. C. Frick Coke Co. One of these rulings read: "Never tell a miner how to drill his holes, but stay with him and show him."

To my mind, to establish such a set of rulings and work to them is a token of safety. I notice that examining boards have dropped the standard for firebosses to 65 per cent. With this lowering of standards, it would seem more than even important that safe rulings should be established in every mine and that mine officials should see that they are followed fully.

John H. Wiley.

Oliphant Furnace, Pa.

Skill in Mining Coal

Skill does not consist in the ability to imitate another or carry out orders and follow instructions, working by direction as a machine. Skill is intuitive and involves a knowledge of how and what to do under the varying conditions in mining.

IT IS some time since the question was discussed in *Coal Age* as to what constitutes a skilled and practical coal miner. I followed those letters with deep interest, but practially all of them treated the matter with little reference to its practical side. It seemed to me that most of the writers assumed to take a narrow view of the question, looking to their own personal interests as employees of large corporations.

It is quite true that there are men

who, apparently, could never learn a trade if they lived and worked a thousand years. On the other hand, there are those who are quick to perceive what is wanted and learn to imitate the actions of others, working under their direction as a machine.

To my mind, the question is: Can we regard these latter in any other light than as mere imitators? Many large corporations have been hiring endless numbers of such workers, until we are compelled to admit that there is no longer the same practical skill that marked the miner in the earlier days.

There is an old saying "Experience is the only school in which to learn," and most of us can verify the truth of that statement. The history of coal mining is strewn with the wrecks of corporations who have spent thousands of dollars in learning what is required in successfully operating their business.

Men Required Today Who Know and Understand the Business

Up-to-date coal companies of today, however, have passed that stage and will not place men at the head of affairs who lack the knowledge and experience required in their business. A foreman must be a man of experience, a machine runner must understand his machine and be able to operate it successfully in the mine.

No one will dispute the fact that, in many of our modern mines where the coal is mined with machines the chief, if not the only qualification of a miner, is strength of back that will enable him to wield the shovel all day. Little regard is had for the knowledge and skill that would enable him to protect himself and avoid accident under the constantly changing conditions of roof and coal.

The roof above the miner may be limerock, hard slate, soft slate, shale or sandstone and may be full of slips that require careful watching to avoid accidents.

Practical Side of the Question

Judging this question from the practical standpoint let me ask, Will a green man be able in a short time to discern these conditions that surround him in his work and to know when he is in danger and must take precautions to safeguard himself. What has taken years of experience in mines to enable old miners to protect themselves and to take out the coal with the least loss and hazard cannot be learned in a brief period or taught by rule of thumb.

Believing that the purpose of the original letter on this subject was to bring out a clearer and more definite idea and conception of what constitutes a practical skilled miner, I have attempted in a few words, to emphasize the intuitive knowledge gained by years of experience in mines, which to my mind is the chief factor that constitutes skill in mining.

Though methods and equipment have changed with time, the miner must still contend with the same natural conditions that have always existed. These conditions will often be aggravated by the failure of a miner to set his timbers where and how experience alone can teach him.

Unskilled miners are, today, costing the companies who employ them large sums by reason of the avoidable loss of coal due to their lack of skill. Other large sums are required in the payment of indemnities for accidents that a skillful miner would have avoided. Notwithstanding these hard facts, practical skill in the mining of coal is fast disappearing from our mines.

Staunton, Ill. W. M. Chambers.

Inquiries Of General Interest

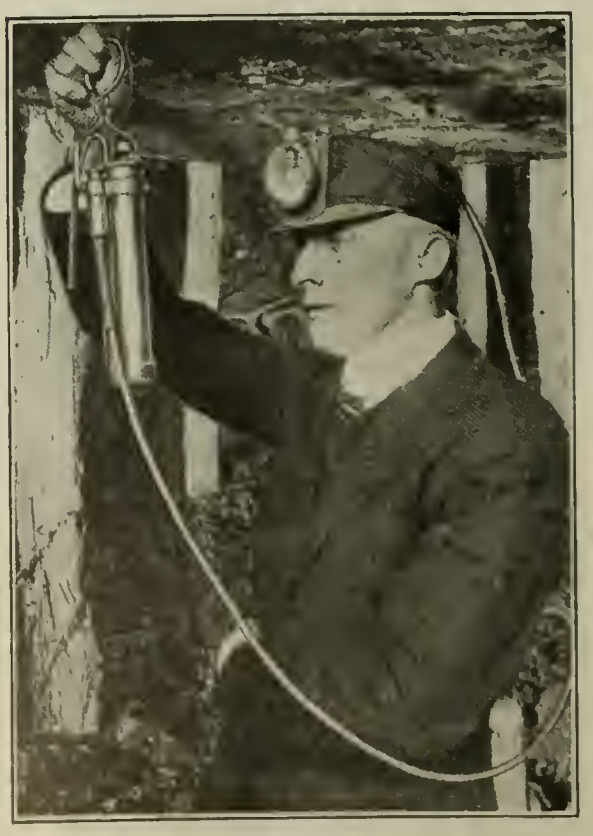
Testing With the Burrell Gas Detector

Description of Instrument; Principle of Action and Method of Making a Test for Gas in a Mine. A Portable and Effective Means of Ascertaining the Proportion of Methane, in Mine Air, as Low as One-Tenth of One Per Cent

KINDLY explain the construction, principle and use of the device known as the "Burrell Gas Detector." We have heard numerous reports of this device being used with good success in mines, instead of employing the usual method of testing for gas with the safety lamp. I am interested in learning more of this device and its use. John H. Marsh.

Taber, Alta., Canada.

The Burrell Gas Detector is one of the recent devices for detecting the presence of methane or marsh gas in mine air. It was designed by George A. Burrell, chemist, U. S. Bureau of Mines, in 1916.



MAKING A TEST IN THE MINE

The device consists of two tubes, jointly mounted and connected at the bottom so as to form what is essentially a U tube after the manner of a water gage. One of the tubes is of brass and surmounted by a screw-cap having a valve and two binding posts connected with a fine platinum-wire bridge just below the cap, in what may be termed the combustion space at the top of the tube.

The other tube is of glass and provided with a brass cap to which is attached a short rubber tube. A graduated scale is mounted between the two tubes. The zero of this scale is at the top and just below the level of the platinum-wire bridge previously mentioned.

In the use of this instrument the glass tube is filled with water, which rises in the brass tube until it stands at the same level in each tube, as marked by the zero of the scale. When filling the instrument with water the valve in the top of the brass tube is, of course, opened. The instrument is now ready for use.

In the accompanying figure, the operator is shown as observing the reading of the instrument, on the graduated scale, after a test has been made. To make the test the operator first blows gently into the rubber tube previously mentioned, thereby depressing the water in the glass tube and causing it to rise till it completely fills the combustion space at the top of the brass tube, as indicated by a slight click of the valve when the water strikes it.

The operator now pinches the rubber tube tightly between his thumb and finger and raises the instrument toward the roof, or wherever he desires to take a sample of the air. Then releasing the rubber tube, the water level sinks in the brass tube and rises in the other branch until equilibrium is established and the level in both tubes again corresponds to the zero of the scale. The combustion space in the top of the brass tube is thus filled with a sample of the air to be tested.

The valve is now closed and the operator turns on the current from his battery, causing the incandescence of the platinum-wire bridge, with the result that any gas present in the air is con-

sumed, forming carbon dioxide and water vapor, the latter being quickly condensed and eliminated.

After two minutes, the current is turned off and the instrument shaken or turned so as to permit the water to flow into the combustion space, for the purpose of cooling the air remaining therein and reducing it to its original temperature before taking the reading of the instrument.

As is well known, the burning of one volume of methane consumes two volumes of oxygen and produces one volume of carbon dioxide. The three original volumes of methane and oxygen, being replaced by one volume of carbon dioxide, the contraction of volume is twice the volume of methane burned, as shown by the equation.

Methane		Oxygen		Carbon Dioxide		Water
CH_4	+	$2O_2$	=	CO_2	+	$2\ H_2O$
1 vol.		2 vols.		1 vol.		2 vols.

The graduated scale has been calibrated on this principle to read percentages of gas present in the air. It is claimed that this instrument gives an accurate reading as low as one-tenth of one per cent, as determined by subsequent analyses of the same air samples, in the laboratory.

As shown in the figure, the same battery is employed, in making a test with this device, as operates the miner's electric cap lamp. For this purpose, the cable connected with the instrument has a terminal plug that can be inserted into a hole provided in the battery for the purpose. This does not interfere with the illuminating power of the cap lamp, while the test is being made.

It may be remarked here that there is a possibility of the carbon dioxide produced in the test, being absorbed in the water when the instrument is shaken. Also, if the water is not properly aerated before making the test, some of the air may be absorbed by the water at the same time. It is probable, however, that due allowance has been made for these conditions in the calibration of the instrument. The advantage in the use of this device is that it enables an accurate test to be made at the point and at the time when the sample is taken. It is not, however, a sight indicator that tests the air without sampling.

Examination Questions Answered

Miscellaneous Questions Asked at Different Anthracite Examinations

(Answered by Request)

QUESTION—*State how the several mine gases may be detected. In what proportion in the air are they fatal to life? In what proportion do they extinguish lights?*

ANSWER—Methane or marsh gas (CH_4) when present in mine air is detected by observing the action of the flame, or detecting the appearance of a flame cap in a safety lamp. Carbon monoxide (CO), present in an extremely small percentage in the air, may be detected by observing its effect on small animals such as caged canaries or mice, which are prostrated more quickly than men. Less than one per cent of this gas is fatal when breathed but a short time.

An instrument for detecting as little as 0.1 per cent of this gas, by a color test, has recently come into use. Carbon dioxide (CO_2) when present in the air causes the miners' lamps to burn dim or extinguishes them completely if a larger portion of the gas is present. Sulphureted hydrogen, or hydrogen sulphide (H_2S) if present in the air is detected by its smell.

Methane is not poisonous to the human system but causes death by suffocation when slightly more than 50 per cent of the gas is present in otherwise normal air. The oxygen content of the air is thereby reduced to about 10 per cent, which is not sufficient to support life. Less than one per cent of carbon monoxide may be *instantly* fatal if breathed; and one-tenth of one per cent of the gas is fatal when breathed a sufficient time, varying with the strength and health of the person. Owing to a certain toxic effect of carbon dioxide on the system, 18 per cent of that gas, present in the air, is fatal if breathed for any length of time, although the oxygen content of the air is only reduced to 17.1 per cent if the air is otherwise normal. Hydrogen sulphide is poisonous, one per cent causing death when breathed but a short time.

About 30 per cent of methane present in otherwise normal air reduces the oxygen content of the air to 14 per cent, which is extinctive of a wick-fed flame burning a non-volatile oil. Carbon monoxide present in the air is not extinctive of flame, as far as is known. About 14 per cent of carbon dioxide, present in otherwise normal air, is extinctive of a wick-fed flame burning a non-volatile oil. Hydrogen sulphide present in the air is probably extinctive of flame to the same degree as methane, namely, 30 per cent.

QUESTION—*Are there any conditions under which flame will pass through the gauze of a safety lamp? Explain fully.*

ANSWER—Assuming a standard wire gauze properly adjusted on a safety lamp, this will only prevent the passing of flame when the gauze is in perfect condition, clean and free from oil and dust and the lamp carefully handled and not exposed to a sudden rush or blast of air. A safety lamp is no longer safe when handled by an inexperienced person carelessly or when not properly cleaned, assembled and inspected. The lamp is not safe when the gauze has become heated by exposure to a gas-charged atmosphere, or not properly protected from a strong air current.

QUESTION—*Two airways have each an area of 64 sq ft. and their lengths are each 3,000 ft, one of the airways being circular and the other square. Is there any difference in the rubbing surface? If so, how much?*

ANSWER—For the same sectional area, the perimeter of a square airway is practically 1¼ times that of a circular airway; and, for the same length of airway, the rubbing surfaces will be in the same proportion. For example, the diameter of a circular airway having a sectional area of 64 sq.ft. is $\sqrt{64 \div 0.7854} = 9.027$ ft.; and its perimeter, 3.1416×9.027 ft. $= 28.36$ ft. The rubbing surface for a length of the circular airway, of 3,000 ft., is $3{,}000 \times 28.36 = 85{,}080$ sq.ft.

On the other hand, the side of a square airway whose sectional airway is 64 sq.ft., is $\sqrt{64} = 8$ ft.; and its perimeter, $4 \times 8 = 32$ ft. The rubbing surface of the square airway, for the same length, is therefore $3{,}000 \times 32 = 96{,}000$ sq.ft., which is practically 1½ times that of the circular airway, as previously stated.

QUESTION—*What produces whitedamp in the mines? What are its injurious effects on the workmen employed therein? How would you treat a man overcome by whitedamp?*

ANSWER—"Whitedamp" is a term applied by miners to the presence of carbon monoxide (CO) in the mine air. It results from the incomplete combustion of carbon, owing to a limited supply of air. Whitedamp is produced by gob fires, firing of shots in close places and explosion of gas or dust in mines.

The effect of breathing very small percentages of carbon monoxide in air is to poison the system by its absorption in the blood. This effect is cumulative and therefore dangerous to health. It has a toxic effect on the nervous system, causing a general debility and loss of vitality, the victim becoming nervous, weak and helpless. Less than one per cent of this gas breathed but a short time will cause death.

The treatment of men overcome with whitedamp is the forced inhalation of pure oxygen by means of a pulmotor, which pumps the oxygen into the lungs.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

BANKING credit, according to *Commerce Monthly* issued May 1 by the National Bank of Commerce in New York, cannot be substituted for reduced capital and credit lines must be commensurate with present assets. "Business must now recognize," the report continues, "that it cannot operate on borrowed money to the same extent as before capital was impaired. It is unsound to attempt to maintain the former high aggregate of credit lines after a year of heavy losses. Easier credit conditions and cheaper rates would not alter this fact. . . .

"Fortunately, some of the very factors which have combined to make credit liquidation desirable also make an adequate volume of business possible on a smaller credit base. It will take less money to do business on a lower price level, even though further increases in production and sales, as measured by physical volume, may take place. Elimination of the speculative element from business and the trend towards conservatism should bring about more rapid turnover. For a time also it may well be that even when measured by physical volume, the total of business will be smaller and with sharper competition goods will be better made and replacement requirements appreciably lessened. . . .

"In spite of some orders from the automobile industry and for pipe making, the buying of steel is entirely in the form of small orders for prompt delivery, and a disposition on the part of buyers to distrust the future course of the market is plainly apparent. . . .

"Cotton consumption has increased steadily during the last three months. Staple goods are selling well, but business in fine fabrics is far below normal. . . . Improvement in woolen and worsted manufactures is indicated both by trade reports and government statistics of active and idle machinery. . . . Conditions in the silk industry are more satisfactory at this date than in either of the other major textiles."

Machine Plant on Full Time

The Taft-Peirce Manufacturing Co., of Woonsocket, R. I., announced May 6 that its plant, employing 700 persons, would be shut down for a week, and would reopen May 16 on full time. The plant, which manufactures machinery and tools, has been operating four days a week.

Foreign Trade Still Shrinking

Foreign trade of the United States continued to fall off in April, figures made public May 11 by the Department of Commerce show. Exports of $340,000,000 compared with $387,000,000 the month before and $648,000,000 in April, 1920. Imports last month increased $3,000,000 over the $252,000,000 total the month before, but were $241,000,000 below the April, 1920, mark. The trade balance in favor of the United States for the month was approximately $85,000,000, far below the monthly average for a number of years. For the ten months' period ended with April, however, the trade balance was something over $100,000,000, more than for the corresponding ten months the year before.

15,000 Paper Mill Hands on Strike

Information received by union officials indicated that more than 9,000 paper-mill workers in the United States and Canada went on strike May 11, making a total of about 15,000 workers who have gone out since May 1 as the result of wage reductions of 30 per cent proposed by the manufacturers. Union leaders declare that the seven mills forced to close down May 11 produce 4,000 tons of news-print daily, or about 60 per cent of the total output.

Mill 8 Months Idle Resumes

The Sanford Spinning Co. plant at Fall River, Mass., owned and operated by the Passaic Cotton Mills Corporation of Passaic, N. J., resumed operation Monday, May 9, after having been wholly shut down since last September.

Large Rail Order Placed

The Algoma Steel Corporation, of Toronto, has received an order from the Dominion Government for 50,000 tons of rails for the Canadian National Railways. The plant at Sault Ste. Marie is in full operation on the contract, which will require about two months to complete. Two thousand men are at work.

Cotton Goods Mill Speeds Up

The Nashua Manufacturing Co. of Nashua, N. H., announced, May 5 that it would operate on a basis of 48 hours a week instead of on the 55-hour schedule which was put into effect last January. The company, which manufactures cotton goods, employs 5,000 persons. The new schedule goes into effect immediately, the announcement said.

La Belle Iron Works Opens

That the La Belle Iron Works plant at Steubenville, Ohio, would resume operations May 16, when more than 1,000 men were expected to return to work, was announced by officials of the company May 9.

Union Pacific to Extend Lines

Contract for what was said to be the first piece of railroad construction work in the West since the war was let by the Union Pacific Railroad Co., May 10. It calls for the grading and bridging of forty-two miles from Haig, Neb., into Wyoming. The new line is to be an extension of the road's North Platte Valley line.

Idlessness Decreases in Illinois

Figures made public in Chicago May 11 by the State Employment Agency of Illinois show that unemployment is decreasing in Chicago and generally throughout the State.

Ford to Make All Own Forgings

Orders were placed last week by the Ford Motor Co. for more than 100 giant drop forge hammers, costing in excess of $1,000,000, it was announced May 11. This equipment will give the Highland Park plant the largest drop-forge plant in the world with the possible exception of the Krupp works in Essen, it is said. The new equipment is designed to produce every steel forging used in construction of passenger cars, trucks and tractors.

Government Fuel Yard Receives New Bids of $2.80-$4.76; March Figures $3.50-$4.82

NEW bids were received by the Bureau of Mines on May 10 from twenty-one coal firms for supplying the Government Fuel Yard in Washington with bituminous coal for the ensuing year. These bids were received following the rejection of proposals recently submitted. Prices ranged from $2.80 to $4.76 at the mine, as compared with earlier figures of $3.50 to $4.82. The bid of H. P. Brydon & Bros., Piedmont, W. Va., was the lowest submitted. The bids follow:

Rockwood Coal Co., Mt. Union, Pa., 10,000 tons Pennsylvania coal, $3.75; same quantity but different analysis, $3.25.

C. J. Rowe Bros., Myersdale, Pa., 60,000 tons Maryland coal, $3.50.

Jenkins & McCall Coal Co., Frostburg, Md., 20,000 tons Maryland coal, $4.20.

D. E. Williams & Co., Philadelphia, 25,000 tons Pennsylvania coal, $3.80.

Maryland Coal & Coke Co., Philadelphia, 25,000 tons W. Va. smokeless nut and slack, $3.19.

H. P. Brydon & Bros., Piedmont, W. Va., 126,000 tons northern West Virginia coal, $2.80, conditioned on bid being accepted before June 1.

White Oak Coal Co., New York, 50,000 tons New River coal, $3.92; 25,000 tons New River nut and slack, $3.36.

Steinman Coal Mining Co., Philadelphia, 10,000 tons, $4.70.

Flat Top Fuel Co., Bluefield, W. Va., 61,000 tons New River mine run, $4.48; 7,000 tons nut and slack, $4.20.

W. D. Althouse, Philadelphia, 6,300 tons Maryland coal, $3.64.

Line & Reed, Baltimore, 20,000 tons Pennsylvania mine-run, $4.07; 15,000 tons, $4.18.

P. & S. Coal Co., Baltimore, 100,000 tons Pennsylvania coal, $3.695; 40,000 tons, $3.595.

Equitable Fuel Co., Baltimore, 45,000 tons, $4.08; 45,000 tons, $3.91; 11,000 tons, $3.53; 9,000 tons, $4.47; 45,000 tons, $3.91; all Pennsylvania coal. Pennsylvania gas coal, 1,600 tons, $3.92.

Fayette Smokeless Fuel Co., 61,000 tons, $3.75 from June to September, and $3.90 thereafter.

Georges Creek & Phoenix Mining Corporation, Philadelphia, 14,000 tons Maryland coal, $3.36 until Oct. 1; $3.81 thereafter, or $3.64 for the entire period.

C. G. Blake Co., Cincinnati, 43,000 tons W. Va., mine run, $4.20; New River nut and slack, $3.92. Corresponding bids of $3.92 and $3.64 if paragraph 9, relating to wage scale changes, is eliminated.

Commercial Coal Mining Co., Philedelphia, 30,000 tons Pennsylvania coal, $4.20.

Chesapeake & Ohio Coal & Coke Co., New York, 61,000 tons West Virginia coal, $4.20.

Consolidation Coal Co., Washington, D. C., 30,000 tons Pennsylvania mine run, $4.48; 1,500 tons West Virginia gas coal, $4.76.

Allegheny Coal Co., 15,000 tons Maryland coal, $3.60. Pittsburgh (Pa.) Coal Co., 1,600 tons Pennsylvania gas coal, $4.20.

Creditors File Petitions in Bankruptcy Against Old Tidewater Coal Exchange

PETITIONS in involuntary bankruptcy were filed by James F. Curtis and Root, Clark, Buckner & Howland, attorneys, against the Old Tidewater Coal Exchange of New York in the District Court for the Southern District of New York on May 9 and on May 12. The creditors signing the first petition were W. H. Bradford & Co., Emmons Coal Mining Co., Weston Dodson & Co., Inc., and Majestic Coal Co., Inc.; on the second petition the creditors were the New England Coal & Coke Co., the Seaboard Byproduct Co. and Dexter & Carpenter, Inc. It is understood that the second petition was merely supplemental to the first, alleging as an additional act of bankruptcy that the exchange had on May 11 admitted in writing its inability to pay its debts and its willingness to be adjudged a bankrupt. As the exchange terminated its active operations at the end of April, 1920, no application was made for a receiver.

Colonel Lloyd C. McGrum, general manager of W. H. Bradford & Co. and chairman of the recently organized creditors' committee of the exchange, gave out the following statement with reference to the filing of the petitions:

"Our creditors' committee was organized with practically all of the largest creditors of the exchange represented in its membership in the hope of liquidating the affairs of the exchange without a bankruptcy. With this in view letters were sent to all of the creditors of the exchange inviting their cooperation, and these invitations met with such a gratifying response that the committee had high hopes of success.

"Upon investigating the accounts and records of the exchange, however, the situation was found to be so involved as a consequence of the various attempts which have been made to adjust the obligations of debtors that there seemed to be no alternative except to file a petition in bankruptcy. This decision met with the full concurrence of the executive committee of the exchange, as is further indicated by its action on May 11 in admitting its insolvency. The bankruptcy makes it none the less important for the creditors' committee to act together in an effort to realize the largest possible amount from the obligations of the debtor members of the exchange. There is no intention of dissolving the creditors' committee, but, on the contrary, we shall invite the continued cooperation of those who have already joined with us in the preliminary steps, and we shall welcome any additions to our number, and shall be glad to co-operate with all debtors in the settlement of the claims of the exchange against them."

Pennsylvania Governor Signs Anthracite Tax Bill; Effective July 1

GOVERNOR SPROUL of Pennsylvania on Wednesday, May 11, affixed his signature to the bill imposing a tax of 1½ per cent ad valorem on all anthracite coal effective July 1. The tax is to be applied when the coal is prepared for market. The bill originally contained a clause that the tax could not be passed on to the consumer, but this was eliminated in the closing days of the Legislature.

A somewhat similar law enacted several years ago was declared unconstitutional on the ground that it was class legislation. The protest of hard-coal operators is again based on the assertion that the act leaves bituminous coal untaxed and is therefore partial.

No Reduction in Miners' Wages, Says Lewis

JOHN L. LEWIS, president of the United Mine Workers of America, predicted in a statement issued May 5 at headquarters in Indianapolis that there will be no reduction in mine workers' wages. He declared the United Miners would resist any attempt to disturb the present relations between employers and employees and urged the public not to delay the purchase of coal in the hope that wage cuts will bring cheaper fuel.

Mr. Lewis' statement is as follows:

"There will be no reduction of wages in the organized sections of the coal-mining industry. The mine workers are now working under a scale of wages fixed by the U. S. Bituminous Coal Commission, created by the President, and which functioned under governmental authority.* These wage schedules were written into an agreement between miners and operators, which will not terminate until March 31, 1922.

"There can be modification or abrogation of this agreement in any coal-producing district without disturbing the integrity of the contract throughout the nation. The United Mines Workers will resist any attempt to replace the present contract. The acute depression in the mining industry now confronting us, with consequent wide-spread unemployment and distress among the mine workers, is not in any way attributable to the wage schedule now in effect. Production costs at the present time are such as to enable coal to be produced and furnished the consuming public at a price relatively lower than any other basic or essential commodity.

"Users of coal should not delay purchase upon the theory or with the hope that any reduction of wages will be accepted by the miner workers. Statements to the contrary have no basis in fact."

*This is not strictly true, the mine workers having received an increase since that time as the result of agitation and a violation of the terms of the agreement.

STRIKE CLOSES BENTON MINE OF U. S. STEEL CO.—Refusal to give the mine examiners of the Middle Fork mine at Benton, Ill., pay regardless of the regularity of operation has resulted in a strike by which 700 men are laid idle. The mine is operated by the United States Fuel Co., a subsidiary of the United States Steel Corporation. William Brinley, superintendent of the plant, is said to have declared that the company is quite indifferent as to whether the mine works or is idle.

We Need Fewer Laws But More Sanity in Enforcing Those That We Now Have*

By John E. Lloyd

THE problems of retail coal distributors are many and varied and should be given careful and serious thought. In our discussions we must not lose sight of the fact that we are "In the public service" and that the well-being and happiness of the public depend largely on our ability to function properly. The retail coal dealer who serves the public best is the greatest asset to the association, as it is only through public confidence gained by unselfish service to the public needs that we can continue to prosper.

The association has a great future before it, a future in which its members will be respected and depended upon in every community they serve. We as retailers fail in our duty unless we give our active support to our local, state and national associations; it is not enough to be mere members. We should be proud of our membership and should let the public in our community know of our association and that it stands for a square deal and their protection. Make your association a force for better business methods. Let your standards be so high that a retail coal dealer who is not a member will be regarded with suspicion.

The truth is not always pleasant, but I feel that it is my duty before retiring from office to give you in detail some thoughts in regard to the coal business.

Standardized Preparation an Important Matter

The matter of sizing and preparation is a serious one in both bituminous and anthracite. All should co-operate for the purpose of putting on the market coal of standard preparation and size that will be the most economical for the consumer. This standard preparation and size should be maintained by all companies alike and no changes should be made without first consulting the retailers and then explaining to the public the reasons for the changes. Instead of doing this, the producer of coal has gone ahead and made changes without properly considering the effect on the domestic consumer.

No real effort has ever been made to create a market or to show the consumer the most economical and best method of burning coal. The anthracite operators complain there is no market for the small sizes—No. 1 buckwheat and smaller. This is true, but a market can be created if the operators are willing to use modern, up-to-date merchandising methods, but so far nothing practical has been done.

Examine the methods of the gas and oil companies and note the results obtained. Every expert coal engineer knows the smaller sizes of anthracite can be used to better advantage and at less cost for private homes, in many cases, than the so-called domestic sizes. However, architects and builders continue to specify ranges and furnaces that will burn only the domestic sizes of pea, nut, stove and egg.

Co-operation Would Increase Consumption

Just a little co-operation between the operator, wholesaler and retailer would create a market for buckwheat sizes and a better market for pea for domestic consumption. This would enable operators to obtain a better average price on all coal sold and at the same time allow them to make a reduction on the sizes now used for domestic consumption.

There should be a permanent joint committee of operators, wholesalers and retailers, in both anthracite and bituminous, who should meet at regular intervals to discuss and plan ways for improving the coal business. The coal trade has been so long and so unjustly criticised by the public press that many engaged in the production and distribution of coal appear to be afraid to meet and discuss mutual problems. This would be of immense benefit to the consumer, if properly carried through. It is only through co-operation that we can expect to continue our freedom of action and eliminate for all time the uneconomical conditions which are bound to follow any attempt at government regulation or control.

By co-operation I do not mean that any one branch of the coal industry should attempt to dictate to the other. Each has its distinct function to perform and each should exert all possible energy and ability on its own end of the job. Let us make suggestions to each other, let us work in harmony and be willing to do anything that will help in the proper merchandising of coal, to the end that the public may be well served; but when we have done that we have no right to go further.

Expect Assistance from Secretary Hoover

In this connection we must not lose sight of the fact that there has been a change of administration at Washington. I believe President Harding and his Cabinet are sincere in their wish "to keep government out of business and put business in government," and we should lend every effort to help. Mr. Hoover, Secretary of Commerce, is especially interested in business and can be counted on, I firmly believe, to assist us in any proper co-operation that will assure a more equitable distribution of coal. Until we as business men give more attention to our government, we cannot expect much improvement in present day problems.

To quote from *Collier's Weekly:* "More business in government means but one thing, if it means anything at all. It means that more business men must pay attention to public affairs. It means they must exercise as much concern over what is going on day by day at Washington, at the State Capitol and the City Hall as they do over what is going on in Wall Street and the ball park and the golf links."

We should get together and study our mutual problems. If we do not and the coal business is continued along the old-fashioned ideas of today, we can expect nothing but government control, and in the end the public will be the greatest sufferer. You are at the parting of the ways and your choice cannot be much longer delayed. Co-operate and do business on a modern merchandising basis and have the government, the public and the press back of you; or continue as you have in the past and you will no longer be free to do as you please, but will be regulated and controlled by the government.

Suggests Combining Yards to Cut Expenses

How can we as retailers distribute coal at less cost to the consumer? One way, I very frankly believe, is by encouraging combinations of existing retail yards. In most places there are entirely too many yards rather than too few. I believe a few companies with yards properly distributed can serve the public to better advantage than the same number of yards each under different management.

Another factor in the cost of coal to the consumer is that the retailer does not sell all the coal that is distributed at retail in his community. By this I mean that others than a retail dealer are able to purchase coal when general business is slack and coal is plentiful, have it shipped to a team track and hauled direct from the car to the consumer. This means that the retail dealer who maintains a yard and the necessary equipment to do a maximum business loses the tonnage to which he is entitled and should have if he is to maintain his yard and be ready at all times to supply the public.

If this uneconomic practice of shipping cars to public sidings in any community is continued by producing companies and wholesalers, it means that the retail dealer will reduce his equipment and then at the very time everyone wants coal at once, there is no way of supplying the demand,

*Address at the convention of the National Retail Coal Merchants' Association, Richmond, Va., May 12-13-14, 1921.

as the team track hauler, or "snowbird," is not functioning. He hauls coal only when the price is low; in summer weather, when delivery conditions are at their best, and when coal is the easiest to purchase. To compare the service he renders with that rendered by the regular dealer who maintains a yard and is in business twelve months in the year is manifestly unfair.

The Federal Trade Commission is opposed to and will protect business against unfair competition. What can be more unfair than the practice of large manufacturing plants purchasing coal and distributing it at cost to their employees? This practice causes endless dissatisfaction in any community where such a plant is situated. A few consumers receive a rebate at the expense of their neighbors. A few families get a little cheaper coal, while the great majority have to pay more.

Railroads Now Treat All Shippers Alike

It was not many years ago that the railroads gave rebates, but now all shippers, large and small, are treated alike, and unless the producer of coal is willing to adjust some of the present inequalities in the distribution of coal, we can expect nothing but continued criticism.

Operators and wholesalers should discontinue the practice of shipping to any but retail dealers who are in business twelve months in every year and who maintain at all times the facilities for supplying the needs of the community in which they live.

The National Retail Coal Merchants' Association should at all times stand for the most economic method of delivery and a square deal for the public. This public interest would best be served by all coal for domestic consumption in any community being delivered only through retail yards.

Another most unsatisfactory condition from both the retail and consumers' point of view is the matter of price, and this during the past few years certainly has been a just criticism, not so much on account of the increase but rather on account of the great variation in prices. Before the war there was some variation in prices quoted by producing companies, but these small differences averaged up during each coal year, so that in the end the costs were nearly uniform.

This is not the case to-day, as the Fuel Administration fixed a differential of 75c. per ton between certain classes of anthracite operators. This has been continued to the present time to a greater or less degree, with increasing dissatisfaction to retail dealers and consumers. Some way should be found under the law to have as nearly a uniform price as possible. This is the only way that coal can be distributed in a manner that will satisfy the consumer. Each consumer wishes to be assured that the price he pays is no more than that paid by any other consumer for the same quality of coal.

Independents Want Higher Prices at Mines

The so-called independent operators (who do not own any railroads and therefore cannot make a profit out of the freight haul) claim that company or railroad-owned mines do not make a profit on coal mining, but on the freight haul, and for this reason they insist they are entitled to and must have a higher price for coal at the mines. If the contention is true, the matter of freight rates on anthracite should be thoroughly investigated and proper reductions made.

At the same time an investigation of anthracite freight rates is made it would be well to investigate bituminous rates as well, in order to ascertain whether coal is paying a rate out of proportion to other commodities. A further investigation should be made of coal shipments at Tidewater. If it is found, for example, that anthracite is not rescreened and reweighed before being loaded in barges, tariffs should be changed to compel the railroads to perform this service.

Proper publicity should be given the coal business, and this can be accomplished only through joint committees of operators, wholesalers and retailers. The coal business gets plenty of publicity, but the wrong kind. The consumer, through the public press, has been educated to a point where he hardly believes anything good of anyone engaged in the coal business.

This can readily be overcome by sustained joint advertising and giving to the public the unbiased facts. Public opinion, in the long run, is fair, and it is only through lack of foresight and the failure of the trade to use ordinary common sense that we stand where we are today, in the shadow of government interference and control.

There are several bills now pending before Congress which, if passed, will be the entering wedge for eventual absolute control of the coal industry. We do not need more government interference to-day. This country has been successful in the past and has reached the position it now holds through individual unhampered effort, and if left alone, American business men will place this country in the forefront of the commerce of the world.

Let Congress and all the government departments and officials devote all their time to matters of government, and, left alone, our business men will continue to make American business the greatest factor in our economic well-being and the envy of the commercial world. By all means let our government be in position to advise and help at all times, but let it stop there. The ills of the past seven years cannot be cured by more laws. What we need are fewer laws and more sanity in the enforcement of those we now have.

Labor Most Expensive Element of Production

Of all the elements entering into the production and distribution of coal, that of labor is the most important and the greatest single item of expense. In the old days the employer used to come in close contact with his men; he knew them all and could call most of them by name. As business has grown, this personal contact has become less and less, until to-day in a business of any size the "big boss" probably is not even known to most of his employees. Even in a small business, employing, say, less than one hundred men, I venture to say that very few heads of firms know and are known to their men.

This lack of contact has been the principal reason for the labor union and the walking delegate. Your men have had no one before whom they could go for a hearing, so, naturally, they have drifted into the union because they received a sympathetic ear from the union heads and walking delegates. The labor leader's job depends upon agitation and making trouble, so why be surprised at present-day conditions? How many of your men know anything about your business, except what they hear from paid leaders? What can you as an employer expect your men to know of conditions except as they apply to their own locality? What have you attempted in the way of proper education along right lines? How often do you get your men together and talk to them? Have you a committee of your own employees who are privileged to come and discuss their problems at any time with you?

If you have not done any of these things and many others, it is you and you alone who are to blame for the present-day unrest. Remember, the leaders of the union are continually agitating by word of mouth, circulars and pamphlets. Labor to-day is hearing just one side and has been hearing only one side of the question for the past twenty-five years, and the only wonder is that conditions are not worse.

Employers Responsible for Education of Men

Employers in the coal business owe a duty to the public and to posterity and that is to see that their men are educated along right thinking lines. See that they receive pamphlets and circulars of the right kind (the kind that will make them good Americans) as often as they are now getting literature which can only end in anarchy.

Labor also owes something to the employers and to the public, that is, more efficiency, with the consequent increase in production per capita. The many uneconomic restrictions of labor unions must be eliminated at once, the closed shop thrown into the discard and a real day's work given for a day's pay. This is not the time to talk of shorter hours for a day's work, but rather to discuss how much longer we can work. There is continual agitation for a universal eight-hour day, while instead we should be talking of a longer working day. To give continuous employment to all in this country our products must compete in the world's markets, and this cannot be done unless labor is willing to

decrease wages and increase production. The closed shop has never and can never accomplish this.

We have all been neglectful of the two most important elements which alone can assure our economic well-being and our continued success as a nation. These two are our employees and our government. As we are, so they will be. The case is in our hands. If we are of the blood of our ancestors who conquered the wilderness, we will continue to build the nation along the lines of freedom and justice, so that in very truth this will be the Land of Opportunity.

New Frelinghuysen Bill Vests in President Decision to Investigate Coal Costs and Profits

By Paul Wooton
Washington Correspondent

AUTHORITY for the Federal Government to investigate conditions affecting the management, organization and practices of concerns producing or dealing in coal is eliminated from a revised fact-finding bill which has been introduced by Senator Frelinghuysen. The new bill vests in the President any decision to investigate costs and profits. The commercial and business features of fact-finding are to be handled by the Secretary of Commerce and the scientific fact-finding by the Director of the Bureau of Mines.

Both the fact-finding and seasonal coal-rate bills were reported favorably to the Senate on Monday, May 16.

In its revised form the seasonal coal bill reads as follows:

"In order to promote continuous operation of coal mines, steady employment of coal miners and economical use of facilities for distribution of coal, the Interstate Commerce Commission is hereby authorized to initiate, establish, approve or adjust rates for the transportation of coal during specified seasons or periods, which shall be greater or less than the rates for other specified seasons or periods, but which in the judgment of the commission will yield as nearly as may be the same annual revenue for like movement as rates without seasonal variation, to be maintained by carriers, as a whole or as a whole in each of such coal-rate groups or territories as the commission may from time to time designate for that purpose, or by such carrier or carriers as the commission may designate. The term 'coal' shall include anthracite and bituminous coal, lignite, coke, including petroleum coke, and briquets and boulets made from anthracite and bituminous coal and from coke.

Commerce Commission Given Emergency Powers

"Whenever the commission is of opinion that an emergency affecting the transportation of coal and requiring immediate action exists in any section of the country the commission shall have, and is hereby given, authority, either upon complaint or upon its own initiative without complaint, at once if it so orders, without answer or other formal pleading by the interested carrier or carriers, to suspend the operation of any schedule in so far as it affects coal rates, whether seasonal or not, upon filing with such schedule and delivering to the carrier or carriers affected thereby a statement in writing of its reasons for such suspension, and defer the use of such coal rates, and to initiate in lieu thereof such seasonal rates for the transportation of coal as in its judgment the emergency may require. The commission shall thereupon enter upon a hearing concerning the lawfulness of the schedule, the operation of which had been so suspended, and the proceedings thereon shall be the same as nearly as may be as those provided in paragraph (7) of section 15. Nothing contained in this paragraph shall be construed as repealing, modifying, or denying any other authority heretofore conferred upon the commission."

The new fact-finding bill authorizes the Secretary of Commerce to investigate:

(1) The tonnage of coal produced and the tonnage of coal sold, including railway fuel.

(2) The stocks of coal on hand in any section of the country or in such consuming territories or districts as may be outlined or designated by the Secretary and the consumption requirements of any such sections or consuming territories or districts.

(3) The distribution of shipments of coal in commerce to any such section, territory or district, including the distribution of coal cars.

(4) The contract and prevailing market prices received or paid for coal by persons engaged or interested in the mining, sale, storage or distribution of coal.

The Secretary of Commerce is authoribed to require, secure, and collect such information currently or at such time as in his judgment may be necessary in the public interest from all persons engaged or interested in he mining, sale, storage or distribution of coal. The data so obtained shall be limited in its use to the purposes of the act and shall not be used for any other purpose. The provision to investigate conditions of miners is continued.

The new fact-finding bill provides that in the publication of data or in the furnishing of information to boards of mediation there must be no disclosure of individual returns or of any business transaction, trade secrets or names of customers. The provision for an investigation as to the desirability of a zoning system for coal is continued, as is also the provision for investigation as to the purchase of Government coal by one agency, reports to be made to Congress in December next by the Department of Commerce.

Mine Bureau Director Authorized to Investigate

The bill authorizes the Director of the Bureau of Mines to investigate the methods and processes for storage, inspection, sampling, analysis, purchase, classification and economic utilization of coal, and the conduct of experiments and researches to determine the most efficient means for such storage and other processes involved in the preparation, transportation and utilization of coal. In this work the Director shall co-operate with dealers, consumers and others to encourage the construction of facilities for the storage of coal and for its utilization.

The Director is also authorized to investigate as to prescribing standards for various kinds and grades of coal prepared for the market. reporting to Congress with recommendations next December.

The bill requires the Interstate Commerce Commission to co-operate with the Secretary of Commerce in carrying out the act and in promoting the proper distribution and use of coal cars to effect most efficient transportation of coal.

A new section requires that upon the request of the Secretary of Commerce or the Mines Director each operator, dealer or other person, and each person who consumes coal in excess of 100 tons annually and each railroad engaged in transporting coal, shall furnish information as required by the act. The penalties of the former bill, $1,000 fine and six months imprisonment, are continued in the new measure for violation of the law.

Senator Frelinghuysen does not contend that his fact-finding bill should not be simplified further. He was not willing to delay further the appearance of the bill on the calendar, but will offer any amendments which may be agreed upon after the conference which was proposed by the National Coal Association. This conference will be held next week, probably May 24. As time passes the prospect for a large attendance increases. Representatives of large consuming interests are requesting that they be allowed to attend. The Department of Justice, it is understood, intends to have a representative in attendance.

It is understood that the President himself is making a study of the coal situation. A member of the administration who has a position close to the President is authority for the statement that the administration as such has approved no measure before Congress.

Hoover Selects McGraw-Hill Executive to Develop Aids to Business

F. M. FEIKER, vice-president and chairman of the editorial board of the McGraw-Hill Co., has been appointed assistant to the Secretary of Commerce, with duties and relations of greatest significance to the coal industry.

Mr. Hoover has divided the Department of Commerce into two parts. Assistant Secretary Huston will supervise the bureaus relating to navigation and fisheries, while Mr. Hoover will give his personal attention to the bureaus of Foreign and Domestic Commerce, Standards and Census. Mr. Feiker will directly assist Mr. Hoover in the expansion of these bureaus as aids to business.

The first step is finding out what kind of facts and figures industry needs from the Government and then, having organized the department to function according to these requirements, the next step will be to devise an adequate system of clearing the collected data back to business. It

F. M. FEIKER
Assistant to the Secretary of Commerce

will be apparent at once that Mr. Feiker's background of engineering training, viewpoint on the needs of industry and sense of publicity will be of great value to him in the furtherance of Mr. Hoover's plans.

Mr. Feiker is an electrical engineer by profession and has been especially interested in aiding Mr. Hoover in the development of his plan for the elimination of waste in industry which was undertaken by the Federated American Engineering Societies at Mr. Hoover's suggestion. He is a graduate of the Worcester Polytechnic Institute, was for several years chairman of the editorial board of the A. W. Shaw Publications of Chicago, and is now vice-president and chairman of the editorial board of the McGraw-Hill Co. Inc., of New York, publishers of *Coal Age* and other engineering and industrial periodicals. He has been one of the prime movers in the movement to interest engineers in the broad problems of public service, which has resulted in the formation of the Federated American Engineering Societies.

Scranton Coal Company Fined $250,000

FOR damage done to the streets of Scranton in violation of an injunction, Judge Maxey, on May 9, placed damages of $250,642.51 on Frank P. Christian, president; John G. Hayes, general manager and James Pearn, an engineer of the Peoples Coal Co. of Scranton. Judge Maxey declared that "in the case at bar the defendants Christian, Hayes and Pearn were the brains and directing force of the Peoples Coal Co. Only in obedience to their will did the corporation function; its misdeeds resulted from their wilful personal acts. Not to hold them responsible for the violation of the injunction would be a travesty and the court would be left to fulminate against a name only, while the living, breathing actors who really did the acts subversive of the decree would be enabled to flout the principle of justice that those who do wrongs should right them."

The fines were as follows: $211,650 to replace supporting material wrongfully removed, $22,075 to rectify the company's defective columnization of pillars; $9,015.25 to pay city's engineering expense; $6,700 to pay city's counsel expenses; $102.27 to pay expense of printing petition, $1,000 fine for violation of injunction in refusing plaintiff access to mines.

H. C. Frick Coke Co. Also Lowers Wages

AFTER paying for some time a much higher scale than the rest of the operators in the Connellsville region the H. C. Frick Coke Co., a subsidiary of the United States Steel Corporation, on May 12 announced a wage cut to take effect on Monday last, May 16. It will reduce the wages of 25,000 men. The H. C. Frick Coke Co., like all the operators in the Connellsville region, runs non-union mines and can therefore reduce wages without violating contracts. It paid the same wage as other operators in the field till March of this year, when W. J. Rainey Co., Inc., made a wage cut of 18 per cent.

On April 1 the other independent mine operators in the Connellsville region followed suit, but made the cut 22 to 30 per cent. W. J. Rainey Co. at that time made such reductions in its wage rates as would bring its scale to that paid by the independents. For six weeks the H. C. Frick Coke Co. continued to operate without a reduction in wages but at last it has made a radical wage cut. This may result in some uneasiness in the western Pennsylvania and central Pennsylvania union areas, which, having a contract that cannot be abrogated, will suffer severely from competition.

The schedule is in brief as follows:

	May 16, 1921	Before Reduction	Nov. 10, 1917
Outside laborers (9 hr.)	$3.30	$5.40	$3.30
Tracklayers, per day	5.55	7.55	5.05
Assistant tracklayers, per day	4.75	6.75	4.35
Mine laborers, per day	4.55	6.55	4.15
Firebosses, per day	7.00	8.80	6.00
Pick miners, per 100 bu	2.65	3.24	2.29
Coal loaders, per 100 bu	1.65	2.10	1.65
Hand drawers, per 100 bu. charged	1.51	2.60	1.44

The wage cut approximates 30 per cent and differs somewhat from the scale put into effect April 1 by the independent operators who adopted the November, 1917, scale. The Frick scale, however, includes portions of the November, 1917, scale, and that of December, 1919. The independents usually follow the H. C. Frick Coke Co. in the wage changes, but it may be doubted whether they will raise the pick-mining rate from $2.29 to $2.65 in face of declining wages.

Shipments of Anthracite 229,694 Tons Greater in April Than in March

SHIPMENTS of anthracite in April, as reported to the Anthracite Bureau of Information in Philadelphia, amounted to 5,967,465 gross tons, an increase over the preceding month of March of 229,694 gross tons and 1,153,254 gross tons greater than the tonnage shipped during the month of April last year, when the switchmen's strike interfered with traffic.

Shipments in gross tons by originating carriers were:

	April, 1921	March, 1921
Philadelphia & Reading	1,123,585	1,018,858
Lehigh Valley	1,102,965	1,022,714
Jersey Central	537,822	540,556
Lackawanna	929,271	1,020,381
Delaware & Hudson	812,967	837,644
Pennsylvania	416,847	333,687
Erie	630,471	561,013
New York, Ontario & Western	128,684	144,930
Lehigh & New England	284,853	257,988
Totals	5,967,465	5,737,77

Retail Coal Merchants, in Annual Convention at Richmond, Discuss Problems of the Industry

RETAIL coal merchants, meeting in annual convention at Richmond, Va., last week, had a taste of true Southern hospitality. Delegates from all over the country, many of whom had stopped at Cincinnati for a jollification with the local brethren there, and had then visited the Pocahontas coal field, gathered for the opening session of the fourth annual convention of the National Retail Coal Merchants Association in the Hotel Jefferson, Richmond, Va., on Thursday, May 12. John E. Lloyd, retiring president of the association, made the best address he has delivered in the three years he has held this office.

The visitors were welcomed to the city by W. H. Swarzchild, president of the State Retail Merchants Association. He commented on the fact that it is very difficult for business men to understand why coal is the one commodity that does not come down in price, a point that seems to be perplexing many. When on Friday morning one of the local Richmond papers carried a story on the convention to the effect that coal prices are coming down, Mr. Lloyd invited the reporters to hear him say that, on the contrary, prices are going up. Needless to say, evening papers of that day spread this word also.

Samuel B. Crowell, treasurer of the association, reported all debts paid and a comfortable balance of $10,000 on hand. Ellery Gordon, secretary-manager, in his report of the activities of the year, stressed the hearty co-operation of the officers and paid tribute to the retiring president.

Indianapolis Merchandising Plan Interests

A feature of the first day's program was the description by John George, of Indianapolis, of the plan of merchandising coal used by the Commercial Credit, Audit and Correct Weights Bureau, conducted by retailers in that city. This bureau, numbering but sixty members out of more than two hundred coal retailers in the city, collects 5c. a ton on coal handled, and raised $42,000 in 1920. The bureau is in essence an open-price association.

A. H. Schoyer, manager of through traffic on the Pennsylvania Railroad, read a paper on the financial condition of the railroads.

Thursday afternoon and evening several hundred of the visitors were taken on a boat ride on the James River.

Friday morning Mr. Lloyd told of the efforts made during the past year to effect closer relationship between the producers, wholesalers and retailers. He hoped that another year would see the anthracite operators meeting with those who gathered together last year.

New directors elected were John E. Lloyd, Philadelphia; Wallace B. Phinney, Boston; James Tattersall, Trenton; William Bartrine, Kansas; Charles E. Dodge, Monroe, Wis.; Ben Steers, Kalamazoo, Mich.; W. W. Griffith, Washington, D. C.; J. L. Browne, Sioux City, Iowa; Mr. Downard, Louisville; Peter Beck, Harvey, Ill., and James Commings, of New Jersey.

In the absence of E. J. McVann, the scheduled speaker for Friday morning, who because of illness was unable to be present, Mr. Lloyd turned the meeting over to discussion, the subjects including a symposium on "Is the coal trade doing its best to sell small sizes of anthracite, to give standard preparation, to overcome the seasonal character of coal demand in buy-early advertising and otherwise, and to set up a reputation for clean, straightforward business ethics?"

Government regulation as a cure for coal troubles was severely condemned, particularly after a member from Indiana had told of experiences with state control in 1920. W. J. Womer closed the discussion on seasonal freight rates by saying that the transportation committee of the association was on record in favor of such a scheme.

The banquet Thursday evening was one of the most enjoyable features of the meeting, by some thought to be the most instructive in the eloquent addresses of Representative Campbell of Kansas and Senator Reed of Missouri. Retiring President Lloyd introduced as toastmaster of the occasion Mr. Walker C. Cottrell, who in short but felicitous remarks introduced the speakers, both of whom spoke much to the same point, taking for their topic the present dangerous tendency of the Government to get away from the faith of our forefathers and from our organic law, the Constitution of the United States. Mr. Campbell started off with the statement that the world was never confronted with such problems as it is today, the nerves of all the civilized nations being unstrung; in this country it was shown in the tendency toward socialism, largely in the way of permitting the Government instead of the people to cure the ills from which we are suffering.

Government Regulation Rampant in Washington

There were, he said, more than 300 bureaus and commissions in Washington regulating different things, and as many as twenty-five doing the same thing—statesmen surrendering their states' rights for government appropriations—selling their birthrights for a mess of government pottage. It had grown to such an extent that at the last session the Senate had passed a bill to send midwives to every expectant home, and unless the thinking intelligent people called a halt this country would go upon the rocks. He begged eloquently for the return to Jefferson democracy and to the limiting of government to its proper function of guaranteeing to the people life, liberty, prosperity and the pursuit of happiness.

Mr. Cottrell in introducing Senator Reed said that he (Cottrell) was in a dangerous position sitting between Reed (Dem.) and Campbell (Rep.), but he wanted to assure both the Democratic and Republican parties that what the people wanted were fewer bureaus and more sideboards, a sentiment that met with the cordial approval of the audience.

Senator Reed followed much the same lines laid down by Mr. Campbell and confirmed his statement about the growth of socialism, which he said is threatening the foundations of our Government. Much of the trouble, he said, was due to the growing tendency, when any trouble arose, to ask why Congress does not do something about it. He decried the tendency of endeavoring to have even human ills rectified by legislative enactment. One of the most telling parts of Senator Reed's remarks was his reference to some recent decisions of the Supreme Court, which he said had in effect nullified the Constitution of the United States. He said with regret that his respect for the Court had been shattered when the Court had held that any business was of public welfare and that Congress could legislate for its regulation. In this, he said, the coal men were interested, for if Congress should declare that coal was charged with public use and proceed to legislate accordingly the courts would uphold it.

Notes a Drift Toward Socialism

It is high time, the Senator urged, for men who love their country to create a sentiment that business should not be charged with public use. This he said had special reference to the coal men, for coal would be the first line of attack, and if coal is so charged why not everything else in turn—wheat, bread, lumber—every commodity that the public needs? The Senator held that a fatal step had been taken when the Government had gone beyond the highways in its efforts at conducting and regulating business. To proceed on the present line can only mean the establishment of a socialistic order on the ruins of this Republic. He cited the packers' bill and the several bills introduced for the purpose of regulating the coal business supported by seductive arguments from the propagandists that coal was a great fundamental essential for all the people and that the Government should regulate it. Such action, he said, would be to set fire to the dry grass of public opinion.

The Senator ridiculed in most eloquent terms the reform-

ers who presume to know much better how every other business than their own can be conducted, and held that regulation by such reformers in the Government was to substitute the incompetence of government for the efficiency of proprietorship. Such ideas had their inception in the ancient theory that "the king can do no wrong." He told how hopeless it was for members of Congress, men who could not know the details of business upon which they were called upon to legislate, to undertake to do so, and the only result must be chaos. He directed his shafts at the manner of rendering departmental decisions where opinions were proposed by subordinates who could not earn $100 a month in the industry upon which the report was made. And the decisions received the approval of the department heads.

The Fuel Administration was cited as an instance where in shutting down industries, whether provided with coal or not, the Administrator "had forgotten the parable of the foolish virgin." Every man should be permitted to run his own business but not to the injury of others. He drew a comparison between the conditions in Europe and in this country and ended with a patriotic peroration that brought the audience to its feet. He was given an unusual ovation for an after-dinner speaker.

Successor to John E. Lloyd Chosen

Following Senator Reed's address the toastmaster announced the result of the elections, which were: For President, Roderick Stephens, New York; First Vice President, Homer D. Jones, of Chicago; Vice Presidents, W. T. C. Beslin of Memphis, T. Percy Bryan of Kansas City, Wallace B. Phinney of Boston, Peter Beck of Harvey, Ill.; Treasurer, Samuel B. Crowell, of Philadelphia.

An appropriate event prepared for the closing of the evening's festivities, the presentation to the retiring president, John E. Lloyd, of a silver after-dinner coffee set, was marred by the failure of the gift to arrive on time, though shipped from Philadelphia five days before.

The feature of the Saturday morning session, after the reports of the committees on cost accounting and resizing had been received, was an address by S. D. Warriner, president of the Lehigh Coal & Navigation Co.

Mr. Warriner began by referring to the changes in sentiment regarding the conduct of business since the world war catastrophe, and particularly the rise in prices and wages after the war had been brought to an end. We were now at the turn but the problems of deflation were of a more serious character than the problems of rising prices, and it was no wonder that business men and the public were more or less confused. We, on this side of the ocean, have echoes of the world-wide socialistic movement. It is as near to us as England, which is now in the throes of labor strikes, and no one can foretell the end. We know that a revolution has been narrowly escaped.

Taxing the Public to Meet Labor's Demands

The problem of the open shop and the closed shop has been passed up, and the old theory that the laborer is worthy of his hire has given way to a new theory that the public must be taxed to give labor the wage that it demands. The echo is heard in this country by two industries, the railways and coal. It will be a great political issue backed by strongly-entrenched unions. We are confronted with the question shall these issues be between man and man or by government intermediaries? Mr. Warriner then spoke of the difference between the problems confronting the bituminous operators with a capacity production of more than 700,000,000 tons a year, a normal production of 500,000,000 tons, and a present rate of production, due to lack of demand, of 350,000,000 tons, and of anthracite which is running practically to full capacity, and with the domestic production moving partly to market, partly to storage yards and partly to dealers.

He deprecated the agitation about a shortage of anthracite this year, but said he realized, as do all anthracite producers, that buying must to a certain extent be limited, as large numbers of consumers have not the money to make advance purchases at prevailing prices. Then, too, higher costs of production and of transportation have restricted the markets for anthracite to a smaller area. He also deprecated the present-day tendency to a lack of ethics in business, particularly as related to the sanctity of contracts. The wages of anthracite mine workers, which represented 70 per cent of the cost of anthracite production, were written into a contract fixed by a commission appointed by the President. That contract establishes a labor cost increase of 138.6 per cent over the pre-war period. It was fixed at the time, in 1920, when the cost of living was at its peak. Notwithstanding the award and the contract the miners struck in September. The troubles were really ended in December, the miners insisting on certain modifications which the operators would not consider. In this stand the operators were supported by the public and the press.

Now, however, the operators are being urged, not by the radical press but by the conservative newspapers, to break that contract. This the operators positively will not do. The contract expires March 31, 1922, and it will stand until that date, even if the cost of living has fallen from 115 per cent above pre-war times to 40 per cent above. The operators must meet the situation by furnishing accurate statements of the condition of the industry. It is faced with the competition of other fuels, now all the keener because of its high price. The margin to the operators is small—always has been small—but must be sufficient to enable the operations to continue. He told of the new acts of the Pennsylvania Legislature; one already a law imposes 1½ per cent tax on the value of anthracite at the mine and if the others are also put into effect the total tax will be 3½ per cent on the total production, or 5 per cent on the domestic sizes.

He asked for harmony in the different branches of the trade, saying that the dealers were not the customers but the partners of the anthracite operators in providing service to the public. The industry cannot function properly unless harmony exists among those engaged in it, and the dealers should meet the operators half way in attaining efficiency of service.

Coal Wholesalers to Consider Future of the Market, Traffic and Legislation

THE two Cobbs—Irvin and Ty—are to be the headliners at the banquet which will close the fifth annual convention of the American Wholesale Coal Association. Three main topics will be discussed at the business sessions of the convention, which will be held June 7 and 8 in Washington. These topics, with their subdivisions are:

The Near Future of the Coal Market.
- (1) The situation as a whole.
- (2) The anthracite situation.
- (3) Eastern coal and exports.
- (4) Middle West and Lake coal.

Traffic.
- (1) Address reviewing the situation from the standpoint of the railroads, the government and the shippers.
- (2) Address outlining methods to meet the wholesalers' traffic problems.
- (3) Report of the Traffic Committee.

Legislation.
- (1) Address by C. C. Carlin in which he will discuss the prospects for coal legislation.
- (2) Report of the Committee on Legislation.
- (3) Determination of the future legislative policy of the association.

The Interstate Commerce Commission has suspended until Sept. 3 rules governing interchange switching at Atlanta. The proposed designated point of interchange at Atlanta between the Southern Ry. and the Louisville & Nashville R.R. is Decatur St., and industries more than three miles distant would be assessed a switching charge of 1.5c. per 100 pounds, whereas the present charge on coal is $2.50 a car.

Sealed proposals will be opened by the Superintendent of Lighthouses, Tomkinsville, N. Y., 3 p.m., May 19, 1921, for 500 tons pea coal delivered in a barge alongside dock at Lighthouse Depot, Tompkinsville, N. Y. Information on application.

Transport and Railroad Men in Britain More Active in Mine Workers' Aid

ANOTHER week of agonizing suspense in Great Britain has not, apparently, brought matters any nearer a settlement. The strike is about to enter its eighth week, and yet up until Tuesday, at least, no conferences between mine workers and operators had been held. The Government seems to be hopeful because it hears more of wages and less of pooling. It is beginning to believe that the mine workers are tiring of their political aims and are simplifying matters by desiring a satisfactory solution of only the wage question.

Miners at one Lancashire pit have asked the Miners' Federation to accept the Government's terms. With the solidarity now existing in mine labor this seems to suggest that a considerable unexpressed sentiment exists in favor of this compromise. It appears that the great resistive powers of the mine workers of Great Britain arise from the fact that the men are being befriended by those large co-operative stores for laboring men which have grown up as the outcome of the celebrated Rochdale experiment.

An untoward development is the action of the transport men. The Government long ago received promises from the executives of these laborers and of the railway men that they would not hinder the unloading and shipment of coal for public utilities. While the coal at the ports was from British collieries, mined by British workmen at prewar wages and under Government control no great trouble existed as to the unloading. It was grudgingly performed, but soon it was foreign and even German coal that approached the wharves, and the feeling on the part of the transport men was increasingly hostile and was fanned not only by class consciousness but even by a spurious patriotism.

Railway and Transport Men Handle Import Coal

As Irish sentiment is not believed likely to affect the settlement of the strike the Irish and English railway men and transport workers on May 8 decided to permit the handling of foreign coal intended for Irish purposes only and shipped to Irish ports. Belgian coal at Dublin was the cause of this decision, but it is understood that several shipments from America are on their way to the ports of Ireland.

Trouble arose, however when German coal made its appearance at the port of London. The transport workers refused to handle it and a number of them were discharged. About this same time came the trouble near Glasgow. Here the pointsmen (switchmen) refused to provide for the transportation of coal that non-union men had unloaded. The Government, which still controls the railroads, ordered the Caledonia Ry. "to carry out its duties." Bob Williams, secretary of the transport workers, with Charles Crump of the railway union had a conversation with Sir Eric Geddes, Minister of Transportation, and demanded that the transport workers be not discharged summarily for handling non-union coal. It seems that conditions are made worse rather than better with the departure of the somewhat conservative J. H. Thomas, secretary of the National Union of Railway Men, to the United States.

Sessions of the executives of the transport workers and the railway men developed that Bob Williams wanted a strike for the reinstatement of the Londoners who had refused to unload German coal. The leader of the railroad men, however, was opposed to any such action. On May 13 the railway men determined through their executive to put an embargo on coal loaded by non-union labor. The firemen's and enginemen's union had previously declined to transport non-union or foreign coal and had promised to give those who were discharged for that reason full pay till reinstatement. This union also called the attention of the Dutch and French transport workers to the resolution of the International Transport Federation at its Geneva congress, which imposed a blockade on coal for England. As a result four hundred thousand tons at Antwerp were tied up, the Dockworkers' Union refusing to handle it, as it was destined for Great Britain. In Glasgow, where men had been laid off, an independent rail strike was declared to take effect on the evening of May 13.

About 7,000 tons of American coal is lying somewhere on the British railroads. It came in at the harbor at Portland and was unloaded by union labor, but the railway men refused to handle it. More than five million men are idle, some striking and some because the lack of coal has closed the factories.

At the big Greenwich power plant of the London County Council most of the members of the General Workers Council are on strike because they heard that coal from Belgium was being used. The Government supplied non-union workers in their places.

Reconsignment Charge Remains $7 Per Car

RECONSIGNING rules on coal and coke were considered in Pittsburgh on May 5. On the railroad side, the representatives were the coal and coke committees of the Trunk Line and the Central Freight associations. On the coal side were the National Coal Association, American Wholesale Coal Association, the Chicago Wholesale Coal Shippers Association, the Pittsburgh Wholesale Coal Association and the National Industrial Traffic League. In addition, several coal associations were heard from by letter.

The hearing was a continuation of that which was held on March 9 at Pittsburgh, when certain revisions of the reconsigning rules were proposed. The railroads at that time had received various recommendations, but could not go quite as far as the various groups had then proposed. The hearing was on the proposed increase in the reconsigning charge from $7 to $10 per car.

The presentation of the coal side of the case was brief and to the point. The burden of the whole story was that the coal trade was willing "to go along with" the railroads in all matters pertaining to their revenue, but could not consent to make those concessions which would ruin the coal trade itself.

The statement made by the jobbers was, perhaps, typical of the lot—although maybe a little more highly colored than the rest. It was said that there was no present disposition on the part of the wholesalers to question the power of the railroad to put these rates and charges into effect. The new charges would have amounted to 21c. or 22c. per ton. On the contrary the gross margin of the wholesaler is, in these tight times, not more than 15c. per ton.

At the conclusion of the presentation of the coal case Chairman Venning announced that the railroad men would retire and would reach a decision at once. In less than five minutes the railroad men were back in the room and Chairman Venning announced that the charges would be $7 a car, but the rules otherwise would remain as proposed.

Central Pennsylvania Coal Producers' Association Seeks Wage Conference

ACCORDING to John L. Lewis, president of the United Mine Workers of America, the Central Pennsylvania Coal Producers' Association is seeking a conference with the union to consider the "grave situation" in the coal industry and wage reductions. This association may be granted the courtesy of a conference, but Lewis declares that there will be no concession.

The union is not proving to the advantage of the mine workers, who note that the Connellsville region is working more steadily than it would if its wages had been maintained and that the central Pennsylvania district is working less steadily than is its due. About 115 coal-producing concerns, employing nearly 100,000 mine workers, will be represented at this conference if it is held.

In the organized districts of Tennessee several thousand mine workers are on strike or locked out because of the wage question, according to Mr. Lewis. The Washington mine workers also are on strike against wage reduction. "There is much rumbling beneath the surface," declared the same authority, "but thus far the operators' associations have not generally attempted to abrogate their agreements, which run to March 31, 1922."

Strikers Put Mine Towns Under Rifle Fire

MERRIMAC, Rawl, Sprigg and Matewan, W. Va., and McCarr, Ky., have been subjected to drum fire, which has now become the accepted manner by which union men enforce their labor demands in the Mountain State. The fusillade started shortly after dawn May 12 at Merrimac, which is about four miles up the Tug River from Williamson. Governor Morgan has asked for Federal troops and has ordered the entire state police force to the scene of the disorder. H. C. Staton, a state prohibition officer and merchant at Sprigg, was killed by one of the bullets, and Noah Phillips and a young man named Calvert, who were employees of the White Star Coal Co. at Merrimac, were seriously wounded.

The towns molested lie within seven miles of one another along the banks of the Tug River, where foliage and boulders furnish a perfect screen for the riflemen. The shots rained all over and around a passenger train at Sprigg as it entered the station, but, fortunately, no one was killed.

Firing on the villages persisted through the night of May 12, and the men, women and children left their homes either for the hills or to more remote districts. On May 13 Gates, near Matewan, and the mines of the New Howard Coal Co., became involved. Dan Witt, a non-union miner, who, with several mine workers' families, was penned in a mine, left it to obtain water and was shot. G. W. Smith was added to those known to be killed.

On May 14 Blackberry City, New Howard and Allburn were added to the beleaguered towns, and the shots had severed all the electric wires and left the villages in darkness. On May 15 the shooting had quieted. It lasted at Merrimac on that day only thirty minutes. So far the only forces used to restore order have been the sheriff's deputies, the state police and troops of the State of Kentucky.

Major General George W. Reed, commanding the Fifth Corps Area, has been making an investigation, but the Federal authorities have remained almost indifferent and on May 16 decided to do nothing. The action of Secretary of War Weeks compares unfavorably with the prompt action during the previous Administration. Things have quieted down, it is true, but the villages are depopulated and no one dares to return. Reports as to the number of killed vary from six to fifteen. The trouble appears to have had its immediate source in the eviction of 100 mine workers from company houses. Apparently non-union men are engaged in the shooting, for Sprigg is a tent colony of strikers. It is reported that an automatic rifle, three other rifles and 1,000 rounds of ammunition were found at Sprigg, wrapped in Charleston, W. Va., papers of Saturday and evidently thrown from a train.

New Tariff Bill Will Tax Coal Imports; Washington Operators Suggest 75c. Ton

BITUMINOUS coal probably will be made dutiable in the forthcoming tariff bill. For the past eight years it has been on the free list. It is understood that the sub-committee of the Committee on Ways and Means of the House of Representatives already has agreed that it is to be dutiable. Coal operators in the State of Washington have asked that the duty be 75c. a ton. It is not known what rate the sub-committee has in mind. Under the Payne-Aldrich tariff the duty on coal was 45c. per ton.

A tariff is being urged largely for the purpose of protecting the domestic industry in Washington from competition by Canadian coal, but coal is reaching Pacific ports from both Japan and Australia. Incidentally Canada collects a duty of 53c. a ton on coal sent in to that country.

It is expected that the full Ways and Means Committee will interpose no objection to a reasonable duty on coal. So far as can be learned, there will be no determined objection either in the House or in the Senate to this duty. Eastern coal operators have advised the sub-committee that there is no objection on their part to the placing of a duty on coal.

Under existing conditions producers of coal in British Columbia and in Alberta enjoy a considerable advantage over producers in the State of Washington. This is particularly true of the mines on Vancouver Island. These properties are on tidewater and employ a considerable amount of Oriental labor. Wages in Washington mines are fully $2 a day higher on the average than are those paid on Vancouver Island. Higher wages are paid at the mines in eastern British Columbia but even there they are 50c. per day lower than those paid in Washington. The great advantage enjoyed by the British Columbian coals, however, arises from the fact that fully 60 per cent of the output consists of the larger sizes. In Washington only about 30 per cent of the coal is recovered in the large sizes. In addition the rate of exchange favors the Canadian operator.

Rail Surplus of $30,894,065 in March Is $50,000,000 Less Than Intended by Law

NET railroad operating income for March was $30,894,065, according to a tabulation prepared by the Association of Railway Executives from reports made to the Interstate Commerce Commission. This represents a return of 2.29 per cent of the tentative valuation fixed under the Transportation Act and a shortage of $50,000,000 from the net revenue contemplated by that act, the association announced in a statement issued May 12.

The March reports showed a surplus for the first time since last December, a deficit of more than $950,000 being returned in January and of $7,378,000 in February, according to the association figures. The improvement, the statement said, "was due principally to a marked reduction in the cost of operation caused by the institution of various economies and a reduction by many roads in the number of employes." Increased traffic also influenced the month's results.

Operating revenues in March were announced as $458,361,526, a decrease of 2-10 of one per cent from the corresponding month of last year and operating expenses as $399,429,447, a decrease of 4.8 per cent. The net operating income was an increase of 104.6 per cent over March, 1920.

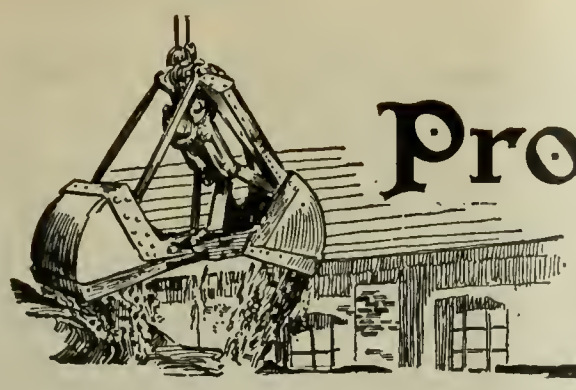
The Western district carriers came nearest to earning a return of 6 per cent in March. Their compiled reports showed net earnings of 2.66 per cent. The Southern district returned 2.27 per cent net and the Eastern district 1.91.

IT IS UNDERSTOOD in Washington that Senator Calder, of New York, is preparing to re-introduce a coal regulation bill. The Senator is reported to be opposed to a Federal Coal Commissioner bill. Report has it that Mr. Calder has submitted to various coal interests a tentative draft of a new bill, but when seen the Senator declined to discuss the subject.

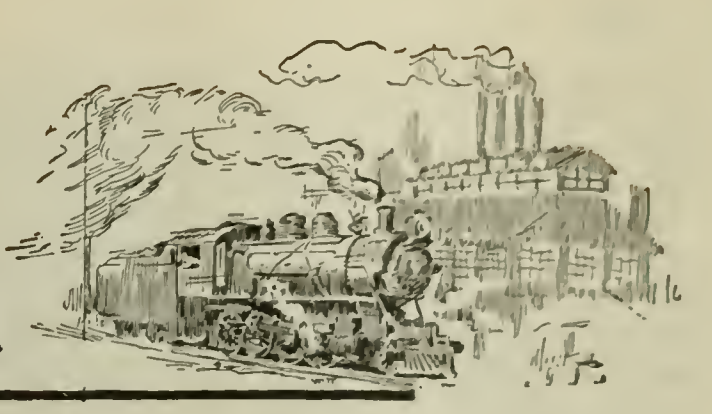
THE COMMITTEE OF BUSINESS MEN which recently conferred with Secretary of Commerce Hoover on plans for reorganizing the department in the interest of trade and industry, have recommended that the Commerce Department include all of the non-regulatory functions of other government institutions having to do with industry. The committee favored the centralization of statistics on industries in the department.

SECRETARY OF COMMERCE HOOVER is understood to feel that the determination of cost of producing coal at the mines is not an essential factor in consideration of coal prices. He takes the ground that costs vary at different mines and a basic determination of costs is not possible in view of these varying conditions, and would not be of benefit to the public. This is an important announcement in view of the controversy which has raged around cost determination, and is expected to play an important part in coal matters in view of the fact that the Commerce Department is now favored by some Senators for administration of the proposed coal act.

THE GOVERNMENT HAS BEEN ALLLOWED ten days' additional time in which to file its brief with the Supreme Court of the District of Columbia in the matter of the National Coal Association's injunction. This serves to extend the life of the temporary injunction for at least the same length of time.



Production and the Market



Weekly Review

DESPITE the slow but steady gains in production of bituminous coal, there is little optimism in the trade. The present gains are attributable to two factors—sustained demand in the West and Middle West for domestic lump and increasing call for foreign bunker coal and exports offshore. Buying for Lake shipment is inactive and the large shipments are almost entirely on the account of shippers with their own docks. Industrial activity and a market for steam coal, the backbone of the bituminous coal trade, is lacking, and the two largest consumers of soft coal, the railroads and the steel industry, are not in the market for more than their current needs, which are much below normal.

As was to be expected, retail coal merchants are proving to be more intelligent buyers than are large consumers, for they are buying both soft and hard coal to the limit of their yard capacity while prices are easy. Coal-burning weather still prevails throughout much of the country and this has helped move both anthracite and bituminous coal to the householders' cellars. This cannot last much longer and the easing up in lump coal prices is already in evidence in a few spots.

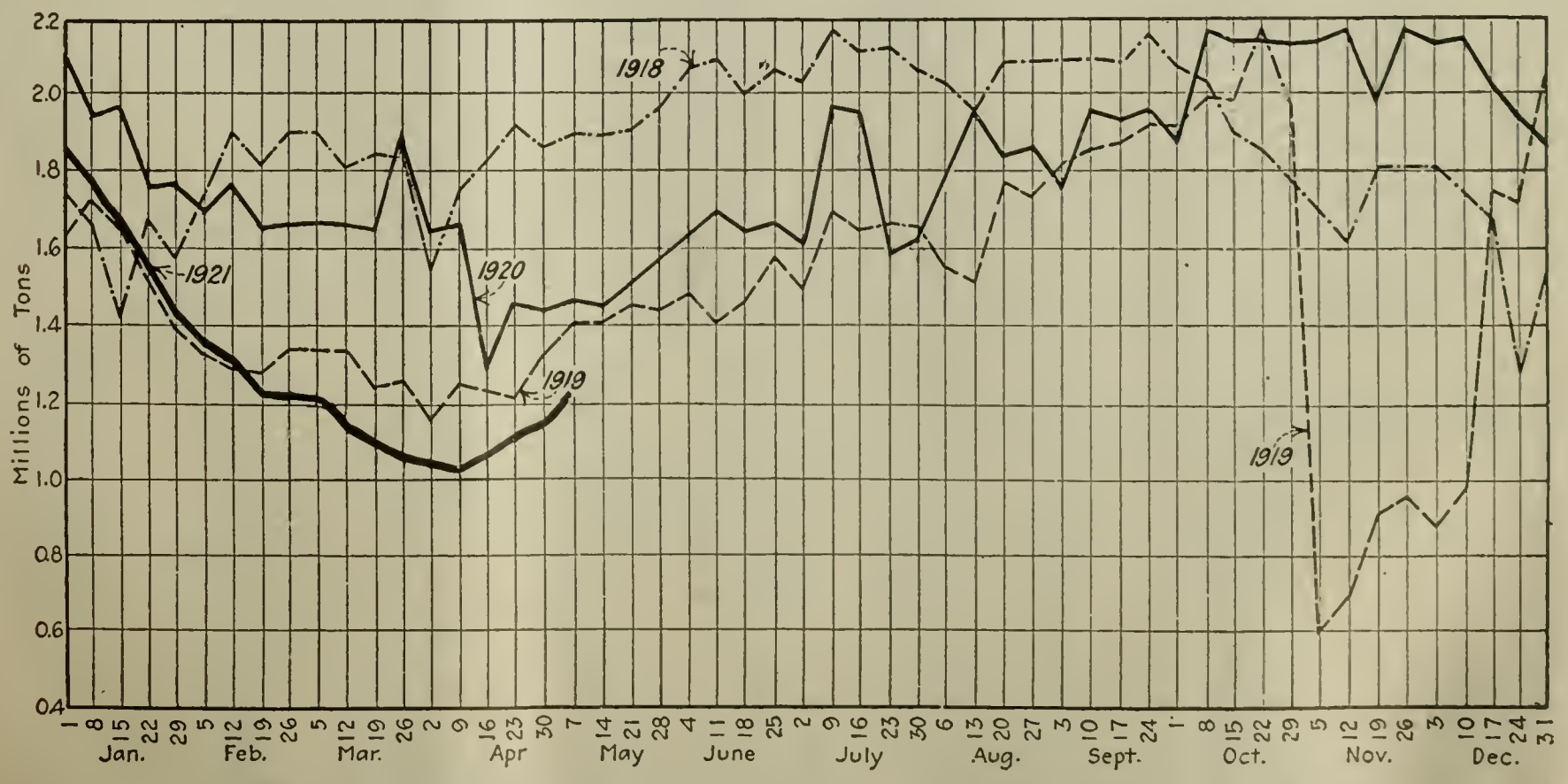
Steam coal resulting from screening out domestic lump has gone begging on the market both East and West and the general level of prices has suffered as a result, *Coal Age* Index for the week showing a drop to 103 from 104 last week. Aside from export demand there is nothing in sight promising continued strength to the market. Briefly, prices at Tide are tending upward, in the Middle West and in New England downward, in the Far West they are stationary and in the Southwest prices are strong, with household coal tending upward.

British Strike Affects Foreign Demand

Foreign demand for coal is gaining, after six weeks of the British strike. The demand so far evidenced is for bunker coal, either for loading at our ports or for shipment as export cargo for bunker supplies at foreign stations, as Gibraltar. No appreciable call is yet recorded for industrial coal in foreign countries that can be traced to shortages arising from non-delivery of British coal. It may be six months before the full effect of the loss in foreign markets of around 10,000,000 tons of coal (if the strike is over by the end of May) will be felt in this country. The seamen's strike on this side has not so far seriously interfered with coal shipments.

A million tons of coal standing in cars at Lower Lake ports awaiting boats to carry it to the Northwest would not ordinarily be considered such a large accumulation,

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

but with so little ore and grain coming down and so few boats available, what would be normally but a week's dumping is becoming a matter for serious consideration.

Anthracite is moving in good volume, mainly to the West, up Lakes and to New England. The Middle Atlantic section could not have one-twelfth its annual requirement now if it were to demand it, because shippers are pushing so much of this current output to more distant markets. Philadelphia dealers have been "rationed" already.

Coke output reflects the situation in iron and steel. So low is the production of beehive that it is doubtful if any is going to iron furnaces.

BITUMINOUS

Gain in production of soft coal continued during the first week in May. According to the Geological Survey the week's output was 7,296,000 net tons, an increase of 5 per cent, or 326,000 tons, as compared with the preceding week. Loadings on Monday and Tuesday, May 9 and 10, were 10 per cent greater than for the corresponding days of either of the two preceding weeks.

As already stated, production in the Middle West is stimulated by the domestic call, which is causing an overproduction of coal. Those fields supplying the Lake trade have increased the amount of coal mined. In the eastern Ohio district production for the week ended May 7 was the heaviest of any period since January, industrial demand also being a trifle stronger. The Northern and Middle Appalachian output was 4,093,000 tons for the last week in April, continuing the gradual increase made since the first of that month.

Tidewater shipments increased during April, the total being 3,041,000 net tons, according to the Geological Survey. This was 213,000 more than for March and the heaviest dumped since January. Increased foreign demand caused by the British strike and a heavier call for bunkers were the main causes for the increase, although coastwise movement to New England jumped to 633,000 tons from the March figure of 518,000. March and April comparison of Tidewater dumpings follows:

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR APRIL 1921, COMPARED WITH MARCH, IN THOUSANDS OF NET TONS

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	April Total	Mar. Total
Coastwise to New England	112	26	87	408	..	633	518
Exports	...	54	116	640	15	825	712
Bunker	381	53	51	319	1	805	626
Inside Capes	...	142	101	17	1	261	235
Other tonnage	484	1	1	27	4	517	611
April total	977	276	356	1,411	21	3,041	.....
March total	1,065	298	316	1,099	50	.....	2,828

During the week ended May 7 export dumpings were 226,159 net tons at the Hampton Roads piers, or a decline of 4,554 tons from the preceding week. Bunker coal, on the other hand, increased 44,254 tons, or 47 per cent, the week's figure being 135,710 tons. The seamen's strike is delaying somewhat the movement at Tide—at this writing there are several ships in the harbor unable to proceed because of the lack of crews. Prices have strengthened a trifle;

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

	Market Quoted	Mar. 1920	Apr.19 1921	May 10 1921	May 17 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$3 25	$3.50	**$3.50@$3.75**
Pocahontas lump	Columbus	2.60	5.50	5.40	**5.50@ 5.75**
Pocahontas mine run	Chicago	2.35	4.00	4.00	3.50@ 4.50
Pocahontas lump	Chicago	2.60	5.00	5.00	**5.00@ 5.50**
*Smokeless mine run	Boston	....	5.85	6.15	**6.25@ 6.50**
Clearfield mine run	Boston	2.95	2.35	2.35	**2.00@ 2.85**
Somerset mine run	Boston	2.95	3.05	2.95	*2.25@ 3.50*
Pool 1 (Navy Standard)	New York	2.95	3.50	3.65	*3.00@ 3.75*
Pool 1 (Navy Standard)	Philadelphia	2.95	3.50	3.25	3.25
Pool 1 (Navy Standard)	Baltimore	2.95	3.25	3.25	**3.25@ 3.30**
Pool 9 (Super. Low Vol.)	New York	2.95	2.80	2.90	*2.60@ 3.00*
Pool 9 (Super. Low Vol.)	Philadelphia	2.95	3.00	2.90	2.90
Pool 9 (Super. Low Vol.)	Baltimore	2.95	3.05	3.10	*2.95@ 3.00*
Pool 10 (H. Gr. Low Vol)	New York	2.95	2.55	2.45	**2.35@ 2.75**
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.95	2.80	2.70	2.70
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.95	2.50	2.55	2.50@ 2.60
Pool 11 (Low Volatile)	New York	2.95	2.15	2.15	2.00@ 2.25
Pool 11 (Low Volatile)	Philadelphia	2.95	2.30	2.45	2.45
Pool 11 (Low Volatile)	Baltimore	2.95	2.25	2.30	2.25@ 2.35
Pool 71 (Navy Sup'mnty)	New York	2.95	2.95	3.00	2.75@ 3.25
Pool 71 (Navy Sup'mnty)	Philadelphia	2.95	3.25	3.00	3.00
Pool 71 (Navy Sup'mnty)	Baltimore	2.95	3.10	3.10	**3.10@ 3.30**
High-Volatile, Eastern					
Pool 34 (54-64) (H. Vol. Gas and Steam)	New York	2.50	1.95	2.00	1.85@ 2.15
Pool 34 (54-64) (H. Vol, Gas and Steam)	Philadelphia	2.50	[1.95	2.10	2.00@ 2.15
Pool 34 (54-64) (H. Volt Gas and Steam)	Baltimore	2.50	2.05	2 10	*1.75@ 2.00*
Pittsburgh mine run	Pittsburgh	2.35	2.25	2 10	2.00@ 2.20
Pittsburgh sc'd gas	Pittsburgh	$2.35	$2.85	$2.60	**$2.50@$2.90**
Kanawha mine run	Columbus	2.70	2.00	2.25	**2.25@ 2.35**
Kanawha lump	Columbus	2.95	3.25	3.50	*3.25@ 3.50*
Hocking mine run	Columbus	2.50	2.15	2.20	2.10@ 2.25
Hocking lump	Columbus	2.75	3.25	3.25	**3.25@ 3.25**
Pitts. No. 8 mine run	Cleveland	2.35	2.25	2.20	**2.25@ 2.30**
Pitts. No. 8 lump	Cleveland	2.60	3.65	3.25	*3.00@ 3.30*
Midwest					
Franklin, Ill., mine run	Chicago	2.35	3.40	3.40	*3.00@ 3.50*
Franklin, Ill., lump	Chicago	2.55	3.55	3.75	*3.50@ 3.85*
Central Ill., mine run	Chicago	2.35	2.50	2.95	*2.25@ 3.00*
Central Ill., lump	Chicago	2.55	3 00	3.25	3 00@ 3.50
Ind. 4th Vein mine run	Chicago	2.35	2.75	3.40	*2.75@ 3.50*
Ind. 4th Vein lump	Chicago	2.55	3.25	3.50	3.25@ 3.75
Ind. 5th Vein mine run	Chicago	2.35	2.75	2.70	*2.25@ 2.75*
Ind. 5th Vein lump	Chicago	2.55	3.00	3.25	3.15@ 3 40
Standard mine run	St. Louis	2.35	1.95	1.90	1.90
Standard lump	St. Louis	2.55	2.25	2.40	**2 25@ 2.75**
West Ky. mine run	Louisville	2.35	2.25	2.00	2.00
West Ky. lump	Louisville	2.60	3.00	2.75	*2.65*
South and Southwest					
Big Seam mine run	Birmingham	2.45	3.05	2.95	2.85@ 3 10
Big Seam lump	Birmingham	2.75	3.60	3.70	3.40@ 4.00
S.E. Ky. mine run	Louisville	3.00	2.75	2.60	2.50@ 2.75
S.E. Ky. lump	Louisville	3.25	3.75	3.90	*3.50@ 4.00*
Kansas mine run	Kansas City	3.50	4.40	4.40	4.25@ 4.50
Kansas lump	Kansas City	4.00	5.00	5.00	5.00

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

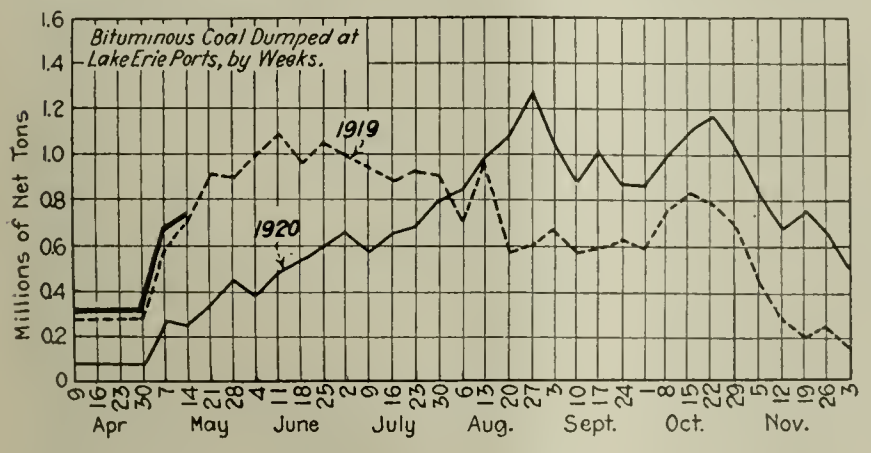
Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	May 3, 1921 Independent	May 3, 1921 Company	May 10, 1921 Independent	May 10, 1921 Company	May 17, 1921† Independent	May 17, 1921† Company
Broken	New York	$2.61	$7.20@$7.50	$7.20@$7.75	$7.45@$7.75	$7.20@$7.75	$7.45@$7 75	$7.20@$7 75
Broken	Philadelphia	2.66	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75
*Broken	Chicago	5.62	.....	.....	12.65	12.40	12.65	12.40
Egg	New York	2.61	7.20@ 8.00	7.20@ 7.75	7.45@ 8.35	7.20@ 7.75	7.45@ 8.35	7.20@ 7.75
Egg	Philadelphia	2 66	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75
*Egg	Chicago	5.62	.....	.....	12.70	12 35	12.70	12.35
Stove	New York	2.61	7.50@ 8.00	7.50@ 8.10	7.70@ 8.35	7.50@ 8 10	7.70@ 8.35	7.50@ 8.10
Stove	Philadelphia	2.66	7.85@ 8.35	7.70@ 8.10	7.85@ 8.35	7.70@ 8.10	7.85@ 8.35	7.70@ 8.10
*Stove	Chicago	5.62	.....	.....	13.00	12 70	13.00	12.70
Chestnut	New York	2.61	7.50@ 8.00	7.50@ 8.10	7.85@ 8.35	7.50@ 8 10	7.85@ 8 35	7.50@ 8.10
Chestnut	Philadelphia	2.66	7.85@ 8.35	7.65@ 8.10	7.85@ 8.35	7.65@ 8.10	7.85@ 8.35	7.65@ 8 10
*Chestnut	Chicago	5.62	.....	.....	12.85	12 60	12.85	12.60
Pea	New York	2 47	5.25@ 5.75	5.75@ 6.15	5.25@ 5.50	5.75@ 6.10	**5 25@ 6 00**	5.75@ 6.10
Pea	Philadelphia	2 36	6.00@ 6.35	6.00	5.50	6.00	**6 00@ 6 25**	6.00
*Pea	Chicago	5 62	.....	.....	10.80	10.70	10.80	10.70
Buckwheat No. 1	New York	2 47	3.25@ 3.75	3.50	3.00@ 3.75	3 50	3.00@ 3.75	3.50
Buckwheat No. 1	Philadelphia	2 36	3.25@ 3.50	3.50	3.25	3 50	**3 50**	3.50
Rice	New York	2 47	2.50	2.50	2.50	2 50	*2.40@ 2.50*	2 50
Rice	Philadelphia	2 36	2.50	2.50	2.50	2 50	2 50	2.50
Barley	New York	2 47	1 50	1.50	1.15@ 1.50	1 50	1.15@ 1.50	1 50
Barley	Philadelphia	2.36	1.50	1.50	1.25	1 50	**1 50**	1.50
Birdseye	New York	2 47	....	2.50	2.50	2 50	2.50	2 50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago. † Advances over previous week shown in **heavy type**, declines in *italics*.
Freight rates do not include war tax New York rates are f.o.b. Lower Ports; to Manhattan add 40c.@55c. to cover harbor charges.

Pocahontas and New River are quoted $6.25@$6.50, gross tons, f.o.b. Hampton Roads. At Philadelphia, Fairmont, Pool 34, is $5.50@$5.75, while screenings are $5.75@$6; Westmoreland mine run is $6, and $6.25 is quoted on Youghiogheny screenings.

Lake dumpings for the week ended May 16, as reported by the Ore & Coal Exchange, Cleveland, were 718,567 net tons of cargo and 19,215 tons of fuel coal. The total for the season now amounts to 2,572,862 tons, as compared with only 849,083 tons for the same period in 1920. April westbound coal movement through the "Soo" was 259,288 tons of soft coal and 109,719 tons of anthracite. April receipts at the docks of Duluth and Superior were 203,270 tons, of which 83,058 tons were anthracite and 120,212 soft coal.



Adjustment of freight rates to Louisville, Ky., from the eastern and southeastern Kentucky fields have placed all grades of coal on a mine run basis, abolishing the differential between screened sizes and mine run. This places the eastern Kentucky districts in competition with southern Indiana.

The War Department is receiving bids, to be opened June 1, for the fiscal year July 1, 1921-June 30, 1922, for supplying coal to the nine corps areas. The Quartermaster General announced that it will be the policy of the department to accept for delivery during July and August as much of the coal as can be handled and stored at each of the posts.

New England all-rail movement for the first week of May was 2,457 cars, only a few less than for the preceding week, but over 800 cars less than during the corresponding

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (*a*)
Apr. 23 (*b*).....	6,815,000	122,086,000	8,523,000	162,076,000
Daily average..	1,136,000	1,274,000	1,420,000	1,683,000
Apr. 30 (*b*).....	6,970,000	129,056,000	8,928,000	171,004,000
Daily average..	1,162,000	1,268,000	1,488,000	1,672,000
May 7 (*c*).....	7,296,000	136,352,000	9,167,000	180,171,000
Daily average..	1,216,000	1,265,000	1,528,000	1,664,000

(*a*) Less 2 days' production during first week in January to equalize number of days covered for last two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (*a*)
Apr. 23.....	1,903,000	28,400,000	1,663,000	26,373,000
Apr. 30.....	1,945,000	30,345,000	1,841,000	28,214,000
May 7.....	1,633,000	31,978,000	1,891,000	30,105,000

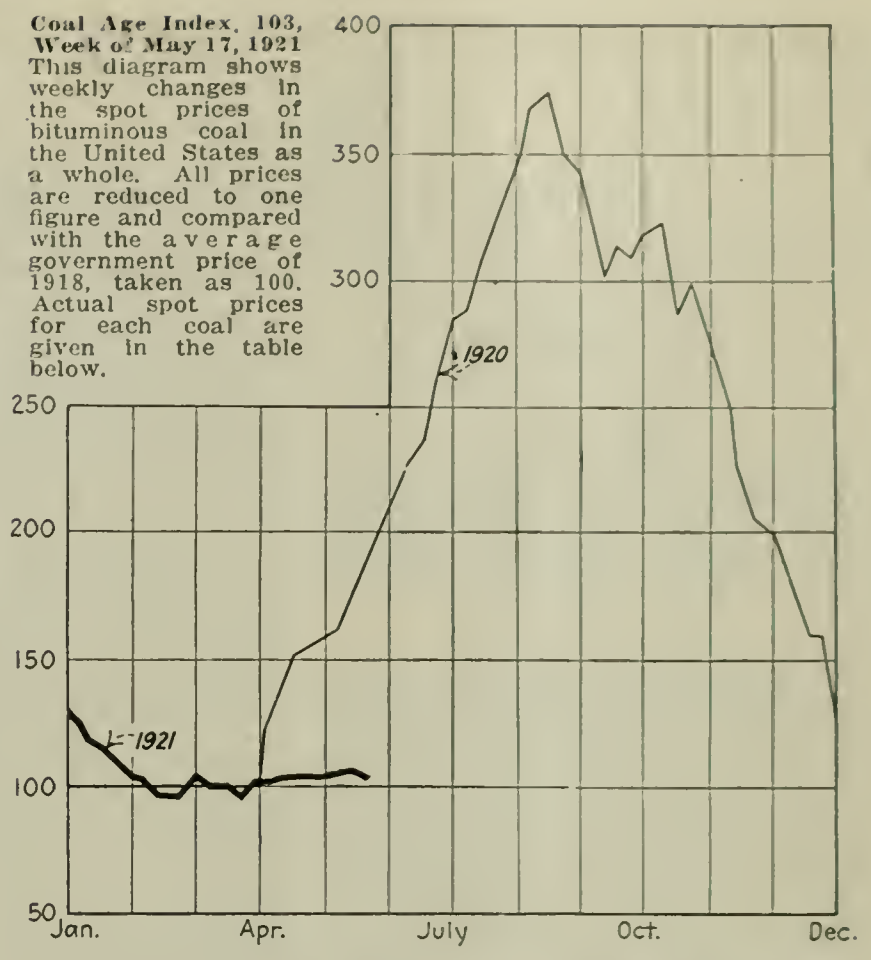
(*a*) Less 2 days' production during first week in January to equalize number of days covered for last two years.

BEEHIVE COKE

Week Ended May 7 1921 (*a*)	Week Ended April 30 1921 (*b*)	Week Ended May 8 1920	1921 to Date	1920 (*c*) to Date
70,000	72,000	370,000	2,915,000	7,744,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Coal Age Index, 103, Week of May 17, 1921
This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table below.



week of 1920. The market in that section is very quiet and reserves are adequate for some time to come. Purchasers still find the difference between spot and contract too great to consider making season agreements. They are, however, taking more interest in quotations, and some operators, anxious to obtain running time, have taken larger orders on the open market for delivery over periods up to ninety days. Coastwise receipts have fallen off because of the marine strike, but this is causing no anxiety, as cargoes for storage had been taken regularly by many industries up to the time of the tie-up.

Four men are known to have been killed in the former strike area in West Virginia on the Kentucky border, where a fierce outbreak occurred during the week. At this writing Federal troops are in readiness to leave for the support of the state police.

ANTHRACITE

There was a sharp slump in production during the week ended May 7. The total output was 1,633,000 net tons, 312,000 tons short of the figure for the last week of April. Cumulative production for the coal year now exceeds that of the corresponding periods of 1919 and 1920.

Purchasing of domestic sizes for storage is proceeding actively. Lake loading is practically confined to the vessel tonnage offering. Steam sizes are heavy, but much of this is going to storage piles, and prices are firm. In favor of early buying, retailers and shippers are calling attention to the increase in price which probably will come July 1 due to the Pennsylvania State tax of 1½ per cent on the mine price of all anthracite produced, effective that date.

COKE

Beehive coke production has again declined. During the first week in May 70,000 net tons were produced, a drop of 2,000 tons from the preceding week. Demand is almost non-existent.

The Frick company has reduced its wages, conforming to the reductions announced by the Steel Corporation. The cut was made effective May 16 and in most instances wages revert back to the scale of 1917.

ON REPRESENTATIONS BY Representative Zihlman of Maryland and others that the Chesapeake and Ohio Canal would have to cease operations unless it continued to transport coal for the Navy to the proving grounds at Indian Head, Md., the Navy Department has rejected recent bids for coal for the Proving Grounds at that point. The Canal was not low bidder in the recent bids and the new bids will give the Canal another chance.

Reports From the Market Centers

New England

BOSTON

Operators Unable to Induce Contracting—Hampton Roads Coals Easier, but Prices Firmer — Marine Strike Shows Signs of Failing—Anthracite Domestic in Fair Volume — Public Takes Better Hold.

Bituminous—As compared with a week ago the market shows no evidence of change. Unmistakably, however, there is more interest on the part of buyers than was the case on April 15. A few consumers who use perhaps less than 25,000 tons each are making an effort to diminish the spread between spot quotations and those for the contract period by trying to bring down the latter, either by making offers for the whole period or by trying to get delivery extended to Sept. 1 on the present spot basis. Without much question there are several shippers who have been so keen for current orders that they have agreed with certain customers to let the spot price carry through June, and even through July in some instances.

Operators have resorted to every known argument to induce buyers to make contracts, but next to no arrangements have been made as yet with manufacturers, or even with the larger utilities. The railroads in this territory have 70 to 90 days supply and in one case at least the operators have been notified again to suspend shipment for two or three weeks.

Receipts continue on a very light daily basis. All-rail the aggregate of contract tonnage is relatively small, and spot coal is also coming forward only spasmodically. The strike of marine workers has made a very material difference in receipts by water, for although there is not the least pressure here for coal the larger distributors had been taking in cargoes simply to store the coal.

Pocahontas and New River coals are quieter again, with only scattering business at Hampton Roads. The bulk of the coal dumped is for off-shore cargo and bunker use, together with Navy requirements; the tonnage coastwise has been almost negligible the past week. Prices, however, show the effect of overseas inquiry. Quotations are shown in the Weekly Review.

The marine strike is in much better shape, from the standpoint of boat-owners. In Boston harbor practically all the tugs are again in operation and several steamers that were tied up are again in service. On May 18, in Philadelphia, the crews of five Philadelphia & Reading Ry. tugs walked ashore in sympathetic strike with the employees of the Shipping Board and private owners, thereby promising to cripple the Reading fleet. The trouble proved to be short-lived, however, and the following day all five tugs sailed with barges in tow.

Anthracite—Aside from interruptions due to unfavorable weather along the coast, recent receipts of domestic sizes have been reasonably consistent. All-rail shipments have been coming forward in regular volume and there is everywhere observed among dealers a disposition to keep their storage as well filled as the situation will permit. Stove coal is behind on delivery because of the heavy demand but egg and chestnut can be had with fair degree of promptness. Broken is again in short supply, with the price being advanced from time to time.

The consuming public is buying in better volume at retail than at any time since March 1. Newspaper reports of the marine strike have had their bearing on this, especially in the coastwise towns.

Tidewater—East

NEW YORK

Domestic Coals Active — Many Orders for Egg and Stove — Producers Sold Ahead on Egg and Stove—Steam Coals Slow, but Quotations Firm — Bituminous Market Quiet—Some Activity Due to British Strike.

Anthracite—There is considerable activity in domestic coals. Egg and stove are heavily booked while chestnut is moving steadily. Shippers are able to induce buyers of the larger coals to include pea in their purchases and are thus able to prevent an overflow in the market.

Nothing definite has been announced so far regarding the action to be taken by the operators regarding the provisions of the Anthracite Tax Law, recently signed by Governor Sproul. The local trade is considerably interested in this law, which becomes effective July 1.

Individual operators are not having much trouble in disposing of their product. Domestic coals are in strong demand, even though their schedules call for higher prices. There are reports that some dealers are offering premiums for quick deliveries. While local retailers are placing orders for egg and stove principally, inland dealers are willing to take any of the sizes available. Many of the local dealers are now selling coal subject to prices at the time of delivery.

There has been a slight strengthening in the steam coal market. Although there has been an increase in the receipts of buckwheat No. 1 some shippers of good independent coals are quoting $3.75. The cheaper grades are quoted around $3.25. To keep down the stock of rice some of the smaller operators are storing it near their mines. Quotations were heard of $6 alongside for buckwheat No. 1; $5 for rice and $4 for barley.

Bituminous—There is a better feeling in the local market. Buying for commercial use does not show any material increase but shippers attribute the optimism to the inquiries received as a result of the English strike and the belief that the market will soon show an improvement because of the entrance of local buyers into the market. Inquiries are increasing in number and consumers are asking quotations on monthly shipments or on tonnages to run from July 1 to April 1 of next year.

Outside of many inquiries and some comparatively small contracts closed, the local trade has had little increased activity as the result of the British strike. There have been several calls here for gas coal to be sent to Mediterranean points.

Coal at the various local docks on May 12 showed a slight decrease over the tonnage on hand. Efforts of the trade to induce buying have had little effect so far. The reports of a freight reduction continue although witnesses appearing before the Senate committees in Washington ridicule the idea.

There has been no delay to shipping here because of the marine strike. All vessels receive bunker supplies promptly and those going to Europe are given a return supply, part of the freight carrying space being given to coal bunkers.

At Tidewater $6.15@$6.35 has been quoted for Pools 9 and 71 and $5.70@$5.90 for Pool 10. Mine prices are reported in the Weekly Review.

PHILADELPHIA

Anthracite Grows Even Stronger—Consumer Buying Steadily — Coal Tax Effective July 1—Buckwheat Only Active Steam Size — Bituminous Little Changed, With Signs of Improvement.

Anthracite—Demand for all family sizes has strengthened and dealers are now willing to take any size from egg to pea, but the call on the retailer is still centered on stove. Chestnut, which was just the least inclined to be free early in the month, has now reached the point where it is only being shipped to regular trade.

Shipment into the city and suburban points has not been so good the past ten days, and the customers of one of the large companies complain of not receiving sufficient coal to keep them going. The report is that they are shipping heavily to Tide for the time being, the intimation being that the coal is destined to New England points.

The amount of tonnage ordered ahead on the dealers' books has im-

proved considerably. This has been brought about by a general increase in the retail prices, the average addition being 25c. This makes standard prices for egg $13.75, stove and nut $14, and pea $11. Some dealers are still inclined to shade prices, but a stronger tone is evident, as coal has grown somewhat scarcer, and with the promise of a regular monthly advance of mine prices, dealers are cautious about quoting a fixed price, particularly those getting a large proportion of independent coal. In addition to this no one knows what disposition the producers will make of the new state tax, which will add about 12c. to the cost beginning July 1. On independent coal the tax item will be even higher, as it is rated at 1½ per cent of the cost at the mines.

Buckwheat is the only really active steam size and even the independents are getting close to the company price of $3.50. There are exceptions of some ordinary grades going for probably 25c. less.

Bituminous—Some profess to note a better tone and shipments probably are a little better. The greatest improvement has been in the textile trade, which is an extremely large factor in the industrial life of this district. This calls for heavier coal consumption, but even yet their purchases are meager, and they show little disposition to stock.

There is little change in the contract situation, the consumer showing but moderate interest, and some of the producers not particularly anxious to obligate themselves further. The attitude of the latter seems to be that buyers who are under contract are taking advantage of low market prices and will only call for contract shipments later in the season when a scarcity arises. The feeling is strong that good market prices are bound to prevail for a long period before the end of the present coal year. The railroads are heard occasionally to have closed contracts for a fair amount of tonnage at somewhat low rates.

BUFFALO

More Bituminous Moving — No Better Prices — Anthracite Stove Scarce — Lakes Loading Progresses, but Vessels Scaree.

Bituminous—Some shippers claim a little better movement but others deny it. A few railroads have bought coal on contract lately, paying about $3 for mine run, which is a trifle higher than they had been offering all along.

The manufacturer has a fair amount of stock on hand and prefers to wait to see how the fall trade is going to set in before stocking up any more. The worst of it is that the chief obstacle to business revival is just where it was and there is not much use of doing anything till it is out of the way. When wages come down so that railroad rates can follow the bituminous consumer will buy coal without waiting a day to see what is the result. He will know that the difficulty is out of the way. There are too many idle mines to begin operation as soon as the demand picks up, to hope for any better prices right away. Shippers see that and say that the profits are going to be small, but a larger volume will help. There is too much coal yet begging for a market for the good of the producing end of the trade.

Anthracite—There is complaint that since April the falling off in demand has been large and shippers fear that the fall will see such a demand that it cannot be met. One reason for the slackness is that the working people are doing so little work that they have no money, although they buy mostly in the fall anyhow. One heavy retailer says that the present May falling-off is largely because the prices were fixed early, while nothing was done last year till nearly the end of May.

The Lake trade is brisk, but as a rule the sailing has been made at vessel owners' option, which means that a great part of the coal is still here. The amout cleared for the week ended May 7 was 106,487 net tons, 26,587 of which was for Chicago, 49,400 for Milwaukee, 8,500 for Duluth and Superior, 27,500 tons for Waukegan and 1,000 tons for Ashland. No regular freight rate has been established.

Coke—Of course, there can be no revival till there is activity in the iron trade, and there is no indication of a stir there. The iron ore carriers report a continuation of the former slackness and express a fear that it is going to last perhaps all summer.

BALTIMORE

Tug-Boat Handlers' Strike Hitting Harbor Deliveries — Bunker Business Also Falls Off — Line Demand Fails to Strengthen — Hard Coal Expected to Advance June 1.

Bituminous—Soft-coal selling in the Baltimore district is very flat. To the natural dullness has been added the fact that the tugboat crews are out on sympathetic strike with the Shipping Board employees. This has brought to a halt almost all the deliveries along the harbor front. Bunker business has also fallen off, and the whole situation is one to bring little joy to the coal man.

Line demand has failed to strengthen, and much cheap coal is offering on the market on quick turn-over. Prices on best coals are the only fairly firm feature. Pool quotations are shown in the Weekly Review. Westmoreland ¾-in. gas has fallen below $3, there being considerable offerings as low as $2.80. Westmoreland slack is bringing around $2.15, while West Virginia gas slack is $1.75. The best grades of mine run gas are around $2.50.

Anthracite—The stage seems to be fated for a setting of higher prices both at wholesale and retail after June 1. There are some independents whose leases are such that it is claimed that higher prices will be necessary, and there would be no surprise here to see further advances in the entire wholesale list, both company and independent. The retail trade of Baltimore absorbed the advances made at wholesale on May 1, but some of those prices are not guaranteed to last even until June 1. There is a practical certainty therefore, that any further material advances at wholesale will have to be met here with a retail increase.

Demand here is light and the public apparently can not be aroused to the "buy early" idea. Many people are now out of work in this section and money is not so plentiful as it was last spring. Coal men will have to work pretty close to a cash basis this time to come out right, especially under the generally uncertain trading conditions.

HAMPTON ROADS

Demand Has Improved—Prices Stiffen —Seamen's Strike Hampers Movement.

During the past two weeks over 75,000 tons have been shipped from this port to the United Kingdom, and several more loaded vessels are lying in port ready to sail to the same destination, but awaiting crews, the shortness of men resulting from the seamen's strike preventing their sailing at once.

This strike has been felt during the last week, although the general opinion is that it will not be successful.

The price of Pools 5 and 7 has jumped to $5.75@$6, with little supply in sight and considerable demand. Pools 1 and 2 have remained approximately $6.50@$6.75, with some dealers quoting $7. Good demand for all grades has developed, with numerous inquiries from all sections.

Activities at the piers for the week ended May 12 are represented by the following statistics:

N. & W. piers, Lamberts Point—	
Cars on hand	1,311
Tons on hand	58,854
Cars dumped May 1 to 11, incl.	2,405
Tons dumped	171,522
Tonnage waiting	8,935
C. & O. piers, Newport News—	
Cars on hand	1 918
Tons on hand	95,560
Cars dumped May 1 to 11, incl.	3,793
Tons dumped same period	203,714
Tonnage waiting	9,870
Virginian Ry. piers, Sewalls Point—	
Cars on hand	1,245
Tons on hand	50 500
Cars dumped May 1 to 11, incl.	3,324
Tons dumped same period	156 243
Tonnage waiting	34,550

Northwest

MINNEAPOLIS

Movement of Coal Declines—Buy-Early Warnings Are Discounted — Hope of Even Lower Prices Delays All Markets.

The axiom of leading a horse to water, but inability to make him drink, fits the coal business in the Northwest. The movement to the interior, during April, was about half of that of a year ago. The amounts moving in all-rail were no larger. Urgings that people buy coal now and spare themselves some uncomfortable experiences a few months later seem to be of no avail. Neither steam trade nor domestic shows the slightest move for increased buying.

Railroads have not been contracting for the season, because they have considerable tonnage due on old contracts. Until their traffic picks up, they do not see much need of contracting for next summer and later. Like everyone else, they are agreeable enough to the idea, for everyone but themselves.

The retail trade shows no life whatever. Buying is much less than usual for this time of year. Retailers are making every effort to induce consumers to put in a portion of their winter's needs, realizing how difficult it will be to handle the rush of business all at once, if it holds off. Last fall it became necessary to hire extra trucks, at whatever price was asked, to get orders out. As a result, many retailers hardly broke even on a portion of the business they handled, and all the time they were being charged with profiteering because of the cost of coal.

It is difficult to handle the situation as conservatively as many in the trade feel should be done. The extreme predictions, involving nearly threats, are not regarded as wise. On the other hand, if the entire purchasing of coal for fall is left until then, it will not be possible to deliver to everyone who may need it. People will forget the times when early cold weather made trouble for them but they do not forget the time when a mild fall allowed them ample time during the early winter months to get in their coal.

MILWAUKEE

Buyers Hold Off for Lower Prices, Which Dealers Declare Impossible—Heavy Flow of Cargoes by Lake.

There is little prospect of any market activity until consumers get over the belief that lower prices will come to those who wait. The 40c. hard coal drop is sneered at, despite the fact that it was accompanied by a reduction in the service cost from curb to bin of 25c. per ton. Anthracite egg is $15.55, nut and stove $15.80, pea $14.05 and buckwheat $12.10; carrying charges are 75c.

Coal is coming in freely by Lake. The one big byproduct plant in this port has almost filled its receiving yard, preparatory, it is said, to a shut-down until fall. Dock companies are urging early buying in order that they can make the most efficient use of their storage facilities.

May receipts up to this time aggregate 77,803 tons of anthracite and 157,120 tons of soft coal, making a total of all grades thus far this season 432,606 tons. Last year's receipts during the same period amounted to 64,290 tons of anthracite, and 64,931 tons of soft coal or 129,221 tons in all.

Bituminous prices are as follows:

	Steam	Retail
Splint or Yough. lump	$8 25	$9 75
Splint or Yough. pile run	7 75	.....
Splint or Yough. screenings	6 50	.....
Hock. or Pitts. lump	8 00	9 50
Hock. or Pitts. pile run	7 50	.....
Hock. or Pitts. screenings	6 25	.....
Pocahontas lump, egg and nut	13 50	13 50
Pocahontas mine run	8 50	9 75
Pocahontas screenings	7 25	.....
Illinois and Indiana lump	7 25	8 50

Inland West

CLEVELAND

Slack Market Less Active — Lake Coal Moving Faster Than It Can Be Dumped —Production Jumps.

Bituminous — The outstanding feature of this coal market is the sharp rise in the rate of output at the eastern Ohio mines. Last week production was fully 57 per cent of capacity compared with less than 50 per cent previously. Impetus which has been given to the Lake movement by the recent reduction in freight rates is responsible for the improvement.

The failure of industrial plants to make any material gains in activity has prevented any growth in the demand for industrial fuel. Users are still clinging to the belief that lower prices are coming. This feeling is based largely upon the hope of a general readjustment of freight rates.

A tendency toward a stiffening in price of prepared steam sizes has been a recent development, but the change has not been sufficient to be reflected in higher prices for spot coal. Producers in some cases are reluctant to turn out prepared sizes and this is keeping the supply down and also preventing the accumulation of large slack stocks.

Lake—Facilities for dumping coal at the lower ports are no match for the volume of fuel now being shipped there. More than 900,000 tons have been brought to the Lake since the season opened. The difficulty lies in getting cargo space, due to the delay in the ore season. Some vessels which were unable to obtain cargoes in the Northwest have been ordered to come down light for coal. Lake carrying rates for 1,250,000 tons of coal have been fixed at 50c. to the head of Lake Superior and 60c. to Milwakee. The shipper will furnish bunker coal at $5.50 a ton.

Pocahontas and Anthracite — Retail prices follow:

Anthracite — Egg and grate, $13.75; chestnut $13.90, stove, $13.95.

Pocahontas—Shoveled lump, $11; mine run, $9.50.

Domestic Bituminous — West Virginia splint, $10; No. 8 Pittsburgh, $8.15; Cannel lump, $12.15.

Steam coal—No. 6 and No. 8 slack, $5.75; No. 6 and No. 8 mine run, $6; No. 8 3-in. lump, $6.

Receipts of bituminous coal during the week ended May 7 amounted to 863 cars; divided, industrial 593 cars, retail 270 cars; as compared with 1,128 cars the preceding week, indicating a decline of some 300 cars.

CINCINNATI

Low-Priced Smokeless Contracts Depress the Market — Lakes Jam Adds Distress Coal—Retail Market Sluggish.

Smokeless coals have dropped 25c. This, with the weakness in the bituminous market has brought about an unsatisfactory state of affairs. Some point to current talk of slack contracts having been signed at $3 to steel mills in the northeastern part of the state as an indication that further cuts may be expected. Slack is now $2.75@$3. Mine run is still quoted $3.50 but a drop has been made in egg to $5@$5.25 and in lump to $5.25@$5.50. Few of the companies are naming prices for June delivery.

The jam of cars at the Lake ports is having its effect on the bituminous market. At Russell on the C. and O. as well as the nearer yard, Silver Grove, across the river from here, there is a growing surplus of loads, while on the L. & N. loaded cars are also accumulating. Where demurrage has to be faced there has been a cutting of price to hasten disposal.

Some slack has sold below $1.40. Mine run sold down to $1.75. Kentucky mines are offering slack $1.60@$2 and mine run, $1.85@$2.10; West Virginia operators have met these and are slighty lower on lump, which can be bought around $3.

Retail prices have shown no change nor has there been any improved inclination on the part of the domestic consumer to buy. A recent statement shows that scarcely 25 per cent of the usual amount of household coal has been placed in the cellars.

CHICAGO

Heavier Steam Coal Buying, but on a Close Basis — Domestic Yards Well-Stocked—Smokeless Softens.

During the past few days there has been some activity in the steam market. Numerous manufacturing concerns have at last awakened to the situation facing them and are actually worried over the prospect of a coal shortage. Purchasing agents of these companies have come into the market and made purchases in hundred car lots.

These purchasing agents, however, are following the same method of procedure. They canvass all the coal companies producing a certain grade and then give the business to the company making the closest prices. As soon as it became noised about that purchases were being made on a large scale by these agents, a number of operators began to compete with each other and as a result, coal was bought at 25c. a ton cheaper than it should have been had the operators in question maintained their balance a little more evenly. Outside of these purchases of spot coal, there has been no particular activity in the steam market, as no contracts of any magnitude have been closed during the past week.

Retail dealers report but little business, in fact, the volume of business booked so far this month is 'way below normal, considering the time of the year. A majority of the Chicago retailers have their bins loaded to capacity and as the public is not buying the way it should, it can be easily understood that there will be but slight activity in the market, so far as Chicago is concerned, during the next few weeks.

A short time ago retailers were very much worried over the smokeless coal situation. They feared that inasmuch

as the English mines were down, European Governments would come into the market and make heavy purchases. This feeling was quite general and for a week or so there was considerable demand for smokeless coals. Under this stimulus, prices on mine run strengthened very materially and many sales were made. It now appears that Europe is not rushing into the American market and Chicago retailers are regretting their haste. The market on this coal has shown considerable signs of weakening and it has been an easy matter during the last few days to purchase mine run as low as $3.

DETROIT

No Sales Improvement Is Apparent—Receipts Are Light and Free Coal Is Scarce.

Bituminous—Instead of the broader demand which some of the Detroit jobbers and wholesalers expected might be developing at this time, the local market continues to present a nearly comatose aspect in both the steam and domestic divisions. While some are inclined to regard the situation as due to the fact that consumption of steam coal has been largely reduced by the curtailed activity of factories and industrial plants, others attribute part of the slackness of demand to a withholding of orders by consumers who believe they will be able to provide for their requirements in the open market.

Jobbers and wholesalers maintain, however, that lower prices are an impossibility, during the continuance of present wage schedules at the mines. They also point out that the dilatory policy of large consumers of steam coal is certain to react on these concerns.

It is pointed out that while the steam plants are holding back orders, their reserves are being consumed and that when these stocks are gone, the buyers will be compelled to take coal at whatever price it may be obtainable, as the alternative of suspending operation of manufacturing activities. Very little coal is now being sent into Detroit and free coal on track is difficult to find.

Smokeless egg and lump is quoted $5.50 at the mines, mine run $3.50 and nut and slack $2.25. Ohio 3-in. lump is offered at $3.25; 2-in. lump at $3.15, ¾-in. lump at $3, mine run at $2.25 and nut and slack at $1.90. West Virginia 4-in. lump is $3.50, 2-in. lump is $3.25, ¾-in. lump at $3, mine run $2.50 and nut and slack about $2.

Anthracite—As yet very little buying of anthracite has been done by the local householders. Retailers have fair supplies on hand.

ST. LOUIS

Growing Demand for Domestic of Better Grades — Cheaper Coals Move Slowly — Steam at Standstill — Shortage of Domestic Sizes Threatens.

There continues to be a good householder call for Carterville for storage. This also includes a fairly good tonnage of anthracite and coke. West Virginia smokeless is out of the market and Arkansas is too high.

Small users of Mt. Olive and Standard are not buying any yet for storage, although a little is moving for current use on account of the wet, cool weather. Apartments are beginning to put in their storage supplies of Standard. This will be under full swing within the next month, but at cost to the dealer. This business is going around $4.50@$5 for immediate delivery. Contract prices are somewhat remote at this time. Steam business is poor in St. Louis and almost none at all from the outside.

Business has not resumed the large industrial centers of the Middle West sufficiently to keep pace with the growing domestic demand. The latter is not noticeable except in the larger places.

COLUMBUS

Better Domestic Demand—Steam Business Is Still Spotty—Considerable Lake Tonnages Being Loaded.

Producers are having a better run of domestic orders. While the increase is not marked, still it is taken as a forerunner of better things. The increased domestic business is coming from the cities and larger towns. While retail stocks are generally fair, still some dealers are running short, especially on the better grades.

During the week ended May 7 a total of 127,650 tons of Lake coal loaded at the Toledo docks of the H. V. Ry. In 1920, up to May 8, only 24,434 tons had been loaded by these docks. So far this season a total of 386,564 tons has been loaded. The T. & O. C. docks at Toledo loaded 28,404 tons during the same week, making a total of 45,724 tons for the season.

Retail prices are fairly steady. Hocking screened lump retails $6.50@$6.75 while other grades can be purchased at $6.25. Hocking mine run sells around $5. West Virginia splints are $7.50 for lump and $6 for mine run. Pocahontas retails around $9.50 for prepared sizes. Anthracite is $13@$14.50.

There is no strength in the steam trade. Some days a few orders appear but this is generally followed by a period of quietude and as a result the market is extremely spotty.

Production is still at a low point with the exception of eastern Ohio, where Lake trade and large industrial contracts are taking a better tonnage. The Hocking Valley is producing only about 20 per cent and the same is reported from Crooksville, Cambridge and Tuscarawas. Pomeroy Bend is running slightly better with an output of about 23 per cent of normal.

West

DENVER

Summer Storage Activity Increases—Production Is Heavier—Prices Unchanged.

Summer storage is showing an increase. In Denver, for example, retailers have stored 40,000 tons of bituminous as against 10,000 a month ago. There is not much buying, but the freight rate rumors, having been quieted, there is a greater confidence among retailers.

Cold winds and rain have helped out. This is another reason why the Colorado operations have taken on an encouraging outlook, the total tonnage for the week ended April 30—158,189—being within 40,000 tons of the output of a year ago. Of a lost tonnage of 108,453, the equivalent of 78,425 tons or 35.4 per cent, was brought on through a lack of orders.

Bituminous lump is $5.50 at the mine, although one of the largest concerns is endeavoring to maintain a price of $5.65. The Moffat R.R., which was blocked by a rock slide as the result of a heavy snow storm the middle of April, is open again, and an average of 20,000 tons of bituminous is coming into Denver weekly.

Southwest

KANSAS CITY

Sharp Jump in Domestic Demand—Oil Cuts Steam Outlet—Prices Rally.

The upward turn, predicted a week ago, in the demand for domestic grades has been realized. The condition has switched to such an extent that some companies are already having difficulty in filling their orders and an advance in the price may be looked for.

Oil continues to displace considerable tonnage of steam grades in Texas, Louisiana, Arkansas, Kansas and Nebraska, and some companies are having difficulty in disposing of steam sizes. This was to be expected on account of manufacturing being at a low ebb and complicated further by outside districts, such as Illinois, dumping their surplus coal in Missouri river markets.

Arkansas lump for May shipment is $6.25, mine run, $4.50, slack, $3.50; Kansas lump and nut is $5, mine run, $4.25@$4.50, mill, $4, slack, $3.75; north Missouri lump is $4.50, mine run and washed slack, $3.85.

South

LOUISVILLE

Better Inquiry and Some Improvement in Tonnage—Lake Movement Aids Operators—Retailers Stocking Heavily.

Smokeless prepared sizes are very hard to secure, due to scarce orders for screenings, resulting in comparatively light production. Movement of Kentucky coals to the Lakes has resulted in larger production of screenings, and a weaker market as a whole, screenings being around $1.65@$1.75.

Large receipts of western Kentucky coal are expected as a result of the advanced freight rates which favor western Kentucky by 50c. a ton. Movement of river coal continues free, heavy rains resulting in fine boating stages

in the Ohio. A number of barges have been received in the past week.

Retailers are stocking coal more freely than in years past, for fear of future tight markets. It is pointed out by some of the traffic experts that with the lack of other tonnage to congest terminals, coal cars should travel better this summer and fall, resulting in larger tonnage movement with the same amount of equipment, as cars are in better repair than they were, due to railroads being caught up with repairs on other classes of equipment.

BIRMINGHAM

Steam Market Slow—Good Demand for Domestic, but Output Is Small—Prices Firm.

The commercial coal market is about as dull as it could be. Spot business shows no improvement and there are no contract offerings except proposals sent out by the Seaboard Air Line Ry. for fuel coal for the next year. The Southern is expected to call for bids shortly.

Industrials who have no stocks or contracts are buying in small spot lots and are not inclined to contract for future fuel supply. Railroads are not taking more than one-third of minimum called for in contracts, due to curtailed transportation business, few boats are moving from Southern ports for lack of cargoes, and the demand for bunker coal is relatively small.

Mines are falling behind on deliveries against domestic contracts, due to the fact that they have not sufficient outlet for the steam product to enable the production of the tonnage of domestic sizes required. Inquiry for lump coal is good but due to the aforesaid conditions there is a limit to the business that can be booked. Mine prices are quoted in the Weekly Review.

Commercial mines are operating one and two days per week where any attempt is being made to run, while numerous small operations are still idle entirely. Labor is shifting very little, as employment in the mining industry is as good as elsewhere.

Canada

TORONTO

Market Quiet—Spring Orders Comparatively Light—Shipments Decreased Since Opening of Navigation.

Domestic orders for anthracite are not being placed as freely as last year. Coal is coming forward in moderate quantities, but shipments have fallen off somewhat in volume since the opening of navigation. The yards are fairly well stocked and dealers have no difficulty in meeting present demands except as regards stove.

Quotations for short tons are as follows:

Retail:	
Anthracite, egg, stove, nut and grate	$15.50
Pea	14.00
Bituminous steam	11.25@11.75
Domestic lump	12.50
Cannel	16.00
Wholesale f.o.b. cars at destination:	
¾-in. lump	7.75@ 8.75
Slack	6.50@ 7.00

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Conditions Presage Heavier Independent Operations — Opposition to Mine-Cave Bills.

Demand continues to increase although the price as yet has not risen sufficiently above company prices to permit many independents to resume operation. Each week, however, conditions keep improving, so it now looks as if the time were not far distant when both independent and line mines would be in full operation. None of the washeries have started operations as yet.

The governor has signed the anthracite tax bill. There seems to be a feeling that this bill may prove unconstitutional when it is taken to the courts. It has been semi-officially announced that a number of the mines in the Scranton district will close down if the mine-cave bills are passed. Petitions are being circulated requesting the governor not to approve the bills.

PITTSBURGH

Heavy Lake Shipments from District, but Little Movement Up Lakes—Competition of Other Districts — Gas Coal Prices Hold Up.

Rate of coal production in the district, about 40 per cent for the rail mines for some time past, has been saved from a decrease by the mining of Lake coal. The line demand has been still lighter in the past fortnight, but Lake shipments have been heavy since the 28c. freight reduction May 5. Coal at lower ports is now estimated at close to a million tons.

Very little coal has gone up the Lakes as vessels are not operating to any extent. A boat cannot operate without having a down cargo as the coal rate, set at 50c. for this season, would not begin to pay. Last year's rates were 65c. on coal and $1 on ore. The market on Lake coal has settled down to approximately a uniform price of $2.50, for ¾-in.

Demand for steam is even lighter than it was two or three weeks ago. The district is feeling the competition of Connellsville and Fairmont coal, but does not meet the prices, merely losing the trade of consumers who are willing to change their coal. Slack produced on account of the shipment of Lake coal is a drug on the market and can easily be had at $1.75. There have been occasional offerings of Fairmont Pool 60, at $1.65, while Connellsville steam could be had at about this figure, good grades of Connellsville byproduct being offered freely at $2.

Pittsburgh district gas coal holds up very well, $3 being frequently obtainable for screened. The resultant slack is in poor demand and goes at $2, which would make about $2.65 for mine run if there were any demand for it.

CONNELLSVILLE

Frick Company Reduces Wages After Independents — Not Enough Furnace Coke to Make a Real Market—Production About Stationary.

In connection with the general wage reduction decided upon by the U. S. Steel Corporation, to be effective May 16, the H. C. Frick Coke Co. has posted notices of its new scale, which agrees only in part with the scale of Nov. 10, 1917, to which the independents in the region reverted on April 1, as some of the jobs are priced somewhat higher than in the old scale.

Demand for furnace coke is practically absent altogether, while for foundry coke it is extremely light. Operators in sounding out the market experience difficulty in finding consumers who take an interest in prices. Most operators are indifferent whether they sell or not since at best they could not secure much of an operation and it seems cheaper to be idle entirely. Meanwhile there is free offering of coal at low prices, good byproduct being readily had at $2 while coal for steam raising can be secured under $1.75.

The last important transaction in furnace coke was the one reported a week ago, 500 tons a day for 30 or 60 days, buyer's option, at $3.40. The spot market is quotable at $3.25@$3.50 for furnace and $5@$5.50 for foundry.

The *Courier* reports production in the week ended May 7 at 26,780 tons by the furnace ovens, and 23,740 tons by the merchant ovens, making a total of 50,520 tons, an increase of 1,810 tons.

UNIONTOWN

Coal and Coke Markets Continue Dull —Even Distress Tonnage Is Hard to Sell—Shortage Impending.

Both coal and coke markets have recorded no change from the dull tone which has prevailed for the past several months. There appears to be a number of inquiries going the rounds but in following them up operators have found them to be of the "bubble" variety, put out largely by consumers to get a line on the market. Actual sales being made are few and far between and some tonnage again is going begging.

One jobber this week had 500 cars of good quality coal on his hands. The tonnage was offered from one car up, $1.75@$1.80. He still has the coal.

Most trade authorities are becoming apprehensive over the continued fuel buyers' strike in the fear that all will return to the market at once. It is pointed out that no improvement has been made in our railroad situation, and, given an over-abundance of coal tonnage, another car shortage would develop. It is to avoid such a situation that operators are almost pleading with their consumers to commence buying now when prices are admittedly at their lowest and the railroads hungry for business.

Quotations of various grades of coal range $1.75@$2.25. Coke prices range $3.25@$3.75 for furnace and $4.25@$4.75 on foundry.

CENTRAL PENNSYLVANIA

Production Shows Gains—Operators Prepare for Busy Times—Prices Firm —No Contract Buying.

Coal mining is making considerable gain. Production for the week ended May 7 was 11,777 cars as compared with 9,915 cars the same week in April. The second week of May is showing gains ranging from 400 to 500 cars a day over the same period in April and operators are hopeful that the increase will continue.

While production in northern Cambria County is still low, operators are going ahead with arrangements for a normal production which they feel sure will come later in the summer. Machinery is being installed in a number of mines and at others the operators are erecting houses during the slump. There is no change noticeable in prices and but few contracts are being closed, the market still being from hand-to-mouth.

EASTERN OHIO

Heavy Lake Movement Increases Production — Contract Inquiries Lag, but Industrial Outlook Is Better—Coal Accumulates at Lower Ports.

Production in the week ended May 7 registered the largest for any week since early in January, when 361,000 tons were produced, or 57 per cent of rated capacity. Output for the year to date is 5,291,870 tons or an average of 47 per cent of potential capacity.

Tonnage mined for railroad fuel account amounted to about 35 per cent, the balance going to industry and to Lake. Thus it may be seen that the freight reduction from the mines to Lower Lake ports has stimulated the movement considerably.

Association mines, it is said, worked 50 per cent of possible work time and the output amounted to 63 per cent of rated capacity, this showing being a marked improvement over recent weeks.

A slight car shortage, amounting to 13 per cent, continues on the Wheeling & Lake Erie, with other lines having ample facilities for all needs. This shortage of cars is reported to be caused by the large number of loads of Lake cargo coal. This is going forward faster than it is being dumped and stocks are heavy. The railroads have some 14,000 cars in port and arrivals are running over 2,000 cars daily. Boats are being offered freely for down cargoes but the demand for tonnage is reported light.

Contract inquiries from industrial users continues light, regardless of the fact that prices are scraping the very bottom. While there is a larger consumption because of some improvement in the general situation, these needs continue to be supplied in the spot market. Slack is $1.75@$2; mine run, $2.20@$2.35 and ¾-in., $2.45@$2.65.

UPPER POTOMAC

Conditions Are Unimproved — Mine Idleness General—No Contracts Being Made.

Mines in the Upper Potomac and Georges Creek regions were still for the most part in idleness during the week ended May 7, as a result of the lack of orders. Dullness was especially marked throughout the area along the Western Maryland. There was no spot buying in evidence and what free coal was produced could be secured at a buyer's price.

Rather than sell under such unfavorable conditions most operators made no effort to resume work, at the same time declining to take on contracts at prices offered.

FAIRMONT AND PANHANDLE

Better Outlook—Production Rate Unchanged—Inquiries Appear But Prices Still Too Low for Acceptance.

Fairmont

Although production was not greatly in excess of that for recent weeks, a slight improvement in northern West Virginia conditions was discernible in the week ended May 7. Inquiries were increasing but carried such low prices that but little business resulted and mines had to be content with a limited amount of contract orders.

Northern Panhandle

Railroad fuel and a few outstanding contracts constituted the only production outlet during the week ended May 7. However, industrial conditions were slowly improving, and it was believed that better business might be looked for in the near future. Only an occasional spot order was being placed and Lake shipments were not increased in volume.

Middle Appalachian

HIGH-VOLATILE FIELDS

Demand Unimproved — Production Maintained with Difficulty—Fresh Outbreak of Thacker Lawlessness.

Kanawha

Conditions were practically unchanged during the first week in May. So little coal was sold that production was not at the maximum over 14,000 tons on any day. Tidewater coal sold as low as $1.75 at the mine but the general quotation averaged $2@$2.25.

Logan and Thacker

Notwithstanding general apathy in the market production was maintained at about 50 per cent in the Logan region. Much of the coal produced was for storage, some going to the Lakes, but little to Tidewater. Both spot and contract markets were unimproved.

Thacker production was somewhat increased, although there was no marked demand. However, some contracts were being made which stimulated production a trifle. The Mingo coal field is again the scene of shootings and disorders and the Governor has asked for Federal troops in addition to ordering the entire state police force to proceed to the scene. At this writing a merchant at Sprigg has been killed and two employees of the White Star Coal Co. at Merrimac have been seriously wounded. The outbreak, the worst since the Matewan battle, has all the appearances of a prearranged attack which is being centered on the towns of Merrimac, Rawl, Sprigg and Matewan, W. Va., and McCarr, Ky.

Northeastern Kentucky

Production continued at the rate of about 25 per cent of normal. Some improvement was noted in the demand for gas and byproduct but in general the industrial situation held down buying except in the most limited quantities. Prepared sizes were not in heavy demand and Lake shipments were too small to aid production.

Virginia

Mines continued to produce at the rate of about 50 per cent of normal with the output not going much over 90,000 tons. General market conditions made it impossible for producers not having contracts to get out any coal, spot orders being extremely scarce. Nearly the entire output was being marketed on a contract basis.

LOW-VOLATILE FIELDS

Better Contract Market — Production Increases as Conditions Improve—Seamen's Strike Slows Tidewater Movement.

New River and the Gulf

Although there was no further gain in New River production, the rate of output was well sustained during the first week of May. The best demand was at Tidewater for bunkerage. Most of the 3,200 cars daily were going to seaboard and although a heavy tonnage was there awaiting dumping, it was being rapidly reduced. Slack was still off as a result of contracting for Western delivery on the basis of $3. The marine strike was interfering with Tidewater shipments during the latter part of the week. A much better de-

mand in evidence in the Winding Gulf region brought production up to 50 or 60 per cent of capacity. Dumpings increased at Tidewater although the seamen's strike was slowing that movement down as the week came to an end. Western shipments were fairly large, much of the coal being under contracts at $3.50 a ton.

Pocahontas and Tug River

A gradual but steady gain in Pocahontas output brought production over the 200,000-ton mark. "No markets" represented a loss of approximately 235,000 tons and there was a further loss of about 6,000 tons, due to slow placements.

With additonal contracts placed, both Eastern and Western shipments were larger. More coal was also moving to Tidewater.

Tug River mines were operating under more favorable conditions, indicating a general improvement in the region and a somewhat better market. As a matter of fact, comparatively little coal was being sold on a spot basis so the improvement may be attributed largely to new contracts.

Middle Western

MIDWEST REVIEW

Steam Trade Very Dull — Domestic Buying Is About Normal — Contracts Still Being Withheld.

Sales representatives covering the territory in the Middle West report that it is a very difficult feat indeed to sell steam coal at any kind of a price. The average salesman in off the road is not so optimistic concerning the industrial situation as he was two weeks ago. The market for domestic coal is fairly satisfactory, in fact, about normal for this time of the year, but the steam market is about as poor as anything experienced in the career of the oldest coal man in the territory.

In spite of the temporary depression in the steam coal market, most mines in Indiana and Illinois are running more regularly. The explanation of this is that operators are filling their domestic orders at a satisfactory price, and taking a chance on the open market on the resultant steam sizes.

Very few labor disturbances or arguments have been reported lately from the coal producing fields of the Middle West. The men quite properly realize the handicap under which the mine operators are working and are consequently showing a tendency to attend to business and really work for their wages now that they have an opportunity. Some operators are talking in a half-hearted way of reducing wages of mine labor, but the common rank and file show no inclination of tackling the problem.

On the other hand, purchasing agents for some of the largest industrial concerns and railroads in the Middle West have stated to the operators that they will place no contracts until mine labor is reduced. The opinion among the operators at this writing appears to be decidedly against any reduction in mine labor.

INDIANA

Steam Demand Slightly Increased—Low-Priced Contracts Made.

With some of the Indiana factories gradually resuming or increasing their production, the demand for steam coal is somewhat more active than it has been. However, it is far from satisfactory and prices are very low. As an indication of the condition, recent contracts were let in Indianapolis for public coal supplies which called for coal to be purchased at the mines for as low as $2 a ton.

Public utilities of the state are getting steam coal from Indiana mines at around $2.50 a ton. Jobbers declare the amount of free coal is not proportionate to the low demand. Indianapolis retailers are selling Indiana mine run at $6.75 a ton and prices range upward to $9 for Brazil block coal.

SOUTHERN ILLINOIS

Better Work Time as Domestic Demand Revives—Steam Sizes Are Heavy and Prices Soften.

Domestic demand in the Carterville field is so far ahead of the steam call that a serious situation begins to manifest itself. Some mines are getting close to full time, but it is half-time on an average and several are still idle. Screenings and nut coal are blocking the tracks at most mines. Large orders for domestic sizes are not accepted. They are usually cut in half with no immediate shipment promised. Association operators are holding to their price on domestic sizes, but are weak on steam. They are coaxed along this way by the independent mines who are offering screenings as low as $1.75. Mine run is also weak, with independent prices down to $2.75. The railroad tonnage is light. Some few contracts are reported, with no prices given.

A small railroad in southeastern Missouri succeeded in contracting with some of the "nickel shooter" jobbers in St. Louis for its supply of lump, egg and nut at $3.10 for the year. The tonnage is not big.

Conditions in the Duquoin field are somewhat similar to the Carterville situation. Three days is the average for those who work, but most mines are idle, and those working are getting the independent Carterville prices, with a reduction here and there.

Mt. Olive conditions show a slight improvement, and prices are pretty well maintained. St. Louis domestic sizes are $3 and outside $3.25. Steam sizes are well sold up on contract, and railroad shipments are rather good. Considerable steam is moving north to the Chicago field.

Standard field conditions show no improvement. If there is any change it is backward. Screenings and nut are impossible to move at any price, and lump in some cases is not a first seller. It will, however, be impossible to get lump shortly unless the screenings call gets better. Railroad shipments are light and the country call for all sizes is unusually poor.

WESTERN KENTUCKY

Slightly Better Domestic Demand—Steam Movement Still Drags—Rate Increase Coming.

As a result of better retail stocking there has been some increase in production and movement of prepared. Screenings are in heavier supply, which however, are being disposed of at very fair prices.

It is held by some operators that the recent advances announced by the L. & N., while increasing rates on western Kentucky coals 15c. to Louisville, have increased rates on screenings and mine run to a far greater extent from eastern Kentucky, which will favor steam coal movement somewhat from this field, and enable the operator to sell at a better price in competition with eastern Kentucky.

In view of the fact that the advanced rates become effective on June 16, it is expected that there will be some increased movement of coal from all fields for stocking purposes prior to that date. Advance in western Kentucky freight rates, to Louisville, however, will result in keener competition from southern Indiana mines.

Prices are holding fairly steady and although mines are not busy, they report that operations are showing some little improvement.

West

UTAH

Retail Price Cut Made to Stimulate Business—Mine Reductions Appear Impossible.

The coal situation here remains unchanged. In the hope of getting its customers to buy coal for storage purposes, the Standard Fuel Co. of Salt Lake City has reduced its prices 50c. a ton for cash with order. Lump will cost $9.50 and the smaller sizes $9. On all orders where credit is desired the regular prices will be charged. In making the announcement the company says that it appears very unlikely that there will be any reduction in the price of coal for summer storage this year.

Retailers cannot reduce the price unless they can obtain a reduction in either freight rates or mine price. A reduction in freight rates seems out of the question. Producers maintain that they cannot reduce the mine price unless wages are reduced, which is impossible. The company is not able to say what effect the announcement will have but the feeling is that the reduction is not sufficiently large to be attractive, especially as it is a cash proposition. None of the other retailers have made a move toward reducing prices so far.

Foreign Market And Export News

British Orders Are Increasing

March Exports Indicate Certain Firm Markets—Chartering of Boats Subsides —Orders Coming Forward But Terms Are Not Readily Acceptable.

Great Britain coal exports for March, 1921, compared with 1913, the last normal pre-war year, show a considerable decline. Although less than for March, 1920, this year shows a revival in certain countries, especially the Netherlands, Spain, Italy and the Argentine.

Pronounced increases were registered in those countries from which large quantities of foodstuffs are sent to Great Britain, in return for which coal is sent. It is clearly illustrated by this increase that on account of the interchange of commodities these markets will always show a preference for British coal, provided the price is at all an economic one.

Comparison of March exports are as follows:

	Tons		
	1913	1920	1921
Total exports	5,596,744	2,406,151	1,968,078
Sweden	281,468	160,759	78,853
Norway	201,410	77,249	44,587
Denmark	252,905	106,490	148,599
Netherlands	166,439	9,686	113,713
Belgium	220,687	91,169	10,938
France	1,072,300	1,184,031	437,659
Portugal	88,230	18,011	29,024
Spain	233,147	27,810	127,642
Greece	49,598	10,988	37,083
Italy	841,966	204,290	332,480
Algeria	112,917	70,853	64,623
Chile	48,076	418	179
Brazil	206,160	12,733	6,097
Argentina	290,459	39,075	98,520
Egypt	183,000	70,160	66,857
British India	34,328	59	27,049

British chartering of steamers to bring coal from the United States subsided during the second week in May, according to the *London Times*. The slump is due probably to the length of time occupied in crossing and also to the limited facilities for unloading steamers of the tonnage required. The amount on the way or expected shortly to be on the way from the United States is unofficially estimated in freight and market circles as more than 100,000 tons.

A large number of offers have been received from British fuel buyers, but owing to the fact that the terms are rather unacceptable no large orders are resulting. British purchasers demand that the coal go forth on a Welsh form of charter with a 2 per cent address commission. They stipulate that the coal be delivered at specified British ports by a certain guaranteed time. Penalties running as high as £100 a day are provided for in case American shippers are unable to make the deliveries upon the date fixed. There is a possibility that business may develop out of the overtures, however.

While most of the American coal that has been shipped during the past few weeks to Great Britain has been ordered for bunker purposes, there is an increasing number of contracts placed here for commercial and industrial uses.

Italian Market Strengthens

British Strike Causes Shortage—New Orders Placed Here—Prices Strengthen —Bunkerage Coal for British Account —Outlook Improves.

Italy has placed a new order for coal in this country, it was learned recently. There is already in effect a running contract with American companies providing for shipment of about 25,000 tons a month. Because of the strike in the United Kingdom, the requirements of the Italian Government have caused the commission here to place a new contract. Future requirements of Italy will depend upon the turn of events in Great Britain.

Italy is again short of coal. As a result, the railroad traffic will be reduced. A number of industrial establishments are already suffering from the lack of sufficient fuel. This shortage is chiefly due to the British strike.

Fairly good quantities of coal are going to British bunker stations and Mediterranean ports. An order reported lately was for two cargoes of 5,000 and 6,000 tons of Pool 1 for shipment to Great Britain. It is understood that the price was around $6.50, Hampton Roads. The freight rate was placed at 35s., a considerable strengthening of the market, bringing the c.i.f. basis up to $13@$13.50.

Daily Average Coal Receipts at Italian Ports During March, 1921

(In Metric Tons)

Genoa	1,235
Savona	1,080
Torre Annunziata	1,077
Leghorn	1,051
Messina	1,037
Civitavecchia	977
Brindisi	969
Spezia	965
Ancona	952
Trieste	839
Palermo	852
Venice	710
Taranto	705
Naples	684
Barletta	603

THE SWISS GOVERNMENT had the intention of reducing coal prices beginning April 1 by 100 francs per ton. This reduction however will not take place during the next few months. The Coal Import Co., as well as the Federal Railways, have large stocks on hand, and in order to provide the industrial establishments with cheaper coal the National Assembly at a recent session proposed to allow the Government a credit up to 22 million francs, which sum may be turned over to the Coal Import Co. at any time for the purpose of enabling the latter to reduce the coal price accordingly. In this connection it may be mentioned that up to the present time the monthly coal imports from the United States are by far exceeding those of any other country.

New York Exports Gain in March

There were 11,681 tons of coal and coke exported through the Port of New York in March, 1921. This consisted of 6,987 tons of anthracite, 3,459 tons of bituminous and 1,235 tons of coke, with a total valuation of $128,511. In March, 1920, exports were 10,370 tons of anthracite, 4,649 tons of bituminous and 1,349 tons of coke.

Comparison of the average price per ton exported through the Port of New York in March of the past five years shows the following:

	Anthracite	Bituminous	Coke
1917	$7 70	$6.09	$12 43
1918	7.66	6.03	15.15
1919	10 34	12.37	14 21
1920	9.06	9.33	12.04
1921	11 31	9 36	13.82

PRELIMINARY FIGURES REGARDING the production of bituminous coal in Prussia for the year 1920 show that the output of 292 mines (the same as in the previous year) amounted to 127,057,135 tons as against 112,031,455 tons in 1919. The sales reached 126,417,455 tons as compared with 111,707,550 in the previous year. The number of men employed was 707,881 against 664,020 in 1919. Lignite production also shows an increase, from 76,096,015 tons in 1919 to 91,979,395 tons in 1920, an increase of 15,883,380 tons. The number of mines in operation was 352 as against 314 in 1919 and the number of men employed rose from 104,445 in 1919 to 133,442 in 1920.

THE EXTENSIVE LIGNITE deposits in the district of Böhlen near Leipzig are about to be exploited. These deposits are the property of the Saxonian State. The first machinery has already been installed, and it is expected that within a few years the output will be of considerable importance. The amount of 200 million marks has been appropriated for the development of these deposits.

A REPORT FROM ROTTERDAM is to the effect that a company, styled the Netherlands Spitzberg Co., Ltd., has just been formed with a capital of 7 million Dutch florins for the purpose of exploiting the coal deposits of the Island of Spitzberg. Before the war, Dutch capitalists intended the exploitation of those coal fields which are said to contain immense quantities of the best bituminous coal. The island also contains considerable deposits of iron ore.

DRASTIC REDUCTION of passenger and freight trains was introduced in Austria on May 11 as a consequence of the disorders in Upper Silesia, which have interrupted coal deliveries for the Austrian Government.

MINE And COMPANY NEWS

ILLINOIS

The Security Mine at Duquoin, operated by the **Security Coal & Mining Co.**, of Chicago, has again resumed operations after a thirty-day shut down. During the time the mine was idle, extensive improvements were made in the main shaft, rescreening plant, boiler room and about the mine in general.

Mine No. 58 of the **Springfield District Coal Mining Co.**, at Hewittville, has been closed down. The shut down is due in part to the low ebb in the coal market, and throws 400 men out of work. The company has headquarters in Springfield.

INDIANA

A slate fall recently in a room of Mine No. 10 of the **Vandalia Coal Co.**, Sullivan, resulted in the death of one man and the serious injury of another. James Johnson, whose head was crushed by the fall, died in the county hospital. Another who was working with him, sustained a badly injured back.

The Ebbo Valve Coal Co., Sullivan County, has filed papers with the secretary of state showing a capital stock of $300,000, of which $200,000 is preferred stock, and organized for the purpose of mining for coal, oil, gas, etc. The directors are W. P. Zimmerman, J. B. Mershon, U. R. Smith, M. D. Manson and H. P. Smith.

The Ft. Dearborn Coal Co., an Illinois corporation, has filed incorporation papers with the secretary of state, for the purpose of doing business in Indiana, $5,000 of the stock being represented in this state. The company will engage in the coal and coke business. The Indiana agent is W. R. Garstand, of Indianapolis.

Edward Allals, Sr., and his company, which operated the Mecca Mine several years ago, have opened a new mine a few miles north of Rosedale and intend to start operation by July 15.

Walter Bledsoe, well known coal operator of Terre Haute, Ind., is president of the **Indianapolis Steel Products Co.**, which is constructing a modern manufacturing plant east of Indianapolis. The company will make bar iron products and possibly springs and reinforcement for concrete.

KENTUCKY

The Kentucky State Board of Charities & Corrections has placed orders for 34,000 tons of Kentucky screenings, at prices ranging $1.80@$2.25, deliveries to start after May 1, and to be completed as soon thereafter as the operator desires, but specifying the time and amount which must be delivered. **The R. C. Tway Coal Co.**, Louisville, got 19,250 tons of the lettings, at $2.25; the **Frankfort Coal & Elevator Co.**, 2,500 tons at $1.80; **the Gordon Mining Co.**, 6,000 tons at $2; **Western Kentucky Coal Co.**, 6,000 tons at $2. The coal is to be delivered to specified state institutions in Frankfort, Lakeland, Lexington, Bowling Green, Eddyville, etc.

The Consolidated Mining Co., of Columbus, has purchased a working mine at Tremont, Harlan County, from the **Vinson-Kolb Coal Co.** The property consists of 260 acres of partly cannel coal.

The May Coal Co., of Alphoretta, capital $100,000, has been chartered by A. J. May, B. L. C. May and Julia May.

The Parker-Elkhorn Coal Co., of Prestonburg, has increased its capital from $25,000 to $50,000.

Two $5,000 Liberty Bonds belonging to Clayborn Baker, bookkeeper, $125 belonging to J. R. Harrison, proprietor of the mine commissary, and $100 of the company's money, comprised the loot of safe blowers at the Victoria Mine of the **Hart Coal Corporation**, near Madisonville, recently.

The Corydon Coal Co. property was sold at a Master Commissioner's sale recently for $23,000. Its appraised value was $63,000. The court may not sustain the sale to **R. W. Turner**, the successful bidder.

The St. Bernard Coal Mining Co., miners, jobbers and retailers, operating in western Kentucky, has only been operating about two mines part time, but will increase operations, and plans to stock its big string of retail yards in Louisville, Nashville, Paducah and elsewhere, taking advantage of the present dull period to lay in good stocks.

Movement of river coal into Louisville in April showed a big gain, and reports indicate a large movement for May, as a heavy tonnage has been contracted for. Records for the first four months as compared with the same months of last year are:

	Tons 1921	Tons 1920
Jan.	1,400	3,022
Feb	970	7,800
March	1,035	4,040
April	14,533	7,520
Total	17,938	22,382

There is a considerable amount of stocking being done by retailers and some industrial consumers who have capacity for storing. It is reported that the Standard Oil Co. of Kentucky has been taking a good deal of cheap coal at its Riverside Refinery at Louisville, where it has a big submerged concrete stocking pond.

MISSOURI

A company headed by **J. H. Warren** of Independence has leased 1,000 acres of land near Slater and has a drill on the Henderson farm, near Knobnoster, testing for coal. The company also intends to test for oil and gas if coal is not found in paying quantities. A number of Kansas capitalists are said to be interested in the venture and to have $200,000 available if coal of paying veins is unearthed.

Frank Martin, two miles south of Otterville, discovered a fine vein of coal on his land. The vein is 12 feet wide and four feet deep and lies only three feet below the surface.

NEW YORK

Newtown Creek Coal & Coke Co., Inc., has been incorporated with a capital of $75,000. The directors are Dominick Luzino, Brooklyn; Joseph J. Porte, Corona, and E. C. Rohman, Queens.

The Charles J. Hunter Coal Co., has been organized in Brooklyn, capital, $25,000, incorporators C. J. and K. Hunter and R. Roeder.

The Brooklyn Nevins Coal Co. has been incorporated with capital of $50,000 by M. Smith, J. and S. Levine.

OHIO

The McBard Coal Co., of Cincinnati has acquired yards in the western part of the city which were formerly operated by the Brokamp Supply Co., at Summitt.

Hearings in the suit of the **Greenough Coal Co.**, a West Virginia corporation, against the **Ohio & Kentucky Fuel Co.**, for breach of contract, came up for trial in the sessions of the United States District Court in Cincinnati. The defendant company asked that the case be taken from the jury.

Papers have been filed reducing the authorized capital of the **Royal Collieries Co.** from $75,000 to $50,000.

The Ashtabula Coal & Supply Co. has been chartered with a capital of $75,000 to do a retail business. The incorporators are G. H. Leathers, E. W. Huelster, K. F. Schmidt, Mott G. Spaulding and M. W. Gray.

The Underhill Coal Mining Co. has been chartered with a capital of $100,000 to mine coal in the Massillon field. Incorporators are Ida M. Pfister, J. Minar, Charles J. Stewart, D. M. Mulhern and Hazel Q. Mills.

W. J. Harahan, president of the C. & O. and the Hocking Valley Ry. has made his first inspection of the Toledo docks of the company early in May. A total of more than 258,000 tons has already been loaded at the H. V. Docks. M. S. Connors, general manager of the Hocking Valley and other officials accompanied him on the inspection trip.

The Michigan-Ohio-Indiana Coal Association announces that one of the features of the coming annual meeting will be a $25,000 Loree anthracite breaker in full operation. So far as the program has been arranged, the speakers wil be Thomas L. Lewis, Charleston, W. Va., secretary of the New River Coal Operators' Association, who will talk on "Co-operation of Coalmen" and C. E. Maurer of Cleveland of the Glens-Run Coal Co., whose subject will be announced later.

Transportation of coal on the Ohio River has rarely been of the volume of the present time. Storage piles are accumulating in all of the towns and cities from Huntington in the East to Louisville in the West. Small cities between Cincinnati and Louisville, which for years have passed up the river and relied upon rail movement have been getting their supply in while the stage of the river is favorable.

PENNSYLVANIA

A banquet will be held June 2 by the western Pennsylvania division of the National Safety Council in Uniontown to wind up the course of lectures and discussions being held there every two weeks for several months past for coal mine superintendents, foremen, etc. The banquet will be held at the Asbury Methodist Church.

Judge George W. Maxey, of Scranton, has fined the **People's Coal Co.** Frank Christian, president; John G. Hayes, general manager, and James Pearn, superintendent, $250,000 for contempt of court in violating an injunction restricting mining under certain areas in West Scranton. The action is the outgrowth of the seizure by the city of the Oxford mine of the defendant company a year ago. Frequent damage to buildings situated in the area in which mining was supposed to be restricted led the city to believe mining was going on there despite the injunction. An attempt to investigate was met by the company with resistance.

An action to recover $150,000 was instituted in the Supreme Court recently by the **Jamison Coal & Coke Co.** against **John W. Galloway.** The suit is based upon a $150,000 note issued by the **Silver Creek Coal Co.**, Pittsburgh, May 1, 1920, payable within one year on the eMllon National Bank, Pittsburgh, and delivered to the defendants. Prior to date of maturity defendants jointly indorsed the note and sold to the plaintiff for value. Upon presentment at the Mellon National Bank payment upon the note was refused.

The Coalmont-Moshannon Coal Co., is installing electrical equipment at its operation near Houtzdale. Among the new installations will be two haulage locomotives, cutting machines, a complete lighting system and stationary and gathering pumps of the most improved type.

Desirous of relieving the acute shortage of houses, the coal department of the **Delaware, Lackawanna & Western Co.** is contemplating the sale of 50 building lots in the vicinity of the Truesdale colliery, at Hanover, and the Loomis colliery, at Dundee, Hanover Township. Sites will only be sold to employees of the company who desire to build in the near future.

WEST VIRGINIA

Operations on a large scale in the Williamson field are expected to follow the organization of the **Wilhelmina Collieries Co.** The capitalization of this concern has been fixed at $250,000. General offices are to be at Williamson. Leading spirits in the new company are: S. H. Goodloe, Jr., H. A. Goodloe, Harry Scherr, C. P. Early and Lant R. Slaven, all of Williamson.

The following West Virginia coal concerns have recently increased their capital stock: **Salkeld Coal Co.** from $150,000 to $750,000; **Atlantic Smokeless Coal Co.** from $200,000 to $250,000; **Canyon Coal & Coke Co.** from $200,000 to $500,000; **Standard Fuel & Supply Co.** from $20,000 to $50,000; **Ridgelin Coal Mining Co.** from $100,000 to $150,000; **The Barbour-Upshur Coal Co.** has reduced its capital stock from $75,000 to $50,000. **The Pinnacle Block Coal Co.** a Virginia corporation, has been granted authority to transact business in West Virginia. **The Flanagan Coal Sales Co.**, incorporated under the laws of the State of Delaware, has been given authority to transact business in West Virginia. Another corporation which has been granted the same privilege is the **Atlantic Coal & Iron Co.**, incorporated under the laws of the State of New Jersey, this company having acquired a large property in the New River field not long ago.

The following West Virginia coal companies have been dissolved and have surrendered their charters: **Empire Coal & Coke Co.; Gwendolyn Coal & Coke Co.; Manbor Coal Co.; West Virginia Bi-Products Coal Co.; Kimball Coal Co.; Pond Creek By-Products Coal Co.; Superior-Thacker Coal & Coke Co.; Guyan Valley Coal Co.; W. & C. Coal Co.; R. G. Bailey Coal Co.**

With conditions in the steel trade slightly improved, the **Whitaker-Glessner Co.**, which has steel plants at Wheeling and elsewhere, has found it necessary to resume operations at its mines on Coal River, which have been closed down since the steel mills suspended operations several months ago. Another company at whose mines operations have been resumed for the time being at least is the **Cannelton Coal Co.**, operating on Smithers Creek where this concern has five mines in operation.

Development of coal land's near Roshy's Rock on the Wheeling Division of the Baltimore & Ohio near Wheeling is promised through the purchase of about 200 acres of coal land by Pittsburgh coal people. In order to mine coal at this point it will be necessary to sink a shaft and it is understood that the new owners are planning to undertake that as a step preliminary to the development of the territory purchased

New machinery was recently installed at the plant of the **E. L. & W. Coal Co.**, operating near Fairmont. The company has just installed a new hoist and has also put in a short-wall cutting machine.

Huntington business men have just launched the **Brownfield Coal Co.** for the purpose of developing coal territory in the Logan field Operations are to be conducted on a large scale as indicated by a capitalization of $250,000. Huntington is to be the headquarters of the company. Leading in the new enterprise are: A J. Dalton, John A. Kelly, E. L Hogsett, John F. Grossenbach and C G. Campbell, all of whom are prominently identified with the Logan region.

Development of coal territory in Marion and Harrison counties is presaged by the organization of the **C. L. & W. Coal Co.**, which has a capital stock of $100,000. Clarksburg capitalists are largely interested in this concern, among them being, Harry E Davisson, Vera B. Fisher, J. E. Low, W. W. Walters, Glenn F. Williams, all of Clarksburg.

The Stone Castle Co. is a new concern just organized for the purpose of engaging in the production of bituminous coal near this city. Its capital stock is fixed at $50,000. Charleston people, as follows, are behind the new company: L. G. Summerfield, E. R. Burrell, B F. Ford, S. L. Boiarsky and L M. Enicks.

The first coal has been taken from the mines just being opened by the **Hite-Barnes Coal & Coke Co.**, organized a year or more ago, this company having property on Indian Creek not far from Lowesville in Monongalia County. This concern is still engaged in opening new headings. The coal owned is in the Sewickley vein, the company having about 142 acres in the Lowesville section. A large number of miners' dwellings have also been built.

BRITISH COLUMBIA

The output of the Nicola-Princeton fields is to be materially increased. There is no doubt that the production of the **Coalmont Collieries** will be much greater in the early future than is now the case. **The Princeton Coal & Land Co.** is proceeding with development and work is either under way or planned in other parts of the district. **The White Lake Collieries** has been incorporated with a capital of $400,000 to develop some 3,000 acres of coal lands in the vicinity of West Summerland. Slopes are being driven and three seams, described as a first-class blacksmith and steam coal, are being opened up. It is the intention to haul the product to Penticton for use on the C. P. R. lake steamers.

There was a slight increase in production in March as compared with February. The mines of Vancouver Island report an output of 134,937 tons as against 128,376 for the previous month. In the Crow's Nest Pass District the improvement was a trifle more marked.

COAL OUTPUT FOR THE MONTH OF MARCH, 1921

VANCOUVER ISLAND DISTRICT

Mine	Tons
Canadian Western Fuel Co.	47,447
Canadian collieries	
Comox	40,567
Extension	17,691
South Wellington	8,234
Nanoose Wellington	4,976
Granby	15,822
Old Wellington (King & Foster)	199
Total	134,937

NICOLA-PRINCETON DISTRICT

Middlesboro Collieries	4,564
Fleming Coal Co.	1,784
Coalmont Collieries	5,477
Total	11,825

CROW'S NEST PASS DISTRICT

Crow's Nest Pass Coal Co.	
Coal Creek	36,291
Michel	25,908
Corbin Coal & Coke Co.	6,540
Total	68,739
Grand Total	215,501

NOVA SCOTIA

Eleven of the fifteen collieries of the **Dominion Coal Co.** have resumed operations and 8,000 of the 10,000 employees are at work Some of the mines had been closed down and others had been working short time for some months. The opening of navigation on the St. Lawrence River and the British coal strike are said to have decided the managers to resume operations on a large scale.

Traffic News

The I. C. C. has decided that the rate increase of last August shall apply to intrastate shipments of coal in North Dakota. Lignite coal is one of the principal commodities of state shipments in North Dakota, amounting to 50 to 60 per cent of the intrastate traffic This coal also competes with coal moving from the head of the Lakes.

In his testimony before the Senate Interstate Commerce Committee investigating the railroad situation **Julius Kruttschnitt** of the Southern Pacific R.R. pointed out that the alleged excessive rates on coal had not cut coal traffic or driven mine operators out of business. Mr. Kruttschnitt said that in 1920 the railroads had an increased locomotive fuel cost of $196,429,760 over 1919. He pointed out that the faulty car distribution of the railroad administration forced the I. C. C. to shift coal cars to coal fields from points where they were scattered at the termination of federal control and that this service had to be rendered by the railroads regardless of expense. The roads consumed 13 per cent more locomotive fuel in 1920 than in 1919 at a cost of $64,572,121 and the increased price of fuel was $131,857,639. The average cost of coal to the railroads in 1920 was $4.20 a ton as against $3.32 in 1919. In December 1920 the fuel cost $4.80 a ton. He estimated that the outlaw railroad strike caused an 11 per cent increase in fuel consumption per gross ton mile. Among increased expenses of 1920 over 1919 he listed $5,855,000 chargeable to coal and ore wharves, partly labor. Referring to water competition, he said the government had constructed locks and dams in the Warrior River, Ala., for carrying coal from the Alabama coal fields to seaports on the Mexican Gulf, tonnage which heretofore has been carried exclusively by the railroads.

The commission has decided that the rates maintained by the Director General of Railroads on coal from mines at Hillsboro, Ill., to the plant of the **Schram Glass Mfg. Co.** at Hillsboro, were not unreasonable.

In the complaint of the Traffic Bureau of Nashville, an I. C. C. examiner recommends dismissal of the plea that the rates to Nashville from mines in Tennessee served by the Tennessee Central R.R. of 30c. per ton on coal from June 25, 1918 to Oct. 28, 1919, and of $1.20 thereafter to the end of Federal control, and from mines in western Kentucky served by the L. & N. of similar rates were unreasonable. As the roads admitted that the rates on coal to Clarksville, Tenn., from mines in western Kentucky served by the L. & N. exceeded the rates in effect from the same mines to Nashville, the examiner recommends that the complaint on this score be sustained and that reparation be awarded on shipments of western Kentucky coal to Clarksville after Nov. 6, 1919.

Oral arguments will be heard by the I C. C. in Washington on coal cases as follows: June 1 **Cameron Coal Co.**; June 15, **Consolidated Coal Co.**

Industrial News

Chicago, Ill.—The House of Woodward Beach, advertising engineers located for the past five years at 17 North La Salle St., is organizing as a closed corporation with a capital stock of $50,000.

Pittsburgh, Pa.—The district sales office of the Morrison & Risman Co., dealers in new and relaying rails and accessories, has been removed to 1123-1124 Park Building.

Washington, D. C.—Retail monthly coal prices of the Government Fuel Yards will hereafter be issued by the Department of Commerce in co-operation with the Department of Labor instead of by the Dewhich heretofore has been carried expartment of Labor, as heretofore.

Washington, D. C.—Senator Johnson, Cal., has introduced a bill authorizing the Rolph Navigation & Coal Co. to sue the United States to recover damages from collisions of its boats with naval vessels in San Francisco Bay.

Washington, D. C.—The coal mining industry ordinarily consumes over 80 per cent of the total production of black powder and permissible explosives and 15 per cent of high explosives, according to a report of the Bureau of Mines on the use of explosives in 1920. All classes of consumers used larger quantities of explosives in 1920 than in 1919, the principal increase being in coal mining, occasioned by the greater output of coal during the year. The Bureau reports that in 1920 there was used for coal mining 8,790,505 kegs of black blasting powder; 37,273,255 pounds of high explosives and 45,222,130 pounds of permissible explosives.

Personals

R. L. Reed, vice-president of the Walter Bledsoe Co. has taken charge of the Cincinnati office. He formerly was located with the company in Terre Haute and Indianapolis. **J. M. Humphrey**, who opened the office about two years ago has resigned.

Tom Dew, who has been connected with the Western Fuel Co. for about a year, has succeeded **D. P. Coleman** as the manager of that company's Cincinnati office, and **R. A. O'Connell** formerly in charge of the Vincent Klob Coal Co.'s office has been appointed as Mr. Dew's assistant.

L. H. Stone, manager of the Cincinnati office of Jewett Bigelow and Brooks spent a week in the east recently, principally in New York.

C. A. Clyburn, manager of the Bluefield office of the Kentenia Coal Sales Co. put in several days in the Cincinnati office going over the sales situation.

C. H. Loughbridge, Finance Building, Philadelphia, advises the appointment of **Albert J. Riker** as manager of the New York office at 2046-47 Whitehall Building.

Arch Coleman, of the City Fuel Co., Minneapolis, spent a few days in Chicago recently.

W. P. McMillan, pioneer coal operator in Illinois, has become connected with D. E. McMillan & Bro., of Chicago. Mr. McMillan opened up and developed the first mine near Christopher.

A. K. Mordue, sales manager of the Thomas W. Mordue Co., of Chicago was in Cincinnati the better part of a week overseeing the transfer of the office from the First National Bank Building to the new Dixie Terminal.

O. W. Seaberg, formerly sales agent of the Seaboard By-Products Coke Co of Jersey City, N. J., has been appointed sales manager of the New York Office of the C W. Williams Fuel Co., Inc.

J. C. Dick announces his resignation as chief of the natural resources subdivision of the Income Tax Unit at Washington, D. C., to resume the practice of consulting mining engineer Attention will be given to the technical questions in the federal tax law involving valuation of mines and other natural resources as applied to invested capital and depletion deductions

G. F. Hallman, superintendent of the anthracite sales department of the American Ice Co., Philadelphia, was recently married to Miss Bertha Bechtel at Norristown.

H. B. Cornog, vice-president of the Cortright Coal Co., spent a week recently at the Clarksburg, W. Va., operations of the above company.

F. E. Herriman, president, Clearfield Bituminous Coal Corporation is visiting the general office at Indiana, Pa., the mines and particularly the new operation and town at Commodore on the Cherry Tree & Dixonville R.R. The corporation is a subsidiary of the New York Central; the output of its ten operations is all delivered to the railroad for engine fuel.

Edward R. Knowles, C. E. E. E. is now associated with Murrie & Co., Inc., New York City, in charge of pulverized coal and gas fuel engineering work.

N. L. Van Hart, who was formerly connected with the C. G. Blake Co., in Cincinnati, renewed old associations last week when he spent a day or two visiting with former trade acquaintances. He is now located in Connersville, Ind., and is interested in mines in southeastern Kentucky.

Colonel D. B. Wentz, president of the Wentz Co., who has been on a vacation and hunting trip to the Far East, is expected in Philadelphia shortly, as he is reported to be on his way home after an absence of three months.

A. B. Schaeffer, of the sales force of the Lehigh Coal & Navigation Co., is seriously ill at his home in Reading, Pa.

L. L. Faust, of Windber, Pa., where he is engaged in bituminous production called on the Philadelphia wholesale trade recently.

Obituary

Death of **J. W. Campbell**, aged 46, removed one of the leading figures in the development of the Connellsville coke region. Mr. Campbell for the past 20 years had been connected with the H. C. Frick Coke Co. for many years as a division engineer.

Edward Hickey, one of the locators of the Anaconda lode, died at his home recently, in Butte, Mont., at the age of 80 years.

Joseph S. Hammond, chief stockholder and holding certain official positions in the Widnoon Coal Mining Co., Lawsonham, Pa., and for a long time superintendent of the Soldier Run mine of the Rochester & Pittsburgh Coal Mining Co.'s operations, died at Hot Springs, Ark., on April 29 after being out of health for some years. His home was at Reynoldsville, Pa., where the funeral was held on May 4.

Edward Ritter, a pioneer coal operator, said to have sunk the first coal mine near the great Edwardsville District, Illinois, died recently at his home in Edwardsville. In 1861, with his father, he bored a well and seeing signs of coal, went to the depth of 300 feet where a rich vein was struck.

Daniel D. Brodhead, for many years connected with the sales staff of Maderia, Hill & Co., New York City, died at his home in Maplewood, N. J., on April 25. Funeral services were attended by many of the coal trade.

Samuel Newton Poston, aged 82 years, the father of E. M. Poston, president of the New York Coal Co., died at his son's residence recently from infirmities due to advanced age. He was a retired hardware dealer of Nelsonville, Ohio.

W. Harry Brown, pioneer coal operator, who until his retirement two years ago, was prominently identified with Pittsburgh's commercial life, died recently in that city. He was long active in coal development and organization work. Just after his retirement he sold a large holding to the Pittsburgh Steel Co.

Association Activities

Indiana Retail Coal Merchants' Association

Several hundred coal men arrived in Indianapolis recently for the sessions of the association.

In an effort to awaken the public to what is considered the danger of a real crisis in the fuel supply, the coal association, through Secretary E. E. Yeagley, announced that the public was invited to attend the meetings.

The convention opened May 4 with the "Better Business Exposition" at the Tabernacle, a comprehensive display of coal appliances, devices for handling, etc.

E. E. Heller, president of the association, delivered his annual address May 5 when the convention session was called to order. Addresses were delivered that afternoon by C. R. Moriarity of Cincinnati; Otto J. Thjomoe, Chicago, and B. E. Lundblad, Sullivan. That night the association held its annual banquet at the Independent Athletic Club, when the Rev. J. Ambrose Dunkel, pastor of the Tabernacle Presbyterian Church, and Howe S. Landers of Indianapolis delivered addresses.

On May 6, George Otis Smith, director of the United States Geological Survey, J. W. Clark, of St. Louis, and B. R. Inman, of Indianapolis, manager of the Indiana State Chamber of Commerce spoke.

E. J. Payne, president of the Lake and Export Coal Corporation of West Virginia and Indiana, declared that with coal production below normal, the present outlook is critical. R. R. Yeagley, secretary of the association, urged the public to avoid another coal shortage by buying coal early this summer.

Oklahoma Retail Coal Dealers' Association

The association, in annual convention at Oklohamo City, indorsed and voted to promote in every way possible the campaign to induce the public to purchase its coal supplies during the summer months. It was predicted that prices would advance during the late summer and winter months, and that those who buy their coal now will effect a substantial saving. The retailers will spend liberally in an advertising campaign to induce the consumers to buy their fuel early.

St. Louis Coal Club

The St. Louis Coal Club at its seventh annual banquet elected officers as follows: president, Frank Tirre, of the North Breese Coal & M. Co.; first vice-president, Wm. H. Riester, Donk Bros. Coal & Coke Co.; second vice-president, P. H. Greenlaw, secy., Fifth and Ninth District Coal Bureau; secretary, Elmer Kleekamp; treasurer, H. C. Trier.

Trade Catalogs

Vanadium (The Master Alloy). Vanadium Corporation of America, New York, N. Y. Pp. 49; 8 x 11 in.; illustrated.

Coxe Stoker. Combustion Engineering Corporation, New York, N. Y. Pp. 29; 6 x 9 in.; illustrated; bulletin C 2-1921 — Advertiser.

Use of Pulverized Coal Under Central Boiler Stations. By John Anderson, chief engineer of power plant, Milwaukee Electric Ry. and Light Co. Published by Combustion Engineering Corporation, New York City. Pp. 30; 6 x 9 in.; illustrated.—Advertiser.

C-H Iron-Clad Solenoids. Cutler-Hammer Mfg. Co., Milwaukee, Wis. Publication 873. Pp. 4; 8½ x 11 in.; illustrated.—Advertiser.

Curtis Steam Turbines. General Electric Co., Schenectady, N. Y. Bulletin 42201-B. Pp. 16; 8 x 11 in.; illustrated. Describing Curtis steam turbines of 100-kw. to 3,500 capacity.—Advertiser.

Publications Received

Speed with Economy — Barney-Ahlers Construction Corporation, New York, N. Y. Pp. 16; illustrated. Showing various types of coal pockets, piers, moderate-size industrial buildings, etc., constructed by the corporation.

Second Annual Report of State Mine Inspector of the State of North Dakota. Period ended Oct 31, 1920. Public Document No. 24; Pp. 24.

Eighth Annual Report of State Mine Inspector of the State of Colorado. Period ended Dec 31, 1920. Pp. 67.

Water Gas Apparatus and the Use of Central District Coal as Generator Fuel. By William W. Odell. Bureau of Mines. Technical Paper 246. Pp. 28. Prepared under co-operative agreement with the Illinois State Geological Survey and the Engineering Station of the University of Illinois.

Coming Meetings

Michigan-Ohio-Indiana Coal Association will hold its annual meeting June 15, 16 and 17 at Cedar Point, Ohio. Secretary, B. F. Nigh, Brunson Bldg., Columbus.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York City.

National Industrial Traffic League will hold its spring-summer meeting at the Winton Hotel, Cleveland, Ohio, on May 25 and 26, Executive secretary, J. H. Beek, 1207 Conway Building, Chicago, Ill.

West Virginia Coal Mining Institute will hold its semi-annual meeting June 7 and 8 at Fairmont, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

Rocky Mountain Coal Mining Institute will hold its summer meeting the early part of June at Salt Lake City, Utah. Secretary, F. W. Whiteside, Denver, Colo.

Mine Inspectors' Institute of America will hold its twelftn annual meeting at Charleston, W. Va., July 12 to 15. Secretary, J. W. Paul, Bureau of Mines, Pittsburgh, Pa.

Illinois and Wisconsin Coal Dealers' Association will meet at Chicago, Ill., July 13 and 14.

American Society for Testing Materials will hold its annual meeting at the New Monterey Hotel, Asbury Park, N. J., June 20 to 24. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

Illinois Mining Institute will hold its spring outing the early part of June on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on June 3 and returning on June 5. Secretary, Martin Bolt, Springfield, Ill.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The 24th annual convention on Oct 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

American Institute of Chemical Engineers will hold its spring meeting, June 20 to 24 at Detroit, Mich. Secretary, Dr. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7 and 8. Secretary, G. H. Cushing, Woodworth Bldg., Washington, D. C.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill. May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill., Secretary, Calvin W. Rice, 29 West 39th St., New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 19 NEW YORK, THURSDAY, MAY 26, 1921 Number 21

Government Concentration Essential in Mining Affairs

ONE feature of the proposed Frelinghuysen coal stabilization bill is worthy of consideration separate and apart from the fact-finding and reporting phase. That feature is the reorganization in the executive departments hidden in the measure. In other words, the Frelinghuysen bill proposes two things—certain things to be done and certain ways to do them. It is to the ways and means and the questions thus opened that we would direct attention.

The mining industry of the United States, in so far as it has ever had any representation or consideration in the Government, has found that support in the Interior Department. In the beginning of the development of the mining industry, of which coal is by far the largest single unit, the problems were primarily those of finding and delimiting the deposits—that is, geological surveys. The next step was technology—methods and machinery for mining, refining and preparing the products of the earth for market. The U. S. Geological Survey met each demand as it arose. The earlier geological and geographical explorations of the coal fields were followed by detailed examinations that involved sampling and analyses of the quality of the coals and, as at St. Louis in 1904, the testing of fuels. Mine safety, mining methods and combustion problems succeeded in turn in engaging the attention of the Survey staff. In 1910, largely as a result of the organized effort of mining men acting through the American Mining Congress, a rib was taken from the Geological Survey and the Bureau of Mines was created, still in the Interior Department. This was the second step in support of the mining industry taken by the Government.

Beyond the geological problem of finding the mineral and coal deposits and the mechanical and technological problem of perfecting safe and efficient mining methods and economical recovery and proper preparation for market, lies the larger present problem of finding a market, as for copper; or stabilizing the market, as for coal. Because an erratic market means periods of high prices, public, popular and therefore political interest in the third phase has been aroused. Behind the passing interest of the public and of legislators in coal and coal prices there is a real need and demand for more information on the economics of the industry. The remarkable demand for the first report on distribution and consumption of coal (1915), published by the Geological Survey in 1916, and the interest in the monthly reports of production (weekly since 1917) are evidence that the men in the coal business were keen for more knowledge of their industry before the consumers and Congress awoke to its value.

Few dispute the wisdom of the old saying, "Know thyself," which is but the laconic way of stating what secretaries and advocates of the associations in the coal trade have been preaching for years. The fundamental purpose of the trade bureaus is to teach those in the coal business more about the work they are doing, and the fundamental purpose of governmental activity with respect to business should be to collect and disseminate knowledge of industry. For instance, the Department of Agriculture makes soil surveys and studies animal husbandry, tells the farmer the best way to plant and grow crops and, finally, tells him how best to market what he produces. The bureau of markets in that department and the regular crop estimates do for the farmer and the consuming public the type of service that Congress is now asked to provide for coal operators and consumers.

There is nothing of regulation, nothing of paternalism, in this sort of service. It is that type of work that the industry would do for and by itself if it were possible. But because the organizations of men within an industry are party to whatever they do, it is necessary for an impartial agency—that is, the Government—to act in their stead. Refuge, safe and sure, is often found in government statistics and reports. Governmental "aids" to industry, to labor, to agriculture and to finance are seldom refused, and are most frequently sought.

The mining industry as a whole, and the coal-mining industry in particular, has been afforded too little of this sort of aid by our Government. It is not that the geological explorations of the Survey and the technological investigations of the Bureau of Mines have not been ample as to quantity or of high quality, but that the combined effort of the two bureaus is not co-ordinated with an eye single to the best interests of the mining industry. There is lacking that singleness of purpose that characterizes the Department of Labor and the Department of Agriculture. There is no Department of Mines. Nor can there be as effective work for the mining industry, no matter how many bureaus there be, if their activities are under a Secretary of the Interior or a Secretary of Commerce, each with many other interests than mining. Much less can the mining industry be served well if what bureaus there are be spread among several departments.

The Department of Mines, for which we speak, is not a new idea. It has been before the mining industry for many years. It was a goal toward which the sponsors of the Bureau of Mines were driving. In support of the idea the whole mining industry will rally now. Coal, petroleum, the precious, rare and base metals, iron, the non-metallics, as clay, stone and lime, together with the allied metallurgical industry, represent a section of the business of this country that is neither agriculture

on the one hand nor manufacturing on the other. Extractive mining is a wasting industry and therefore is not full brother to commerce.

Reorganization of the executive departments is on the program of the administration this year. It is understood that the President favors a new Department of Public Welfare. There is urge for a Department of Public Works. Now is the opportune time to bring forward the demand for a Department of Mines. The coal stabilization bill of Senator Frelinghuysen, as reported out, takes a backward step, for it would rip out of Interior, the only home the mining industry ever had in our Government, one of the three prime functions of government with respect to the coal industry, and leave the others behind. Instead of bringing together those agencies of government having common objectives this bill runs counter to the fundamental theory of proper organization by scattering rather than concentrating.

Creation of a new bureau to do the things with respect to fact-finding that may finally be decided upon is the first requisite. This bureau should either be in the Interior Department, where are the Geological Survey and the Bureau of Mines, or all three should be carried over to the Department of Commerce. Whether in one department or the other, the three bureaus having to do with mining, of which coal is a large and interesting part, should be together under one man. If that man cannot be a secretary in the President's Cabinet he should be an assistant secretary of mining.

With possibly one exception, the references to the Bureau of Mines in the Frelinghuysen bill only recite duties and powers already conferred and are therefore redundant. Amend the bill in this regard, provide for a bureau of markets to supplement the geological and technological bureaus already efficiently functioning for coal and other minerals, put them all in one department, preferably a new Department of Mines, and move forward.

The Impotence of Force

MORE can be accomplished in the way of getting information from the individuals in an industry by way of voluntary reports than by compulsion. Coal men are no exception to the general run of American business men. They are much more willing to be led than driven. Their sense of fairness and willingness to help a common cause and good, will carry them farther than all the statutes ever written.

For nearly forty years the Geological Survey has been collecting statistics from coal operators and, so far as we are informed, there is but one operator who regularly refuses to furnish voluntarily all the data requested. We doubt very much whether legislation can induce him to report that which he does not desire to divulge. One refusal out of six or seven thousand is a pretty high average for voluntary reporting.

There is something about being required to report even the simplest facts that does not appeal to the individual. It is this feature of the proposed Frelinghuysen coal stabilization bill that savors too much of governmental regulation to suit many. We believe that the Government will get just as far in fact finding by relying on voluntary reports as on penalties. We believe in getting the facts but we are opposed to compulsory reports. The facts can be collected as well and for less money the other way, but the money is necessary either way.

Trading Substance for Shadow

SCRANTON citizens have quite generally gone on the principle that if you ask long enough you can always get the Legislature to give you what you want. Predictions are that they will get the Kohler and Fowler mine-cave legislation which they have so ardently desired in the past and regarding which they have so long pleaded, but it will indeed be a gift of ashes, the ashes truly representing the incinerated hopes and aspirations of their prosperous borough.

If some of the newspapers are to be believed, the meeting of Tuesday, May 17, was merely a concession to the anthracite mining interests made by a Governor who was fully determined to sign the two mine-cave bills. They report that after the inquiry he assured some of the visitors privately that he always had been in favor of the legislation and had seen no reason to change his mind.

The operators are willing to have a commission appointed and will abide by its decision. They want to be heard by competent authority. They desire that the judgment be made by men who have examined the conditions and not by outsiders who have read in the newspapers and seen in their pictorial supplements only what the Peoples Coal Co. has done and nothing about the work of the other companies in the field, who, unlike the Peoples Company, are still doing business and doing it with due consideration for those who own the surface rights. Judge Wheaton, for the Lehigh Valley Coal Co., declared at the meeting with the Governor, that the Peoples Coal Co. had violated all the decencies of mining.

Still less do the companies feel safe when the burgesses of the various boroughs are given power to close down mining operations. President Richards of the Reading remarked to the Governor that his company operates in twenty-four boroughs and that he did not believe one of the burgesses in the two dozen was qualified to regulate coal mining. Anyone who knows politics as it exists in the anthracite region and in most others will be disposed to agree with him.

Luzerne Borough almost to a man is opposed to the proposed legislation and it may well be. The Haddock Mining Co. is the town's chief taxpayer and the employer of the heads of five hundred families who receive almost a million dollars annually in wages and salaries. It has paid $75,000 in taxes to the borough in the last five years and has spent about half as much in reparations.

As frequently happens, this bill drawn to impose a burden on those who are unfortunate enough to have invested in coal mines, will place a still heavier impost on others who have not and have accordingly been hoping to benefit by it. Unfortunately the desire to secure the advantages of such legislation has caused Scranton citizens to overlook the evils which follow in its train. They have exchanged a tangible voluntary concession to receive in its place a law which probably being unconstitutional, affords no assurance of relief whatever. The companies out of their earnings have given compensation wherever it is needed. The legislators have undertaken to give in place of this merely what should be rightly regarded as an unconstitutional law. The people are trading substance for shadow, but the trade fortunately is not yet made. They may yet avoid an unprofitable bargain by stating to the Governor that the price is altogether too high.

Susquehanna Installs Electric Slope Hoist and at a Shaft Replaces Steam by Electric Drive

To Serve Two Radically Different Degrees of Slope a "Two-Speed" Hoist Is Installed—At a Shaft a Steam Hoist Is Altered to Electric Drive by Adding Motor, Gears and Coupling—Use of Electricity Makes Possible the Disuse of an Isolated Boiler Plant

By Lewis W. Le Grand
Wilkes-Barre, Pa.

THE Susquehanna Collieries Co., a subsidiary of M. A. Hanna & Co., has in the past few years made rapid progress in the electrification of its extensive mining operations in the anthracite fields of Luzerne and Schuylkill counties, Pennsylvania.

In some cases entirely new electrically-driven units are being installed to replace present steam-actuated equipment, and in others, where the design of existing machines and other conditions will permit, motor drives of various types are applied to replace the steam- or air-operated motive elements of such equipment. Typical of these new and "changed-over" machines are the two hoisting units here described, both of which were designed and built by the Vulcan Iron Works, of Wilkes-Barre, Pa.

Two Speeds to Suit Two Differing Grades

At the No. 13 slope of the coal company's No. 6 colliery, Glen Lyon, Pa., an electrically-operated hoist of unusual design recently was put in operation. This new machine, several views of which accompany this article, is of the two-speed type. It is located inside the mines at the top of an inside slope. Normally three loaded cars having a maximum total weight of 45,000 lb. are hoisted per trip unbalanced, and an equal number of empties are lowered on the return journey. The hoist serves two lifts.

In order to serve the lower lift, where the grade is steepest, without increasing the size of the motor above that required to handle the load at the desired speed on the upper lift, the hoist was designed with a speed change giving two rope velocities, one of 400 ft. per minute for handling the loaded trips on the lower lift and the other of 750 ft. per minute for hauling the loads on the upper lift. This speed change is accomplished in the first reduction gear, the hoist being of the double-reduction type.

Only One Clutch Can Be Engaged at a Time

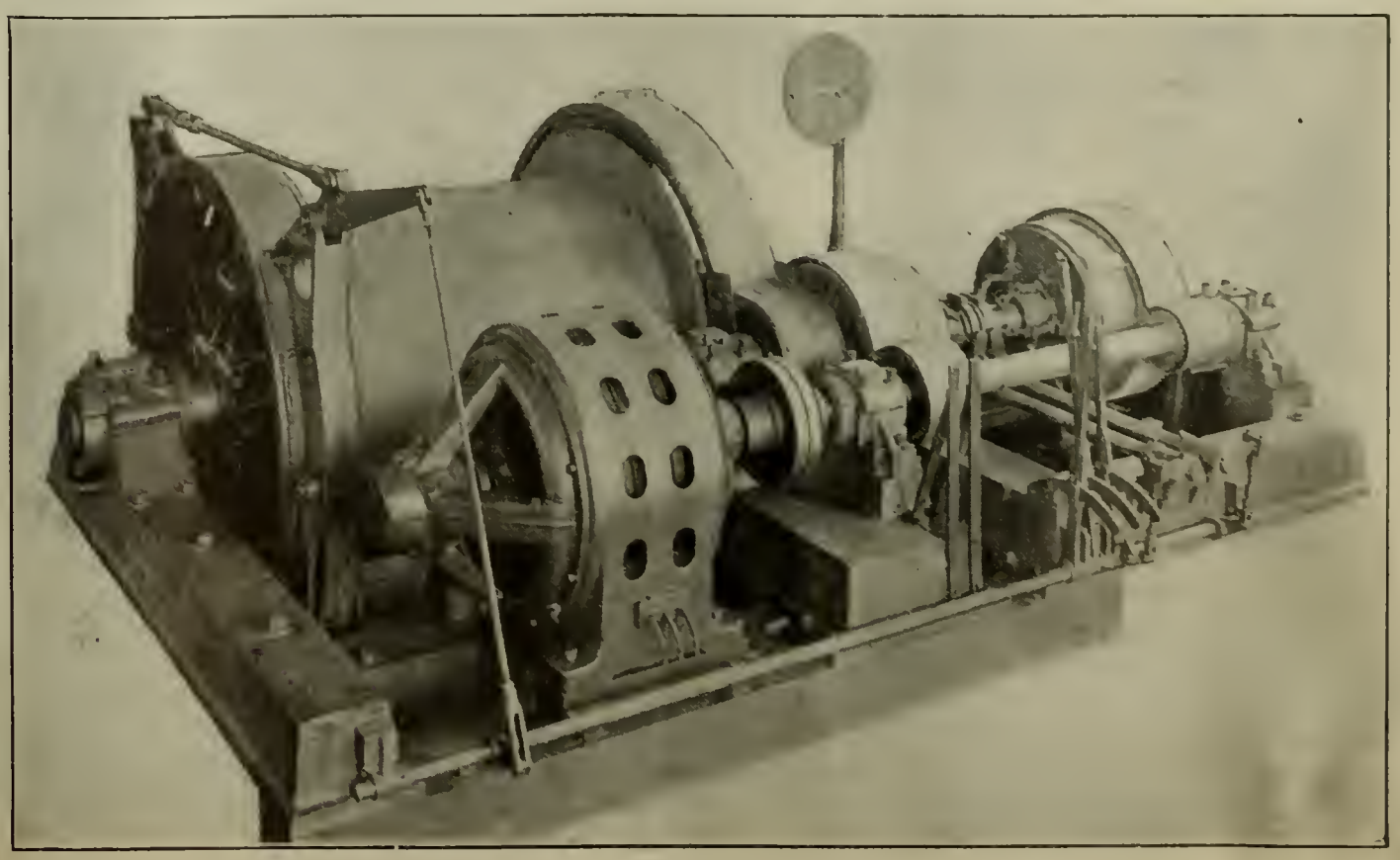
Two sets of steel herringbone gears of different ratios make up the first reduction or motor gear. The pinion of each set is keyed rigidly to an extension of the motor shaft, and the corresponding large gear is bronze-bushed to run on the intermediate shaft. These two gears are engaged and driven by means of separate heavy-duty friction clutches, the clutch disks being keyed to the intermediate shaft between the two gears. Each clutch is controlled by a separate hand lever, the arrangement being such that only one clutch can be engaged at a time.

This is accomplished by means of interlocking lugs on the clutch shipper-shaft arms which make it impossible for the operator to move the lever so as to engage either clutch with its gear unless the other is disengaged from its gear. Both clutches may, however, be disengaged at the same time, permitting the drum

FIG. 1

Two-Speed Hoist

This electrically-operated 250-hp. hoist at No. 6 colliery, Glen Lyon, Pa., has two speeds, one 400 ft. and the other 750 ft. per minute; two herringbone gears of different ratios making the first reduction from the speed of the motor shaft.



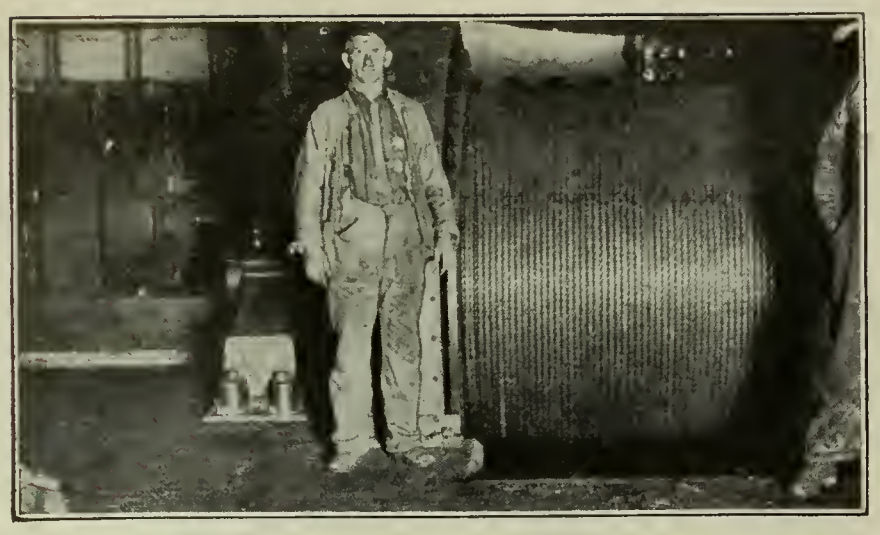


FIG. 2. DRUM OF 250-HP. HOIST
The drum has a capacity for holding 2,000 ft. of 1⅜-in. diameter rope in two layers. It is 6 ft. in diameter and 5 ft. wide.

and intermediate shaft to revolve free of the motor. In normal operation, however, in lowering the empty trips the high-speed gear clutch is engaged.

The hoist drum, which has a winding capacity of 2,000 ft. of 1⅜-in. rope in two layers, is of built-up construction, 6 ft. in diameter and 5 ft. wide. The shell is formed of rolled flange steel and secured to heavy radially-ribbed end flanges, each of which is supported by a separate spider keyed to the drum shaft. The brake ring is a separate casting from the drum flange, to which it is secured by steel bolts in elongated—that is, slotted or approximately elliptical—holes, so that expansion of the ring from heat developed in braking will not affect the drum and cause breakage.

To Aid in Erection, Drum Was Made in Halves

To facilitate the handling and erection of the hoist inside the mines the drum was made in halves, all joints being machine-finished and fastened together by turned steel bolts driven in reamed holes. The drum is keyed to a 12-in. diameter forged-steel shaft and also is bolted to the main-gear spider, giving maximum rigidity.

The brake is of the parallel-motion post type, controlled by hand. The posts are of cast open-hearth steel lined with woven-wire asbestos friction material and supported by cast-steel links and turned pins mounted on cast-iron anchor plates bolted to the foundation.

With the exception of the brake posts and supports the entire hoist, including the motor, is "self-contained," the various parts being mounted on a cast-iron bed of "box" section. This bed plate is made in pieces of convenient size bolted together. The drum-shaft bearings are integral with the side members of the bed plate. The intermediate and motor-shaft extension bearings are of rigid ring-oiling type, bolted to the bed frame.

The depth indicator is of dial form, chain-driven from the drum shaft. The main-gear set is of cast open-hearth steel, the teeth being straight-face machine-cut. The drum gear is made in halves and is keyed to the drum shaft as well as being bolted to the drum. All gears are covered by steel guards.

Hoist Has 250-Hp. Induction Motor

The hoist is driven by a 250-hp. General Electric 2,200-volt 3-phase 60-cycle 435-r.p.m. slip-ring induction motor joined to the hoist by a Francke all-metal flexible coupling. The controller is of reversible magnetic type with primary-panel reversing and secondary-panel accelerating contactors. Sectional grid resistance is used. The hoist is so constructed that a 300-hp. motor may be installed at a later date in place of the present machine. This hoist has been in operation for about a year, during which time the entire outfit has given satisfactory service.

In Conversion Used Parts of Steam Hoist

The second unit to be described is a shaft hoist at No. 7 colliery, Glen Lyon, which has been altered from steam to electric operation. The original steam engines, which were made by the Vulcan Iron Works in 1885, had 26 x 60-in. cylinders and were direct-connected to a 13-in. drum shaft on which is mounted a wood-lagged drum 10 ft. 2 in. in diameter with a 6-ft. face. This drum winds two 1½-in. wire ropes, one at each end of the drum, hoisting in balance from a vertical shaft 400 ft. deep. The weights of cage, car and maximum load carried in the car are 10,000, 4,500 and 12,000 lb. respectively.

For the electric operation of this hoist a geared motor drive was built and connected to one end of the drum shaft; the steam brake was converted from a direct-acting type into an air-released gravity-actuated weighted type, and a safety device was installed in connection with it. Of the old steam hoist the main bearings, drum shaft, drum, brakes and indicator remain as originally furnished, practically without change. At present the old engine cylinders and bed plates are in place, but it is the intention to cut off the old engine beds near the main bearings and remove them, as well as the cylinders and other parts that are no longer used. The electrified hoist is shown in the accompanying photographs.

Details of the Drive Mechanism

The drive consists of a set of single-reduction herringbone gears having a ratio of 12.25:1. These are mounted on a cast-iron box-section bed frame, the pinion shaft being attached to the motor by a flexible coupling and the gear shaft being joined to the drum shaft by a cast open-hearth steel flange coupling. To make room for the drum-shaft half of this coupling the old engine crank on one end of the drum shaft was removed and the half coupling keyed in its place.

The bed frame carries the pinion and gear-shaft bearings, the former being of the ring-oiling rigid type and the latter of the wedge-adjusted removable-shell type. All are cast separate from, and bolted to, the bed frame. The gears are of cast open-hearth steel, protected by guards, the one over the pinion being hinged, which

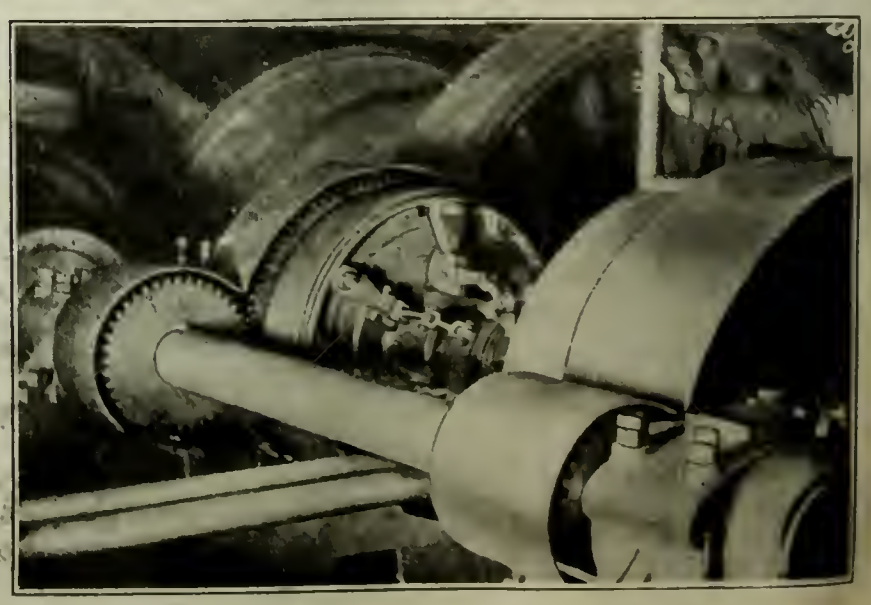


FIG. 3. SPEED-CHANGE GEARS AND CLUTCH OF HOIST
Interlocking lugs are so arranged that only one clutch can be engaged at any one time.

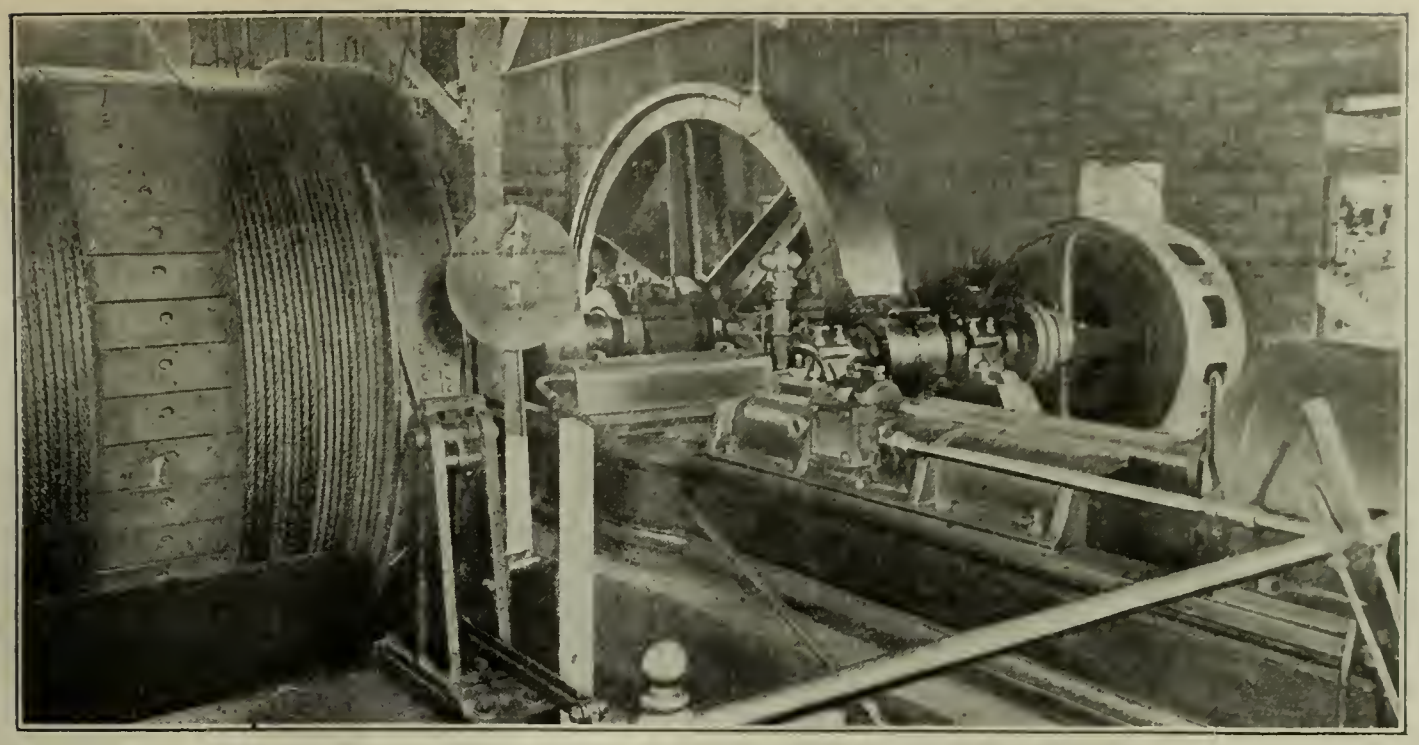


FIG. 4

Converted Shaft Hoist

Originally constructed for steam it is now converted to electrical operation, being driven by a 400-hp. 2,200-volt 3-phase 60-cycle slip-ring induction motor. Note on right of illustration the discarded cylinder and bedplate of steam engine.

permits it to be lifted, thus facilitating inspection and lubrication.

This hoist is driven by a 400-hp. Westinghouse 2,200-volt 3-phase 60-cycle 360/340 r.p.m. slip-ring induction motor which is mounted on a cast-iron sub-base bolted to the gear-drive bed frame and anchored to the foundation. A Westinghouse full-magnetic type of control is used, with sectional grid resistance.

Conversion Completed in Fifty-Two Hours

To give protection against accidents from the failure of power, from overwinding and overspeeding, a Vulcan safety device has been installed and the old steam brake converted into an air-released weighted type by changing the piston packings and operating valves to suit compressed air and applying a weighted rig and solenoid device to the brake cylinder. For the operation of the brake cylinder a small motor-driven air compressor with automatic controller and air reservoir has been installed. The brake engine is controlled for service braking by means of a valve placed convenient to the operator.

Of special interest is the fact that this motor drive was installed in such a manner that electric operation began in the remarkably short time of fifty-two hours after steam drive ceased. In order to avoid shutting down operations in the mines for any considerable length of time the job was commenced on Saturday afternoon and continued until finished.

Changes Which Conversion Involved

About all the work that had to be done in order to start electric operation was to remove the engine connecting rods and one crank, press and key the half-coupling to the drum shaft, lower the gear shafts into their bearings, bolt up both couplings and turn on the power.

To insure a perfect fit of the half-coupling to the drum shaft it was kept at the Vulcan shops until the old crank was removed and a pin gage made of the exact diameter of the shaft. The coupling was then bored to gage size and trucked to the hoist location. Since the change-over was made about a year ago, elec-

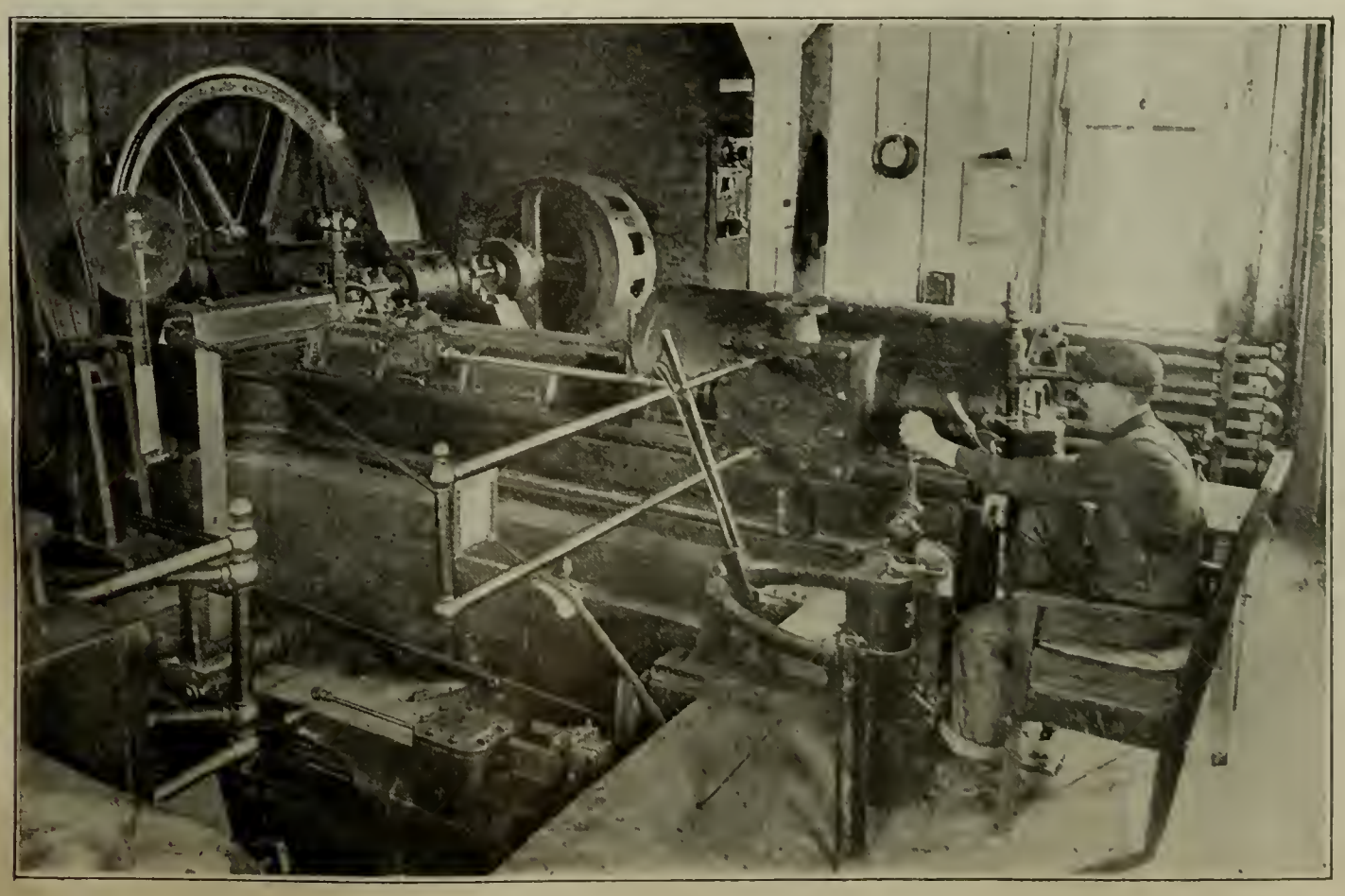


FIG. 5

Converted Hoist

Taken at another angle and at a greater distance. In the extreme left foreground can be seen a companion steam cylinder to that on the right. In making the change a geared motor-drive was connected to one end of the drum shaft, and the direct-acting steam brake was converted into one of an air-released gravity-actuated weighted type.

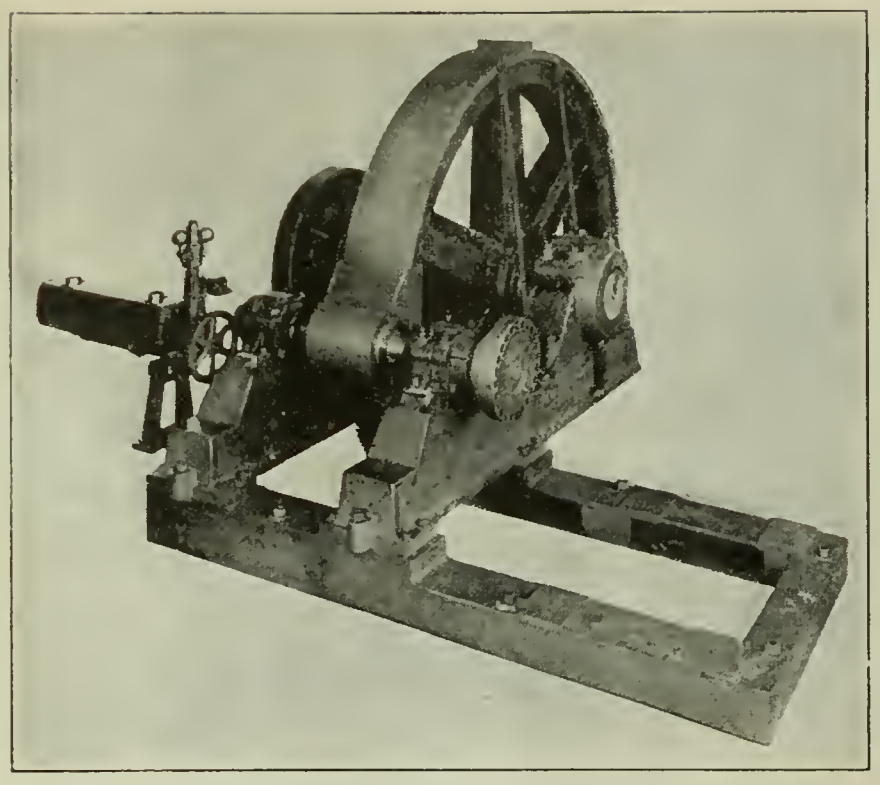


FIG. 6. GEARED MOTOR DRIVE BEFORE ATTACHMENT TO HOIST

The drive consists of a set of herringbone gears having a ratio of 12¾ to 1, mounted on a cast-iron box-section bedframe, the pinion shaft being attached to the motor by a flexible coupling.

tric operation has continued satisfactorily and practically without interruption.

The installation of this motor drive and the electrification of a steam-driven fan in close proximity to the engine house just described, made it possible to dispense with the services of an isolated boiler plant.

Vanadium as an Alloy Gives Greatest Elasticity and Tenacity to Iron

CERTAIN elements possess the power of radically altering the physical characteristics of iron. Although no one has yet been able to produce this element in a chemically pure state it is believed that if this were possible the resulting metal probably would be as soft as lead. It seems that any foreign substance added to iron, therefore, renders it harder.

Many elements both metallic and non-metallic are found combined with iron in nature, and in refining the metal are seldom entirely eliminated. On the other hand, certain other elements may be added to advantage to fit the metal for commercial use. Among the chief non-metallic elements found combined with or that may be added to iron are carbon, sulphur, silicon and phosphorus. The metallic elements usually combined or alloyed with iron to alter its nature and fit it for some certain purpose are nickel, manganese, vanadium, molybdenum and tungsten.

Titanium also is not infrequently found combined with iron in nature. Though the presence of this metal affects the iron with which it is combined, no special use has yet been found for titanic iron, and this element is considered rather detrimental than otherwise. Of course, almost any metal may be alloyed with iron, but the elements above named are the ones most commonly found in the ore or used in ferrous metallurgy.

Until a few years ago iron was chiefly marketed and consumed in four principal states, namely, cast iron, wrought iron, mild steel and tool steel. With their uses and adaptabilities every one is familiar. More recently has come the casting made from mild steel, while within comparatively recent years has been developed the practice of alloying mild and carbon steels with such other metals as nickel, manganese, tungsten, molybdenum or vanadium to harden, soften or toughen the resulting steel, as may be desired.

Of all these alloying elements it is probable that vanadium weight for weight possesses the greatest influence. A small fraction of one per cent of vanadium added to an ordinary carbon-tool steel enhances its value, adding immensely to its elasticity and tenacity.

Vanadium was discovered in 1804 by Del Rio in the brown lead ores of Mexico and in 1830 by Sefstrom in the Taberg iron ore of Sweden. Not until 1896 was it used in metallurgy and then at the Firmany Steel Works, in France, where it was used for armor-plate steel. In 1899 and 1900 Prof. F. O. Arnold, of Sheffield University, investigated the effect of vanadium on steel and found that tools of steel containing 0.3 per cent of vanadium would cut 75 per cent more turnings than tools of the same steel containing 3 per cent of tungsten.

In 1905 a large and rich deposit of sulphide of vanadium was found in the Peruvian Andes. The mineral was termed Patronite after Antenor Riza Patron, the original discoverer. More than 90 per cent of the vanadium comes from this deposit, which is found at Mina Ragra, near Cerro de Pasco, Peru. It is a hard black mineral resembling a bituminous clay or coal, and it has frequently been regarded as coal, but abandoned for that purpose. It contains about 20 per cent of vanadium and 60 per cent of sulphur. It also is found in other deposits, where it runs only 1 or 2 per cent, the rest being a dirty "coal" or else a dirty asphaltite derived from oil and not, directly at least, from vegetable matter. This mine is 15,500 ft. above sea level.

Vanadium steel finds its chief application in those instruments or machine parts that must be at once strong, hard and tough. Thus it is used in the shafts and disks of turbines, the races of ball bearings and the rollers of roller bearings, in tools that must be resilient or capable of resisting repeated shocks indefinitely, such as the sets of pneumatic riveters, the pistons or strikers of pneumatic drills and the like. For these and similar purposes this material is meeting with ever increasing favor in the mining industry as well as in the manufacture of airplanes, torpedo boats, automobiles and other mechanical contrivances.

DURING THE DEBATE in the House on the naval appropriation bill Representative Stafford, of Wisconsin, inquired as to what was being done to utilize Alaskan coal for the navy, as authorized by the bill. Representative Kelley, in charge of the bill, said an appropriation of $1,000,000 for mining or contracting for coal by the navy had been carried in the naval bill for five years but had never been used. Representative Stafford said the argument for the Alaskan railroad had been that it would enable the navy to reach the Matanuska coal fields. Representative Kelley said a small amount had been used in experimenting with coal and to determine the extent of the coal beds, but that when a vein which gave promise was struck it usually would run out and no commercial development of coal had been made. Representative Madden, Illinois, also criticised the railroad expenditure and predicted that it would cost $30,000,000 or $40,000,000 more before coal was reached and $50,000,000 more before the coal was placed on the Pacific to coal the fleet.

L. C. CREWE, president of the LaFollette Coal & Iron Co., of LaFollette, Tenn., has been elected by the Southern Appalachian Coal Operators Association as a director of the National Coal Association. He succeeds E. C. Mahan as the representative of Tennessee and Georgia.

Two Strip Pits and Much Allied Industry Operated by Fushun Colliery

Worked with Unusually Large Machinery—One To Be Five Times as Big as Panama Canal—Makes Ammonia Sulphate with Own Sulphuric Acid—Powdered Coal and Mond Gas Used Under Boilers—Starting Timber Forests—Large Repair Shops—Welfare Provisions

By N. Yamaoka*
New York City

IN ADDITION to the four pits and three shafts mentioned in the article entitled "Manchurian Plant with Seam in Places Four Hundred Feet Thick Uses Sand Filling," appearing in last week's issue, there is also an open cut mine at Kuchengtzue connected with the operations to which the general name of Fushun colliery has been given. Reference was made to this stripping in the article mentioned, but it is worthy of further consideration.

It was opened in April, 1914, at the suggestion of Mr. Onuma, the engineer of Fushun colliery. Here the western terminus of the bed is tilted upward and outcrops from 30 to 40 ft. below the surface. At this point, moreover, the thickness of the bed reaches 400 ft. or more. By the end of October, 1919, 2,508,322 cu.yd. of sand and soil, 1,463,532 cu.yd. of shale, 371,824 cu.yd. (348,585 tons) of low-grade coal and 1,024,356 cu.yd. (960,334 tons) of bituminous coal had been removed.

As soon as investigation showed that coal could be advantageously stripped to a depth equal to three times its own thickness, it was decided to open this pit upon a large scale. An area amounting to some 500 acres, where the coal attains a thickness of from 180 to 430 ft., will be stripped during the next thirty years or more. It is calculated that from this area will be removed during the first year 32,850,000 cu.yd. of loam, sand and gravel, 104,564,855 cu.yd. (100,826,648 tons) of coal, 15,684,000 cu.yd. of partings, 185,221,000 cu.yd. of shale and 75,628,000 cu.yd. of gneiss. The excavation will eventually total 381,099,000 cu.yd.

*Electrical engineer, South Manchuria Ry.

The panorama, Fig. 2, shows this open cut, which is now known as No. 1. The big shovel in the center of the illustration is working in coal and appears to be preparing to load it into the 20-yd. Western air-dump cars with which this open cut is equipped, these cars when in place for loading being ranged on the track just above the shovel.

Thirty-Foot Dirt Dumps Preferred

The height of the dumps on which the stripped material is discharged is limited to about 30-ft. because the spoil becomes quite disposed to slide in the extremely wet weather of the summer season. The roads in the pit on which the dump cars travel are standard gage with a limiting grade of 2 per cent. The rails weigh 80 lb. per yard.

The coal and its partings are shot by holes drilled by 10-hp. motor-driven Keystone drills and by Jackhamers. They are charged with black powder which is made at a factory owned by the company, the shots being fired by electric fuses. The cost of the black powder per ton of coal afforded is 20c.

The coal and shale are loaded by Chinese coolie labor into wagons from benches 12 ft. high. About twenty wagons form a trip. They are hauled up inclined roads having a 15 per cent grade to a loading platform, where they are dumped into 27- to 50-ton standard railroad cars. The partings are hauled to the same dump as is used for overburden. There are five electric hoists of 300-hp., using 2,100-volt 60-cycle current, the rope speed being 600-ft. per minute. The frames of these machine

FIG. 1. POWER AND BYPRODUCT RECOVERY PLANT OF FUSHUN COLLIERY IN MANCHURIA

In the center at the rear are a block of fourteen gas producers of Lymn type and in front eleven of the Mond pattern. In the foreground on the right is the large gas-power station where the chemical energy of the producer gas is converted into electrical energy. At the left in the rear is the sulphuric acid works and in front of it the Bamag coke plant, which is only for test purposes. To the left beyond the confines of the illustration thirty Koppers ovens will soon be constructed.

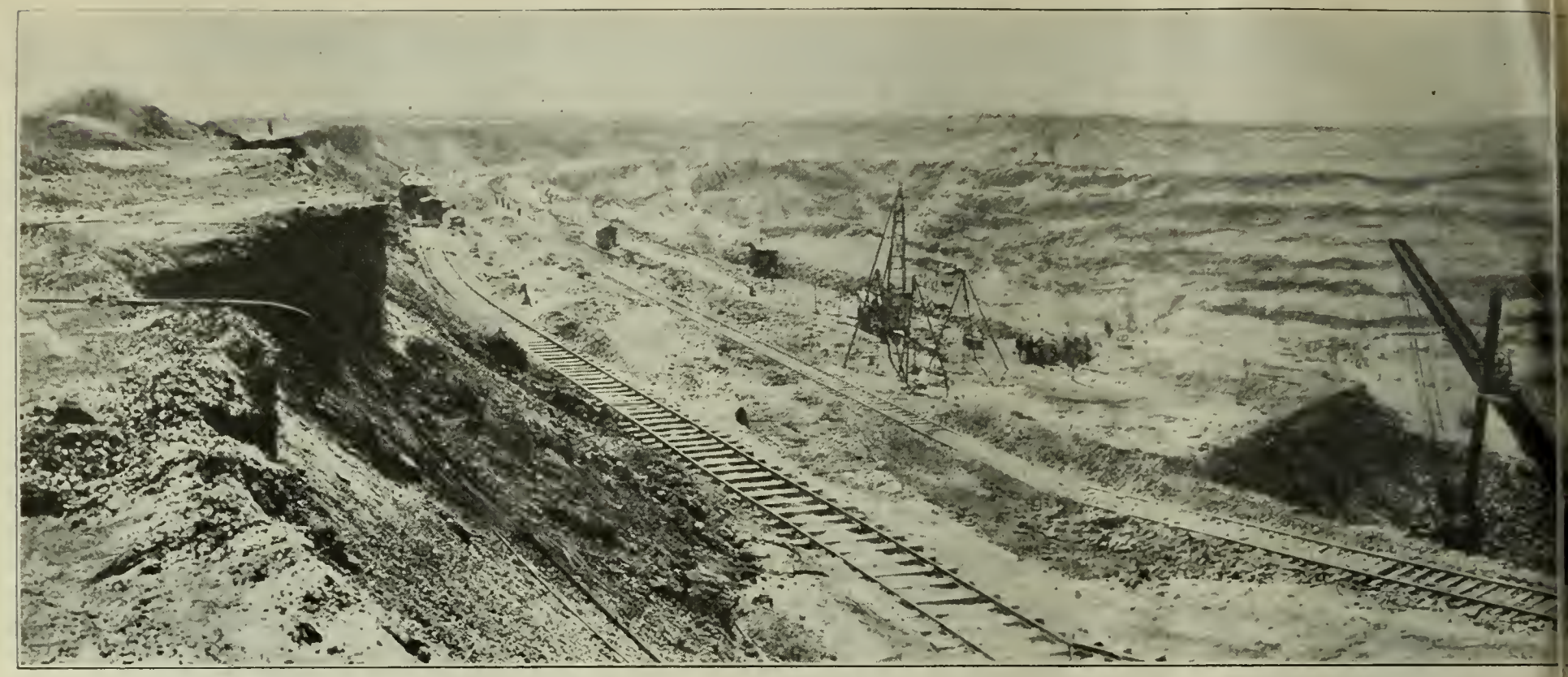


FIG. 2. OPEN CUT NO. 1 AT THE FUSHUN COLLIERY SHOWING THE LONG INCLINES BY WHICH COAL IS RAISED

The stripping machinery is in happy contrast with this coal-loading equipment, which is even smaller than is usual in the United States. A Bucyrus revolving shovel with 2½-yd. dipper and three Bucyrus railroad-type shovels with a dipper of the same size are used for stripping. The first shovel will dump 20 ft. above the rail on which it stands and so can load railroad cars on a track 20 ft. higher than that on which it is operating. The other shovels, dumping at an elevation only 16 ft. above the top of

were made at the factory of the South Manchuria Ry., the motor being from the Allgemeine Electricitats Gesellschaft, of Germany, and the gears from the Citroen Co., of England.

The cars used for loading coal and partings are only of 0.6 ton capacity. They have a 2-ft. gage and run on 25-lb. rail. The management of the colliery is convinced that the mine cars used are too small for efficiency but declared that the sudden determination to open strip pits made the use of the underground equipment advisable, seeing that the officials could not afford to wait for deliveries from abroad.

Five Times Size of Panama Canal Cut

Operations have been begun farther to the eastward in the Oyama district. Here some 450 acres will be stripped and the quantities of material moved will be: 91,300,000 cu.yd. of soil overburden, 1,023,500,000 cu.yd. of shale, 386,500,000 cu.yd. (372,900,000 tons) of coal, or 1,402,300,000 cu.yd. in all.

This will be about 5.4 times the world's biggest excavation—the Panama Canal. If the total amount of material that will be moved were piled around the earth at the equator, separating the northern from the southern hemisphere, it would girdle the earth with a solid wall 29 ft. high and 10 ft. thick. The whole plan of working is not completed yet but the excavation of soil was started in October, 1920, at the western part of the Chen Chin Chai pit, with five bucket excavators (made by the Niigata Iron Works, Japan), each of 160 cu.yd. per hour capacity. Eleven 100-ton steam locomotives and eighty 20-yd. Lidgerwood flat cars are now used to transport the excavated material to the dump.

The shale is removed in the manner in which excavations are made on railroads until a depth of about 130 ft. is reached, after which that system is not regarded as being economical. This shale after being loosened by blasting is loaded on flat cars by electric shovels and hauled away. For depths greater than 130 ft. the shale is loaded as before into flat cars and dumped into hoppers erected at each level of operation. From these hoppers it passes to skips, which are hauled up inclines to the rim of the pit by a 1,000-hp. electric hoist.

When soil and shale are excavated and the coal bed exposed, mining will be started. The coal will be blasted first, then loaded by electric shovels into coal cars of standard gage and brought to a hopper. From here it will be taken out of the pit and to the screening plant by means of an electric hoist similar to that employed in elevating the stripping cars.

The electric-railway department of the Fushun colliery controls twenty 50-ton and four 25-ton electric locomotives, also four motor cars with five trailers. The 50-ton locomotives are designed for a 1,200-volt direct-current single-trolley system and are equipped with four 120-hp. motors. They are capable of hauling a train weighing 600 tons or more on a straight level track. Three of these machines are of Allgemeine Electricitats Gesellschaft manufacture, thirteen are of General Electric make and four were built in Japan. Seven locomotives are now serving on the main coal-transportation line, thirty-eight miles in length; six on the sand transportation line, forty-two miles in length; three for switching in the Fushun station yards, one is placed at the locomotive shed and the remainder are spares. The 25-ton locomotives are of Allgemeine Electricitats Gesellschaft make fitted with two 55-hp. motors and serve as auxiliaries.

Overhead construction is of the five-point catenary-suspension type, having a pole spacing giving a 150-ft. span. Poles usually are single iron lattices. The trolley is a 4/0 B. & S. grooved copper wire. To facilitate safe and rapid train movement a system of automatic block signals of the Union Switch Signal Co. has been adopted.

Passenger Service Provided to Mining Town

For passenger service between the mining pits and the central residential quarter, four motor cars, each equipped with two 80-hp. 1,200-volt motors, are operated. It is interesting to note that this application of direct current at 1,200 volts on an overhead trolley system was the first of its kind in the Far East.

TO THE SURFACE IN SMALL MINE CARS OF 0.6 TON CAPACITY RUNNING ON 25-LB. RAILS WITH A 2-FT. GAGE

rail on which they rest, can fill cars only if they come in at the same level as the shovel. The earth is excavated without shooting and is loaded into 20-yd. Western air-dump cars (of which there are thirty) and dumped along the outer border of the pit so as to protect it against the floods of the river. Five 80-ton steam locomotives are used in this service. The nature of the material can be judged from the appearance of the bank shown at the extreme left of the illustration.

Direct current of 1,200 volts is generated by three 400-kw. and one 750-kw. synchronous motor generators. The synchronous driving motors are direct-coupled and are of 585 hp. and 1,100 hp. These machines were supplied by the General Electric Co.

Electrification of the Fushun Branch Line is now under consideration. The realization of this plan is not a remote possibility, as it will be the most rapid and economical manner in which to move the coal in view of the large coal tonnage, which, it is expected, will eventually reach seven million yearly.

At present the colliery has two power plants, besides one in course of erection. These supply electric current to all pits for both power and lighting as well as to several industries in the district. No. 1 station is the steam-power plant and in it are placed two sets of 1,000 kw. Parsons turbo-alternators and one 5,000 kw. General Electric Curtis turbo-alternator together with complete installations of controlling and feeder switchboards. Ten 400-hp. Babcock & Wilcox water-tube boilers supply steam to these machines as well as to the hoists and ventilating-fan engines of the Oyama shaft.

Ammonia Sulphate Made in Gas Ovens

No. 2 station is the gas-power plant. Fushun coal contains a high percentage of nitrogen, this averaging 1.6 per cent. Even the refuse picked from the tables with the slate contains from 1.0 to 1.2 per cent of this element. This constituent in the coal offered every inducement for the installation of a gas plant equipped to recover ammonia. As a first step, in 1914 were installed eleven sets of Mond gas producers, in which 240 tons of coal are gasified per day, furnishing nine tons of ammonium sulphate and about the same quantity of tar as a byproduct.

The gas from the producers, in passing through the washers, ammonia absorber and coolers, having been freed of dust, ammonia and tarry substances, is ready to be burned as fuel under the boilers. The steam-generating equipment consists of eight Babcock & Wilcox water-tube boilers designed to burn Mond producer gas and to supply steam to two horizontal Curtis Allgemeine Electricitats Gesellschaft reducing turbines, running at a speed of 3,600 r.p.m. These are each direct coupled to a 1,500-kw. 2,200-volt 60-cycle 3-phase alternator. Low-pressure steam for the producers is taken from the intermediate stage of the turbine.

The heavy demand for ammonium sulphate and the rapid progress in developing the mine during the recent war necessitated the extension of the power plant. Another bank of eleven Mond gas producers was erected in 1917 and a bank of fourteen Lymn gas producers as well as three 3,000-kw. 3-phase 60-cycle 2,200-volt General Electric Curtis turbo-alternators operating at 3,600 r.p.m. in the following year.

The two power stations operating together have an aggregate capacity of 19,000 kw. Byproduct recovery from the gas plant amounts to thirty tons of ammonium sulphate and about the same quantity of tar daily.

Powdered Coal Made and Used at Plant

To meet the ever-increasing demand for electric power for mining and other industrial purposes and at the same time to replace the uneconomical coal-fired boiler plant of the No. 1 station, No. 3 station was designed and is now in course of erection. Here one new General Electric Curtis 12,500 kw. turbo-alternator will be installed. The 5,000-kw. machine also will be transferred here from the No. 1 station, which is to be shut down. The boiler plant consists of six 800-hp. Babcock & Wilcox boilers burning powdered coal, prepared by Horbeck pulverizers.

When the world-wide depression in trade and industry began some of the industrial plants in this district, including the Fushun factory of the Electro-Chemical Industry Co., a big consumer of electricity, shut down, making further extension of this power plant unnecessary. The colliery is now undertaking to transmit electric energy to Mukden, where it expects that some 3,000 kw. may be needed in various industries, for city lighting and for a proposed street tramway.

Electric current is generated and was formerly transmitted at 2,200 volts. As the power demand in the distant pits increased two new substations were erected

FIG. 3. OPEN CUT NO. 2, WHERE FIVE SCRAPER BUCKET EXCAVATORS EACH OF 200 CU.YD. PEI

Here the cover over the coal runs from 10 to 40 ft. The pit was opened in 1920. A Bucyrus revolving shovel with a 2½-yd. dipper and a railroad shovel of the same firm having a dipper of equal size are removing the overburden. A Myers-Whaley shovel is being used for the loading of coal. Four 300-hp. electric hoists are used for hauling coal and shale. Four 80-ton steam engines and twenty-five 20-yard Western air-dump cars carry the excavated stripping to the dump, which is located southwest of the pit. To the above have just been added five scraper-bucket excavators, each handling 200 cu.yd. per hour. Eighty Lidgerwood Manufacturing Co. 20-yd. flat cars transport the material stripped by these excavators to the dump, where eight

at Wantau and Lumpo pits and the transmission voltage raised to 11,000 in order to reduce the line loss. Oil-cooled 625 k.v.a. single-phase transformers are installed in each of these substations.

The most important byproduct of the Mond and Lymn gas-power plant is sulphate of ammonia, for the manufacture of which sulphuric acid is an essential raw material. Two sulphuric acid plants, each having a daily capacity of fifty tons of chamber acid, have been installed. One of these has been working since 1916 and is composed of two chamber systems placed side by side, each having thirty-six pyrite burners, one Glover tower, three rectangular chambers and three Gay-Lussac towers. The other plant has circular chambers and is designed for burning pyrite and zinc blend, the cinder of the latter being sent to the zinc-refining plant, under the administration of the Zinc Refining Co. in Fushun.

Seventy-five improved beehive ovens producing sixty tons of coke a day have been installed. These were intended primarily to supply coke for the electric furnaces of the Electro Chemical Industry Co. and to a lesser extent to furnish fuel to power plants along the railway company's lines. Before the calcium-carbide plant of the Electric Chemical Industry Co. shut down an installation of thirty byproduct ovens to produce 100 tons of coke was contemplated. This installation, however, now has been postponed.

The mine timber employed in the Fushun colliery in 1919 amounted to 7,835,000 pieces. Most of these came from the forests along the Mukden-Antung railway line, in the Yalukyang and Kirin districts. It is possible that no heavier demand than this will occur in future, as the amount of mine timber recovered when using hydraulic stowage is remarkable.

In 1919 the colliery began afforestation in the vicinity of the coal field with the idea of obtaining, after say thirty years, the necessary quantities of relatively small timber or that up to about 7 in. in diameter, 6,720,000 pieces of which were needed in 1919. To meet this demand a forest covering 54,000 acres planted with some 110,000,000 trees will be required. It was decided to complete this work in thirty years. In the first year, 1919, an area of 980 acres was planted with 2,000,000 young trees while at the same time 4,400,000 sprouts were reared in the nursery fields.

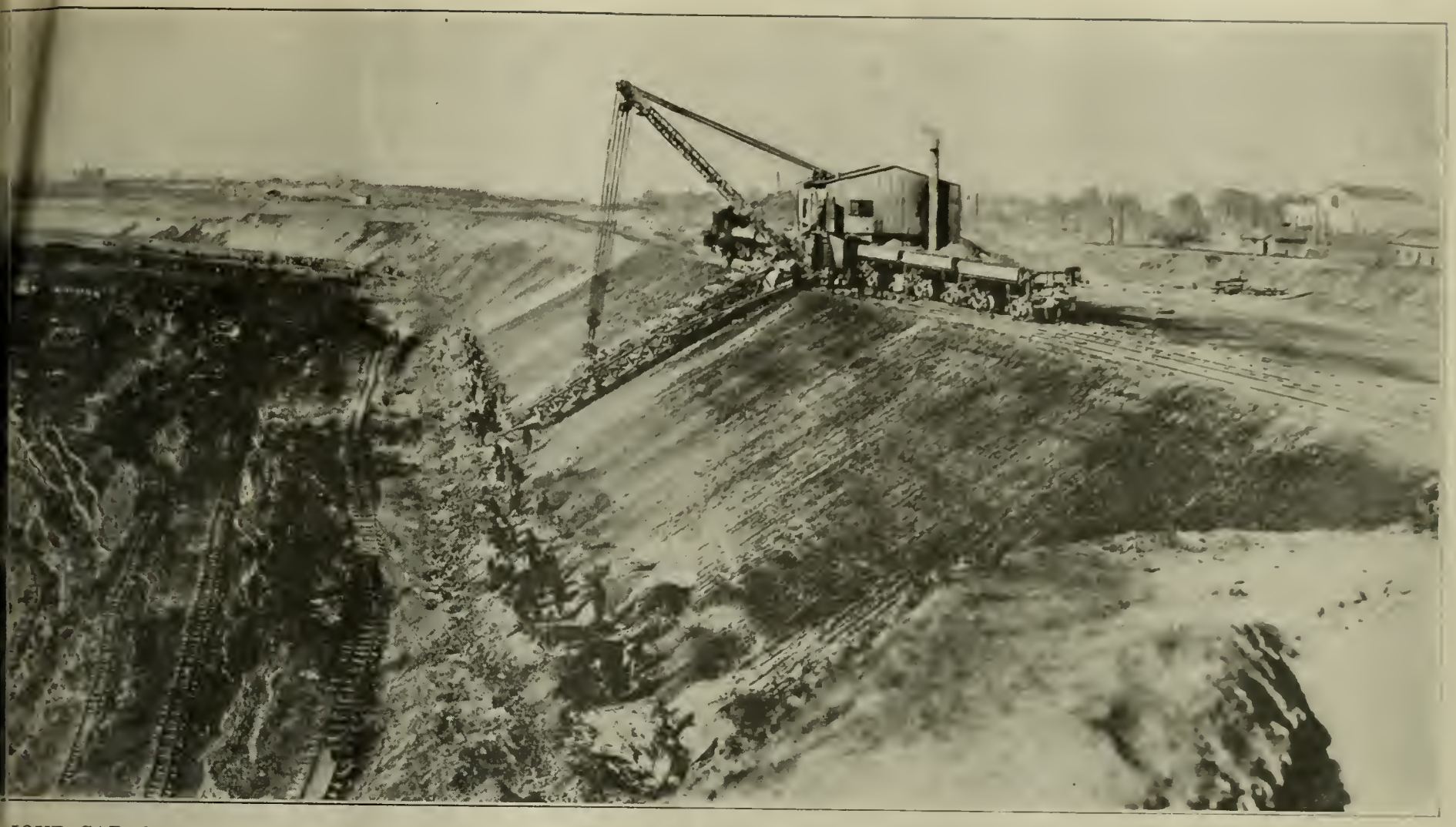
Planting will be carried out yearly, the number of trees being increased and the acreage extended until a maximum of 9,000,000 young trees on 4,400 acres is reached in each of the years 1928 and 1929, after which 7,000,000 young trees will be planted yearly to fill up the place of those cut down and put to use. The young trees are ready for service when they have grown for ten to twenty years. As for the bigger timbers, it is believed that these can be obtained from Yalukyang district in future as in the past.

Large Plant Alters and Renews Machinery

Alterations and renewals of parts on the various pieces of machinery employed, such as hoists, turbine pumps, ventilating fans, screens, excavators, electric machines, etc., are made and put in place in the colliery workshop. The repair of electric locomotives and sand cars is performed in the locomotive shed.

A rescue station is installed at the town of Chen Chin Chai and seven first-aid teams, each consisting of six men equipped with Draeger or Proto breathing apparatus, are ready for duty when called.

With the development of mining operations the man-



HOUR CAPACITY ARE STRIPPING THE OVERBURDEN. THE AREA STRIPPED COVERS 450 ACRES

unloading plows are installed to handle the material. Ten 80-ton steam locomotives will soon be hauling these cars from the shovel to the dump. In this pit the benches will be 30 ft. high and the coal will be loaded by electric shovels. A complete hauling and screening plant for this pit is under construction, and engineers are visiting this country and Europe to gain ideas and find machinery for this work.

Unfortunately a well-designed colliery town on which the company has spent a half million dollars in the last fifteen years lies over the area that this strip pit must ultimately cover. Like parts of Hibbing, Minn., its days are numbered. It must be removed to make way for the excavators and new residences are being built.

agement realized that it would have to provide housing for 3,000 Japanese and 39,000 Chinese, and a plan was drafted for building a new town at Chen Chin Chai as an auxiliary enterprise. Seven hundred buildings with a total floor area of about 200,000 sq.yd. had been constructed by the end of the fiscal year 1919. Suitable provisions also were made for streets, bridges, drains, sewage, etc., necessary for maintaining this town in accordance with modern standards.

Education and Health Are Not Overlooked

In addition, two primary schools, a girls' school, an apprentice-training school, a mining school, a colliery hospital, a club, electric lighting and gas works, water works and other public improvements have been established. The colliery hospital is divided into several specialized departments and administers to a large number of patients annually, the staff being consulted about 370,000 times in a year. Water wells were placed beside the River Hun. From this source two turbine pumps of 3,100 gallons per minute capacity furnish water for industrial purposes, and two 1,250-gallon and two 620-gallon pumps supply drinking water. At the end of June, 1919, the colliery town contained 6,966 dwellings which were occupied by 4,034 Japanese, 2,918 Chinese and 14 Koreans.

The telephone exchange station is equipped with switchboards for 600 subscribers besides 300 on an independent telephone system.

Two-thirds of the Chinese laborers are "transportation men," from Shantung and Chihli districts. The company spends a sum of 300,000 yen for this purpose yearly. Such laborers are not only supplied with lodging free of charge but are rationed three meals at 14 sen (7c.) a day, receive free medical treatment for sickness or accident and are supported for not more than six months by the colliery if disability is incurred in the line of duty. In case of death, regardless of cause, the funeral is performed at the expense of the colliery.

Yentai pit, now under the Fushun colliery, is of less importance both as regards quantity and quality of output than are those described above. This operation is situated about twenty miles northeast of Lisoyang. No reliable record covering its discovery or early development is available, but that the Koreans who worked the Fushun coal, simultaneously worked that at Yentai is obvious from the nature and type of the operations.

During the Russo-Japanese War the Russians obtained the coal needed for railway service from this pit. Yentai coal is semi-anthracite containing 0.5 to 2.73 per cent of sulphur. The coal is found in a series of eighteen beds ranging from 1 to 6 and sometimes to 10 ft. in thickness. The total quantity available is computed to be 20,000,000 tons. The daily output at present amounts to only 300 tons. Iron pyrite found in this deposit is used at the sulphuric acid factory in Fushun.

The House Committee on Interstate Commerce has favorably reported a bill authorizing the Borderland Coal Corporation to construct a bridge across the Tug Fork of the Big Sandy River at or near Borderland, in Mingo County, West Virginia.

Sealed proposals will be opened by the Superintendent of Lighthouses, Detroit, Mich., June 7, 1921, 2 p.m., for furnishing coal as required by lighthouse vessels and light stations for the fiscal year ending June 30, 1922, to be delivered at Detroit, Sheboygan, Sault Ste. Marie, Houghton, and Marquette, Mich., and Duluth, Minn. Information on application.

Fuse Versus Automatic Switch for Motor Protection

Fuses Furnished Are Readily Replaced by Others of Such Large Capacity as to Afford No Protection to Motors—Replacement of Plug Fuses Too Expensive—Oxidation Reduces Capacity of Fuses, Making Them Blow Out Too Readily—Circuit Breakers Not Readily Tampered With

THE success of electrical equipment in mines largely depends upon the means provided for its protection against improper usage or improper manipulation. Fuses are undoubtedly the oldest form of motor protection. In recent years these devices have undergone great improvements in both design and quality. That they still have a useful field of application is undisputed, but it is open to question whether they offer the most reliable protection available for electrical mining apparatus.

One of the principal objections to their use arises from the necessity of having within easy reach a more or less skilled workman to replace them when blown. Even assuming that an electrician is immediately available, considerable time is lost in unscrewing covers, removing the blown fuse or fuses, and replacing them with new ones.

This operation is still more difficult, when, owing to a severe short-circuit, the fuses have been violently blown and the terminals damaged by the resulting arc. All these operations require time during which important machines are idle, workers are delayed, and the output is seriously affected.

Tubular Fuses Apt To Be Replaced by Wire

Another important objection to fuses arises from the ease with which they may be tampered with by unauthorized persons, as well as their liability to incorrect replacement by those whose technical knowledge is insufficient to enable them to differentiate between one size of wire and another, or to make the necessary allowance in regard to current-carrying capacity when substituting a copper fuse for one of tin or other low-fusing metal. Attempts have been made to surmount these objections by designing the fuse in the form of a screwed plug, but the frequent replacement of this type of fuse is expensive, and resort often is made to rewiring.

Such an attempt always involves the possibility of using some size of wire other than that with which the plug was originally supplied, and as variations in this direction usually are toward a larger rather than a smaller conductor, the re-fused plug offers little or no protection to the apparatus it is supposed to safeguard. Furthermore, when such fuses fail and a machine is stopped the plug socket is frequently bridged by means of fuse wire or other material, a method which if carelessly executed invariably damages the fittings.

The ordinary tubular fuse lends itself to a similar kind of abuse; in fact, this device is more easily replaced by pieces of wire than is the plug fuse. Therefore, it is obvious that fuses, unless replaced in a proper manner by a competent workman, are likely to become utterly useless as a means of protection.

Risk of fire also is constantly present, especially in mines where gas exists. There is always the possibility of a fuse box containing an explosive mixture which is likely to ignite when a fuse blows. The greatest danger arises under conditions of short-circuit, when fuses of any kind are apt to burst with great violence.

By suitable calibration a fuse may be arranged to provide a definite time limit between the reaching of maximum current value and the interruption of the circuit. This feature may be usefully employed in cases where motors are subjected to a rapidly fluctuating load, causing the current to momentarily rise above the safe limit of continuous operation.

What is known as "aging" also is a serious drawback. A fuse must necessarily carry the full current passing in the circuit, and obviously if the wire is sufficiently small to be melted at, say, 25 or 50 per cent overload, it is always at a high temperature and oxidizes rapidly. Consequently, an old fuse may melt when carrying a current considerably below its rated capacity. Incidentally it might also be mentioned that in the case of plug fuses the rise in temperature in many instances is sufficient to impair the contact between the plug and its fittings, causing the surfaces to weld together and preventing the withdrawal of the plug. Furthermore, even when the plug is successfully removed, the burned surfaces require refacing before another fuse can be inserted. The shortcomings enumerated above are sufficient to make desirable a more reliable and convenient means of protecting electrical mining apparatus than the fuse affords.

Why Circuit Breaker Excels Fuse

Undoubtedly some form of automatic switch or circuit breaker is the most efficient protection for either large or small motors. The advantages of this type of switch may be enumerated as follows: (1) After the switch opens as a result of overload, or from some other cause, the circuit can be immediately re-established with an adequate degree of protection without assistance from a skilled workman. (2) The risk of coming into contact with live parts while changing fuses is entirely eliminated. (3) The measure of protection once properly set remains constant. (4) The setting at which the device will trip may be readily varied within well-defined limits clearly indicated on any automatic switch that is the product of a reputable manufacturer.

On direct-current circuits, by using a double-pole switch it is only necessary to provide a trip on one line and on three-phase circuits with the neutral point insulated two trips only are necessary. If the neutral point is grounded, in order to adequately protect the apparatus a trip coil should be placed in each phase. The overload adjustment should be well protected from interference by unauthorized persons but should be readily accessible to any one provided with a suitable key.

In the case of direct-current motors air-break switches are required, but on alternating-current circuits, oil switches are preferable and should always be used on

underground apparatus. Each switch should be provided with a no-voltage attachment, which, in the event of interruption in the current supply, will isolate the motor connected to it.

As regards first cost, fuses have the advantage over circuit breakers, but in maintenance expense and in continuity of operations with a maximum of safety the automatic switch is undoubtedly the best form of protection for electrical apparatus both above and below ground.

Rocking Towers with a Clamshell Bucket Permit Storage of Coal Over Large Areas

A NEW apparatus for storing coal and other material is being manufactured by the Railway & Industrial Engineering Co., of Greensburg, Pa. This device, which embodies many radical departures from present practice, is called the Harrington rocking cableway, after its inventor, N. T. Harrington, of the company above named. While the apparatus may be employed to advantage in the handling and stocking of many materials, its use as a coal-storing unit attracts most attention at the present time.

Already installations of this device have been made at some bituminous mines in central and western Pennsylvania. It is believed also that the apparatus will find ready favor among the handlers and storers of anthracite. By reason of the large area that may be served by the unit it will be possible to store high-sulphur coals with comparative safety from spontaneous combustion, as the mine product may be placed in piles of small depth scattered over a wide area.

The apparatus consists essentially of two structural-steel towers, each of which is balanced by a counterweight attached to its base; an ordinary clamshell or grab bucket; controlling ropes for the manipulation of the towers and bucket, and the necessary electrical- or steam-driven operating motors.

The illustration shows the principles of operation of the new apparatus. The base of each tower is curved and filled with concrete, which acts as a counterweight, tending to keep the structural support in an upright position. The tower base is set on an oppositely curved support, and may be given a lateral movement through an angle of about 120 deg.

With this construction it will be noticed that the line of thrust through the tower base always is at the point of contact with the tower support. When the tower is at its greatest inclination the counterweight in the base is exerting its greatest moment, so that any tendency to slip backward along the curved base as the tower is pulled over is nullified by this increasing counterbalancing effect.

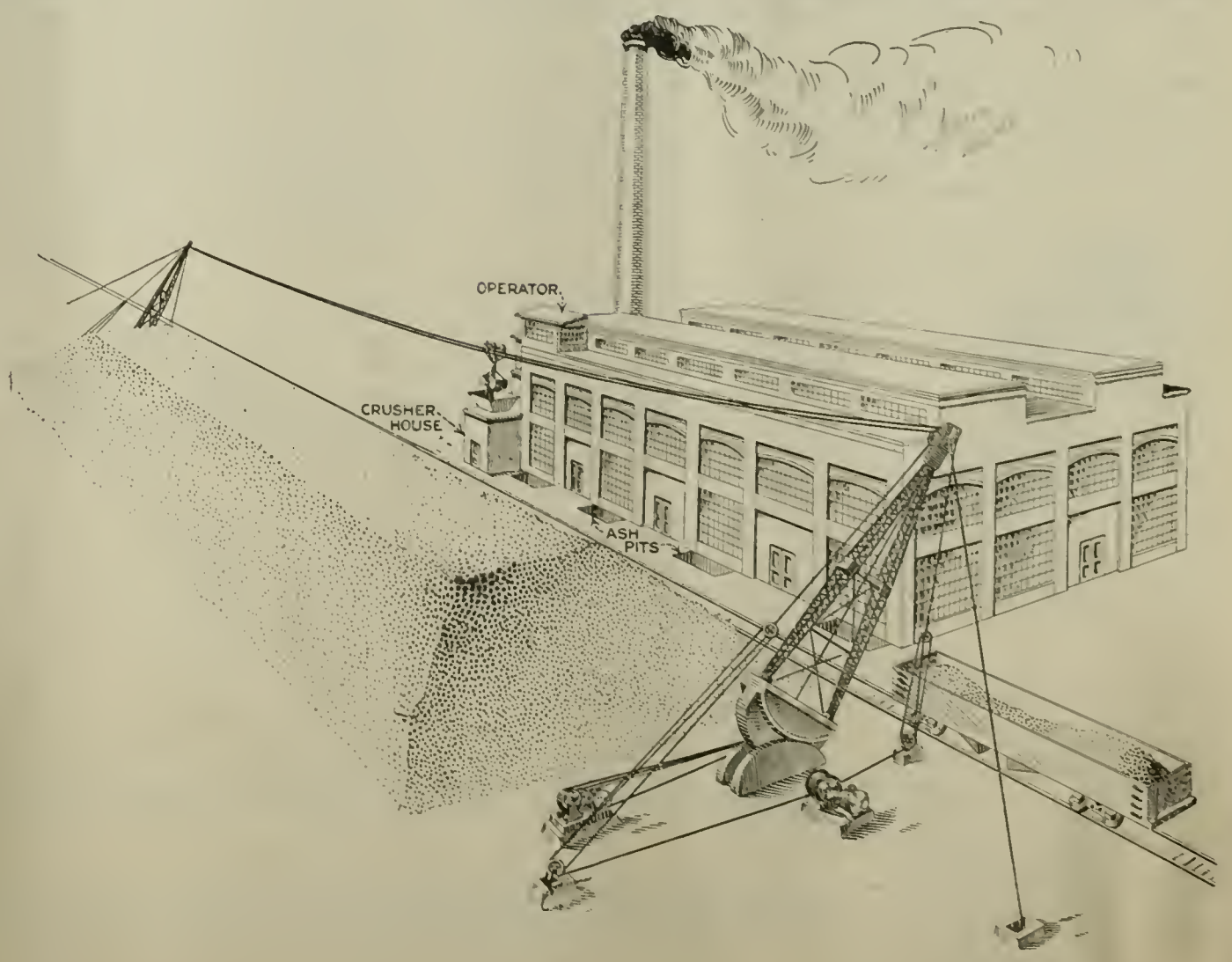
Each tower is stayed in the rear by a cable guy attached to a concrete anchor, and a rocking or tilting anchor is placed at either side. A continuous cable passes through suitable blocks attached to these latter anchors, thence up and over two sheave wheels at the top of each tower. This cable is actuated from a drum situated near one of the towers and in line with the rocking anchors, and operated by a motor. Thus it is possible to rock or tilt both towers in unison from the one control. The length of the common leg of the triangles formed by the line of thrust of the tower, the tilting guys and the horizontal does not vary; the other two, of course, change with the inclination of the tower, but their sum or combined length remains constant.

Pile Sevenfold as Long as Towers Are High

Bucket movement and manipulation are controlled by the same man who rocks the towers. He may be stationed at any convenient point of vantage from which he can oversee all sections of the large area served by the device. From experiments that have been made with towers of light construction it has been found that

Cableway on Rocker Tower

The ordinary cableway has small capacity unless the towers which support it move. By rocking the towers the capacity of the cableway is increased and large tonnages can be handled without moving the base of the tower on rails. This illustration suggests the use of the rocking towers at a factory. It would be equally applicable at a mine where level ground was attainable. It is shown with a track for emptying cars, and a hoppered crusher over which the coal can be discharged.



they may be located at a distance from each other that is roughly 7½ times their individual heights. The width of the rectangle covered is 1.7 times the tower height. The resultant available storage space consequently is quite extensive. For example, suppose towers 60 ft. high are employed. A storage space is created that is about 450 ft. long and slightly more than 100 ft. in width. A speed of bucket traverse on the cableway equal to 1,000 ft. per minute may easily be attained. This, while not excessive, is many times that of the ordinary crane, which the apparatus closely approaches in principle of operation.

The device gives a rapid service over depressions in the ground, as the main cable may be stretched above a surface of rough contour, where it might be impossible to build supports or tracks for any other type of mechanism. It can also operate over buildings or other obstructions and thereby utilize areas for storage that might be unavailable otherwise. The predominating feature of the apparatus is the movement of the main track cable in a lateral direction with only a light moving weight in the shape of operating parts. Practically no power is consumed in the transport of any dead weight along with the live one.

Balanced Skip Hoist That Both Elevates And Distributes Boiler Coal

MUCH attention has been given during the last few years to the design and construction of material-handling apparatus. Consequently a radical improvement in this line is hardly to be expected, but when made is a matter of interest. Such an improvement has recently been patented by Warren Travell and is now being manufactured by the Exeter Machine Works, Inc., 30 Church St., New York.

Of all the many forms of equipment for raising materials the skip hoist probably is the oldest. The earliest type consisted simply of a windlass with a tub or bucket; later, guide rails were added and a cage structure adopted, resulting finally in the modern passenger elevator and the deep-mine hoist.

One branch of this development, dating back more than one hundred years, produced the so-called skip, having four wheels running on a pair of inclined tracks. In order to dump the skip automatically the tread of the upper pair of wheels was made narrower than that of the lower pair, the track for these wheels was curved at the upper limit of travel and the wider-gage track carrying the lower wheels was continued straight on for a short distance. This gave a simple and efficient hoisting device and one which in thousands of installations has proved satisfactory.

One Transfer Where Two Were Used Formerly

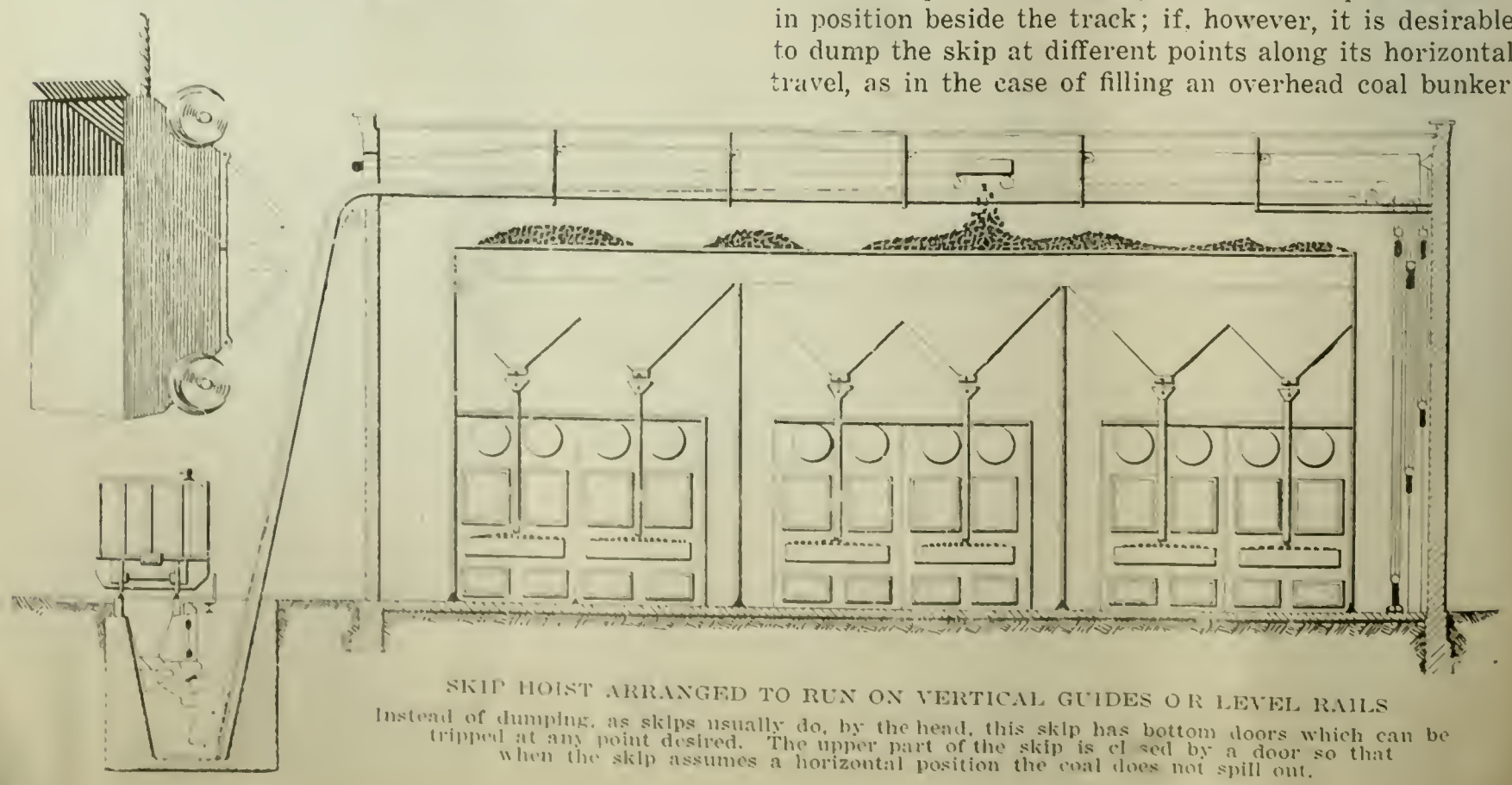
In all these devices no attempt has been made to build a single machine combining horizontal transport with the hoisting operation. The material handled has always been removed from the skip or cage at the end of the hoist and the horizontal movement, where necessary, has required the installation of additional equipment. Industrial railways, cableways, bucket conveyors, belt conveyors, scraper conveyors and many other forms of transporting equipment thus have been used in connection with, or as auxiliaries to, skip hoists.

The improvement above referred to is one whereby the skip which elevates the material is enabled to transport it horizontally. In other words this improvement makes it possible to do with a single machine the work that heretofore has required two separate devices for its accomplishment.

In order that the skip may be able to carry its load both vertically and horizontally without spillage a radical change has been made in its construction. The ordinary skip is simply an open-ended box equipped with four wheels and a hinged bale. The improved skip has an opening in the upper portion of the side or top for receiving the load, and has single- or double-hinged doors on the opposite side for discharging when the skip is running on a horizontal track.

Coal Is Tripped Wherever It Is Needed

Filling of the skip is accomplished preferably by a chute from a hopper. The doors or valves of the skip are held in the closed position by a latch, the tripping of which accomplishes discharge. For installations having a fixed point of discharge, the latch trip is fastened in position beside the track; if, however, it is desirable to dump the skip at different points along its horizontal travel, as in the case of filling an overhead coal bunker



SKIP HOIST ARRANGED TO RUN ON VERTICAL GUIDES OR LEVEL RAILS

Instead of dumping, as skips usually do, by the head, this skip has bottom doors which can be tripped at any point desired. The upper part of the skip is closed by a door so that when the skip assumes a horizontal position the coal does not spill out.

in a boiler house, the trip easily may be shifted from place to place as required. A further improvement consists in placing the trip on a traveling frame which is moved back and forth by a hand winch conveniently located.

An important feature of this improved skip hoist consists in the balancing of the entire weight of the skip and half that of its load by a counterweight which operates only during the vertical motion of the bucket. In lowering the empty skip the motor raises the counterweight, doing the same amount of work as in hoisting. As the weight of the skip frequently is as great as that of the load is carries, the effect of this arrangement is to reduce the necessary size of the motor and the unbalanced stresses in the hoisting equipment to one-quarter of what is required for the ordinary unbalanced hoist or to one-half of that for the less common type in which two buckets are operated in balance. A second counterweight of nominal size is employed to take up the slack rope paid out from the hoisting drum during horizontal travel of the skip.

Reduces Manual Labor Needed in Operation

Manual labor necessary for the operation of this device is reduced to a minimum by the installation of automatic switches which reverse the motor at either end of the skip's run. By this means, in combination with an automatic filling device, the skip hoist is made entirely self-acting in its operation and requires only the occasional services of an operater to keep the machinery oiled and to shift the movable tripper in case one is used.

The skip may be of any suitable capacity and the height of lift and length of run may be made any reasonable distance to suit existing requirements. Assuming the ordinary case of a boiler house with a hoist of this kind transferring coal from a hopper to an overhead bunker, an equipment of this improved type having a skip of one ton capacity with a traveling speed of 500 ft. per minute will handle coal at any rate up to eighty tons per hour. With a skip of two tons capacity the rate of handling is increased to 150 tons per hour.

This skip hoist would serve not only for boiler plants away from the coal mines but also to carry slack from a tipple bin to a bin above the boilers or to deliver the crushed bone from the picking table to the same point.

Ireland's Peat Supply Will Serve All Her Needs for Two Hundred and Fifty Years

A BRITISH report of the peat resources of Ireland says that the Irish peat bogs cover three million acres, more than half being "red bog," as distinct from "mountain peat soil." More than a million acres of these bogs represent the flat and deep areas, three-quarters of which are concentrated within the central belt, bounded on the north by a line joining Howth with Sligo and on the south by a line joining Wicklow with Galway.

The million acres are estimated to have peat deposits of an average depth of 17 ft. and to contain upward of two billion long tons of anhydrous peat. Nothing definite is known as regards the content of the mountain bogs, but there probably are in all between three and three and one-half billion long tons of anhydrous peat or, say, four billion long tons of dried peat in the Irish bogs. At the present rate of peat consumption, say six million long tons per annum, and allowing that all the imported coal, 4,650,000 long tons, were replaced by peat fuel on the basis of two tons of air-dried peat to one ton of coal—that is, about nine million long tons of peat—the peat deposits would satisfy the fuel and power requirements of the country at the present rate of consumption for more than 250 years.

The total coal used in the inland districts of Ireland amounts to 1,463,000 long tons, leaving a balance at ports of import for local use and for use in adjoining districts not requiring to be transported by rail of 2,800,000 long tons. The total coal consumed in Ireland for all purposes amounts to only 1.08 long tons per head per annum, but to that should be added the large amount of peat used. Apparently 1,500,000 people are wholly dependent on peat for fuel, which at 4 long tons per head per annum would amount to 6,000,000 long tons a year.

Assuming that 90 per cent of drained bog is water and that the density is 1.00 the yield will be about 120 long tons of anhydrous peat per foot-acre of the bog, or about 160 long tons of air-dried peat containing 25 per cent water. A long ton of average slane-cut air-dried peat fuel, filled loosely, occupies approximately 140 cu.ft., whereas a corresponding figure for bituminous coal in bulk would be about 45 cu.ft.

Air-dried peat containing 25 per cent moisture has a calorific value between 6,000 and 7,000 B.t.u. per lb., whereas coal as supplied in Dublin averages 11,000 to 12,000 B.t.u. per lb. "as received." Taking the mean of these figures for peat and coal it follows that 1.77 tons of average slane-cut air-dried peat will occupy 5½ times the volume of a ton of coal and hence may be said to be approximately 5½ times as bulky as its calorific equivalent in coal.

Machine-cut peat when filled in loosely gives an average volume of 100 cu.ft. per long ton, but the calorific value per pound is the same as if the peat were slane-cut. Such peat is four times as bulky as coal when comparing the calorific values of both.

The House Committee on Appropriations in reporting the naval appropriation bill for the year beginning July 1 next—the bill having failed in the Senate last session due to fight over a reduced naval building program—reduces coal appropriations for the navy by one-half from those available for the current year, in anticipation of reduced coal prices. "It would seem reasonable to anticipate a decline in fuel prices," says the committee, in support of an allotment of $17,500,000 appropriated for fuel for the navy. The appropriation for fuel for ships' use for the current year is $30,000,000, which includes a deficiency appropriation of $20,000,000. Another deficiency of $6,000,000 has been submitted, making a total of $36,600,000 for fuel for ships' use for the current fiscal year ending June 30. For the four years prior to the war the committee says the appropriations for ships' fuel averaged $5,226,114. The committee provides for 1922 a total of $17,500,000 for fuel, or half the current year requirements but more than three times the annual appropriations immediately preceding the war. The committee also anticipates reduced steaming by the navy, as the bill provides for a navy of 100,000 men. It also says that with the increased tonnage over the pre-war period, attributable practically solely to small craft, it would seem that the amount of fuel proposed should prove adequate. For fuel for the Marine Corps the committee provides $590,000, an increase of $140,000 over the current year but $274,800 less than estimated.

The request of District of Columbia public schools for an appropriation of $20,000 for coal for the balance of the year has been granted.

Kohler Bill Will Shut Down Scranton Mines

TO A COMMITTEE of members of the Central Labor Union and various civic bodies the coal operators of Scranton gave notice on May 7 that they would discontinue operation on the day that Governor Sproul signed the Kohler bill because 85 per cent. of the coal left under Scranton must be acquired by second mining and cannot be recovered without causing damage to the surface, which under the Kohler bill is a violation of the law.

The conference included all the operators in Scranton and Dunmore, the representatives of the Kiwanis and Rotary clubs, the Board of Trade, the Commercial Association and the United Mine Workers of America. S. J. McDonald, president of the Central Labor Union, acted as spokesman, asking W. W. Inglis, general manager of the Delaware Lackawanna & Western R.R., Coal Department, how much coal was under Scranton and Dunmore, how much was pillar coal, and could second mining be done without disturbing the surface?

Mr. Inglis put the coal resources under the two cities as one hundred million tons, said that 85 per cent was in pillars and that the coal in second mining could not be taken without disturbing the surface. On being told by Mr. McDonald that "Many people of Scranton believe that the operators are using considerable bluff and buncombe and that they will not close operations if the mine-cave bills are signed by the Governor," Mr. Inglis replied: "As soon as the law is signed, the mines will be closed. We are preparing for this already. If we accept the provisions of the Fowler [the reparation] bill we automatically deprive ourselves of contesting the constitutionality of the Kohler [the regulatory] bill."

Officials of the Leggitt's Creek and Van Storch collieries informed the labor-union representatives that they were willing to become parties to the voluntary agreement between the companies and the Board of Trade providing for the repair of houses valued at less than $5,000. Charles Dorrance stated that the Hudson Coal Co. could not see its way clear to be a party to this agreement but declared that the company had been repairing properties damaged by mine caves for some time. The D. L. & W. declared that the contracts to repair properties damaged by mine caves would be abrogated as soon as the Governor signed the Kohler bill. About 800 properties will be left unrepaired if that action is taken.

Between 15,000 and 20,000 Men May Be Idle

Fifteen local collieries will be closed down when the Kohler bill is signed: Diamond, Hyde Park, Mt. Pleasant, Green Ridge, Bellevue, Dodge, National, Sloan, Taylor, Van Storch, Leggitt's Creek, Gibbons, Nay Aug in Scranton and Nos. 5 and 6 of the Pennsylvania Coal Co. in Dunmore. Between 15,000 and 20,000 men will be laid idle and payrolls amounting to $50,000,000 will be wiped out if the mines are closed. The feeling, in some sections, however, is still quite strongly in favor of the Kohler and Fowler bills. Even the Lackawanna County Medical Association felt impelled to vote in their favor at a recent meeting.

The Kohler bill requires the coal companies to file accurate maps and tracings of all workings at least once in every six months. In cities these maps are to be filed with the mayor, and in boroughs and first-class townships they are to be filed with the county commissioners. Another section requires that the companies "keep designated by number each and every pillar of anthracite coal beneath the surface still remaining in place." All these pillars must be plainly marked with numerals.

Section 4 gives mayors, burgesses and township commissioners and their agents the right at all reasonable times to inspect mining operations. Another section gives these same authorities the explicit authority to close down mining operations under certain conditions. Section 5 says:

"The mayor of cities, the burgess in boroughs, the board of township commissioners in townships of the first class, shall have the power to prevent the mining of anthracite where the pillars of coal shall not have been numbered and the numbers thereof designated by maps or tracings, as provided by this act, and where mining operations are being conducted in violation of this act they shall have the power to prevent any miner or laborer other than those necessary for the protection of life and property from entering the mine or mining operation until such time as the provisions of the act have been complied with."

Townships of the second class are excluded from the operation of this act and also any lands which are owned in fee simple and are at the same time distant more than 150 ft. from any improved property owned by any other person.

Petitions are being circulated saying that the companies are doing everything humanly possible to protect the properties over their workings, and the General Citizens Cave Committee is urging that these documents be not signed.

British Columbia Coal Inquiry Completed; Cost Sheets Justify Prices

THE coal inquiry ordered by the Government of British Columbia to ascertain why coal costs the consumer in the province so much more now than it did a few years ago is at an end. This investigation was granted after agitation centering chiefly in the City of Vancouver. It was backed up by the City Council of that city. It will, there is no doubt, cost the ratepayers of the province a considerable sum. What results will be achieved remains to be seen. The reports of the Commissioner, the coal-mining engineer chosen to conduct the technical side of the inquiry, and the chartered accountant have not yet been released by the Minister of Mines. But, from all reports, it is not likely that much new light will be thrown on the British Columbian's problem of obtaining cheaper coal.

F. T. Congdon, counsel for the public, voiced public sentiment when he observed that it seemed absurd that with coal in quantities short distances from the centers of population, it should cost $15 a ton. The cost sheets of the operators and the dealers, sworn to by responsible businessmen and apparently unshaken by competent rebuttal evidence, justify the prevailing conditions.

Mr. Congdon, as a result of his activities before the Coal Commission, made the following recommendations relative to the coal business of the providence:

(1) Abolish the use of the long ton.

(2) Require coal operators to furnish monthly returns of operating costs and sales realizations of their several mines.

(3) Dealers should be licensed, not for revenue, but to comply with conditions contained in the license safeguarding the public.

(4) Consideration of feasibility of collection of stores of coal during the summer.

(5) Tests should be made and published showing the analyses and characteristics of coal from all provincial mines.

(6) Dealers should be required to issue regular lists setting forth the different grades of coal, tests relating to them and the uses to which different grades of coal may be best applied, with prices.

(7) Consideration of appointment of a fair weights and measures officer for the province, and he might be given supervision over similar civic officers and jurisdiction as to grades.

(8) Supervision of construction of buildings might include regard to convenience for accepting coal and wood in bulk.

(9) Combines which keep up the price of coal should be dissolved and the offenders punished.

(10) An exactment to compel operators to furnish coal to any person demanding a quantity not less than one carload of forty tons.

(11) Study should be given to the question of introducing uses of coal that would obviate the waste of byproducts and the public nuisances now suffered.

(12) Consideration of the use of pulverized coal and establishment of central plants for production and autimatic stokers.

(13) Encouragement of interior (British Columbia) mines which can produce coal at low operating costs and can place it on the market at low cost if railway rates are made reasonable, and endeavor to secure reduction of railway rates.

Problems of Operating Men

Edited by James T. Beard

Co-operation Needed in the Development of Improved Equipment

Development of a New Type of Machine Requires the Expenditure of Time, Labor and Means and Involves Many Failures—Mine Officials Must Co-operate with Manufacturers to Insure Success

WITH much interest I have followed the letters in *Coal Age* bearing on the development of coal-loading machines. It was pleasing to note that N. D. Levin, in his letter, Mar. 24, p. 543, characterizes the attitude of a previous writer on this subject as being obstructive to all progress.

Perhaps few men beyond those directly connected with the manufacturing end, realize the great expense and amount of work necessary for the development of a new type of machine of any kind. Many trials bring failure and disappointment and these must be met and the difficulty overcome by renewed mental effort before ever the machine is brought to public notice.

Operators Benefited More Than Manufacturers

Let us pause here and ask: Who is ultimately the greatest beneficiary in the event of final success? Will not the coal operator profit to an even larger extent than the manufacturer when the improved equipment has been placed at his disposal and its installation shows a larger production at a less cost for operation?

History will prove that the consuming public owes a great debt of gratitude to many a poor starving inventor, who has devoted the best years of his life to develop the things that we now enjoy and are prone to regard as a matter of course. Without improved equipment in our mines, where would the coal industry be today? Is it not time that we put aside the short-sighted, selfish policies that so often control us and lend assistance and encouragement to those who are striving to develop and improve present equipment in mining?

It was my good fortune, earlier in life, to secure employment with a coal operator who gave freely of his time and offered every facility for trying out, in his mine, any new device that promised to be a benefit to the industry. For that purpose, a section of the mine was understood as being set apart where a new machine or type of equipment could be installed.

It was even permitted to make any possible changes in the methods of working that seemed necessary to give the device a fair chance to succeed. I do not recall, however, that these experiments involved the management in any great expense. On the other hand, I am sure that the benefits derived more than outweighed the trouble and expense entailed by the trial.

Difficulties Encountered

There are a number of difficulties involved in the mechanical loading of coal, and this is especially true under the present methods of laying out mine workings. As just mentioned, however, it is in the power of the mine management to lend great assistance in the practical development of new machinery, by showing a willingness to modify the methods of working employed, in a portion of the mine, for the purpose of trying a new machine under as favorable conditions as possible.

That a successful mechanical loader is desirable in our mines we all agree. It is my firm belief, that, in time, this type of machine will be developed so as to work successfully under most any condition common in mining. But, assistance from mine operators will greatly hasten that time.

Speaking of concentration of work, which one writer appears to regard as impracticable, it is my opinion that modern appliances such as coal loaders and other improved equipment make concentration not only possible but highly probable.

Hydraulic Blasting

There is, for instance, now being developed in this field, a method of hydraulic blasting in connection with the Oldroyd mining machine, which undercuts and shears the coal, besides cutting the slots for the hydraulic cartridge. These efforts have met with some considerable success.

My hope is that if this method can be perfected and a suitable loading machine devised, it will be possible to load the tonnage of a mine from a very small fraction of territory now required.

It is unnecessary to point out the many economies that would result from a great concentration of work, as all mining men know what trouble and expense are involved in keeping open large and scattered areas, in mines. With cutting, shooting and loading performed in one continuous operation, it is clear that a small territory will furnish a large tonnage of coal and better supervision can be had and maintenance cost reduced to a minimum.

W. A. Ream,
Denver, Col. Mining Engineer.

Work That Counts for Nothing

Much time is lost by mine foremen in fruitless efforts often made necessary by reason of a lack of proper management and co-operation.

PERMIT me to offer a few suggestions in line with an editorial that appeared in *Coal Age*, Mar. 3, p. 391, entitled "The Futile Foreman." The article pointed out a few things that cause mine foremen much fruitless effort and appealed to me as of far-reaching importance in the production of coal.

Attention is first drawn to the lack of suitable transportation facilities in the mine. This may be due to a number of things, such as poor equipment, cars and track not in good condition, insufficient power for hauling the coal and a poorly arranged system generally.

Essentials to Success in the Operation of a Mine

Every practical mining man knows that the successful operation of a mine depends largely on maintaining good roadbed, track and switches. Competent trackmen must be employed for this work and given the tools and material required for their purpose. Cars must be mounted on efficient bearings and kept in good repair.

Where these matters are not given proper attention, frequent derailment of the cars is bound to happen and the foreman must spend much of his time in seeing that the wreck is cleared, cars put back on the track and all necessary repairs made at once, so that there will be no further delay in hauling coal.

It goes without saying that these difficulties can be avoided with proper foresight on the part of the management and the co-operation of all concerned. On the other hand, failure to give needed attention to these matters causes the foreman many hours of lost labor that should be put to better advantage in the mine.

Experience has taught me that efficient mine management is the chief factor in producing results. Reference was also made to inadequate power. In mule haulage, the animals must be kept

in prime condition. If mechanical haulage is employed the installation must be such that delays will be largely avoided and the coal brought to the tipple regularly. The cars should be mounted on roller bearings and kept well lubricated.

In regard to the foreman losing much time in breaking in new men, my belief is that this will depend much on his treatment of the men he employs. A foreman should give his men incentive to work and induce them to co-operate with him and with each other in a single purpose to produce coal and avoid unnecessary delay.

Make New Men Understand That Only Merit Counts

In starting new men, the foreman has an excellent opportunity of gaining their confidence and making them understand that merit is the only thing that counts. The aim and purpose in mining is to produce coal and avoid delays and unnecessary expense. To do this, there must be co-operation on the part of every man in the mine.

I have often studied to ascertain why the daymen in a mine have so little desire to keep up their work in an efficient manner. My conclusion is that mine foremen are often to blame for not giving them the right incentive to work. Any show of favoritism on the part of the foreman destroys all incentive for good work. On the other hand, if men are given to understand that merit is the only thing that counts they have an incentive to do their best. Then and only then will there be the real co-operation that will produce results. W. H. Luxton.

Linton, Ind.

Safety Requirements in Tennessee Mines

Attention is drawn to the classification of mines generating explosive gas and the requirements specified for such mines in the Tennessee mining law.

THE question of making the mines safer has been again brought forward in the letter of James Ashworth, mining engineer, which appeared in *Coal Age*, April 21, p. 716. Reading that letter brought to my mind another, by R. W. Lightburn, bearing on the same subject, published some time since. (Jan. 6, p. 22)

In his letter, Mr. Lightburn referred to the question of whether a fireboss violated the mine law when he permitted the air returning from a pair of entries generating gas, to pass through rooms where locked safety lamps were in use.

Mining Law Must Be Clear

I recall the discussion of this question, and agree with the sentiment expressed by one writer (Oct. 28, p. 903), that the fireboss could not be held to have violated the law, unless the reading of the law made it clear that his act was contrary to its requirements.

My belief is that where the state mining law does not clearly specify the requirements necessary to make a mine safe, it is the duty of the mine officials, the superintendent, foreman and fireboss to make and enforce regulations that will accomplish this end. In the case to which reference has been made, it would seem that the law was indeterminate in respect to the act of the fireboss, which warrants the conclusion that no law was violated in that case.

Safety Requirements in the Tennessee Mining Law

In this connection, I want to make a few brief references to points in our Tennessee Mining Law, which I believe are worthy of note. In this state, the mines are grouped in four classes, but I will mention only those mines belonging to Class A, as generating firedamp in sufficient quantity to be detected on the flame of a modern safety lamp.

The Tennessee law makes some special requirements regarding these mines, with a view to increasing the safety of their operation. It is specified (Sec. 32) that such mines must be laid off in districts, and not more than fifty men and eight mules shall be employed at one time in any single district or split of the air current.

Mines Examined Every 60 Days

Again, the law states (Sec. 9) that the chief inspector or one of the district inspectors must examine each Class-A mine at least once every sixty days. The minimum amount of air required in these mines is 150 cu.ft. per min. for each person and 600 cu.ft. per min. for each mule employed in the mine.

The law permits no mine generating gas and belonging to Class A to be operated for thirty days without a certified foreman in charge and he must hold a Class-A certificate. (Sec. 15).

Regarding crosscuts and breakthroughs in entries and rooms, the law specifies (Sec. 19) that no entry shall advance more than 60 ft. ahead of the last completed breakthrough, without the special permission of the chief mine inspector who shall designate the distance, which is allowed only for the purpose of making connection with other openings.

The same section specifies that the distance between breakthroughs in room pillars shall not exceed 75 ft., which shall also be the distance of the first room from the entry or air-course.

Overcasting the Air and Use of Electric Cap Lamps

Before closing, I want to refer to two points in which I cannot agree with Mr. Lightburn, as expressed in his letter to which I have referred. First, the idea advanced of overcasting the intake air so as to conduct it into the rooms turned off the return airway, for the purpose of giving them fresh air, does not appeal to me as good practice. It would not only weaken the chain pillar, but what is more, it would reduce the volume of air that would reach the face of the headings where the gas is generated.

Again, Mr. Lightburn endorses very strongly equipping the mine with electric cap lamps. The objection to this, in my opinion, is the failure of these lamps to give any indication of the presence of noxious gases. My preference is the locked safety lamp for use in mines generating gas.

When working to the dip I have seen men overcome by breathing blackdamp, of the presence of which they were unaware because their electric lamps gave no indication of the danger surrounding them. I know that we cannot all agree on this matter. But, where cap lamps are used there should always be some lamp or other means of making known the presence of noxious gases when they occur. Oscar H. James.

Crawford, Tenn.

With What Authority Should the Fireboss Be Clothed?

Is the mine foreman or the fireboss the official who is most responsible for the safety of the men and property? Should the fireboss be clothed with the authority of a state officer?

FOR some time past, considerable discussion has been carried on, in our institute meetings in this region, in regard to what authority should be given firebosses. It has been argued that, inasmuch as the fireboss is required by law to pass an examination before a state examining board and hold a state certificate, he is in fact a state official.

Advocates of this doctrine claim that, in regard to matters pertaining to the safety of the men and property, the fireboss should be clothed with authority that could not be questioned by either the superintendent or the mine foreman. In other words, should he conceive it advisable to do so a fireboss could stop the mine or any portion of it without consulting other authority.

Divided Authority a Menace to Safety in the Mine

Like most questions, this one presents two sides for consideration and I may be permitted to offer a few comments from the viewpoint of the superintendent and foreman of a mine. In doing this, I will try to be brief and mention those points that appear to have the most direct bearing on the question of authority in the operation of a mine.

My conviction is that the authority over all matters pertaining to the operation of a mine and responsibility for the safety of the men employed therein should rest wholly with the mine foreman. Divided authority and responsibility are fatal to any enterprise and usually lead to the playing at cross-purposes and "passing the buck."

It goes without saying that a competent foreman would, at all times, be willing to discuss with his superintendent matters pertaining to the method of working, haulage, timbering and other operations underground. With his fireboss he would likewise discuss matters relating to the ventilation and safety of the mine.

Naturally, a foreman in charge of a mine would quickly resent any interference in his control of the men occasioned by the giving of orders not his own. Orders given over the head of a foreman must weaken his authority and prove fatal to discipline, while the psychological effect on the man himself acts to lessen his usefulness.

Moreover, the fireboss usually leaves the mine at noon, that being the end of his shift. From that time the foreman is the only responsible person in charge. Now, should a dangerous condition arise or accident happen how easy it would be for the foreman to shift the responsibility to the shoulders of the fireboss and claim that he had neglected some duty during his shift. Right here is a chance for trouble.

At the best, the position of foreman is a difficult and trying one, requiring energy, patience and judgment. He must deal with men of various nationalities, temperament and ideas, and labor to weld these diverse elements into a compact organization having one purpose, which is the safe, efficient and economical operation of the mine.

In this work he should have the entire confidence and support of those in authority over him. He must have the assurance that his word is supreme. My experience has been that if a man of average intelligence, experience and ability is given proper authority and the responsibility placed squarely on his shoulders he will rise to the occasion and perform his work quickly and well. On the other hand, hedge a man about with petty restrictions, divide his authority and responsibility, question his judgment and the result is an increased expense and diminished efficiency in the performance of work.

Finally, I would have the mine foreman given a rigid examination and granted a certificate for a limited period only. He should be given entire authority over the mine and held responsible for the safety of his men and the property in his charge. His compensation should be commensurate with these duties and responsibilities. To divide this authority and responsibility will make neither for safety nor efficiency.

W. A. REAM,
Denver, Col. Mining Engineer.

Inquiries Of General Interest

Size of Opening in Regulator to Reduce Quantity of Air Passing

Calculation of Opening in Regulator Required to Reduce Air Volume Must Be Based on a Constant Power on the Air When Speed of Fan Is Constant

RECENTLY, I have been perplexed in estimating the size of opening required in a box regulator in order to reduce the quantity of air passing in a split 6 x 8 ft. in section and 2,000 ft. long. This airway being shorter than the other split, has been taking too much air and it is desired to reduce the quantity to 30,000 cu.ft. per min. The pressure at the mouth of the split is 15 lb. per sq.ft.

My figures show that the natural pressure in this split, for the circulation of 30,000 cu.ft. of air, would be 9.1 lb. per sq.ft. Subtracting this from the pressure at the mouth of the split (15 lb. per sq.ft.) gives for the pressure due to the regulator 5.9 lb. per sq.ft. Then, calculating the area of the opening in the regulator that will pass 30,000 cu.ft. of air per minute gives

$$A = \frac{0.0004 \times 30{,}000}{\sqrt{5.9/5.2}} = 11.26 \textit{ sq. ft.}$$

However, setting the slide in the regulator so as to give this area of opening, I find the quantity passing in that split is still too large, although the fan is running at the same speed as before. Kindly explain where the trouble lies.

Johnston City, Ill. STUDENT.

The effect of placing a regulator in an airway is to increase the resisting power of that airway or split and the total resistance of the mine is also increased. Assuming the power on the air remains constant, as indicated by the speed of the fan being unchanged, the effect of an increased mine resistance is to increase the pressure and decrease the total quantity of air in circulation.

By means of a regulator it is possible to effect any required distribution of the air between two spits. The quantity in the regulator split will be reduced while that in the free split is increased; but the increase in the latter is less than the decrease in the former split, which results in a decrease in the total quantity of air passing into the mine.

The method of calculation employed by this correspondent holds true only when the pressure at the mouth of the two splits remains constant. But, if the power on the air in the main airway remains unchanged both splits will be under an increased pressure, by reason of the regulator.

In order to make this calculation, it is necessary to know either the power on the air (U) or the original quantity of air (Q) in circulation before the regulator was put in position. We must also know the length of the other split.

Assuming the original quantity of air passing into the mine as Q = 70,000 cu.ft. per min., makes the power on the air 70,000 × 15 = 1,050,000 ft.-lb. per min. Also, taking the lengths of the two splits as 2,000 ft. and 3,000 ft., respectively, each having the same cross-section 6 × 8 = 48 sq.ft., their respective rubbing surfaces are 2(6 + 8)2,000 = 56,000 sq.ft.; and 2(6 + 8)3,000 = 84,000 sq.ft.

Now calling the unit pressure after the regulator is in position p, the quantity of air (q) that will pass in the free split under the pressure p is

$$q = a\sqrt{\frac{p\,a}{k\,s}} = 48\sqrt{\frac{48\,p}{0.00000002 \times 84{,}000}} = 8{,}113\sqrt{p}$$

But, since the total air volume (U/p) is equal to the sum of the quantities passing in the two splits (q + 30,000), we can write $8{,}113\sqrt{p} + 30{,}000 = U/p$; and, multiplying throughout by p, gives for the power on the air,

$$U = p(8{,}113\sqrt{p} + 30{,}000) = 1{,}050{,}000 \textit{ ft.-lb. per min.} \quad 1.$$

But, since the pressure (p) producing the circulation is equal to the sum of the natural pressure in the regulator split and the pressure due to the regulator, we have for any area of opening A, in a regulator passing 30,000 cu.ft. of air under a pressure p,

$$p = 5.2\left(\frac{0.0004 \times 30{,}000}{A}\right)^2 + 9.1$$

$$A = \frac{748.8}{A^2} + 9.1 \quad 2.$$

Now, by trial, a value must be found for A, in equation 2, that will give a value for p, which substituted in equation 1 will make the power on the air U = 1,050,000 ft.-lb. per min. By trial, we find this value of A is practically 10 sq.ft.

For example, making A = 10, in equation 2, gives

$$p = \frac{748.8}{10^2} + 9.1 = 16.588 \textit{ lb. per sq. ft.}$$

Finally, substituting this value for p, in Equation 1, gives for the power on the air

$$U = 16.588(8{,}113\sqrt{16.588} + 30{,}000) = 1{,}045{,}800 \textit{ ft.-lb. per min.},$$

which is close enough to the value previously found.

Therefore, the opening in the regulator required to reduce the quantity of air passing in this split to 30,000 cu.ft. per min., under the assumed conditions, should be 10 ft. square.

Examination Questions Answered

Examination, Mine Foremen and Firebosses, Bituminous (Pa.), April 5-8, 1921

(Selected Questions)

QUESTION—*What are the duties of a mine foreman when he arrives at the mine in the morning?*

ANSWER — The mine forman's first duties on arriving at the mine in the morning are to receive the verbal report of the fireboss and examine his written report regarding the condition of the mine and any dangers that he may have discovered in his examination. He should receive from the fireboss and hold the checks of men working in any places reported to be unsafe. No one should be permitted to enter and proceed to work, except with the permission of the mine foreman, whose duty it is to appoint the daymen to their several duties, after which he should give his personal attention to the removal of dangers reported by the fireboss. He must also see that drivers and motormen are on hand and that the work of hauling and hoisting the coal is gotten underway with as little delay as possible.

QUESTION — *What information relative to qualification and experience should a mine foreman obtain from a workman seeking employment?*

ANSWER—He should ascertain where and for how long the man has worked previously, examine his credentials if he has any, and form his own personal estimate of the man's character and ability to work, so as to be able to judge correctly as to the kind of work for which he is best fitted.

QUESTION — *What are the requirements of the mining law in regard to cut-throughs in rooms and entries?*

ANSWER—The Bituminous Mine Law (Art. 9, Sec. 3) requires the mine foreman to see that proper cut-throughs are made in all room pillars at such distances apart as the inspector may decide is necessary, not more than 35 nor less than 16 yd., depending on conditions affecting ventilation. Art. 4, Sec. 2 requires further that the foreman shall see that these cut-throughs are closed when necessary, so as to conduct the air current forward to the last cut-through next to the face of each room and entry. No room or entry shall be turned in advance of the last cut-through on the entry, excepting that roomnecks may be turned by the entryman driving the entry when the inspector gives his consent.

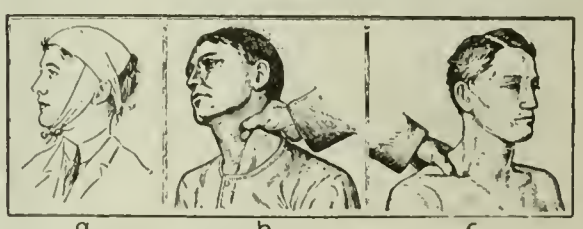
QUESTION — *The ventilator produces 60,000 cu.ft. of air per min. What volume of air would you expect to find at the working faces, and how many men would you employ to conform with the Bituminous Mine Law?*

ANSWER—Good practice will require that eighty or ninety per cent of the main intake current shall be found, by measurement, passing through the last cut-throughs, at the working faces of the several splits. The percentage of the air reaching the working faces will naturally depend largely on the development of the mine.

The bituminous law (Art. 9, Sec. 2) specifies that no more than 70 persons shall be permitted to work in the same continuous current, unless the mine inspector considers it impracticable to comply with this requirement, in which case he may authorize the employment of a larger number not to exceed 90 persons.

QUESTION — *What first-aid treatment would you give to a workman with head and shoulder laceration?*

ANSWER—Send for a doctor at once. In the meantime, make every effort to stop the bleeding from the wounds. If the bleeding proceeds from the scalp, a tight bandage should be applied so as to cover the bleeding part. This should be secured firmly by passing over the scalp and under the chin, over the forehead and around the back of the head, as shown at (a) in the accompanying figure. To assist in stopping the bleeding from the head, a pad should be inserted under the bandage over the temporal artery just in front of the ear and above the jaw. Should the bleeding be profuse and coming from an artery, as indicated by its bright red color, pressure should be applied to the carotid artery, by pressing the trumb or finger deeply into the neck just in front of the strong muscle that reaches from the breastbone to the bone behind the ear, as shown at (b) in the figure.



STOPPING BLEEDING OF WOUNDS IN THE HEAD

Where the bleeding proceeds from wounds in the neck and is profuse, coming from the arteries, there should be no delay in applying pressure at the most effectual point. If the wound is in the shoulder or armpit, the pressure is best applied upon the subclavian artery, by pressing the thumb deeply into the hollow behind the collar bone, as indicated at (c) in the figure.

As no portion of the body can keep alive when the blood supply is cut off for a considerable length of time, an attempt should be made to relieve the pressure gradually and observe the effect on the bleeding. A continuous pressure on an artery should not last more than two hours at the most; but an antiseptic compress should then be bound firmly in place and should remain so at least an hour to allow a blood-clot to form.

QUESTION—*What instructions would you give to a miner in regard to the handling and use of explosives?*

ANSWER—Where blasting by miners is permitted strict rules should be made and enforced, limiting the amount of explosives that each miner can take into the mine, which will depend on the number of shots he will fire. Each man should be instructed to use every precaution in taking his explosives into the mine, carrying them in proper receptacles, keeping the caps and powder separate and stowing these away in a safe place in his box until required for use. Each miner should be instructed how to locate his holes to the best advantage and how the powder should be charged in the holes and tamped. He should also be instructed in regard to the warnings that he must give before firing a shot. In most cases, the rules should forbid any shot being fired or any hole charged, until the mine foreman or fireboss has examined the hole and determined the amount of charge to be used and permission has been given to fire. Every miner should be examined to ascertain that he is familiar with the requirements of the law regarding the handling and use of explosives and the charging and firing of holes.

QUESTION—*What are the uses of an anemometer, water gage and tape line, in connection with ventilation of a mine?*

ANSWER — The tape line is used to measure the dimensions of the airway where the reading of the anemometer is taken. Multiplying the average width by the height of the airway gives the sectional area in square feet. The reading of the anemometer for a single minute is taken as representing the velocity of the air current in feet per minute. Multiplying the sectional area of the airway by the velocity of the air current gives the volume of air passing in cubic feet per minute.

The water gage is used to ascertain the difference of pressure between the intake and return airways for the mine or any section of the mine. Each inch of water gage corresponds to a pressure of 5.2 lb. per sq.ft., which is the unit of ventilating pressure for the mine or section in question. Multiplying the volume of air in circulation by this unit pressure gives the power on the air, expressed in foot-pounds per minute. Dividing this by 33,000 gives the horsepower on the air.

Production Costs, Increased Freights and High Wages Prevent Lower Coal Prices, Says E. W. Parker

IN VIEW of the somewhat widespread discussion of the domestic fuel situation, the following editorial from the *New York Herald* of May 9, and the reply thereto from the Anthracite Bureau of Information, may be found of interest:

COAL PRICES MUST COME DOWN

Coal producers who are berating the public for not loading up now with coal for next winter at war-inflation prices might as well save their breath. At a time when steel plants, textile mills, railroads, express companies and other industries are readjusting war inflation wages, cutting war-inflation production costs and lowering war-inflation prices the coal trade cannot expect to stay up in the war-inflation clouds and get away with it.

What the coal business needs to do to sell its coal is to offer its product to the public at a right price, like any other manufacturer or dealer. If it does not do that the coal trade is not going to sell its coal. It is of no use to tell the public that unless it buys its coal now at the excessive prices demanded for it the public next winter will freeze to death at still higher prices. The public is not going to buy the coal at these excessive prices and the public is not going to freeze to death.

The time has come for plain speaking to the coal producers who think they can sit tight on war-inflation wages, war-inflation production costs and war-inflation prices to the public when everything must be readjusted. Either they must act to bring about the economic readjustment which is imperative in their business as in every other business—either they must thus provided the cheaper coal, or Federal, State and local governments, backed by all the power that is in the American people, will get on that job for them.

The reply of the Anthracite Bureau of Information, issued May 10, and signed by E. W. Parker, director of the Bureau, is as follows:

"The editorial in your issue of May 9, entitled 'Coal Prices Must Come Down' seems to demand some response. It is not believed that the *Herald* desires to do injustice to the anthracite operators any more than to other persons or corporations engaged in industrial enterprises. It is quite evident that the writer of the editorial is not in full possession of the facts and conditions with which the anthracite industry is faced at the present time.

"Permit me to say in the first place that no one would be more pleased to welcome a decline in the price of hard coal than the anthracite operators, if that could be accomplished without involving serious loss to the industry as a whole. The fact is, however, and it is a very important fact, that in the face of the present cost of production no material reduction can be made in the mine price of anthracite without eliminating a substantial portion of the necessary tonnage or compelling its production at serious loss to the higher-cost companies. Some mines are now idle for the simple reason that present prices do not permit of their operation at a profit.

"There are three factors involved in the cost of coal to the consumer, namely, production, transportation and local distribution. Including the advance in wages granted by the President's Anthracite Coal Commission last year, the aggregate increase in the labor cost of anthracite over the prewar period has been 138.6 per cent (see Monthly Labor Review of U. S. Department of Labor, October, 1920, p. 104), and the award of this commission fixes the rate of wages until March 31, 1922. The labor cost in the production of anthracite represents over 70 per cent of the total expense. The cost of supplies, such as timbering, mine rails, explosives, etc., have practically doubled. The wholesale price of domestic anthracite according to the Monthly Labor Review (February, 1921, p. 51) has increased 98.5 per cent.

"It is a matter of common knowledge that freight rates have been advanced approximately 100 per cent, and there is no reason to believe that the retailers' expenses have not increased in the same proportion. The anthracite operators, however, have nothing to do with either the cost of transportation or local distribution.

"It may be claimed that as the increase in wages subsequent to the agreement of 1916, notwithstanding the existence of a four years' contract, and by the President's commission were granted because of the advancing cost of living, the miners should now consent to reductions in wages before the termination of the existing contract, because of the marked decline in the prices of other commodities. It goes without saying that any action of that character would almost certainly precipitate a general strike, and effectually stop the production of every mine in the anthracite region. The operators are not willing to break their contract. Is it the opinion of the editor of the *Herald* that it would be wise to make the attempt?

"In conclusion permit me to call your attention to the fact that there are now before the Governor of Pennsylvania two bills relating to taxes and charges on anthracite coal. If they become laws the total levy in all probability will amount to 3½ per cent on the mine value of the entire commercial production (coal used in the operation of the mines is exempted), and as 30 per cent of the tonnage consists of steam sizes, sold in competition with bituminous coal and at less than the cost of production, the entire tax will have to be carried by the 70 per cent of domestic coal, which by a simple process of arithmetic will be seen to have to carry a tax of 5 per cent. If the bills become laws they will go into effect July 1."

Task of Regaining Public Confidence Rests With Retail Coal Man, Says Dr. Smith

DR. GEORGE OTIS SMITH, director of the Geological Survey, in an address before the Indiana Retail Coal Merchants Association at Indianapolis on Friday, May 6, declared that the coal industry was in bad grace with the public, although he personally did not feel that the case against the coal industry had been fairly tried. He said that coal men must prove their good relation to the public before the public makes the fatal mistake of demanding government control of the coal industry. He said the burden of regaining public confidence lay with the retail coal man and that results would be achieved through service and publicity of business facts. Director Smith said he looked forward to the day when coal-trade associations would replace the activities of their lawyers with work of economists and other constructive efforts. These organizations should be efficient through permission under the law to combine so that stronger organizations for co-operation might be built up with no restraint of trade. Extracts from his remarks are as follows:

"In common practice we start our economic logic at the wrong end; it is natural to think first of the price to the consumer, but that is not always the place to apply the remedy. The economist, whether he be a lawmaker, a newspaper writer, a coal dealer, or some other variety of plain citizen, should first study costs rather than prices, for costs determine prices. What did the coal cost at each step in its production, all the way from the working face in the mine to the bin in the consumer's cellar?—that is the question that must be answered. No federal law or municipal regulation could long control prices to the consumer except as it controlled costs to the producer and distributer. Price too often is only a symptom, and treatment of that symptom, distressing as it may seem, will not reach the real seat of the trouble, which is some abnormality that may not be apparent but that really causes excessive costs.

"If I were speaking to coal operators I should discuss the distressing condition of the country that tries to support too many coal mines and too many mine workers. With a mine capacity far beyond even our maximum needs, full-time employment is out of the question. Any suggestion of deflating this excessive mine capacity, however, only arouses a protest by the guardians of the freedom of private initiative; they contend that personal rights are threatened and

they will tolerate no amendment to the present rule of opening up new mines and of enlarging old mines whenever high prices invite speculative investment in the coal business. But encouragement of wide-open competition in coal mining has failed to benefit the consumer, and the spread between capacity and output has lately been getting larger, partly because our restrictive legislation that affects the coal business expresses so completely the gospel of competition and the dogma of anti-combination; we have thought in terms of prices rather than of costs.

"The condition of having too many mines may be in part paralleled by the condition of having too many dealers. On this subject I have no statistics, and so I only suggest the thought. The consumer may welcome the entrance of new men into the retail coal business, but he should consider the question, Is there enough business to support the number of dealers already handling it? Just as coal can be mined most cheaply by large units working twelve months in the year, so also coal can be distributed most cheaply by large units working twelve months in the year. It is not in the public interest to encourage competition by multiplying the number of small operators or small dealers. Lower prices cannot come by the route of higher costs.

"The 'snowbird' incident does violence to coal economics, whether the 'snowbird' be operator, jobber or retailer. The small mine operator, whose leased mine is opened on the cropping and is overexpensive in labor and cars, while its product disturbs the market by reason of poor quality and high price; the fly-by-night seller of car numbers, who has neither investment nor conscience to stabilize his business; and the amateur retailer, who takes on a side line of a few cars of coal as a flyer when demand exceeds supply and when neither experience nor equipment seems necessary to success—all are birds of the same feather, who appear in flocks when the picking is good. The ideal in service is continuous and reliable service, rightfully profitable to him who serves, because it is helpful to him who is served."

Freight-Car Loading Continues to Gain; Still Behind 1920 Figures

AN INCREASE of 17,470 in the number of freight cars loaded with revenue freight during the week which ended on April 30 compared with the preceding week was shown by reports received from the railroads of the United States by the Car Service Division of the American Railway Association.

The total for the week was 721,997 cars, which is the largest number loaded during any one week since just before last Christmas. This is the fourth consecutive week an increase in loading has been reported. The total is, however, nearly 79,000 cars below that for the corresponding week in 1920 and approximately 30,000 below that for the corresponding week in 1919.

Increases were reported, compared with the preceding week, in the loading of all classes of freight. Coal loading totaled 145,010 cars, which was an increase of 6,400 over the week before but 23,700 cars below that for the corresponding week in 1920, while 451,714 cars were loaded with merchandise and miscellaneous freight, which includes manufactured products, an increase of 5,000 cars over the preceding week. Grain and grain products, forest products and ore also increased about two thousand cars each. Compared with the corresponding week last year, decreases were reported in the loading of all commodities.

Nova Scotia Mine Workers Dissatisfied

ALLEGING that the Dominion Coal Co. and the Nova Scotia Steel & Coal Co. are violating the Montreal agreement by refusing to adhere to the yardage provisions thereby arranged, the United Mine Workers is meditating a strike. J. B. McLachlan, secretary-treasurer of the United Mine Workers of America, was examined at Ottawa by the Special Committee on Fuel as to the costs of production in the Maritime fields. He said that the Halifax coal dealers' "spread" was $4.25 on the coal they handled, whereas the mine workers got only $2.30 for producing it. Wm. Delaney, district vice-president, complained at the same hearing that the Dominion Coal Co. has stored this year only 170,000 tons against 300,000 to 400,000 tons in other years, the reason alleged being that owing to the financial embarrassment of the company the banks would not advance it money for storage. D. D. McKenzie stated that the mine operators did not want to store except for contracts ahead.

Glen Alden Coal Co. Offers $60,000,000 For Lackawanna Coal Properties

THE Glen Alden Coal Co. has bid $60,000,000 for the anthracite coal properties of the Delaware, Lackawanna & Western Railroad Co. and this offer has been accepted, according to announcements made by the contracting companies subject to the confirmation of the stockholders.

This is the first step to be taken by the railroad toward segregating its railroad and coal interests. Railroad stockholders will be given the opportunity to purchase the stock of the coal company at $5 a share on the basis of one share of coal stock for each share of railroad stock now held.

In official quarters it is stated that the purchase of the road's coal properties by the Glen Alden company has no direct bearing on the capitalization of the railroad company's surplus to the extent of $45,000,000, which will be distributed as a 100 per cent stock dividend if the stockholders approve at the special meeting on July 21.

Common Policy for Miners in Anthracite And Bituminous Regions

BELIEVING in greater co-operation between mine workers in the anthracite and bituminous regions and that the whole 500,000 union men should make a united front and advocate similar policies, a conference was held May 17 at Indianapolis by the international officers of the United Mine Workers of America and the district presidents and international board members of the anthracite region.

It was decided that not until after the international convention of the United Mine Workers, which begins in Indianapolis on Sept. 20, shall the anthracite tri-district convention be held, so that the smaller body may be swayed by the larger. The anthracite convention hitherto has been held in August.

It would be a concession to the public much to be desired if the mine workers would decide definitely whether they thought wages should be based on the year or on the day. Here, indeed, is a policy on which they might profitably agree. Should a man who is irregularly employed only get the same wage as does one who has work all the time? Those in the anthracite region who work regularly demanded at the last wage conference the same pay as in the bituminous districts, where the wage was raised to provide for irregularity. A common policy might prevent them working both ends against the middle.

Controversy Over Powder Price Settled; Indiana Miners to Pay $2.40 Per Keg

POWDER prices for miners in district No. 11, United Mine Workers of America, including most of the Indiana coal territory, were raised to $2.40 a keg, following an agreement between miners and operators recently. Many of the mine workers who have been idle returned to work. John L. Lewis, international president of the United Mine Workers, asked that operators and miners meet and effect a settlement. After much deliberation the mine workers agreed to the 15c. increase in powder prices. A large number of mines near Terre Haute closed May 1, when the old contract of $2.25 a keg expired and the operators attempted to charge $2.40 a keg. Officers of the mine workers upheld the operators on the powder price.

THE FRENCH MINISTER OF PUBLIC WORKS has reduced the price of furnace coke to 110 francs per ton, which hitherto was 135 francs. Considerable stocks in coke being at hand in France, the Government has turned over large quantities to the general trade.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

IN THE manufacturing countries of Europe the productive machinery is in better condition than it has been since the end of the war, according to a report of business conditions issued May 18 by the National Bank of Commerce in New York. "Physical plants," the report continues, "have been rehabilitated, railway congestion relieved and the fuel shortage overcome. Unfortunately, under present conditions, the productive capacity of Europe, like that of the United States, cannot be profitably employed.

"Every country in the world has large stocks of imported merchandise awaiting absorption and in some localities stocks are so large that it is impossible to provide proper storage facilities. The absorption of this accumulation has begun, but is being retarded in the countries which are Europe's best customers because those countries are unable to dispose of their own products. This condition is further aggravated by the fact that the world-wide fall in commodity prices has affected primary commodities more than semi-finished and manufactured articles.

"The volume of retail trade has been fairly satisfactory, at least for department stores and other large stores in cities. The money value of sales has been somewhat less than last year but the physical volume of goods moved has remained approximately the same. It appears, however, that department stores and larger establishments are doing a greater proportion of the total business than hitherto, so that the smaller establishments are running somewhat behind. Continued public demand in spite of wage reductions, and at a time of considerable unemployment, appears to be accounted for by large popular savings of the past few years, and unsatisfied requirements in many of the staple lines.

"Encouragement may be taken from the action of the Legislature of Pennsylvania in repealing the so-called Full Crew Law, the final vote being taken the day after the reduction in the Pennsylvania Railroad dividend. This is one of the first signs of a more intelligent attitude toward the railroads on the part of state authorities. The cost of this statute to the transportation companies of Pennsylvania during the ten years during which it has been in effect is estimated to have been $40,000,000."

Railroads Taking Back Men

An immediate beneficial effect of the Railway Labor Board's announcement of an approaching rail wage reduction was shown in Chicago, May 18 when the Chicago & Alton R. R. re-employed 3,000 maintenance of way and shop men. Two thousand more, it is announced, will be employed on June 1. Predictions are made that all of the 250,000 men now out of work in the country will have been re-absorbed by the railroads by July 1.

Rubber Shoe Plant Closes

Notices posted May 14 in the shops of the Boston Rubber Shoe Co. in Malden and Melrose, Mass., announced a shutdown from May 27 to July 5. The mild winter, with consequent falling off in demand for rubber footwear, is given by the management as the reason for closing. The factories employ 3,200.

General Electric Strikers Return

The longest strike in the history of the General Electric Co., Schenectady, N. Y., was ended May 16, when many of the moulders and coremakers who went out in sympathy with the striking foundrymen at the Erie (Pa.) plant last June returned to work after international officers of the union reported that the strike fund was low and that no more benefits would be forthcoming.

Ford Factory Making New Records

Production at the Ford Motor Co.'s plant is increasing steadily. May 3 a new record was established, with 3,953 cars turned out that day. This high mark, however, stood only twenty-four hours. May 4, 3,993 cars were built. This stood only forty-eight hours, for on May 6, 4,042 cars were made, and the record was again raised twice when on May 9 and 10 4,072 and 4,083 cars were made respectively. It is expected that the production for May will be fully 100,000 cars as against 90,000 for April.

German Knives Close U. S. Mill

The branch of the Walden Knife Works located at Goshen, N. Y., has been closed down, owing, it is stated, to the poor demand for knives because of large importations from Germany, which are sold at lower figures than the American product can be offered.

Employment Gains Exceed Losses

Increased employment in eight major industries and decreases for the remaining six reported was shown in Labor Department figures for April. The largest increase was in the automobile industry at 25.2 per cent, others being, woolen, 22.3 per cent; hosiery and underwear, 7.6 per cent; men's clothing, 7 per cent; silk, 5.2 per cent; cigars, 5.6 per cent; cotton finishing, 1.7 per cent, and boots and shoes, 8 per cent. Decreases were in car building and repairing, 12.3 per cent; iron and steel, 9.7 per cent; leather workers, 11.3 per cent; paper making, 11.4 per cent and coal mining, 3 per cent.

Outerwear Mills Speeding Up

Manufacturers of knit goods for outerwear, according to the *Journal of Commerce*, are speeding up plants in Wisconsin, Michigan and adjacent states, and a number have gone on a basis of manufacturing for stock because of the bright outlook for autumn and winter business. The volume of for-stock manufacture, however, is as yet only a small proportion of the total. Manufacturers and jobbers say that orders for spring and summer exceeded expectations. Orders continue to come in for comparatively small quantities, but are increasing in size and frequency. The best reports prove that stocks in retailers' hands are much lower than a year ago. Prompt delivery orders continue with most of the mills. Manufacturers appear desirous of having a recognition among the retailers that the summer months are likely to find an excess of orders over capacity unless advance buying is indulged in more freely than has been the case during the past two or three months.

Operator and Public Better Protected by Publicity Than by Legal Regulation, Says Hoover

HERBERT HOOVER, Secretary of Commerce, gave his views on publicity in the coal industry in the following telegram to the National Coal Association convention at New York, May 19:

"I am in receipt of your request that I briefly express my views on the value of publicity in the coal industry. I am confident that it is the desire of the whole industry that it should not only grow in stability but also that it should secure and hold public confidence. It is my belief that both the coal operator and the public will be better protected by regular prompt and monthly publication of fundamental facts than by extension of legal regulations beyond existing anti-trust acts. It is proposed to determine and publish monthly totals of production, stocks, consumption, percentage of the industry in operation and average prices realized at the mines for different classes of coal.

"I believe this will go some distance toward accomplishing several things. It should stimulate industrial consumers to more regular demands. It should enable coal operators to forecast more reliably the volume of demand. It should enable the consumer to form some judgment as to the prices he should pay for coal. It should tend to hold down overexpansion in the industry by publication of the ratio of production to capacity; also, by illuminating to the public the mine prices it would protect the great majority of operators from the criticism that can only be properly levelled at the minority in such buying prices as last year. I believe it would to some extent mitigate extortionate prices and unduly low prices by giving realization to the great consumers that there is no fundamental shortage of supply on the one hand and encouraging them to take advantage of the periods of depression in production on the other.

"The outstanding economic difficulty of the coal as well as some other industries of the country is the cost and risk imposed both on the industry and the community by the highly intermittent production. I do not imagine that publicity is a cure-all to intermittency or any other economic ill, but at least it is an assistance toward sounder and more stable industry."

Senator Frelinghuysen, in Letter, Expresses Opposition To Restriction of Private Operation of Industry

J. D. A. MORROW, vice-president of the National Coal Association, has received from Senator Joseph S. Frelinghuysen of New Jersey, chairman of the Senate sub-committee on Interstate Commerce, the following letter regarding the latter's bill now pending in the Senate designed to stabilize the coal industry:

"I am in receipt of your letter of May 14 announcing the fact that the annual convention of the National Coal Association will meet next week and it is their intention to consider carefully the proposed legislation embraced in the Senate bill known as an Act to Stabilize the Coal Industry.

"While I cannot make any statement beyond that I have already made for publication, I will say that it has been my desire, ever since I became the head of the sub-committee of the Interstate Commerce Committee to investigate the coal situation, to do something that would bring about better conditions and greater harmony in the industry.

"The experience of the last few years of shortage of supply caused by the war, strikes and climatic conditions has caused much confusion in the minds of the consumers as well as those who legislate for the people. To hastily legislate in reference to a great industry such as this is, without facts, or any attempt to reform without experience, in my opinion would be unwise. I have steadily opposed the passage of any legislation which would regulate or restrict the private operation of any industry.

"However, I believe that the Government should be in possession of all the facts and figures concerning the coal industry; that there should be a department of the Government charged with the collection of these facts and that, through co-operative effort of the various elements of the industry—the operators, the miners, the wholesalers, retailers, and the consumers as well as that important factor in the coal situation, the transportation lines—a more complete understanding and better conditions would be brought about.

"The act introduced by me has this object in view. It places in the hands of the Secretary of Commerce the duty of working in co-operation with those who mine and sell coal and also those who buy it. There has never been anyone in the Government to whom coal operators or consumers could go for information or advice.

"The bill I have introduced empowers the Secretary of Commerce to collect this information and pay some attention to the coal industry. The Secretary will have no regulatory power or any authority which would interfere with the ordinary course of the business.

"The scientific work in relation to coal is still left with the Department of the Interior, or, in other words, the Director of the Bureau of Mines. This work has to do with the determination of grades, kinds and qualities of coal and of the relation between the productive capacity of the mines to the consumption of coal as well as with the development and improved methods of production.

"The Bureau of Mines is suitably equipped for work of this character, while the Department of Commerce

is relied upon for the commercial phases of the matter, covering production, shipment, available tonnage at the mines, and price, both wholesale and retail.

"I feel that when this bill is enacted into law it will greatly relieve the present unsettled conditions and bring about a better understanding. If something of this character is not done and there is no one in authority who can speak upon the coal question, the misunderstandings will continue and the industry will be in a more unsettled condition than ever before."

Sponsor for Seasonal Rate Bill Says It Is Honest Effort To Avert Coal Famine and Panic Prices

SENATOR Frelinghuysen's seasonal rate bill was discussed during the hearings in the railroad investigation before the Senate Interstate Commerce Commission, Chairman Cummins and Senators Frelinghuysen and Stanley (of Kentucky) favoring the legislation, while railroad representatives opposed it on the ground that it would reduce revenues of the roads.

Senator Stanley said he was favorably inclined to the bill, for by reducting rates at certain periods of the year there would be an automatic increase of transportation, and in this way the movement of coal could be distributed by altering the rates just as the movement of a clock was controlled by adjusting the length of the pendulum.

"What would happen in the other months when there were no reduced rates on coal?" objected Julius Kruttschnitt, of the Southern Pacific. Senator Stanley said there would be less pressure on the railroad movement, but Mr. Kruttschnitt said the net result would be a large decrease in railroad revenues. Senator Stanley thought otherwise, saying the roads would move the same tonnage, 50 per cent during three winter months and the other 50 per cent during the other nine months, which would be adjusted so that during the months when there was the greatest strain on the roads they would carry 40 per cent, and the remaining 60 per cent during the other months. He said the legislation was designed to keep coal cars in more continuous service and distribute the burden upon them instead of having them used for other purposes.

Mr. Kruttschnitt in reply took for example a total movement of a million tons on which the rates would be reduced to intensify movement. Under the plan 750,000 tons would be moved under the lower rates instead of 500,000 at the reduced rate, which would leave only 250,000 tons to move at the normal rate, which would result in a loss to the roads. Senator Stanley pointed out that during the winter the roads would have a higher rate to compensate them for the loss of revenue during the time the reduced rates were in effect, and that the roads would enjoy a continuous revenue at a smaller operating charge for the whole time.

Mr. Kruttschnitt said that when he was president of the Union Pacific coal properties an experiment to induce summer purchase of coal through a reduction of 25c. a ton in the price had failed after a two years' trial, only 25,000 tons more than the normal consumption being purchased, but Senators favoring seasonal rates pointed out that the railroad rate was not reduced and that therefore Mr. Kruttschnitt's experiment was not a fairly comparable example.

Senator Frelinghuysen said the object of the bill was to prevent panic prices which prevailed last year and also to prevent a coal famine next winter by inducing the public to buy now when 250,000 cars are idle. "It may be successful and it may not, but it is an honest effort to remove the high peak load in the winter and place it on the summer, when it is low," he said.

Chairman Cummins said the earnings of the roads upon coal moved would be just the same as if there had been no difference between the summer and winter rates. "Well, if the legislation is framed to produce that effect, nobody could complain," said Mr. Kruttschnitt.

Raise Coal Rates to Louisville from N. E. . Tennessee, E. Kentucky and Virginia

AN ADVANCE in coal rates to Louisville from eastern Kentucky, northeastern Tennessee and Virginia has been announced by the Louisville & Nashville R.R. At the same time a decrease in rates to Lexington is announced. The advance is made despite protests made by the traffic department of the Louisville Board of Trade. The new rate will be effective June 16. Louisville and Cincinnati and all intermediate points will be affected. The outstanding feature of the advances is in the fact that all differentials as between prepared and steam grades are eliminated, which places the burden on the steam consumer, there being a comparatively small advance on domestic sizes.

In the adjustment from eastern Kentucky mines, taking the Middleboro group as representative, the present rate to Louisville is $1.56½ a ton on slack, $1.69 on mine-run and $1.81½ on all other kinds of coal. The revision establishes a flat rate of $1.90, representing an increase of 33½c. on slack, 21c. on mine-run and 8½c. on all other kinds of coal.

The increases apply from L. & N. mines in southeastern Kentucky, eastern Tennessee and Virginia also from L. & N., Henderson route and Illinois Central mines and branch connections to Louisville and other Ohio River crossings.

Rates to Lexington, on the other hand, have been adjusted downward by flat reductions of 20c. to 25c. to create a symmetrical system of rates. In other words, Louisville loses the preferential differential that it enjoyed heretofore by reason of its geographic location and traffic conditions.

Rates from western Kentucky to Louisville also will be increased 15c. a ton over the Louisville & Nashville with the Illinois Central and Louisville, Henderson and St. Louis taking the same action. This increase places western Kentucky rates on approximately the same basis as rates from the Ayrshire group mines in southern Indiana. The increase in eastern Kentucky rates incidentally will put them up to within 10c. or so per ton of the rates from West Virginia over the Chesapeake & Ohio.

Would Have Courts Nullify Anthracite Tax

A RESOLUTION directing the Attorney General to institute proceedings to nullify the recent act of the Pennsylvania Legislature imposing a tax of 1½ per cent ad valorem on anthracite coal mined in that State was introduced in the House of Representatives on Friday, May 20, by Representative MacGregor, of Buffalo, N. Y., on the ground that the tax violated the Federal Constitution and would enhance the price of coal. The resolution was referred to the Judiciary Committee.

On the same day an opinion on the constitutionality of the law was requested of Charles D. Newton, Attorney General of the State of New York, the contention being raised by Corporation Counsel William S. Rann, of Buffalo, and Frederick E. Norton, of the Syracuse Chamber of Commerce.

ALL OF THE BIDS of coal firms submitted to the Cincinnati Board of Education for supplies for the current year were thrown out at a meeting of the members of the Board last week. No public explanation was made but private expressions of opinion made by the members centered about the statement that they believed the prices were too high. It has been ordered that the contract be readvertised on June 1.

Operators Name Committee, with Power to Act and Without Instructions, to Discuss Coal Legislation

ASSIGNED cars, pending coal legislation and election of officers were the prime matters of interest at the fourth annual convention of the National Coal Association, held in New York on May 19 and 20. Interest in the assigned-car question has been given new impetus by reason of the call of the Interstate Commerce Commission for a hearing on the subject, which, it is understood, will involve privately-owned cars. By the time the question came up for consideration in a formal way on the floor of the convention most of the discussion had already taken place in local groups. It is understood that the committee on railroad relations passed the question up to the Board of Directors, who in turn referred it to the floor of the convention. Following a short discussion during which T. H. Watkins characterized private cars as special privileges and charged that during the strike on the railroads a year ago trains of loaded private coal cars were moved when other coal cars were left standing, the convention voted unanimously to stand by the ultimatum of a year ago at the Atlantic City convention to oppose assigned cars. It appeared to be the general feeling that no declaration could properly be made with respect to whether or not private coal cars are assigned cars, in view of the divided opinions in the membership. The question, it is fully expected, will be settled in due course on its merits by the Interstate Commerce Commission.

The program included discussion of the legislation proposed by Senator Frelinghuysen. Several weeks ago it was proposed that a conference be held between Secretaries Hoover and Fall, Senator Frelinghuysen and representatives of producers, jobbers and retailers. The board of directors of the American Wholesale Coal Association on May 17 authorized a committee of three to sit in at this conference but without power to act or to commit the jobbers to any proposed legislation.

Adopt Recommendation Without Dissent

The operators have been discussing the subject in local associations for the past ten weeks and when the question came up in convention a committee of one representative from each field was appointed to select a smaller committee of three to confer in Washington. When this large committee reported on the second day of the convention the recommendation was made that W. K. Field, E. E. White and Ralph Crews be selected as a committee without instructions and with power to act, representing the National Coal Association at an informal hearing on the Frelinghuysen coal legislation. The recommendation was adopted without discussion and without a dissenting vote.

Colonel D. B. Wentz, the retiring president, in introducing the subject said:

"As many of you know, Senator Frelinghuysen of New Jersey has been working on a bill with the idea of regulating the coal industry of the United States. Secretary of Commerce Hoover has advanced the theory that it is necessary for the Department of Commerce to have certain statistics, rather in the nature of census information in connection with the various basic industries of the United States, of which coal is one, and he and Senator Frelinghuysen have been having conferences from time to time with regard to this matter.

"Senator Frelinghuysen recently reported his bill out to the Senate from the Committee on Interstate Commerce, of which Senator Cummins is chairman. At a hearing on the Frelinghuysen bill, representatives of your association urged that Senator Frelinghuysen postpone action in connection with his bill until Senator Frelinghuysen, Senator Cummins, Secretary Hoover and possibly Secretary Fall, of the Interior Department, could sit down around a table with representative coal men—and by that I mean coal men representing the bituminous coal operators, anthracite operators, the wholesalers and the retailers—and discuss the features of that bill. This association was in no way committed to any policy and has none.

"A suggested arrangement for a conference was arrived at that seemed to appeal to the other branches of the coal industry. Senator Frelinghuysen suggested a committee of twelve as a maximum number. The anthracite coal operators have appointed a committee of three with power to sit in that conference. The National Retail Coal Association held its annual convention in Richmond, Va., last week, and authorized the president of that association to appoint a committee of three with power, which committee is being selected this week. The Board of Directors of the National Wholesale Coal Association about ten days ago appointed a committee of three to meet with Senator Frelinghuysen and the Secretary of the Interior, but without power. It seems to your Board of Directors and to your officers that you should appoint a committee of three to go along with these other committees, either with or without power, as you may see fit.

"I understand that Senator Frelinghuysen expects and is ready to go ahead with the conference as arranged, and I believe he has told the vice-president of your association that any bill which may be arrived at as a result of this conference can be brought up, either in the House or in the joint conference.

Variety of Views on Regulatory Legislation

"In your association there are members who are opposed to any legislation which will in any way regulate the coal industry. There also are members in your association who, although opposed to legislation which will regulate the industry in any way, believe that some legislation will be passed at this session of Congress, and that it would be wise for you and for the other coal people of the country to participate to some extent in the drafting of that legislation. Frankly, there are other members of this association, and there are coal men who are not members of this association, who believe that it would be most desirable to have legislation somewhat in the form suggested by Secretary Hoover. So that you have all of these views among you."

J. D. A. Morrow, vice-president of the association, gave his support to the proposal to meet the officials in Washington. Speaking on the subject he said:

"You gentlemen should not get the impression that Senator Frelinghuysen or Mr. Hoover, or anybody else, so far as I know, is hostile to this industry in the proposed legislation now before Congress. Those men are seriously impressed with the view that some legislation is desirable, not merely with regard to coal but also with regard to various industries.

"Mr. Hoover has said to me repeatedly that, in his view, the collection and publication of a few simple, elemental business facts about all the industries of the country would be a very desirable thing for the Government to do, and if such information is collected currently and published currently so that the producers and consumers of those commodities can inform themselves as to conditions in those industries, that is all the Government needs to do or should do; that then it would be possible for the individual to make up his mind intelligently as to his own course of conduct, and that this is in accordance with the fundamental principles of this Government, and we do not want anything more. Briefly, I think they are Mr. Hoover's views, as I understand them.

"Senator Frelinghuysen's view possibly is somewhat different from Mr. Hoover's, but again I think it is fair to say that he is not animated by a feeling of hostility toward the industry. He believes in the collection of somewhat different information from that which Mr. Hoover desires, but Senator Frelinghuysen, I believe, is not seriously committed to a long range of particular details. He has a gen-

FOURTH ANNUAL CONVENTION, NATIONAL COAL ASSOCIATION, WALDORF-ASTORIA HOTEL, NEW YORK

eral idea in mind, but is open to conviction on it. He is willing to sit down and talk with the committee in a businesslike way."

A feature of the elections this year was the nomination of directors at large from the floor one day and elections by ballot the following day. In this way the confusion that characterized the elections a year ago was avoided.

Those elected as directors at large to serve a two-year term were: J. G. Bradley, president, Elk River Coal & Lumber Co., Dundon, W. Va.; F. C. Honnold, secretary, Coal Operators Associations, Chicago, Ill.; E. C. Mahan, president, Southern Coal & Coke Co., Knoxville, Tenn.; S. Pemberton Hutchinson, president, Westmoreland Coal & Coke Co., Philadelphia.

J. G. Bradley Elected to Presidency

The following are the officers elected for the year 1921-22:

President, Mr. J. G. Bradley, president of the Elk River Coal & Lumber Co., Dundon, W. Va.; vice-presidents, Alfred M. Ogle, president, Vandalia Coal Co., Terre Haute, Ind ; Erskine Ramsay, first vice-president, Pratt Consolidated Coal Co., Birmingham, Ala.; Ira Clemens, president, Clemens Coal Co., Pittsburg, Kan.; J. D. A. Morrow (executive vice-president), Washington, D. C.; treasurer, J. J. Tierney, Crozer-Pocahontas Co., Philadelphia, Pa.; secretary, W. B. Reed, Washington, D. C.

The executive committee for the ensuing year will be as follows: J. G. Bradley, chairman; C. E. Bockus, president, Clinchfield Coal Corp., New York City; T. W. Guthrie, president, Hillman Coal & Coke Co., Pittsburgh, Pa.; G. W. Reed, vice-president, Peabody Coal Co., Chicago, Ill.; A. J. Maloney, sales manager, Chicago, Wilmington & Franklin Coal Co., Chicago, Ill.; H. N. Taylor, vice-president, Central Coal & Coke Co., Kansas City, Mo.; J. P. Walsh, vice-president, Pittsburgh Coal Co., Pittsburgh, Pa.; T. H. Watkins, president, Pennsylvania Coal & Coke Corp., New York City; T. T. Brewster, vice-president, Mt. Olive & Staunton Coal Co., St. Louis, Mo.; D. B. Wentz, president, Stonega Coke & Coal Co., Philadelphia, Pa.

Addresses by James A. Emery, counsel of the National Association of Manufacturers; A. W. Douglas, vice-president, Simmons Hardware Co., and the Honorable John J. Cromwell, ex-Governor of West Virginia, were features of the convention.

In reviewing business conditions over the country, Mr. Douglas said: "The real reason for the present quiet situation is that the farmers are not purchasing. The people are buying things they don't need but the farmer is economizing. The farmer knows how to economize, whereas we go at it half-heartedly.

"Building is being held up on account of the price of labor and material. It will not resume normal until the building industry reaches a basis where prices are reduced to correspond with the volume of business.

"The remedy is in our own hands. The general feeling is that it is going to be quiet during the next two or three months, but everyone is looking for something better when the harvest time is over."

Governor Cornwell said he was a coal consumer, not a coal producer, but he talked from a full and sympathetic knowledge of the coal man's problems and troubles. His address was replete with sound counsel and honest advice to the industry. Speaking afterward Mr. Bradley, the newly-elected president, said:

"I listened this morning with great attention and great approval to the speech of John Cornwell, ex-Governor of West Virginia, and I want to say to you that I stand four-square with John Cornwell; I don't think anybody could have pointed out a clearer way to go than John Cornwell pointed out to the members of the National Coal Association."

Speaking of current conditions Governor Cornwell said:

The Committee on Resolutions of the National Coal Association presented at the convention, May 19, the following resolution on the death of Franklin K. Lane, which was adopted:

"In the death of Franklin K. Lane this industry, in common with the great American public, has suffered the loss of one who inspired the highest ideals of citizenship. His was a life of exceptional service and his record of achievement one to which all men can turn for inspiration with solemn pride.

"This association here expresses its profound appreciation of the unstinted gift of the rare talent and genius of this great American, and records its conviction that the nation is the better because of his life and work.

"It is the desire of this convention that its membership convey to the family an expression of sincere sympathy in their bereavement."

"Whether the shortage will occur again, I don't know, but it ought not to happen again. It will only occur, it seems to me, if there is another country-wide strike, and that is not, in my judgment, an improbability—but to that I will allude a little later. But under any other condition that we can conceive there ought not to be a country-wide coal shortage such as there was a year or so ago, and without that there certainly ought not to be any necessity for federal or state regulation of the coal industry.

"However, there is another point of view and that is the public point of view, and I have been very much interested and impressed by the remarks which have just been made to you that touch indirectly upon that question. What is the public point of view?

"When you gentlemen buy or lease a piece of coal land and build your tipples and plant upon it and begin to operate it, you say to yourselves, 'This is my property and this is my private business. I have a right to operate it or I have a right to close it down, as I see proper.' But the public, on the other hand, says that coal, as this gentleman [Mr. Douglas] has suggested, is the basic industry of this country. It means light, transportation and, in the end, food, because it brings food to the sections of the country from the sections that produce it. In the last analysis the public says, 'It means life and death to us,' and therefore, it says, 'Whether you regard this as a public industry or not, it is a very vital industry to us, and therefore we have a right to see that you do not do anything which will take away from us this thing which is so essential to us when we need it, or which will cause us to have to pay exorbitant prices.'

"That is the thing and that is the thought which, when accentuated by the coal shortage and high prices, leads the public to make a demand for some regulation or control of the coal industry.

Lays Much Responsibility on Association

"What is the remedy, then? This gentleman says to you that this matter lies largely within your hands; and I think he is right in this: that there is nobody else in this country and no other organization in the country that understands this situation as thoroughly and as completely as the coal associations and the coal operators. Certainly there are no people in the country who are as directly and as completely interested in putting those facts absolutely before the people of the country and making them understand what the situation is.

"I, without any spirit of criticism, want to say to you that as he has suggested, it seems to me that the coal associations and coal people have not always met that situation and have not always given the facts to the public and impressed it upon the public as much as they might have done.

"It seems to me that this seasonal proposition can be eliminated some way by the widest and most effective campaign which you could put on, that would educate the American people and the coal consumers to the fact that the operator cannot store coal. Many coal consumers do not understand that. But you can educate them that the coal consumer can store the coal. You can educate them that while you have the capacity and the ability and the plants to produce the coal within a short time which they need for a year's consumption, it will not be possible, perhaps, for the railroads to transport a year's supply within a short time, and that unless they do spread their purchases more over a larger part of the year than they do, these coal shortages are bound to occur every year.

"The public does not thoroughly understand that. I know that because I come in contact with enough coal consumers to appreciate the fact that they are not absolutely informed upon that proposition as fully and completely as they might be.

"It is your job, then—it is the job of the National Coal Association, of your state associations and your district associations—to put that question before the country and to impress it upon the public mind, and to impress it upon the mind of your legislators in the national legislative bodies as well as in the state Legislatures, that the remedy for this question lies with the people themselves rather than with the creation of new statutes."

New Plan of British Operators Thought to Give Promise of Strike Settlement

ANOTHER week of sullen resistance—the eighth—has resulted in little actual progress toward ending the coal strike in Great Britain. The British public, that wondered at the capacity of the hunger strikers to subsist without food, is wondering now at its own capacity to sustain without revolution eight weeks of industrial stagnation.

On May 21 the British mine owners were reported to have started to elaborate a plan which may result in settlement. The details have not been divulged, but apparently an attempt will be made to regulate wages by the cost of living.

A Laborite member of Parliament and former Food Controller, George Roberts, declared on May 19 that the cowardice of the miners' leaders had prolonged the strike. They were afraid, he said, to tell the mine workers the truth. He intimated that the mine workers would have to accept the wages and conditions offered and that every day of delay but added to the toll of their misfortune.

At Folkestone, in Kent; at Leith, in Edinburgh; at Middlesboro, in Yorkshire, and at Portland, in Dorsetshire, coal is being landed from foreign ports. Four million tons of shipping lies idle in British ports.

Will Flush Part of Old Mine in Scranton

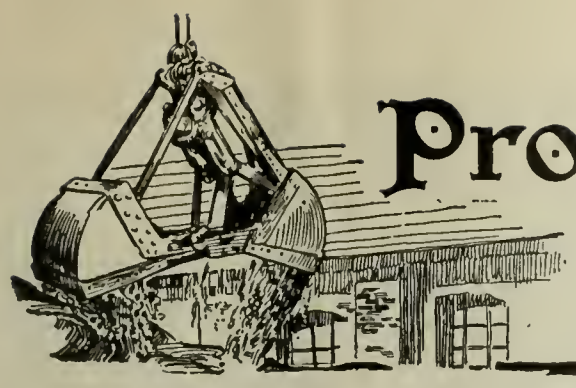
AS SOON as an old working of the Lackawanna Coal & Iron Co. has been drained of water, flushing will commence under an area owned by one hundred property owners in the central hill section of Scranton. To provide the drainage which will precede flushing a hole is being driven by the Scranton Coal Co., the present owner of the mine, from the New County vein to the surface vein. The water thus taken out will be conducted through the New County vein to a sewer.

The total cost to the property owners had been set at $68,680, but that was before dewatering had been commenced. Surveys have proved that less work has to be done than was expected. The Scranton Coal Co. has agreed to undertake all the inside work, the cost of which has been estimated at $42,389. The flushing is estimated as likely to take two years, and the labor cost to the company will be $25,632, eight men being employed for the entire time.

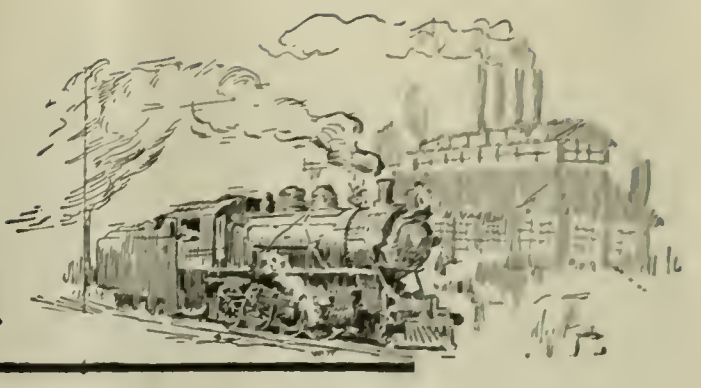
The Scranton Gas & Water Co. will furnish all the water needed free of cost. The Scranton Railway Co. was asked to furnish its dump cars free, but refused. Two boreholes will be used for the flushing. The mine that has to be drilled is sixty years old and though it is still standing intact the citizens are afraid that without support it will not long resist disintegration.

A THOROUGH SURVEY of the Federal Government's executive machinery has begun. The joint committee charged with the work met May 12 to organize and outline the work. President Harding was present. Walter F. Brown of Toledo, who is the executive representative of the committee, was elected chairman, and Senator Smoot of Utah vice-chairman. As soon as the survey of the departments has been completed public hearings will be held. The evidence gathered by the committee and that submitted by witnesses then will be studied and recommendations will be made which will cover, in addition to the subject of regrouping existing bureaus, the various proposals for new departments.

In discussing the naval appropriation bill in the House, Representative Mondell, Wyoming, said the Navy Department must be given latitude in the expenditures for coal, as Congress could not say in advance what its activities should be in a given year. If a large naval force was sent to the Pacific by the President it would increase the fuel consumption above ordinary requirements and as a defense proposition the department must be given discretion relative to essential expenditures if authorized as an emergency by the President.



Production and the Market



Weekly Review

PRODUCTION of bituminous coal has been gaining as fast since April 1 as it receded from Jan. 1. The increased rate of output—7,937,000 net tons in the second week of May, a gain of 554,000 tons or 7.5 per cent over the preceding week—according to the Geological Survey, however, is no indication of increased industrial demand. Increased loading at the mines for shipment up to the Lakes and for Tidewater account for the upward progress in the curve of production. Coal is being pushed up the Lakes as fast as boats can be found to carry it. Now that there is no other outlet for the coal, shippers owning docks on the Upper Lakes are taking advantage of the opportunity to fill storage docks to capacity against the demand of next winter. These shippers, with Lake obligations filled or nearly so, will be well prepared to meet any extra local demand later in the season. All records for early season loading at Lakes will have been broken this year.

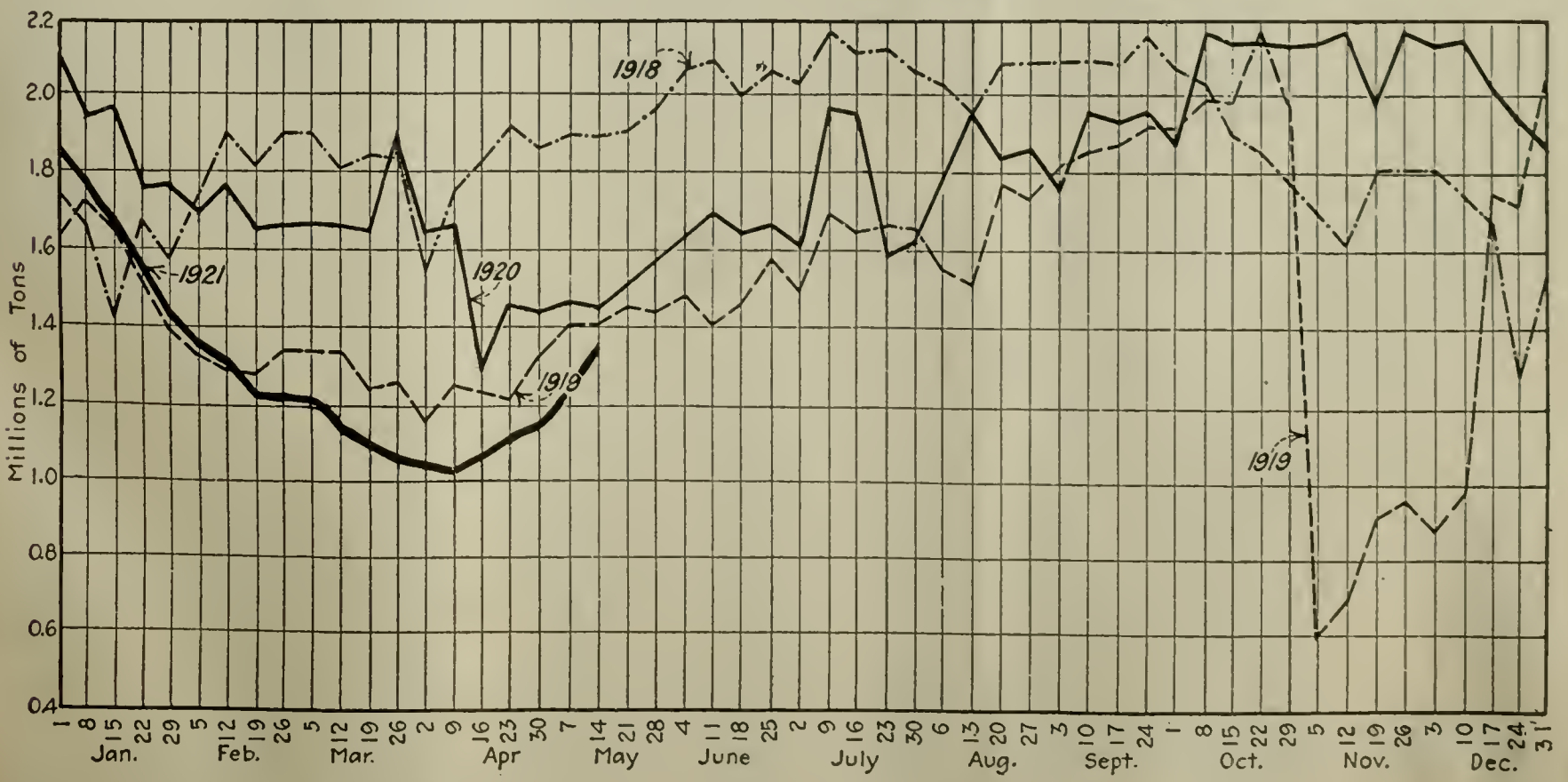
Foreign demand is becoming the feature of the market. Loadings of export cargoes continue to increase, and it is pointed out by the Geological Survey that dumpings for export cargo and bunker at Hampton Roads in the second week of May were 362,405 net tons, a rate in excess of last year's heaviest export movement, during September, when 321,077 tons were dumped. So far there have been no material changes in prices at Atlantic ports. The supply is not in excess of demand and of pier capacity. With but a limited hole to fill abroad, for the delinquency of British tonnage is the measure of the extra demand for exports from this side, and with Lake shipments piling up on top of a large carry-over from last year, the prospect of any serious shortage among industrials next winter is becoming less likely. Looking ahead six months, and assuming no change in the rate of industrial activity, there is no reason to expect other than what may be termed a normal pre-war fall spurt in prices. It behooves every large consumer, however, to watch closely his stock pile and his rate of consumption, for an unsuspected spurt in business may catch the country unprepared.

Anthracite Production Holds Up Well

Anthracite output, the chief matter of concern to so many in the East, has not slackened. Production holds up well to the best records ever reached. and what is not taken by householders stays in the storage bins of retailers and producers.

Coal Age Index of spot bituminous prices remains unchanged at 103. There were more decreases in prices (8) than increases (5) but the increases were the larger.

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

BITUMINOUS

The upward trend in production dating from early in April continued during the week ended May 14. According to the Geological Survey the total output was 7,937,000 net tons, nearly 600,000 tons above the figure for the preceding week. The increase is attributed to heavier Lake and export shipments. Loadings for Monday and Tuesday, May 16 and 17, were less by nearly 3 per cent than those of the opening of the second week in May.

Production in the Northern and Middle Appalachians continues to increase. From the tonnage figure of 59.7 per cent of the total for the country in the week ended April 16 it grew to 62.7 per cent in the first week of May, 4,571,000 net tons being the output for that week, a gain in one week of nearly 500,000 tons.

Spot Market Sales Decline in Volume

Volume of spot buying is declining. Domestic demand, which had shown a satisfactory tone earlier in the month, is slumping, as householders are slow in buying for storage. Steam sizes are hard to move, partly due to he heavy production of Lake coal and because much of the resultant fine coal from the heavier domestic output of the forepart of the month had been forced on an unwilling market. This has weakened prices for all except screened lump sizes.

The expected railroad wage reductions are affecting both the spot and contract markets. Many buyers profess to see an early reduction of freights immediately following any such wage cuts and are laying plans for curtailing fuel purchases until that time comes. They are evidently disregarding the fact that a reduction in wages may meet with determined opposition by railroad men and that a disturbance or delay in transportation conditions would have a bolstering effect on demand and prices.

New England all-rail shipments increased to 2,700 cars during the week ended May 14, compared with 2,457 cars the week preceeding.

Hampton Roads dumpings are increasing. The piers are working full time and the heavier tonnage being shipped from the mines is being rapidly absorbed. The strike of American seamen is having very little effect at the piers.

EXPORT AND FOREIGN BUNKER COAL DUMPED OVER PIERS AT HAMPTON ROADS

(In net tons)

	Export	Foreign Bunker	Total Foreign
Weekly average:			
September 1920	271,321	49,756	321,077
March, 1921	87,732	38,744	126,476
April, 1921	137,632	67,960	205,592
Week ended—			
May 7	226,159	135,710	361,869
May 14	283,620	78,785	362,405

Effective June 1, Pool 71 will be dropped. This classification—Navy Supplemental—was made necessary during the war by the heavy requirements of the Navy Department, which now requests its discontinuance.

The University of Michigan is in the market for from 5,000 to 7,000 tons of bituminous coal for immediate delivery. Proposals may be addressed to Shirley W. Smith, Secretary University of Michigan, Ann Harbor, Mich. The proposals will be considered only when received not later than noon May 31, 1921.

The price of coal for fueling Lake vessels has been placed at $5.50 delivered. Despite the scarcity of vessels, coal is being dumped at the lower ports in great volume, as compared to former years. A light movement of down cargoes

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

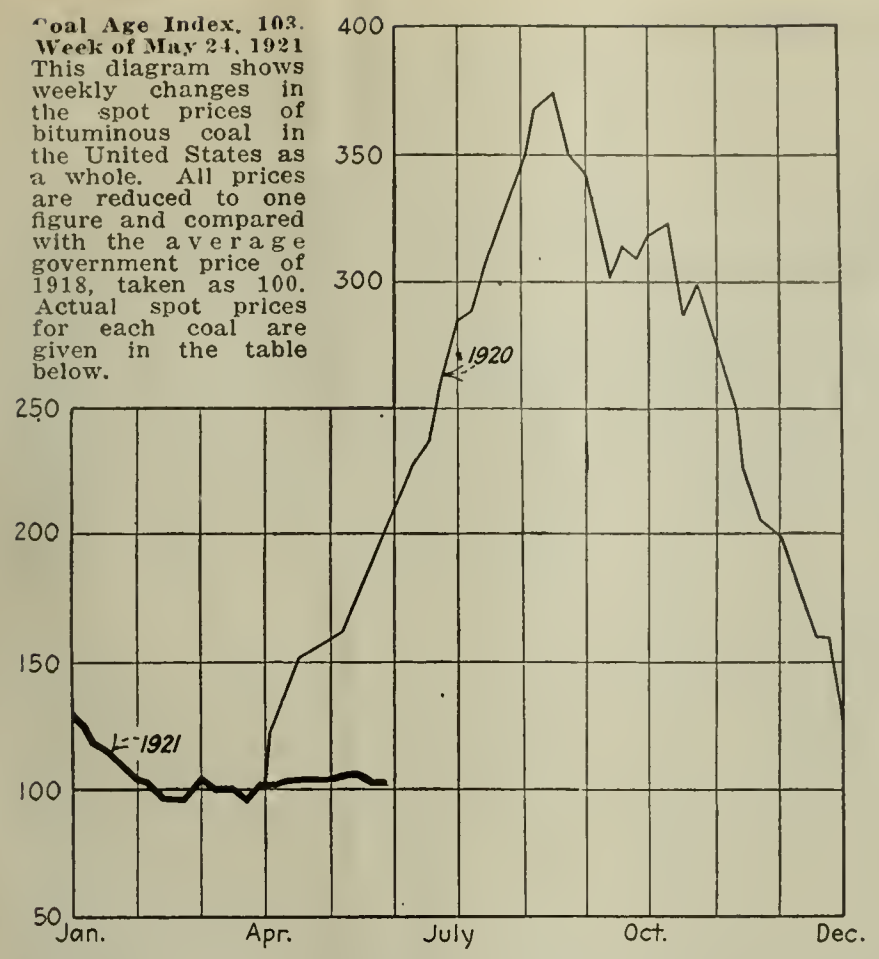
	Market Quoted	Mar. 1920	April 26 1921	May 17 1921	May 24 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$3.35	$3.60	*$3.50*
Pocahontas lump	Columbus	2.60	5.25	5.60	*5.50*
Pocahontas mine run	Chicago	2.35	4.00	4.00	*3.00@ 4.50*
Pocahontas lump	Chicago	2.60	5.00	5.25	5.00@ 5.50
*Smokeless mine run	Boston	....	5.75	6.40	6.25@ 6.50
Clearfield mine run	Boston	2.95	2.20	2.40	2.00@ 2.85
Somerset mine run	Boston	2.95	2.80	2.90	2.25@ 3.50
Pool 1 (Navy Standard)	New York	2.95	3.50	3.40	**3.35@ 3.75**
Pool 1 (Navy Standard)	Philadelphia	2.95	3.40	3.25	3.25
Pool 1 (Navy Standard)	Baltimore	2.95	3.10	3.30	**3.25@ 3.40**
Pool 9 (Super. Low Vol.)	New York	2.95	2.75	2.80	**2.65@ 3.00**
Pool 9 (Super. Low Vol.)	Philadelphia	2.95	3.05	2.90	**3.00**
Pool 9 (Super. Low Vol.)	Baltimore	2.95	2.95	3.00	**2.95@ 3.10**
Pool 10 (H. Gr. Low Vol)	New York	2.95	2.55	2.55	**2.40@ 2.75**
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.95	2.75	2.70	2.70
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.95	2.45	2.55	*2.45@ 2.50*
Pool 11 (Low Volatile)	New York	2.95	2.20	2.15	**2.15@ 2.35**
Pool 11 (Low Volatile)	Philadelphia	2.95	2.45	2.45	2.45
Pool 11 (Low Volatile)	Baltimore	2.95	2.30	2.30	2.20@ 2.30
Pool 71 (Navy Sup'mntal)	New York	2.95	2.95	3.00	2.75@ 3.25
Pool 71 (Navy Sup'mntal)	Philadelphia	2.95	3.30	3.00	3.00
Pool 71 (Navy Sup'mntal)	Baltimore	2.95	3.00	3.20	3.20
High-Volatile, Eastern					
Pool 34 (54-64) (H. Vol. Gas and Steam)	New York	2.50	2.00	2.00	**1.85@ 2.20**
Pool 34 (54-64) (H. Vol. Gas and Steam)	Philadelphia	2.50	2.15	2.10	2.00@ 2.20
Pool 34 (54-64) (H. Vol. Gas and Steam)	Baltimore	2.50	2.15	1.90	*1.80@ 1.95*
Pittsburgh mine run	Pittsburgh	2.35	2.25	2.10	2.00@ 2.20
Pittsburgh sc'd gas	Pittsburgh	$2.35	$2.85	$2.70	**$2.75@$2.85**
Kanawha mine run	Columbus	2.70	2.25	2.30	**2.50@ 2.75**
Kanawha lump	Columbus	2.95	3.50	3.40	3.25@ 3.50
Hocking mine run	Columbus	2.50	2.20	2.20	**2.25@ 2.50**
Hocking lump	Columbus	2.75	3.35	3.30	*3.25*
Pitts. No. 8 mine run	Cleveland	2.35	2.20	2.30	*2.15@ 2.30*
Pitts. No. 8 lump	Cleveland	2.60	3.40	3.15	**3.00@ 3.50**
Midwest					
Franklin, Ill., mine run	Chicago	2.35	3.40	3.25	*2.75@ 3.50*
Franklin, Ill., lump	Chicago	2.55	3.55	3.70	3.50@ 3.85
Central Ill., mine run	Chicago	2.35	2.75	2.60	2.25@ 3.00
Central Ill., lump	Chicago	2.55	3.00	3.25	3.00@ 3.50
Ind. 4th Vein mine run	Chicago	2.35	2.75	3.10	2.75@ 3.50
Ind. 4th Vein lump	Chicago	2.55	3.25	3.50	3.25@ 3.75
Ind. 5th Vein mine run	Chicago	2.35	2.75	2.50	2.25@ 2.75
Ind. 5th Vein lump	Chicago	2.55	3.00	3.25	3.15@ 3.40
Standard mine run	St. Louis	2.35	1.80	1.90	*1.75*
Standard lump	St. Louis	2.55	2.40	2.50	*2.25@ 2.50*
West Ky. mine run	Louisville	2.35	2.25	2.00	**1.85@ 2.50**
West Ky. lump	Louisville	2.60	3.00	2.65	2.30@ 3.00
South and Southwest					
Big Seam mine run	Birmingham	2.45	2.95	2.95	2.85@ 3.10
Big Seam lump	Birmingham	2.75	3.60	3.70	3.40@ 4.00
S.E. Ky. mine run	Louisville	3.00	2.75	2.60	*2.50@ 2.65*
S.E. Ky. lump	Louisville	3.25	3.75	3.75	**3.75@ 4.00**
Kansas mine run	Kansas City	3.50	4.40	4.40	*4.00@ 4.25*
Kansas lump	Kansas City	4.00	5.00	5.00	5.00

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in heavy type, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	May 10, 1921 Independent	May 10, 1921 Company	May 17, 1921 Independent	May 17, 1921 Company	May 24, 1921† Independent	May 24, 1921† Company
Broken	New York	$2.61	$7.45@$7.75	$7.20@$7.75	$7.45@$7.75	$7.20@$7.75	$7.45@$7.75	$7.20@$7.75
Broken	Philadelphia	2.66	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75
*Broken	Chicago	5.62	12.65	12.40	12.65	12.40	12.65	12.40
Egg	New York	2.61	7.45@ 8.35	7.20@ 7.75	7.45@ 8.35	7.20@ 7.75	7.45@ 8.35	7.20@ 7.75
Egg	Philadelphia	2.66	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75
*Egg	Chicago	5.62	12.70	12.35	12.70	12.35	*12.50*	12.35
Stove	New York	2.61	7.70@ 8.35	7.50@ 8.10	7.70@ 8.35	7.50@ 8.10	7.70@ 8.35	7.50@ 8.10
Stove	Philadelphia	2.66	7.85@ 8.35	7.70@ 8.10	7.85@ 8.35	7.70@ 8.10	7.85@ 8.35	7.70@ 8.10
*Stove	Chicago	5.62	13.00	12.70	13.00	12.70	**13.10**	12.70
Chestnut	New York	2.61	7.85@ 8.35	7.50@ 8.10	7.85@ 8.35	7.50@ 8.10	7.85@ 8.35	7.50@ 8.10
Chestnut	Philadelphia	2.66	7.85@ 8.35	7.65@ 8.10	7.85@ 8.35	7.65@ 8.10	7.85@ 8.35	7.65@ 8.10
*Chestnut	Chicago	5.62	12.85	12.60	12.85	12.60	12.85	12.60
Pea	New York	2.47	5.25@ 5.50	5.75@ 6.10	5.25@ 6.00	5.75@ 6.10	*5.00@ 5.85*	5.75@ 6.10
Pea	Philadelphia	2.36	5.50	6.00	6.00@ 6.25	6.00	*5.75@ 6.00*	6.00
*Pea	Chicago	5.62	10.80	10.70	10.80	10.70	10.80	10.70
Buckwheat No. 1	New York	2.47	3.00@ 3.75	3.50	3.00@ 3.75	3.50	3.00@ 3.75	3.50
Buckwheat No. 1	Philadelphia	2.36	3.25	3.50	3.50	3.50	*3.25@ 3.50*	3.50
Rice	New York	2.47	2.50	2.50	2.40@ 2.50	2.50	*2.25@ 2.50*	2.50
Rice	Philadelphia	2.36	2.50	2.50	2.50	2.50	2.50	2.50
Barley	New York	2.47	1.15@ 1.50	1.50	1.15@ 1.50	1.50	1.15@ 1.50	1.50
Barley	Philadelphia	2.36	1.25	1.50	1.50	1.50	1.50	1.50
Birdseye	New York	2.47	2.50	2.50	2.50	2.50	.....	2.50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago. † Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index, 103. Week of May 24, 1921 This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table below.

of ore has commenced and these vessels will help to reduce the heavy accumulation at the lower Lake piers, which for a time was so large that an embargo was imminent.

Early record Lake dumpings were again broken in the week ended May 23, when cargo coal loaded at Lake Erie ports was 920,809 tons, and vessel fuel 28,877 tons, bringing the total for the season to the end of last week to 3,522,548 tons.

BITUMINOUS COAL ON HAND AT OPENING OF NAVIGATION AS REPORTED BY 24 DISTRIBUTING DOCK COMPANIES ON LAKE SUPERIOR AND LAKE MICHIGAN

(In net tons)

April 1, 1917	572,687
April 1, 1918	1,031,978
April 1, 1919	3,374,503
April 1, 1920	860,521
April 1, 1921	2,053,022

ANTHRACITE

Lowered rate of production during the first week in May was only temporary, being caused by the observance of May Day. This is shown by the rapid recovery during the week ended May 14, 1,938,000 net tons being produced as compared with 1,633,000 net tons during the preceding week.

The Geological Survey has published more details regarding stocks of anthracite in the country as of April 1. The following table gives the quantity of anthracite in the hands of the railroad coal companies (including the Susquehanna Collieries Co.), in gross tons:

ANTHRACITE HELD IN STORAGE BY 10 OF THE LARGEST PRODUCERS

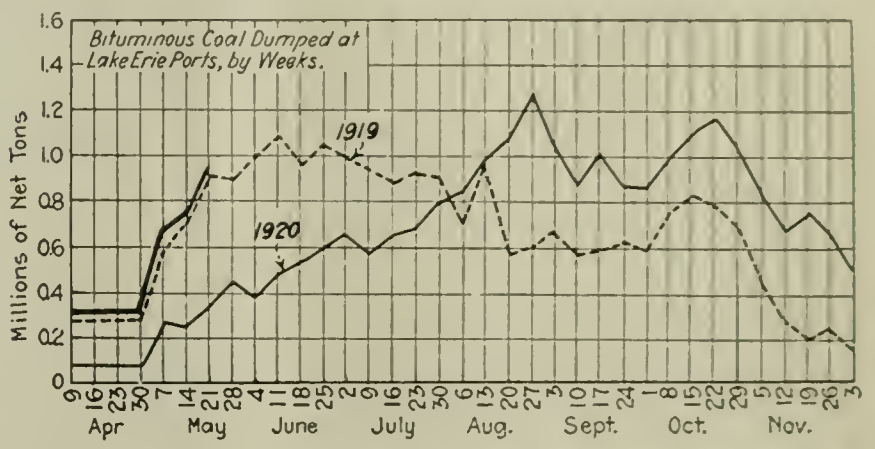
	Domestic Including Pea	Steam Sizes	Total
January 1, 1919	227,540	821,902	1,049,442
April 1, 1919	1,371,444	1,172,573	2,544,017
March 1, 1920	286,919	1,123,450	1,410,369
June 1, 1920	445,863	664,914	1,110,777
January 1, 1921	124,354	453,466	577,820
April 1, 1921	371,088	1,241,978	1,613,066

Since the quantity stored by the other independent producers is small, these figures may be taken for practical purposes as the total held by producers. The figures are therefore, approximately comparable with those reported to the Federal Trade Commission on April 1 of the pre-war years: 1913, 3,891,711 gross tons; 1914, 5,223,844 tons; 1915, 7,406,502 tons; 1916, 4,585,906 tons; 1917, 894,347 tons.

For stocks in retail coal yards only sample data were collected by the Geological Survey from a group of representative dealers. Their replies are summarized in terms of weeks' supply and to get rid of the effect of varying rates of delivery upon the apparent size of the supply the actual tonnage held by 813 dealers is compared with what the identical dealers carried last year and the year before.

Expressed in terms of weeks' supply these figures show an average stock in the hands of retailers over five weeks and one day on April 1 this year compared with three and a half weeks on Jan. 1, two weeks and one day on June 1, 1920, three weeks on March 1, 1920, four weeks and three days April 1, 1919, and five weeks and one day on Jan. 1, 1919.

These 813 dealers in twenty-four states distributed an average of 258,693 net tons of anthracite per week the first quarter of this year. They had on hand Jan. 1, 1921, 874,580 tons and 1,322,082 tons on April 1. Compared with April 1, 1919, the total in the hands of identical dealers the first of April this year was greater by 457,120 net tons.



Good retail demand continues, with stove in heaviest call. More independent operations are resuming with a better demand and premiums are being obtained for prompt shipments. However, retailers are beginning to feel that this heavy demand cannot be sustained throughout the summer and the feeling is growing that July 1 may see a slump.

Reports show that New England received 3,298 cars of anthracite during the week ended May 14. This was 170 cars less than in the corresponding week of 1920.

COKE

Beehive coke production shows no recovery from the depression of recent months. The output during the second week of May was 70,000 net tons, practically the same as that for the week preceding.

Connellsville reports only small trading in furnace at $3.25@$3.50; foundry coke is softer, $4.75@$5.25. The Frick wage cut has been accepted quietly by its employees.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
April 30 (b)	6,984,000	129,070,000	8,928,000	171,004,000
Daily average	1,166,000	1,268,000	1,488,000	1,672,000
May 7 (b)	7,383,000	136,453,000	9,167,000	180,171,000
Daily average	1,231,000	1,266,000	1,528,000	1,664,000
May 14 (c)	7,937,000	144,390,000	8,764,000	188,935,000
Daily average	1,323,000	1,269,000	1,461,000	1,653,000

(a) Less 2 days' production during first week in January to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date (b)	1920 Week	1920 Calendar Year to Date (a)
April 30	1,945,000	30,220,000	1,841,000	28,214,000
May 7	1,633,000	31,853,000	1,891,000	30,105,000
May 14	1,938,000	33,791,000	1,774,000	31,879,000

(a) Less 2 days' production during first week in January to equalize number of days covered for the two years. (b) Revised from last report.

BEEHIVE COKE

Week Ended May 14 1921 (c)	Week Ended May 7 1921 (b)	Week Ended May 15 1920	1921 to Date	1920 to Date (c)
70,000	70,000	343,000	2,989,000	8,087,000

(c) Subject to revision. (b) Revised from last report. (c) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Reports From the Market Centers

New England

BOSTON

Scattered Purchases—No Price Changes —Better Grades Increase Outputs— Marine Strike No Hindrance—Retail Anthracite Grade Improves.

Bituminous—Certain buying has recently developed on the part of steam users who are inclined to stock at present spot prices. Without doubt Hudson River gateway receipts will soon show an increase. Contract business remains difficult to secure although there has been no modification of the price range.

Spot prices are unchanged. It will take much more representative buying to accomplish any stiffening and this is not looked for during the next thirty days. Railroad fuel stocks are still in far too comfortable shape to warrant their taking the lead in purchases and it is generally conceded there will be no broadening demand until the carriers themselves begin to take coal in normal volume.

The more favorably known grades are gradually increasing in weekly output, showing signs of better conditions. Export and bunker business are standing mines in good stead just now. Coastwise markets are apparently indifferent to the smaller receipts because of the fewer steamers in commission. However, there is no uneasiness anywhere because of the marine strike.

Each day the strike gives new evidence of failure. One of the currrent features is the number of sailing vessels again taking charters in the coastwise trade, these bottoms being in position to run at lower cost than steamers because of existing regulations making mandatory the large number of men employed on each steamer. Several charters at $1.25, Hampton Roads to Boston, have been reported, a rate which steamship owners would be most reluctant to accept.

On cars Boston, Providence or Portland, Pocahontas and New River are offered $8.15@$8.75 with an occasional sale at less than $8.

Anthracite — Receipts of domestic sizes are being maintained, both all-rail and by water. Deliveries by the latter route are somewhat improved because of better towing weather, although the aggregate for May will probably not exceed the April figure. Producers have plenty of orders in hand especially for egg and stove. For pea and steam sizes there is almost no demand.

The ordinary householder is still backward about buying, although the demand is improving. However, the larger buyers are seeing that their bins are filled and this is reflecting a more urgent demand on the wholesaler.

Tidewater—East

NEW YORK

Demand for Domestic Coals Strong— Egg and Stove Scarce—Steam Coals Easy—Bituminous Shows Improvement —Quotations Trifle Stronger.

Anthracite — Demand for domestic continues. There has been no slowing up in buying and dealers in most instances are willing to take a reasonable amount of the smaller coals if given the larger sizes.

Although the trade is busy dealers are inclined to believe that they are in for a quiet summer to be followed by a busy fall and winter. The comments regarding coal prices appearing in the daily press are not having any good effect upon the situation, but instead are having a tendency to delay buying.

Independent coals are moving steadily. Producers are sold weeks in advance. Offers of premiums for quick delivery of independent coals have been reported.

Some trouble in moving steam coals is to be expected this summer. Most of the industrial plants using these sizes have full bins and have let it be known that they will not be in the market for further shipments inside of three months. Buckwheat is in better demand than rice or barley. Rice, which has been held close to the $2.50-mark, has been shaved in some quarters 25c. Much of this size, as well as barley is being stored by the smaller producers.

Bituminous—Some shippers find a slightly better movement and the report of local pool operations for the week ended May 20 bear them out. The better grades that go to make up Pools 1, 9 and 71 are sold up for a week or two ahead and prompt shipment is hard to get. Contract coals are in better movement.

This market has suffered very little from the effects of the marine strike. Bunkering has not been delayed and vessels have not postponed sailings because of inability to supply fuel. The failure of labor leaders to involve the tugboatmen in the marine workers difficulties was expected by the boatowners. Because of the slow demand for coal it is estimated that not more than one-third of the coal-carrying barges are in use and the transportation offices are besieged daily by men looking for work. Harbor boat rates range from 40c to 50c.

While the export demand is steadily increasing shippers look for still greater business when the British strike is ended. They believe that the condition of the mines and the lack of coal will compel the buying of considerable American coal before the output of the mines will be sufficient to take care of the requirements of the English public.

At Tidewater, Pool 9 was quoted $6.25@$6.40, f.o.b., and Pool 10 ranged $6@$6.25. Quotations for the various pools at the mine, had a wide range during the week, as shown in the Weekly Review. In this market Moshannon coal was quoted around $2.75. ported as available, and quotations Very little Fairmont slack was reranged $2@$2.25.

BUFFALO

Jobbing Activity Meets Small Response—No Improvement in Sight— Anthracite Dull—Lake Shipments Good —Vessels Idle.

Bituminous—Jobbers are working hard to keep up trade, but they complain that the demand cannot be stimulated much by anything they can do. It appears that consumers are letting their stocks run down, the idea being that business improvement is some distance away and that they can buy coal as fast as they please when the stir does appear.

It may happen otherwise. Shippers are already saying that with crops to move in the early fall it would be easy to swamp the railroads with a rush of coal and then prices would go up. Nobody really looks for this sort of thing, but the big bulge was not looked for last fall either. Railroads are all running with short supply, although they will take coal when they need it next fall.

Bituminous prices are, as formerly, dull and unsteady at $3.50 for Youghiogheny gas, $3 for Pittsburgh and $2.75 for No. 8 lump, $2.60 for Allegheny Valley mine run, and $2 for slack.

Anthracite—The trade is quiet, with consumers satisfied to take their chances on better conditions in the fall. They do not heed the warnings of the shippers to take coal into the cellars as fast as they can be produced. That would save a possible shortage when cold weather comes on and stave off the winter premiums.

The Lake trade is about normal, though neither coal nor vessels are plentiful. But for the heavy grain receipts lately which furnished several steamers a day to load coal, the shortage of tonnage would have been serious.

Loadings for the week ended May 14 were 98,287 net tons, of which 45,900 tons cleared for Milwaukee, 21,000 for Duluth and Superior, 10,487 for Sheboygan, 8,000 for Waukegan, 7,200 for Chicago, 3,000 for Racine, and 2,700 tons for the Sault.

Freight rates have been fixed at $1 for Racine, the Sault; 65@70c. to Chicago; 65c. to Waukegan; 60c. to Milwaukee; 55c. to Sheboygan and 50c. to Duluth.

Coke— Most of the furnaces in this district are shut down, some of them

with big piles of pig iron on hand for which there is no market. Iron ore comes in at a slow rate. Connellsville foundry is $5, and furnace is $4.

HAMPTON ROADS

Brisk Loadings at Piers—Foreign Demand Strengthens — Prices Unchanged.

An unusually brisk week's business has occupied the coal piers, and the prospects are that the dumpings for the month will exceed 1,500,000 tons. Already over 1,000,000 tons have gone across the local piers.

The British coal strike had a most distinct effect, 22 vessels sailing with coal, the majority of them for foreign ports, with indications that they will ultimately be diverted to the United Kingdom.

At the end of the week the piers were full of ships, all berths being taken as rapidly as they were vacated, with a line of ships waiting in position for their turn at the chutes. The Newport News coal piers were forced to run Sunday, while the others worked full time.

Prices have not advanced because of this briskness. Pools 1 and 2 continue to be offered $6.50@$6.75, with other pools selling $5.50@$6.

Activities at the piers for the week ended May 19 are represented as follows:

C. & O. piers, Newport News—	
Cars on hand	2,218
Tons on hand	110,560
Cars dumped May 1 to 18, incl.	6,472
Tons dumped same period	349,462
Tonnage waiting	35,665
N. & W. piers, Lamberts Point—	
Cars on hand	1,739
Tons on hand	85,280
Cars dumped May 1 to 18, incl.	4,753
Tons dumped same period	377,927
Tonnage waiting	12,163
Virginian Ry. Piers, Sewalls Point—	
Cars on hand	1,321
Tons on hand	41,600
Cars dumped May 1 to 18, incl.	5,320
Tons dumped same period	305,012
Tonnage waiting	28,150

BALTIMORE

Better Grades More Tightly Held—Pool 71 Is Dropped — Exports Increase — "Maryland's Own" Stirring Up Congress on Anthracite.

Bituminous—Better grades are being a little more tightly held as the very gradual contracting shortens the amount offering. Cheaper grades are still running at very low figures. Gas coals are weaker, and some attractive lump has been offered considerably below the recognized level of selling.

Export movement is showing up better and this is reflected in the increased dumpings as well as in mine loadings. The pool reserve, however, has not lessened, and indeed the increase in run to Tide has been above the increase in pier dumpings, so that the B. & O. reserve at Curtis Bay alone is daily in excess of 1,200 cars, with about the same amount at Port Covington of the Western Maryland and Canton of the Pennsylvania combined.

Loading for May will run in excess of the figures for April. For the first half of May loading was 54,465 tons cargo and 10,588 tons bunker. Loading for the balance of the month promises to run in excess of those figures. The shipping strike tended to hold back the total.

A feature which came to break the mid-spring dullness was the ending of Pool 71 as a supplemental Navy coal; this being done at the request of the Navy Department. During the war, to supplement to Navy standard coal under Pool 1 class, some mines in Pools 9 and 10 were reclassified under Pool 71. The need for this is over. Those mines which are dropped from Pool 71 will now request a reclassification.

Anthracite—Hard coal men here are merely marking time. The constant stirring up in government circles of the question of wholesale prices, freight rates, etc., is not productive of contentment and is slowing up the whole buying process as a large part of the public can not be dissuaded from the idea that they will get coal at cheaper rates.

One of Maryland's own Congressmen has "added to the gaiety of nations" by demanding "another exhaustive study of hard coal prices." Volstead has assured him of co-operation (the idea of a cheaper coal champion may make up for his failure on some other lines in the eyes of the "wets" and even some "drys") and the whole goes merrily on—at least in the daily press.

PHILADELPHIA

Strong Anthracite Demand Keeps Up—Average Independent Prices Increase—Bituminous Quiet—Real Buying Expected Soon.

Anthracite — There is no diminution in the demand; the real difficulty lately has been to get enough to satisfy retail needs. At this time the yards are nearly empty of egg and stove, and there is not a heavy stock of chestnut. Pea continues to come in good volume, although the delivery of this size is also growing.

Demand for egg and stove has really developed into a rush. This has enabled some of the smaller producers to get better prices, until now some of the very ordinary grades of egg and nut are bringing close to the top independent prices. Some independents who have been content to take $5.50 for pea are compelling buyers of the other sizes to take pea with them and at increased prices.

Last week it was the companies who were shipping lightly to this market and it now seems that they have been joined by the independents, as the receipts have been the lightest all around for the season.

Retail prices of $13.75 for egg and $14 for stove and nut are perhaps more strongly maintained than at any time since the spring trade opened. Many dealers have big tonnages of these sizes on the books and are going out and paying higher prices to fill them.

Despite the fact that trade is active every one is asking how long will it keep up. The general feeling is that underneath there is not the stability that would warrant a continuance of heavy consumer buying right through to winter, as in other years. Of course the retailers will take all the coal they can store, as they know they will need it, and in addition they feel certain of saving something on the price. The general impression now is that the consumer demand will drop off about July 1.

Buckwheat is the only steam size in demand and that is none too good. Rice and barley are giving real annoyance.

Bituminous—Current buying is extremely light, although most houses report numerous inquiries. The consumer is still buying only for current consumption, with no real disposition to stock up. There are some concerns with fair stocks, somewhat isolated from their plants, who rather than cut into them are buying for immediate use in light volume.

In some instances there appears to have been even a curtailment of ordinary buying, due to the announcement of a railroad wage reduction, which leads certain consumers to the belief that freight rate reductions will soon follow. If they stick to this line of reasoning it is quite likely they will find the freight reduction will be eaten up by increased market prices the moment buying starts.

There has been no appreciable change in spot prices during the past week. Of course one hears of somewhat radical cuts being made on certain good coals occasionally, but this cannot be taken as indicative of the market. Often it is done merely to get a trial for the coal by a new consumer.

Inland West

CHICAGO

Possibility of R.R. Strike on Wage Controversy — Market Is Dull — Certain Grades Being Cut.

The main topic of conversation in the Chicago market is the possibility of a strike on the part of some of the Railway Brotherhoods before July 1. Railway officials all claim there will be no difficulty whatsoever, as wage differences will be adjusted without friction and with good feeling on both sides. On the other hand, a number of salesmen have come into Chicago from the road lately and these travelers all report conversations they have had with brakemen, switchmen, section-men, etc., to the effect that there will be no reduction in wages without a strike.

In the meantime the Pennsylvania has perhaps taken the wisest attitude of all the roads so far. This company has given out an invitation to include all branches of labor on the system, requesting the men to elect representatives, either union or non-union, to confer with the railroad officials in regard to the wage reduction. The men are to be given absolute freedom in the selection of their representatives. The Chi-

cago trade is about equally divided on the strike question. There is a growing belief that there will be some little difficulty and perhaps consequent flurry in the coal market before the wages of railway employees are satisfactorily adjusted.

The coal market in Chicago this week showed few signs of activity. Smokeless showed weakness and several sales of Pocahontas mine run were reported at new low levels for the year. The market on West Virginia splints as well as Kentucky grades proved to be dull, although dealers having contracts are reported to be taking in the coal ordered without hesitation. The higher grade domestic coals from southern Illinois are being sold at circular prices.

CINCINNATI

Shippers Protest L. & N. Rate Increase —Slack Prices Soften as Domestic Production Grows—Retail Figures Unchanged.

Cincinnati was caught napping last week when the C. & O. interests obtained an advance in the rates over the line of the L. & N. from Hazard and Harlan, from an approximate of $1.87 to $2.10. Under the old rate the C. & O. had a differential against them of about 35c. A petition has been forwarded to Washington asking that a reconsideration of the matter be given. The one pointed statement is that the increase, compared with the reduction of the Lake rate, makes the latter only about 10c. in excess of the former.

Prices continue their downward course. Kentucky and West Virginia screenings sometimes are offered at $1.25@$1.35. However, there is a wide variation in prices on actual sales made; ranging from $3@$3.50 for domestic sizes, $2@$2.25 for mine run and $1.25 up for slack. Demand for smokeless prepared coal has risen with a better call also at Lake and Seaboard. Slack is weaker with the heavier domestic production. Prices range $5@$5.50 for prepared, down to $2.75@$3 for slack.

Retail prices have changed but little even in the face of the falling wholesale market. Quotations are, bituminous lump, good grades, $8.50@$9, mine run $6.75, nut and slack $6; smokeless lump $9.50@$9.75, mine run $7@$7.50, nut and slack $7; anthracite egg $15.

CLEVELAND

Production Gains As Movement to The Lake Grows—Slack Prices Soften—Retailers Predict Increases for Pocahontas—Water Rates Closed

Bituminous—Heavier movement to the Lake ports has counteracted the continued dearth of demand from industrial users and the output of Ohio mines has been stimulated to a marked extent. At present the Eastern Ohio mines are reaching the highest rate of production of the year. Prices of soft coal at the Eastern Ohio mines remain unchanged, save for a slight weakening in slack, which is now quoted $1.60@$1.85.

Pocahontas and Anthracite — The only development of interest in the pocahontas market has been the announcement of a number of dealers that the price would have to be increased. This is based on the advice that mine prices are advancing. It is said that the prices now are $5.75 compared with $5@5.25 on May 1. Reports reaching Cleveland retailers are to the effect that mines are receiving bids of as high as $5.50@$6.

Receipts of bituminous coal at Cleveland during the week ended May 14 amounted to 1,001 cars; divided, 699 industrial and 302 retail; as compared with 863 cars the previous week.

Lake—Shipments are much heavier than for the corresponding period of 1920. Not all of the coal dumped on vessels has been moved, some of the boats still remaining in port. Despite the congestion at Lower Lake ports, no diminution of shipments from the mines has taken place.

This congestion has resulted from the lack of cargo space, due to the tardiness of the ore season. In the last few days, however, a considerable number of vessels have been obtained to take coal to the Northwest and this will alleviate the congestion.

A number of Lake shippers have closed freight contracts for the season, under which a large part of the coal to be shipped will be carried on a basis of 50c. a ton to ports at the head of Lake Superior and 60c. to Milwaukee. These rates are identical with 1920. The bunker fuel price has been fixed in most cases at $5.50.

ST. LOUIS

Unusually Easy Market with Nothing in Demand—Retail Orders Fall Off.

Carterville, which was in good demand and somewhat scarce two weeks ago is being held back at the mine on domestic sizes. The country situation is just as bad.

The steam situation shows slight improvement in isolated spots, but generally it has slipped some in the last two weeks, with no indication of regaining for some time to come. Nut and screenings are a drug on the market and a buyer can name his own price for any quantity.

A little Mt. Olive coal comes through for domestic, but the better part of the tonnage is going outside. Standard for domestic is not in demand at all.

Higher grade hard coals are moving better. Some coke is also ordered and this week has seen some demand for smokeless, which has been nothing heretofore. Mine prices are shown in the Weekly Review.

DETROIT

No Interest in Bituminous Markets—Reserves Being Utilized—Retailers Not Stocking — Anthracite Distribution Slow.

With the progress of improvement in industrial lines proceeding somewhat haltingly, the local market has failed to shake off the dullness that has characterized it for some months. Buyers of steam coal are not coming into the market actively. Their failure to do so is in part attributed to further curtailments in operation, as well as to the withholding of orders by some who believe they will be able to satisfy their requirements by purchases in the open market, taking advantage of bargain offerings. Meanwhile not very much coal is arriving in Detroit.

The consumption of reserves, without making provision for their renewal, impresses the jobbers as being likely to create a dangerous shortage in supply later.

Ohio lump is quoted around $3.25, mine run $2.25, and nut and slack $1.90@$2. West Virginia lump is offered at $3.50, mine run at $2.50 and nut and slack $2. Smokeless lump and egg are quoted at $5.50, min run $3.50 and nut and slack at $2.25.

Distribution of anthracite is reported much behind, in comparison with previous years.

COLUMBUS

Slight Improvement in Steam—Domestic Still Quiet—Activity Is Reported in Lake Trade.

With a slight improvement in the demand for steam sizes, particularly mine run, there is a better feeling developing in all producing areas. The increase is not marked, although some producers say there is a better run of orders.

Buying on the part of manufacturing plants is better and public utilities are also in the market to a certain extent. Reserve stocks are getting low and this will mean better orders for the future. Railroads are taking a larger tonnage.

Domestic trade is still quiet in all sections. Retail stocks are fairly large and generally sufficient for the present. Householders are showing little disposition to stock up for next winter, except on certain high-grade coals. Prices are fairly steady at former levels. Hocking lump sells around $6.50, and West Virginia splints are $7.25@$7.75. Pocahontas is stronger at $9.50@$9.75.

Lake trade is showing some activity. During the week ended May 7 the H. V. docks loaded 43,526 tons as compared with 127,650 tons the previous week, making a total of 430,090 for the season. So far a total of 8,506 cars has been dumped at the docks. The T. & O. C. docks loaded 17,353 tons as compared with 28,404 the previous week, making a total of 63,077 tons for the season.

Northwest

MINNEAPOLIS

Market Is Inactive—Urgings to Buy Early Are Discounted by Public—Keen Competition on Small Current Business.

The coal situation seems to be in *statu quo*. Urgings and arguments to induce the trade to buy early have so far had very little effect. As has been pointed out in this column heretofore, the situation is readily understood.

Consumers have become disgusted with the regular performance urging them to buy early each spring. They do not believe that the reasons given are necessarily true, nor do they admit the advantages of a better distribution of the coal movement to be sufficient for them to buy early.

From a coal man's standpoint, their attitude seems unreasonable, but so far there has been but little which appeals to the one moving factor—the consumer's self-interest. It is true that it is commonly predicted the fall will see higher prices. But this has been done before, and the fall saw no higher prices and sometimes lower. In short, the coal business has been somewhat singled out for unusual scrutiny and suspicion. "Profiteer" is regarded as synonymous with coal dealer by many.

A further cause for suspicion is that to the rank and file of consumers, coal means hard coal, upon which there has been relatively little decline. When people in the trade talk of heavy declines, they refer to soft coal, which the bulk of consumers know but little about.

This puts the knowledge of soft coal conditions with steam users largely. The purchasing agents for these larger consumers are exceedingly inclined to be "hard-boiled" toward the coal business. They get the idea that prices on soft coal ought to decline at least $4 beyond what has already been named. In the face of the showing of figures, starting with the cost at the mine, the freight added and a modest margin, they insist that prices must come down. Practically the situation is deadlocked.

There is some improvement on the Lake, due to the ore fleets getting into service. A number of ore boats have come up coal-laden, and are returning with ore. From the position of the dock concerns, they have more coal than they need now, on the basis of the demand. Unless there is more call from the interior, they have ample stocks for the present, whether they receive more coal right along or not.

There is a keen fight being made for public contracts, with prices being cut sharply in an effort to get the business. All indications are that the competition on steam trade for some time to come will be exceedingly keen.

DULUTH

Steady Bituminous Receipts — Slow Down Cargoes May Delay Coal Movement—Twin Cities' Rate Mix-Up.

Steady receipts at the docks featured the week, with dealers reporting minimum activity in selling fields. In all 31 cargoes were received during the week, of which two were anthracite. Twenty-five cargoes are on the way, of which three are hard coal.

Present briskness in Lake coal shipments is liable to receive a toning down unless more local cargoes are available for the return trips of the carriers. Of the boats which are now unloading in the harbor, many will return light, because of the scarcity of ore and grain.

It is felt that unless anthracite shipments pick up there will be a shortage before the season gets fairly started. This anthracite shortage is due to the lack of carriers. A shift in the grain or ore market may change the whole situation over night.

A threatened advance of 15c. a ton in the rate between Duluth-Superior and the Twin Cities was uncovered when a dealer, who returned from the Twin Cities, quoted W. H. Groverman, manager of the dock operators association, as saying that a mix-up in rate schedules would probably bring this increase about on July 6. If this occurs it will mean that a large part of the coal which is now shiped to Twin Cities from this point will remain at the head of the Lakes, and that Illinois coal will be moved even farther into the Northwest than at present. Dealers at both points are looking for some effective way to combat the threatened increase.

The feeling is that soft coal prices have reached bottom, but that anthracite may drop slightly before a final low level is reached. Contracting has been slow.

MILWAUKEE

Market Unusually Quiet—Buyers Hold Off, Expecting Lower Prices—Cargoes Arriving at Lively Gait.

The so-called buyers' strike, which prevails in every branch of trade throughout the country, is decidedly in evidence in the Milwaukee coal market. It seems to be the universal impression that coal is too high, and that something is bound to intervene and bring prices down to lower levels. Acting on this theory, few are putting in coal for next winter. Dealers assert that present prices are here to stay for the season, and that there is a bare possibility that soft coal may be advanced later on. The market is stalled between these two judgments.

To counteract the disturbing sentiment, dock men are resorting to serial advertisments in the newspapers, in which the various elements of the coal business which contribute to supply and price are thrown upon the screen, so to speak. Meanwhile the movements of coal at all the yards is subnormal for the season, but docks are busy receiving Lake coal, which is arriving freely.

Thus far, 71 cargoes have been unloaded since navigation was resumed. The total volume docked aggregates 159,869 tons of anthracite, and 447,732 tons of soft coal, 607,601 tons in all. Last year up to this time 27 cargoes had been received, embracing 77,490 tons of anthracite and 102,522 tons of soft coal, or 180,012 tons in all.

Southwest

KANSAS CITY

Domestic Market Is Strong — Steam Heavy with Oil Competition—June Circulars Are Higher.

Demand for domestic grades is on the increase and some companies are having trouble already to fill orders for lump and nut produced in Kansas, Arkansas, Missouri and Oklahoma. Many operators are already advocating the use of smokeless mine run produced in Arkansas and Oklahoma and are advising the trade that on account of industrial plants going from coal to oil in the South, there will be no place for the slack, therefore, lump cannot be produced.

All the mines in the Southwest are carrying hundreds of cars of unbilled steam grades. However, it is not expected this condition will continue long, for no doubt there will be a strong demand as soon as industrial plants resume operation in the fall. Also, the supply of oil is limited and oil companies are now making no contracts except on a sliding scale based on crude oil prices.

Arkansas lump for May is $6.25, June $6.50, mine run $4.50, slack $2.75; Kansas lump and nut, May shipment, is $5. On June 1 it is expected the price will advance to $5.25 for Kansas lump. Mine run is $4, slack $3.75; north Missouri lump is $4.50, mine run $3.85, washed slack $3.85.

South

LOUISVILLE

Domestic Prices Firm — Screenings Weaker Due to Heavier Production—Operations Improving.

Eastern Kentucky mines are increasing operations, averaging four days a week in many instances. Movement to the Lake and retail yards is resulting in heavy production of screenings, which are being sold at constantly reduced prices. Indications are that this condition will make for a stagnant market for steam.

It is reported that several of the large industrial concerns are unable to consume their own production in view of reduced industrial demand generally, and as a result are throwing part of their own coal on the open market. Many small mines who have not been busy are taking all the business they can get at present prices, with the result that no higher markets are in sight for the time being.

Screenings have been weak for several days, Hazard breaking 20c. Gas and byproduct as well as public utility plants are buying in comparatively small lots, and railroad movement is not showing much increase. A considerable portion of the present movement of prepared is for stocking.

A drop in crude oil prices on May 18 also had a tendency to hold down the coal market. With West Virginia operators short of industrial demand and quoting block at $3, and mine run $2@$2.40, Elkhorn Kentucky fields being in line with these quotations, other fields of eastern Kentucky are apparently doing well to secure prices that they are now getting.

BIRMINGHAM

Commercial Buying Restricted to Immediate Needs—Domestic Demand Good—Production Less Than Two-Thirds of Normal.

Buying is still confined to the spot market, and no coal is being bought for stocking purposes. The only contract business of importance was proposals sent out by the Seaboard Air Line Ry. and the Southern Ry. The Seaboard rejected all bids on its fuel supply for the next year and will call for new ones while no action has yet been taken by the Southern. All rail lines seeking new contracts so far have greatly reduced the maximum tonnage to be taken as compared with expiring agreements. Quotations are holding firm in general, though there is some price shading among the smaller operators in the scramble for the lean trade offerings.

There is a good volume of domestic business booked but deliveries are slowed down account mines not being able to dispose of the steam product. Inquiry for lump is still holding up pretty well and there is some difficulty in placing orders for higher grades. Cahaba and Black Creek lump is quoted $4.60@$5.15; Carbon Hill $3.60 @$3.85; Big Seam $3.40@$4.

Production now is running between 180,000 and 200,000 tons per week against a normal output of 300,000 tons. The furnace companies are producing and consuming at their own works a large proportion of the coal now being mined in the district, though the requirements along this line are on a minimum record basis.

West

DENVER

Production Declines Slightly—Markets Are Inactive — Operators Seek to Arouse Buying Interest.

After a seven weeks' climb the output took a temporary slump in the week ended May 7. There is no one reason for the decline, some operators contending that the public is not yet aroused to the importance of the coal situation, while certain retailers say the shipment from Wyoming mines at a lower price than is quoted by Colorado operators has had the effect of stifling what little enthusiasm was displayed by dealers.

The mines, working only half-time, produced 147,100 tons as against 158,000 the week of April 30. One large operator issued a circular as follows: "Coal is cheaper now than it will be later on, but if you wait until the last minute before ordering you will have to pay more and may have to take inferior coal."

Thus far, the first four weeks in 1921 are the only weekly periods when the tonnage has gone above the average reported for last year. Operators are using this for the basis of an argument that there will be a serious condition of affairs when cold weather comes along.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Producers Work Full Time—Independent Operations Improve—Steam Sizes in Better Demand.

All of the line companies are now working full time. Practically all independents in the lower fields are likewise working. Some large washeries in the lower field have opened up and new ones are under construction.

In the northern field there has been no change in the conditions from last week. Steam sizes are moving a little better now and some operations in the southern field are not only selling all they can produce but are taking coal from their stock piles. Others, however, are still stocking some coal, pea and under in size.

CONNELLSVILLE

Market Remains Stagnant—Foundry Coke Easier—New Frick Scale Slightly Above Independent — Production Declines.

There have been only a very few transactions in furnace coke in the week, and then in very small lots. Demand for coke for smelting, heating, water gas manufacture, etc., is far below normal yet exceeds the current market demand for furnace coke for iron blast furnace use, and prices average as high as can be obtained from blast furnaces. Blast furnaces can undoubtedly buy odd lots at $3.25, though $3.50 is frequently quoted.

Foundry coke continues in very limited demand, and prices have weakened, ordinary brands being now available at under $5, formerly the minimum. We quote the spot and prompt market at $3.25@$3.50 for furnace and $4.45@$5.25 for foundry.

The new Frick scale shows a rate per 100 bu. for mining and loading room and rib coal of $2.65, while the independent scale adopted April 1, a duplicate of the old scale of Nov. 10, 1917, is $2.29 and the old scale, that of Sept. 1, 1920, was $3.24. The bushel is 76 lbs. and at 3,000 lbs. coal for 2,000 lbs. coke the pick mining cost per ton of coke made is therefore $1.28 on the old scale, 91c. on the present independent scale and $1.05 on the present Frick scale. Much of the work is done by machine mining, however, the rate for loading short wall machine coal being $2.10 while the present ratio, in both the Frick and the independent scale, is $1.65. Outside day labor on both scales is $3.30, against $5.40 on the old scale.

The *Courier* reports production in the week ended May 14 at 20,020 tons by the furnace ovens, 23,270 tons by the merchant ovens, a total of 43,290 tons, a decrease of 7,230 tons.

PITTSBURGH

Coal Continues to Accumulate at Lake Docks—Bunker Price Arranged—Production Unchanged.

Production continues to run at 40 per cent or a trifle less, being supported in large measure by Lake shipments, which can hardly be continued much longer as loaded cars are accumulating at docks in the absence of anything like a normal vessel movement. The line demand is somewhat poorer than it was a week or two ago. The steel industry in particular is taking less coal and looks for still lighter consumption during the next two months.

The price of bunker coal for Lake vessels has been arranged for the season at $5.50 delivered. Vessels usually take such coal as they require and settlement is made with the dealer accordingly, while the railroad traces the coal and charges the local freight rate, which is $2.05½, against the cargo coal rate of $1.58 as reduced early in May. The quoted market on cargo coal remains at $2.50, but this price is probably shaded in some cases.

Demand for gas coal continues fair and the market is moderately strong as producers are not forcing any sales, feeling that their reserves in the ground are limited and should be conserved.

Expectations entertained in some quarters two or three months ago that coal miners might take the initiative in suggesting a wage reduction to stimulate the coal industry are disappointed and operators, while admitting that wage rates are altogether too high in relation to the labor situation, seem indisposed to make any move.

UNIONTOWN

Lowered Wage Scale Forms Basis for New Business—Little Moving.

No untoward incident marked the effectiveness of the new scale of the H. C. Frick Coke Co. last week. Employees had become reconciled to a reduction in wages for weeks before it was announced and registered no complaint.

There has been no improvement in the production situation and most trade authorities do not anticipate an im-

mediate resumption of plant activity. The new wage scale, however, forms the basis for new business both on the part of the corporation and independents. They are prepared to quote contract prices at figures which it is believed will represent a normal market tone for future business when coal users come to the point where they need tonnage.

The market for furnace coke has been definitely lowered below the $4 deadline without adding any strength to it. For months operators declined to move furnace coke below $4 but several weeks ago a large independent operator shaded that figure and the result has been that $3.75 is now the accepted maximum price for furnace. There is a fair demand for foundry coke from $4.50@$5.25. Various grades of coal are quoted at spot from $1.80@$2.25.

CENTRAL PENNSYLVANIA

Production Continues to Gain—Miners Discuss Wage Questions.

Reports indicate a steady and substantial improvement in business throughout the region. Traffic has shown a gain and this is generally due to a picking up of mining.

The first two weeks of May showed a gain of 4,168 cars over the corresponding period for April. Prices are also showing up a little better, the gain over the beginning of the month amounting to an average of about ten cents a ton.

Since the recent correspondence between the United Mine Workers of the district and the operators, it has become known that the mine workers of District No. 2 have called a meeting to consider the wage question. The operators contend that because of the existing wage scale they are unable to compete with other fields and thus the miners have been idle because of the falling off in production.

EASTERN OHIO

Record Production for the Year Due to Heavy Lake Loading—R.R. Fuel Movement Slumps—Slack Becoming Heavy.

A new high record in weekly production for the present year was made during the week ended May 14. The output amounted to 432,000 tons, the largest volume since last November, and represents 68 per cent of potential capacity. Association mines worked 32 per cent of possible worktime during the week and produced 75 per cent of rated capacity. Production since Jan. 1 is estimated at 5,723,449 tons, or 48 per cent of the rated capacity.

The greatest stimulus to production has been derived from the Lake trade, and especially since May 4, when the reduced rail rates went into effect on Lake cargo coal. Whether the heavy consignments to Lake can continue is problematical as the accumulation at the docks is mounting, the coal not being dumped at sufficient speed to keep pace with arrivals. Embargoes may become necessary to slow up the movement to some of the docks.

While improvement in the trade is slight, operators are incorrigibly optimistic. It is felt that the low ebb has been passed and that there will be a gradual betterment henceforth. There has been some softening in the spot price on slack due to the large volume of lump to Lake, prices ranging $1.60@$1.85.

Loading for railroad fuel account is at a minimum. At the present rate of production it is not over 25 per cent of the total tonnage mined, compared with over 50 per cent several months back.

UPPER POTOMAC

Conditions Unchanged — No Contracting — Forced Sales Constitute Large Part of Business Done.

Conditions have been unchanged for weeks, the second week of May proving no exception. Very little contract business is being negotiated with the result that the great majority of operations are still closed and there seems to be no prospect of resuming work in the near future. Quotations are purely nominal and it is possible to secure various grades at almost any price, where producers attempt to keep in operation.

FAIRMONT AND PANHANDLE

Lake Demand Aids Production—Tide Markets More Satisfactory — Slack Weakens.

Fairmont

Aside from a temporary spurt in production on Friday of the week ended May 14 conditions were unimproved. Some little increase in demand for Lake coal was noticed, but nearly 300 mines were out of operation during the last few days of the week. Some companies, shipping export coal, are being called upon to increase that movement, particularly for French orders, and it is thought that the Tidewater market will soon absorb a more satisfactory tonnage than it has for some time.

Northern Panhandle

A fair volume of Lake coal was being moved and mines were operating at about 50 per cent of capacity. The slack market was very weak with the heavier production of screened sizes. Mine run spot coal was selling at about $2.50, lump $2.75 and slack $1.75. Producers feel that more satisfactory conditions are not far ahead and that production from now on will show a gradual increase.

Middle Western

MIDWEST REVIEW

Steam Prices Cut—Domestic Slower—R.R. Wage Reduction Talk Slows Coal Buying.

It is now quite evident that the number of coal contracts to be closed this year will be very small and insignificant when compared, for instance, with those closed last year at this time. The sales agent who goes to see his trade in regard to a contract, is confronted with questions that are very hard indeed to answer. The buyer feels that the situation is so unsettled, so few orders have been taken and so few are in prospect, that it would be folly to contract for the usual tonnage of coal.

For instance, a plant to our knowledge used 10 cars a day. The business of the company, which is a firm of national reputation, has shrunk so that it is exceedingly doubtful if this concern will use more than 5 cars a day. The purchasing agent has no means of knowing just what the future is holding in store, consequently until conditions become more settled, he prefers to buy his coal on the open market. Some claim contract quotations will decrease, while the majority believe steam coal can be purchased throughout the year on the open market at cut rate prices.

The steam coal situation in the Middle West has shown but few signs of improvement. For the first time in a number of years, some of the largest companies have disregarded circular quotations and are selling steam at very material discounts. While the industrial situation looks a little better than it did last week, the effect of this small improvement has not as yet been felt in the market.

The domestic market is just about holding its own. Operators are receiving enough business to prevent them from cutting prices although there has been no flood of orders placed. The farmers are feeling extremely poor and are cutting all expenditures to the narrowest margins. Indiana and Illinois coals, it is predicted, can look for a good market in the Northwest during the late summer and fall, but the prospects in that territory for the sale of high grade Eastern all-rail coals is extremely poor. Unless all indications fail the Northwest is going to be supplied this year from either the docks or from mines in Illinois and Indiana producing the higher grades.

The wide publicity given the decision of the railway wage board to the effect that wages will be reduced promptly, has if anything, been a hindrance to the coal market, as a number of concerns who have been contemplating placing substantial orders have decided to wait until freight rates are reduced. In our opinion, this policy is extremely ill advised as no consideration is given to the possibility of a strike on the part of the railway men affected. Should such a strike materialize, there will be a flurry in the coal market which will tend to strengthen prices materially.

SOUTHERN ILLINOIS

Domestic Demand Eases—Steam Sizes Are Heavy—R R. Tonnage Lighter—Production Slumps

The present week has been remarkable for the sudden let up in the demand for domestic sizes, except for movement through the Northwest. Screenings and nut sizes are hardest to move and it is a relief in a way to many mines to be a little easier on lump and egg orders.

There has been an easing up in the working time at several places in the

past week on this account. Railroad tonnage has been unusually light.

In the Duquoin district the working time is not as good as at the mines operating as in the Carterville field of Williamson and Franklin counties.

Prices here are also pretty well broken up. The top of the market for Carterville domestic is $3.85, others selling down to $3.25, with screenings $1.75@$2 and mine run $2.60@$2.75.

Mt. Olive conditions have eased up considerably excepting on domestic sizes. As a rule steam is piling up at the mine. Working time is about 2½ days as against 3 days last week.

The Standard field continues in a demoralized condition. The price on screenings is as low as $1.25 and on 2-in. lump $2; 6-in. lump is $2.25@$2.50, and mine run is from $1.90 up. Working time at commercial mines is about two days a week. One or two additional mines have shut down on account of no orders.

WESTERN KENTUCKY

Better Retailer Demand — Industrial Market Showing Some Improvement— Prices Slightly Higher.

During the past week prices averaged approximately 10c. a ton higher than during the previous week. For many years western Kentucky endeavored to sell coal regardless of price, and met any and all competition, with the result that many mines were in financial difficulties. Today the situation is changed.

As a result of a hard fight, western Kentucky has secured freight rates enabling her to reach a number of markets which formerly were closed. She is also developing a southern river trade, which at one time belonged to the Pittsburgh district, and which was dropped by the river companies when they developed a good demand in the upper river markets. Most of the boating trouble was between Pittsburgh and Paducah, Ky., where the western Kentucky river operators are getting out their coal below the point where most of the trouble in river navigation was experienced.

Right now there is some little movement in retail yards, a slightly better northern steam demand, and a fair consumption of steam coal in Louisville, Nashville, Memphis and southern points.

Middle Appalachian

LOW-VOLATILE FIELDS

Tide Shipments Increase—Bunker Call Improves — Heavier Domestic Demand Causes Sluggish Screenings Situation.

New River and the Gulf

Prices for Gulf coal were somewhat firmer during the second week of the month, with Tidewater coal running $6.35@$6.50 per gross ton. Inland shipments were firm at $3.50 net. Production on the Vgn. Ry. averaged about 60 per cent of capacity. A better inquiry and consequent movement is developing, due to the British strike.

New River production as a whole was about 50 per cent of potential capacity. There was an undiminished Tidewater demand despite the marine strike, yet most of the coal was being purchased for bunkerage. The bulk of the prepared coal was destined for Western markets and the improved demand for domestic is resulting in slack becoming exceedingly hard to sell.

Pocahontas and Tug River

Despite the fact that the United States Coal & Coke Co., one of the largest producers in the Tug River field was not operating the output was over 90,000 tons. This company is planning to resume operations with a horizontal wage cut of 20 per cent. Demand was somewhat more pronounced although it has not caused any material price change. However, operations were becoming somewhat more steady. Demand for prepared sizes was growing, especially in Western markets, which is causing screenings to move very slowly, as in other fields.

There was a steady growth in production in the Pocahontas region during the first half of May, larger and better markets enabling producers to speed up to some extent. Much of the output was being placed on contract although more coal was also sold on a spot basis.

Western markets presented the best outlet for domestic sizes at $4.50@$5. The question of disposing of the resultant slack is worrying operators, as there is no demand for that grade, and prices were being lowered to prevent an accumulation. Coal was moving in larger quantities to Tidewater for bunkerage and export shipments were also heavier.

HIGH-VOLATILE FIELDS

Lake Movement Picks Up — Domestic in Better Call — Contract Market Inactive — Mingo Shooting Interrupts Operations.

Kanawha

There is little or no spot demand in evidence and producers are dependent upon the limited amount of contract business offering. These orders were not sufficient to keep the mines going more than three days during the week ended May 14. Not only was the spot market inactive but few new contracts were being closed.

Logan and Thacker

Logan mines continued to ship for storage, heavy movement going to points on the Ohio River or to the Lake. However, Detroit automobile concerns are buying a little more freely, but there was an extremely limited market for an average of 30,000 tons produced each day.

There was comparatively little coal produced in the area affected by the fighting in Mingo County, on May 12, 13 and 14. Aside from such interruptions, there was a very fair output, the total for the week being about 80,000 tons. A large portion of the output was going on contract as the spot demand was not particularly brisk.

Most of the mines in the affected area were running about three days a week. It is not believed that the Mingo shooting will have any permanent effect on the non-union miners, nor that it would frighten many of them away, as was the purpose of such shooting.

"Matewan Day," May 19, did not bring the general outbreak which was feared. However, an attempt was made to assassinate the superintendent of the Rawl Colliery, operated by the Crystal Block Coal & Coke Co. The head house of this company had been fired on May 16. Shortly after the attack on Superintendent Tulley, the head house, tipple and conveyor of the War Eagle Coal Co., at War Eagle, was dynamited, with a loss of approximately $55,000.

Virginia

Conditions during the second week of May showed little variation from those prevailing throughout April, tonnage moving on a basis of about 50 per cent of capacity. The average running time of the larger mines was three days. Small operations with no contracts are still out of the running.

Northeastern Kentucky

Although there was still much idleness, production was on a somewhat larger scale than during previous weeks. The bulk of the additional coal mined was going to the Lake, and there was also a somewhat better demand for prepared sizes in the Western market. This tended to create a larger surplus of slack for which there was no sale and the price has stiffened even further. Buyers' offers of contracts at prices ranging $2@$2.50 were not acceptable to producers and practically no new agreements were signed during the week.

West

UTAH

Buying Fails to Increase with Price Reductions—All Markets Show Inactivity.

Coal production continues at a rate far below normal. Domestic and steam markets are both poor. No one is buying coal except a little for immediate needs. There is a surplus of skilled labor at the mines but operators are not turning anyone away and as a consequence the men are still working from 2 to 3 days a week.

Coal dealers of Salt Lake City have agreed to follow the lead of the Standard Fuel Co. in selling from now until July 1 at a reduction of 50c. for cash or C. O. D. It is hoped that this will result in many orders for storage coal, but this is hardly likely as ready money is not very plentiful here, and moreover, people have been looking for a greater reduction.

Foreign Market And Export News

French Railroad Coal Stocks; Reconstruction Loan

R.R. Stocks Heavier—Proposals Heard for Exchanging Coal for Austrian Wood Pulp—Loan Placed for Reconstruction Purposes.

During February, 1921, the French railroads (the six big districts and the roads of Alsace Lorraine) received 1,121,272 tons of coal, of which 445,508 tons were French, 192,207 English and American, 1,975 Belgian and 479,582 German. The quantities were apportioned as follows:

	French	English and American	German
State	3,600	16,100	119,800
North	74,397	16,344	68,747
East	61,515	1,539	75,770
P-L-M	80,078	74,023	117,707
P-O	76,580	67,140	77,585
Middle	24,274	19,061	18,711

The state has also received about 1,930 tons of Belgian coal. The railroads of Alsace-Lorraine received 125,064 tons of French coal, 72,585 from the Sarre, 45 tons from Belgium and 1,262 from Germany. Consumption amounted to 859,360 tons; stocks were 1,980,610 tons on Feb. 1 and 2,296,080 tons at the end of that month, which represent requirements for 74 days. This was divided as follows—State, 442,500 tons; North, 295,830; East, 264,620; P-L-M, 471,180; P-O, 514,510 (107 days); Middle, 137,170, and Alsace-Lorraine, 170,270. In addition, the Metropolitan of Paris consumed 7,200 tons and received 900 tons of French coal and 8,000 tons of English and American. Stocks as of Feb. 28 were 10,700 tons or 41 days' needs.

Austria's need of coal was the subject discussed at a recent French conference. In view of the shortage and high price of paper in France it was proposed that Austria be furnished with 200,000 tons of Sarre coal annually in exchange for wood pulp.

The Union of the north French coal mining companies is about to place a loan of 800 million francs for the reconstruction of the collieries in the Departments of Nord and Pas de Calais. The shares will be of a nominal value of 500 francs each with a guaranteed interest of 6 per cent, the first payment to be made on Oct. 1, 1921.

British Strike Cripples Industries

Government Is Financing Fuel Purchases for Essential Works—France Removes Export Restrictions—Belgian Dockers Refuse to Load Coal for Great Britain

London advices are that the British Government is purchasing coal in America through ordinary trade channels for national essentials. Money is being advanced by the Government to buyers in order to secure adequate supplies for railroads, public utilities, bakeries, etc. No coal will be purchased for other industries.

The French Coal Controller has agreed to remove all restrictions on coal exports from northern France to British ports. So far no coal has been discharged under Government protection, but cargoes have been unloaded in different ports by voluntary labor. Domestic coal rations are now limited to be used for the purpose of cooking, except in case of serious illness.

The Belgian dockworkers have decided to oppose by all legal means the loading of coal for England, it has been announced in Brussels. The dockers take this action in order to show their solidarity with the striking British coal miners.

While the effect of the coal strike on all industries in Great Britain has been serious, its influence on the iron and steel trade has been most marked. With production dwindling and prospect of cheaper prices of coke, the blast furnaces were buying fuel from hand to mouth during the month of March. The strike threat was carried into effect on April 1. Blast furnaces immediately were damped down by the score, owing to the uncertainty of the outlook and the shortage of fuel, with the result that on Saturday, April 16, from the best figures available, it could only be determined that five blast furnaces in all Great Britain were in operation. As a natural consequence of this the pig-iron trade is to all intents and purposes suspended for the time being.

The whole future of the British iron and steel trade rests on the nature of the agreement by which the coal strike is settled. No further reduction in prices to meet foreign competition can be made unless fuel prices and wages are lowered, for the British iron and steel industry could not go on indefinitely selling at a loss.

SILESIAN MINES are idle and railway service has been discontinued, except for a few military trains owing to the insurgent Poles who are terrorizing the countryside.

REPORTS FROM THE ITALIAN GOVERNMENT Coal Office show these imports:

Exported from	January	February	Mar. 1-15
America	134,517	192,215	71,517
England	292,306	304,312	148,957
Belgium	7,527	2,338	
Germany	150,062	191,470	97,309
Total (tons)	584,412	690,335	317,783

ITALIAN BUYERS ARE coming into the market for increasing amounts of American coal. Last week several large cargoes were closed for the West Coast. Reported c.i.f. prices ranged $11@$12.75.

Hampton Roads Clearances

The following vessels sailed with coal cargoes during the week of May 15:

Antonios Strathatos, Gr., for Port Said, 5,944 tons; Absaroka, Amer. for Lisbon 4,907 tons; Baarn, Du., for Rio de Janeiro, 7,312 tons; Bruitenzorg, Du., for St. Michaels, 8,909 tons; Chama, Br., for Aalborg 1,790 tons; Clyde Maru, Jap., for Port Said, 6,972 tons; Dachet, Amer., for Queenstown, 6,313 tons, Dakotan, Amer. for Messina, 8,201 tons; Elkton, Amer. for Gibraltar, 7,148 tons; Innterton, Br., for Gibraltar, 6,700 tons; Le Myra de Villers, Fr., for Rio de Janeiro, 5,400 tons; Mokta, Br., for Gibraltar, 5,850 tons; Peebles, Br., for St. Georges, 6,635 tons; Sagoland, Swed., for Gibraltar, 8,350 tons; Sallust, Br., for Buenos Aires, 6,501 tons; Sinsinawa, Amer., for Queenstown, 6,234 tons; Torrey, Nor., for Gibraltar, 7,493 tons; Veerhaven, Du., for Funchal, 4,628 tons; West Segovia, Amer., for United Kingdom, 6,796 tons; Woldingham, Br., for Madeira, 4,428 tons; Wangaratta, Br., for Wellington, 3,334 tons.

The following c.i.f. prices were reported during the same period: Great Britain, $10.50; Holland, $11; Scandinavian ports, $11.50@$12; Brazil, $10. and Argentina, $11@$11.50.

A BRITISH COAL OWNER with interests in the north of England has aroused a good deal of comment by proposing the creation of a gigantic coal trust for the entire country. There are in Great Britain 3,000 coal mines run by 1,400 concerns, and he argues that if they were amalgamated great economy in overhead charges would be made possible. His scheme has called forth much criticism. The miners have refused to accept it and it is pointed out that even if it were a good thing in itself it would take far too long to organize to be of service in the present crisis. Moreover, the idea of one trust for the entire country is being condemned as implying the creation of too powerful a monopoly.

English, German and American Coal Unloaded at French Ports

CHANNEL PORTS

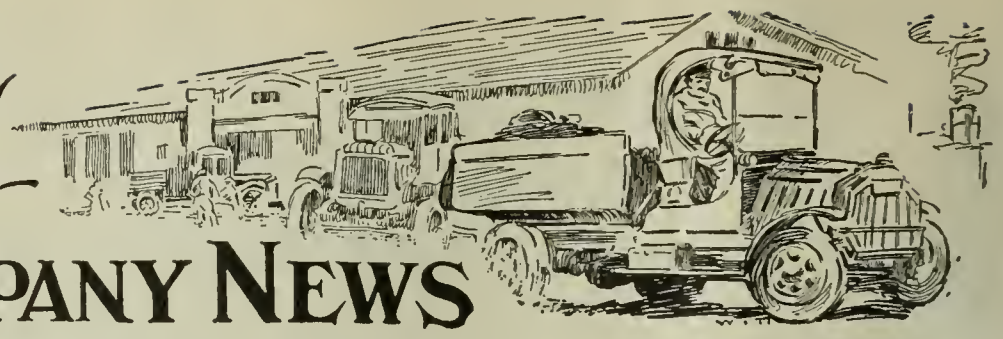
	Week Ended April 16	Week Ended April 23
Dunkirk	600	450
Boulogne	2,737	1,791
Dieppe	1,075	2,466
Fecamp	135	670
Le Havre	5,330	7,000
Rouen	23,500	9,400
Honfleur	3,430	
Trouville	750	1,231
Caen	2,870	7,532
Cherbourg	1,183	4,375
Saint-Malo	500	2,535
Brest		540

ATLANTIC AND MEDITERRANEAN

Lorient	1,571	676
Saint-Nazaire	4,604	8,818
Nantes	4,603	5,626
La Pallice		1,847
La Rochelle		2,100
Rochefort	3,000	4,150
Tonnay-Charente		950
Bordeaux	8,626	
Bayonne	1,265	2,764
Marseille	13,568	11,792
Total	79,347	76,713

FRENCH ATLANTIC PORTS will receive several cargoes of Pools 5 and 7 gas coals, shipped last week. This tonnage is for Paris gas works and is taken to indicate that France has a good demand for this grade of fuel, due to the continuance of the British strike. Prices ranged $10.50@$11.75, according to reports received here.

MINE And COMPANY NEWS



ALASKA

In a letter to the House Territories Committee against the bill transferring control of Alaskan affairs from present government departments and bureaus and placing it under an Alaskan Development Board of five members, Secretary of Agriculture Wallace recommends an Alaskan Board composed of representatives of each federal agency now active in Alaska and one or two permanent residents of Alaska. He recommends that the homestead law should be amended as it now applies to Alaska so that surface rights may be segregated from mineral rights. There are large areas underlaid by lignite, some of them the best agricultural lands in the territory. If these areas were located in any of the States the homesteader would be allowed to file and secure surface patent, the coal bodies being reserved by the federal government. This provision has not been extended to Alaska. He says that at present there is a land seeker in Alaska who claims to represent 100 residents of the Dakotas who wish to settle in Alaska if he reports favorably. Much of the available agricultural land in Alaska is underlain with coal and is classified as coal land. The one thing which is most likely to prevent a favorable report is the fact that until the law with reference to homestead entries for lands classified as coal land is changed, title to the surface of the land cannot be obtained, the secretary says. Such a change in the law would do much to stimulate permanent settlement in Alaska.

ALABAMA

Hywell Davis, commissioner of the Department of Labor, who has been making a survey of the unemployment situation in the Alabama coal fields, has completed his work. It is understood that the department at Washington desired first-hand information on the labor situation with a view of possibly relieving the conditions in regard to unemployment, there being no intention of re-opening past labor troubles in the district.

Foster Bain, director of the United States Bureau of Mines, **Dr. D. A. Lyon**, supervisor of stations of the bureau, **Dr. O. P. Hood**, chief mechanical engineer, and **Dr. R. Moore**, chief chemist of the bureau, made an inspection of the mine rescue station recently and also visited the new experiment station at Tuscaloosa. The officials of the Birmingham station, now located in West End, will occupy offices in the Federal postoffice when completed, the foreman in charge of equipment remaining at the present station.

ILLINOIS

A new town known as Jamestown is now experiencing a boom, due to the mining operations which are being developed in its vicinity. The town is located a few miles north of Cutler and is situated on the Wabash, Chester & Western R.R., which is now owned by the officials of the **Southern Gem Coal Co.**, of Chicago. The same company has bought two mines near Jamestown and are repairing extensively and equipping them with machinery. The town was laid off a little over a year ago and since that time many new homes have been erected and business houses are now being built. The railroad serves a large number of Mines along its route and terminates in Mt. Vernon, where the Southern Gem company has recently completed a large and modern rescreening and storage plant.

The Boehmer Coal Co., of St. Louis, which recently purchased and re-equipped the Victory mine in Perry County, has been awarded contracts by the City of St. Louis, to supply the city schools with coal for the coming winter.

The large washhouse of the **Smith-Lohr Coal Mining Co.**, located at Pana, was recently completely destroyed by fire. The cause of the fire has not been determined.

The mine of the **Paradise Coal & Coke Co.**, at Paradise, has again resumed operations after being idle for a time, during which the air shaft of the mine was retimbered.

INDIANA

Notice has been received by Vigo County court officials that the motion for an appeal in the case of Frank Arietto against the **J. K. Deering Coal Co.** has been dismissed by the Supreme Court of Indiana. In the Vigo County Superior Court Arietto was awarded $10,000 damages against the coal company.

The Carbon Hill Coal Co. of Terre Haute has secured leases on a large acreage of Marshall coal near Rosedale and commenced sinking a mine. A complete coal mining plant will be installed. The mine will be served with a switch from the P. B. C. & St. L. Ry. The Carbon Hill company is composed of Chicago, Terre Haute and Brazil capitalists.

The Dry Fork Coal Co. at Terre Haute has filed a preliminary certificate of dissolution.

The western Indiana coal mine industry is beginning to boom again, following months of idleness due to dull market conditions. District officials state that more than a score of mines have been reopened, working full time, and that many others are working part time. Six new mines have sprung up in this district in the past ten days, all of which promise to turn out a good grade of coal. It is the belief of the district officials that the next two weeks will show some surprising developments in the industry.

Coal contracts amounting to $425,516 for the various state institutions of Indiana have been awarded by the state purchasing committee. The actual saving made through the postponement of the award is $23,152. Companies obtaining contracts for supplying coal to all the state institutions, were as follows: **Walter F. Bledsoe & Co.**, Terre Haute; **Ogle Coal Co.**, Indianapolis; **Star City Coal & Mining Co.**, Indianapolis, and **Middleton & Wyman**, of Madison.

KENTUCKY

The Fletcher Circuit Court was reversed by the Court of Appeals in the case of the **Elkhorn-Hazard Coal Co.** against S. C. Fairchild, the Appellate Court holding that a receiver for the company should not have been appointed. The court says that the company had money and property to compensate Fairchild and others in royalties and that they had an adequate remedy at law.

The Benito Coal Co., of Middlesboro has increased its capital from $25,000 to $150,000.

The Dempster Construction Co., has started work on an extension near Visco up Montgomery Creek to the site of the new coal town to be put in by the **Memms-Haskins Coal Corporation.** A number of mines in this district have started operations again as a result of increased demand from the Lake district. Extensive improvements are planned by the **Solar Coal Co.**, at Conda, according to reports just received.

MARYLAND

On May 15 Colonel C. W. Watson, president of the **Consolidation Coal Co.** and heads of the various divisions and departments of the company completed a week's inspection tour of the properties of the company in four states—Kentucky, West Virginia, Pennsylvania and Maryland as well as an inspection of the Duluth and Superior properties of the **Northwestern Fuel Co.** They had as their guests a number of bankers from New York, Philadelphia, Baltimore, Fairmont, Cincinnati, Ashland and other points, several of the directors of the company also being in the party, which traveled in a special train. Among the guests and officials of the company were, General Samuel McRoberts, prominent New York banker and a director in the Consolidation Co.; George A. Baird of Chicago; Alden S. Blodgett, vice president of the Guaranty Trust Company of New York; D. W. Buchannan, president of the Old Ben Coal Corporation of Chicago; John E. Buckingham, president of the Ashland National Bank of Ashland, Ky.; T. D. Crocker of the Minneapolis General Electric Co., Minneapolis; W. W. Colpitts of Coverdale & Colpitts, New York; Robert A. Cassatt of Cassatt & Co., Philadelphia; J. C. Fannagen of Robert Garrett & Sons, Baltimore; M. J. Goble, vice president of the Fifty-Third National Bank of Cincinnati; T. Edward Hambleton of Hambleton & Co., Baltimore; V. L. Highland, of Clarksburg, W. Va., president of the Empire National Bank and a director of the Elkhorn Fuel Corporation; A. B. Koontz, Charleston, vice president of the Union Trust Co. of that city; A. S. Knowles, of Coverdale & Colpitts, New York; L. A. Linderman, president of the Austin Machinery Corporation, Chicago; W. Bladen Lowndes, vice president of the Fidelity Trust Co., Baltimore; Acosta Nichols, Spencer Track Co. of New York; Judge Edward C. O'Rear, a prominent attorney of Frankfort, Ky.; A. H. S. Post, president of the Mercantile Trust & Deposit Co. of Baltimore; Frank Altschul, of New York, a director of the Consolidation; E. L. Booth, president of the Empire Coal Co., Ltd., of Montreal, Can.; A. W. Calloway, of Baltimore; a director in the Consolidation; Colonel Ralph Crews, attorney of the firm of Shearman & Sterling, New York; Edward Hamlin, president of the Metropolitan Coal Co., Boston; J. S. Holbrook, general manager of sales of the Empire Coal Co., of Montreal; Walton Miller, president of the National Bank of Fairmont W. Va.; E. N. Saunders, Jr., president of the Northwestern Fuel Co., St. Paul, Minn.; John Tracy, New York; Stanley A. Russell, assistant vice president of the National City Co., New York; W. S. Lucas, vice president of the National City Bank, New York; George T. Watson, of Fairmont, a director of the Consolidation; Geo. W. Fleming, president of the Elkhorn Fuel Corporation, New York; J. E. Watson, Jr., Fairmont; J. O. Watson, Fairmont; James W. Weir, Charleston and Elkins, W. Va.; W. L. Andrews, vice president of the Consolidation, Baltimore; F. W. Wilshire, vice president, New York; S. D. Camden, vice president, New York; E. M. Mancourt, vice president, Detroit; F. P. Lyon, vice president, Fairmont; Hon. Johnson N. Camden, Versailles, Ky.; J. D. Stewart; Thomas F. Logan; James Alexander; Brooks Fleming, Jr., assistant to the president; W. M. Wilshire, general manager of sales, New York; A. S. Bowles, general auditor, New York; A. T. Watson, general purchasing agent, Fairmont; F. C. Davis, assistant general purchasing agent and president of the Fairmont Supply Co.; C. L. Green, director employment relationship department, Fairmont; Frank Haas, consulting engineer, Fairmont; C. N. Tarleton, manager of the West Virginia Division; J. G. Smyth, manager of the Elkhorn Division; E. R. Price, manager of the Millers Creek Division; G. M. Gilette, manager of the Maryland Division; W. H. Kramer, manager of the Pennsylvania Division; J. E. Parsons, manager of the Export Department; E. H. Garner, manager of the Boston office; J. L. Jacoby manager of the Portsmouth, N. H., office; C. A. Chambers, manager of the Detroit office; T. H. Richardson, manager of the Cincinnati office; W. A. Leetch, manager of the Washington office; William McGreevy, manager of the Philadelphia office; H. C Thomas, manager of the Baltimore office; A. B. Lemmon, manager of the Chicago office; C. E. Davis, manager of the Louisville office; C. T. Uhl, attorney at Somerset, Pa.; A. Taylor Smith, attorney at Cumberland, Md.; Tusca Morris, attorney at Fairmont; Greame Turnbull, of New York; Dr. C. J. Johnson, of Jenkins, Ky.; A. L. Mancourt, of Mancourt-Winters Coal Co., Detroit, Mich.; Murray Wilshire, New York; R. Delevante, New York, secretary to Colonel Watson; George Akola, New York; T. F. Quinn, New York; A. E. Thurnes, Fairmont; R. L. Robb, Fairmont.

MISSOURI

The Missouri Pacific R. R. auctioned off 90 cars of West Virginia smokeless mine run, shipped by the **Cleveland & Western Coal Co.** of Cleveland, to the **M. W. Warren Coke Co.** of St. Louis for the Laclede Gas Light Co. which was rejected because the consignees claimed that it failed to meet a provision of the contract that specified the coal would run less than eight per cent ash. Car service alone on the coal amounted to something like $20,000. In addition to that there are freight charges of about $4.50 per ton on about 4,500 tons of coal. It is understood the coal at the mine sold for about $5. **The Wallace Coal Co.** bought 60 of the cars, ranging $2.50@ $2.70 per ton delivered at St. Louis. The other 30 cars went to three other scattered purchasers, the Missouri Pacific bidding in fourteen of them at $2.50 and $2.75 for railroad fuel. It is understood that a law suit over the actual loss in the transaction will result.

NEW YORK

The annual report of **Burns Brothers** for the fiscal year ended March 31, 1921, shows total net profits, after depreciation and federal taxes of $1,762,788, equivalent after preferred dividends to $20.55 a share earned on the $8,094,400 common stock. The consolidated income account of the Burns Brothers of New Jersey and Burns Brothers of New York for the year ended March 31, 1921, compares as follows:

	1921	1920
Net sales	$29,475,298	$24,053,980
Costs and dep.	26,232,953	22,150,009
Gross prof.	$3,242,345	$1,903,971
Exp. and tax.	1,711,424	1,209,272
Net profit	$1,530,921	$694,699
Other inc.	231,867	332,356
Total	$1,762,788	$1,027,055
Pref. divs.	99.290	101,976
Com. divs.	808,517	779,070
Surplus	$854,981	$146.009
Profit and loss sur.	$2,347,239	$1,757,789

Receivers of **Coale & Co., Inc.**, New York City, were appointed recently in an equity proceeding instituted by Walter G. Jones of Yonkers, who holds an assigned claim of $31,700. The company was recently indicted by the Federal Grand Jury on a charge of the misuse of priority order for the transportation of coal but the indictment was dismissed. Liabilities were stated to amount to about $2,500,000 and assets to more than $2,000,000. The complaint says the company is without sufficient funds to meet pressing needs in carrying on its business.

PENNSYLVANIA

After being closed down for three months the **Beachley Coal Co.**, of Portage, Cambria County, has started operations at the mines at Fiddler's Green. The mine is working six days a week.

The Frugality Coal & Coke Co. is taking advantage of the slump in the mining business to take a turn at reforestation. This company is planting 10,000 trees, pine, spruce and other evergreens on their land. Last year this company set out 8,000 trees.

The Sanner Coal Co., the Triangle Coal Co. and the **Hillcrest Coal Co.**, all operating mines in northern and western Somerset County, have resumed operations on a 40 to 50 per cent basis. The large new mines of **D. B. Specht** in the same field began production recently.

On May 1 a terrific explosion occurred in the generator room at the Hagevo Mine of the **Shade Coal Mining Corporation**, seven miles south of Windber, in Somerset County. An investigation revealed that some one had placed a large quantity of dynamite under one of the motors. H. E. Morgan of New York City, president of the corporation, was at the mines during the week making an investigation. The mine has been shut down pending the rebuilding of the power house and the installation of new machinery.

VIRGINIA

The Coalmont Moshannon Coal Co., filed a petition in the Circuit Court of Norfolk recently against the Matthew Addy Steamship & Commerce Corporation of Delaware for recovery of damages for alleged breach of contract and under Virginia practice garnished their defendants. The defendants filed petition for removal of the case to the District Court of the U. S. for the eastern district of Virginia. Plaintiff filed a motion to remand the case, claiming that it was not removable for the reason that the plaintiff and principal defendant were non-residents of the eastern district of Virginia. The District Court sustained this motion and ordered the case remanded to the State Court. A petition for mandamus directing the District Judge of the eastern district to vacate the order remanding the case, to redocket it in the District Court and that it be heard and determined according to law, was filed. A rule to show cause was issued and the judge has filed his return in which he asserts that the petition should be dismissed for the reason that the mandamus is not an appropriate remedy because not permitted by Section 28 of the Judicial Code. The Supreme Court dismissed the petition for mandamus, on the ground that Section 28 of the Judicial Code is controlling and that Congress alone has the power to afford relief.

WEST VIRGINIA

Frank P. Harmon, of Washington, one of the pioneer coal operators of the Norfolk & Western coal fields, is the head of the new operation, the **Puritan Coal Corporation**, at Burch, on the new Pigeon Creek extension of the N. & W. The company, which was recently organized, has a capital stock of $500,000, and the erection of a plant that will be thoroughly modern in every detail is contemplated. H. H. Davis, formerly with the Cabin Creek Consolidated Coal Co., and Everette Harmon, formerly general manager of the Lynn Coal & Coke Co., will be associated with the corporation.

All mines of the **Pocahontas Fuel Co.** will be operated on a full-time basis, from now until further notice, according to bulletins issued at each of the various plants of the company, says a news item from Bluefield. **The United States Coal & Coke Co.** has announced a general resumption of its plants on Tug Fork. These companies are the major operations of the Pocahontas field, and in addition to these companies the announcement comes that other producers are making preparations for full-time operation.

At the annual meeting of stockholders of the **Maryland Coal Co.** of West Virginia, the board of directors, consisting of J. W. Galloway, George Howlett, John T. Hanson, J. E. McGowan, George Paull, Nathan Todd Porter, Jr., and Gordon Smith were re-elected.

Traffic News

In the complaint of the **Wayne Coal Co. vs. the Pittsburgh & West Va. Ry.**, the I. C. C. has denied a motion of the railroad to dismiss the complaint without hearing. The complaint relates to the distribution of coal cars at the mines of the coal company on the line of the P. & W. Va.

The Southern Ohio Coal Exchange of Columbus complains against unreasonable rates on bituminous coal from Ohio groups to C. F. A. territory as compared with rates from the Crescent groups.

In the Supreme Court, counsel for the **State of North Dakota** has asked for an order to prevent the I. C. C. from putting into effect increased rates in the state until the Supreme Court had decided the pending cases attacking the right of the commission to prescribe state rates.

Plans for the Chicago, Terre Haute & Southeastern Ry. becoming a part of the Chicago, Milwaukee & St. Paul system were made public recently in Indianapolis, when the Public Service Commission was asked to approve a 999-year lease between the two roads. The C., T. H. & S. is to be made a coal carrier for the bigger railway system, which agrees to place new equipment on the coal road, according to papers filed with the commission. No date was set by the commission for considering the application for approval of the lease, but its terms already have been agreed upon by the Directors of the two roads. Under the lease the C. M. & St. P. agrees to pay the corporate expenses of the Southeastern road, not exceeding $12,000 a year, the interest on $18,317,000 of bonds, and the principal of the bonds when they become due. The lease also provides that the C. M. & St. P. may buy the Southeastern by paying $10 a share for its outstanding stock.

In the case of the **C. N. Dietz Lumber Co.**, involving rates on coal from points in Colorado, Illinois, Pennsylvania, West Virginia and Wyoming to destinations in Iowa, Wyoming and Nebraska, the I. C. C. has authorized the Central Illinois Coal Traffic Bureau to intervene.

The Slogo Coal Corporation and others of St. Louis in a complaint to the commission attacks as unreasonable the rates on bituminous coal from mines at Johnson City and O'Fallon City, Ill., to intrastate and interstate destinations. Request is made that there be established joint through rates on coal from Johnson City which shall not exceed rates in effect July 1, 1917, by more than 15 cents per ton, plus the recent rate advance.

The Salt Lake & Utah Ry. ("Orem Line") is appealing to the State Public Utilities Commission to be admitted to exactly the same footing in the matter of coal traffic as the steam roads. The company's case is being presented by President W. C. Orem and Vice-President Ross Beason. They claim the road could supply a proper quota of cars to handle the coal traffic which would come to them. The application is opposed by the Salt Lake Route and the Utah Railway, who claim they have spent $5,000,000 on a joint terminal and are joint owners of 2,000 gondola coal cars so that in effect there is one railway extending from the coal mines to Salt Lake.

A number of cases were before the **Kentucky State Railroad Commission** on May 5, among others the complaint of the Carter Coal Co. and others against a new rate put into effect by the Cumberland R.R., probably will be settled by resumption of the old rate, it was said. The Hazard rate, plus 10c. was given to mines on the Ohio & Kentucky R.R., at Frozen, Van Cleve, Wilhurst, Hampton, Rose Fork, Lee City, Helachawa, Adele and Cannel City to Winchester, Richmond and points beyond, and the Hazard rate plus 20c. from Caney, Wells, Malone, and Index. Complaint of the existing differential had been made to the commission by the Emory Cain, Riverside, Spencer, Bear Creek, Progressive and Wilhurst Coal Companies and H. B. Jones.

Charges of collusion between attorneys representing the stockholders of the old defunct **Chicago & Eastern Illinois Railroad Co.** and the receivers of a large coal property formerly owned by the road are made by E. H. Miller of Huguenot Park, Borough of Richmond, representing minority stockholders of the bankrupt road. Exploitation of this coal property, "constituting a sinister design against the railroad security holders," is charged in a petition filed in the United States District Court for southern New York. The petition seeks to annul the recent order of the I. C. C. granting to the reorganized C. & E. I. R. Co., the right to issue stock. A bitter fight is being made by a small group of New England stockholders, whose holdings do not amount in all to more than $100,000, to check the reorganization of the bankrupt road.

Invoking the decisions in both the federal and state courts, made against "illegal and invalid" associations of coal companies with railroads and against monopolistic schemes as against public policy, suits have been filed by the **Sunday Creek Coal Co.**, and the **Buckeye Coal & Ry. Co.**, both of Columbus, in the Ohio Supreme Court on appeal from courts of Perry County, against the **Central Union Trust Co.**, and the **Hocking Valley Ry. Co.** It is set up in the briefs of the plaintiffs that since the courts have disassociated the coal and railroad companies and decreed the cancellation of all contract relations between them, that in spite of these decisions the courts of Perry County found for the railroad company in a suit brought to quiet title to coal lands in Athens, Perry and Hocking counties. The cloud on the title arises through a mortgage made in February 1899 by the Hocking Valley Ry. Co. to the Central Trust Co., as trustee to secure an issue of $20,000,000 railroad company's bonds. The coal companies declare that they neither signed nor agreed to the bonds. The mortgage trust deed referred to also provides for a royalty of two cents on every ton of coal mined from its properties, to be turned over to the mortgage trustee and applied in retiring the railroad bonds.

The Pittsburgh, Ohio Valley & Cincinnati R.R. has asked the I. C. C. for authority to construct and operate an extension of its road, which will run from its present terminus near Powhatan Station, Belmont Co. in a southerly direction 2.9 miles to a point in the coal lands of the Marcoll Coal Co., in Switzerland Township, Monroe Co., Ohio.

The Hagerstown (Md.) Chamber of Commerce in a complaint to the I. C. C. attacks as unreasonable the rates on bituminous coal originating in the so-called Pittsburgh-Youghiogheny, Connellsville, W. Va., Cumberland and Piedmont coal districts /to Hagerstown because they exceed the rates from those districts to Martinsburg, W. Va.

The commission has suspended until July 1 the operation of schedules of the **B. & O. R.R.** (Willard, Ohio, exclusive, Neffs, Ohio, Parkersburg, W. Va., Kenova, W. Va., inclusive and east), which provide a switching charge of 55c. per 2,000 pounds for switching coal, coal bouletts or briquetts and coke from points of connection with the Chesapeake Western Ry. to private sidings on the Valley R.R., also to connections with the Southern Ry.

In the complaint of the **West Kentucky Coal Co.**, an I. C. C. examiner recommends that four cars of coal from Clay, Ky., to Clinton, Ia., were misrouted and awards reparation to the coal company, but that the rate applicable via route shipments should have moved is not unreasonable.

Personals

Carl Scholz, vice-president of the Raleigh-Wyoming Coal Co. is on a trip that includes a visit to Chicago and Cincinnati and possibly other cities in the West.

Frank Harris of the Cannelton Coal and Coke Co. of Cannelton, W. Va. was a visitor to the Cincinnati market to size up the western situation.

O. V. Feeney, formerly in the sales department of W. J. Rainey, Inc. for a number of years, has become connected with the Pioneer Coal & Coke Co. as assistant resident Manager of the New York Office.

The Hauck Mfg. Co., Brooklyn, N. Y., manufacturers of oil burners, oil forges, etc., has elected as president, **Henry T. Gerdes,** Mechanical Engineer and manufacturer of New York; first vice-president, **M. C. Hauck;** second vice-president, **A. B. Hauck;** third vice-president, **H. H. Kress;** treasurer, **A. H. Stein;** secretary, **J. Lutz.**

Henry Henderson, who has been superintendent of the coal mining operations of the Tennessee Coal, Iron & R.R. at Blossburg, Ala., has been transferred to the superintendency of the Blocton Division, succeeding **James Stewart,** who died recently.

E. J. Taylor of Pittsburgh, Pa., has retired as chief engineer of the Pittsburgh Coal Co. on account of ill health. He has been made consulting engineer. The position of chief engineer has been filled by the promotion of **Harry Miller** of Pittsburgh, assistant general manager of operations.

W. E. Buch, Kentucky River Mining Co., of Lexington, spent several days in Cincinnati recently looking after business matters.

N. R. Lickerman of the Fidelity Coal Co., Chicago, recently made a trip to the mining sections of West Virginia stopping off in Cincinnati en route.

E. H. Heiner, vice-president of the Superior Coal & Dock Co., recently visited the docks and offices of the company, located at Duluth-Superior harbor.

O. H. Koch, one of the members of American Engineering Council's executive board, has just completed visits to member societies in New Orleans, Birmingham and Nashville. He reports that these societies are very much interested in the activities of the Federated American American Engineering Societies.

L. W. Wallace, executive secretary of the Federated American Engineering Societies, has returned to his office in Washington after a visit to Milwaukee, Detroit and Chicago. At Milwaukee he addressed the Society of Industrial Engineers; at Detroit he spoke at the annual banquet of the local engineering societies; in Chicago he attended a meeting of American Engineering Council's committee dealing with the licensing of engineers.

R. O. Petman, vice-president, F. P. Weaver Coal Co., Toronto and Montreal, and sales agent in Canada for the Imperial Coal Corporation, has completed a two weeks vacation in Atlantic City.

Charles A. Owen, president of the Imperial Coal Corporation and of the Tidewater Coal Exchange, Inc., was designated by the Salvation Army as chairman of the wholesale bituminous coal section for the Third Home Service Appeal. On the committeee with Mr. Owen are the following: **Lebanon S. Williard,** Williard-Sutherland, **G. M. Dexter,** Dexter & Carpenter, **J. D. Enney,** Wm. Cory-Mann-George Corp., **Mr. Lewis,** M. A. Hanna & Co., **John Whiteley,** Whiteley & Foedish, **Nat C. Ashcom,** B. Nicoll & Co., **W. A. Marshall,** W. A. Marshall & Co., **R. B. Baker,** Sterling Coal Co., **T. H. Watkins,** Pennsylvania Coal & Coke Co., **Jas. Hill,** Knickerbocker Fuel Co., **John Berwind,** Berwind-White Coal Mining Co.

Industrial News

Birmingham, Ala.—Charles F. Horst, Jr., has withdrawn from membership in the Grider Coal Sales Agency, Inc., with which he has been associated for several years, and has established an agency and brokerage office in the Brown-Marx Building.

New York, N. Y.—The Pioneer Coal & Coke Co., of Pittsburgh has opened a local office at 17 East 42d St.

Washington, D. C. — The Senate has adopted the committee amendment to the naval bill increasing the appropriation for fuel for the Marine Corps from $590,000 to $1,000,000. Vote on the amendment increasing the appropriation for fuel for the Navy from $17,500,000 to $25,000,000 has been deferred until later.

Washington, D. C.—The Navy Department in a letter to the House Committee on Mines and Mining in connection with the pending bill to have the Bureau of Mines purchase coal for all government services, requests that the Navy be permitted to continue the purchase of its coal.

Washington, D. C.—The failure of retail prices to be reduced in proportion to wholesale prices was considered at a conference of representatives of retail dry goods interests with officials of the Department of Commerce, Federal Trade Commission and the Federal Reserve Board. The conferences may extend into other lines of business.

Washington, D. C.—The sales tax proposal, now being heard before the Senate Finance Committee, would apply to sales of coal. Its cumulative effect would also be felt in determining costs of materials such as coal used in the production of articles for sale, according to witnesses before the committee.

Association Activities

Cincinnati Coal Exchange

Over one hundred retailers from Indiana, Michigan, Illinois and the Northwest were the guests of the exchange while passing through the city on the way to the Richmond convention. The visitors were taken for a tour of the city and across to the Fort Mitchell Country Club, where dinner was served. Following the repast short talks were made by Joseph Briscoe, president of the Cincinnati Coal Exchange, James Reilly, manager of the Queen City Coal Co. and president of the local Chamber of Commerce, Captain Heller, president of the Indiana Retail Coal Merchants' Association, John A. George, president of the Indianapolis Coal Co., President Ed. Zipf of the Chicago Coal Merchants' Association, Homer Jones of Chicago, a cost expert and M. Hiscox of the Coal Retailer.

Indiana Retail Coal Merchants' Association

Protest against the farmers' co-operative bill, passed by Congress, May 1, was made in a resolution adopted recently at the closing session of the association. The resolution set out that the bill grants privileges to "persons in stated lines of business which are denied to others who are engaged in other lines." It also objects to the feature that seeks to exempt certain classes of producers and traders from the provisions and penalties of the anti-trust laws, while all others not so classified are to be held to strict observance of the laws.

George Otis Smith, director of the United States Geological Survey, was the principal speaker at the last session. Mr. Smith asserted that the coal business is unpopular with the public and urged that extensive publicity and advertising campaigns be instituted to regain public confidence. He said that a great deal of the unpopularity was brought about by the operations of a large number of small dealers who made flyers into the market during the era of high prices and quick gains and who were unable to withstand later losses. Other speakers were J. W. Clark of St. Louis, Mo., assistant general traffic manager of the Big Four, who explained operating costs of the railroads in handling coal, and B. R. Inman, manager of the Indiana State Chamber of Commerce.

St. Louis Coal Club

The St. Louis Coal Club held its final meeting of the season May 11 at the American Annex Hotel, St. Louis. Dr. T. R. Bell of the chemical department of Washington University, delivered an address on the "Demonstration of the Method of Determining the Fuel Value of Coal." An actual B.t.u. test was made.

Obituary

John W. Campbell, aged 45, division engineer of the H. C. Frick Coke Co., died suddenly at Ashland, Pa., where he was visiting relatives. Mr. Campbell had been in ill health for some time.

Charles P. Ford, a resident of Marshwood, Pa., for over thirty years one of the most prominent individual coal operators in northeastern Pennsylvania, died in the Scranton private hospital, following an illness of ten days.

Alexander Sharp, a prominent mining engineer of British Columbia, member of the Canadian Mining Institute, and particularly well known because of his knowledge of coal-mining conditions in western Canada, died at Vancouver after a long illness. In the course of a long residence he has been identified with most phases of mining development in British Columbia.

Coming Meetings

Michigan-Ohio-Indiana Coal Association will hold its annual meeting June 15, 16 and 17 at Cedar Point, Ohio. Secretary, B. F. Nigh, Brunson Bldg., Columbus.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York City.

West Virginia Coal Mining Institute will hold its semi-annual meeting June 7 and 8 at Fairmont, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

Rocky Mountain Coal Mining Institute will hold its summer meeting the early part of June at Salt Lake City, Utah. Secretary, F. W. Whiteside, Denver, Colo.

Mine Inspectors' Institute of America will hold its twelfth annual meeting at Charleston, W. Va., July 12 to 15. Secretary, J. W. Paul, Bureau of Mines, Pittsburgh, Pa.

Illinois and Wisconsin Coal Dealers' Association will meet at Chicago, Ill., July 13 and 14.

American Society for Testing Materials will hold its annual meeting at the New Monterey Hotel, Ashbury Park, N. J., June 20 to 24. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

Illinois Mining Institute will hold its spring outing the early part of June on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on June 3 and returning on June 5. Secretary, Martin Bolt, Springfield, Ill.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The 24th annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

American Institute of Chemical Engineers will hold its spring meeting, June 20 to 23 at Detroit, Mich. Secretary, Dr. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7 and 8. Secretary, G. H. Cushing, Woodworth Bldg., Washington, D. C.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Sugar, Coal and Congress

WE ARE about to feel the new emergency tariff in action. The New York *Evening Post* quotes from a bulletin of the New York Coffee and Sugar Exchange as follows: "In the event of the Emergency Tariff Bill now before the Congress of the United States becoming a law, which provides for an increase in the duty on 96 deg. test Cuba centrifugal raw sugar of .5952c. per pound, the value of all outstanding contracts of standard fine granulated sugar shall be increased 63c. per pound, in accordance with sugar trade rule 18, effective upon the opening of business on the day following the signing of said bill by the President."

An increase of 6.3 mills per pound is $12.60 per net ton and there are consumed per year in this country about 3,750,000 net tons of sugar. The new sugar tariff will cost the people of the United States, therefore, something over $47,000,000 per year. This sum is of the same order of magnitude as the increase in the cost of anthracite to domestic consumers in the coal year just closed occasioned by the increase in wages of mine labor awarded by the Anthracite Wage Commission last summer. The increase in wages, it will be remembered, caused the operators to raise the price of domestic sizes $1 per gross ton, and as there were produced and distributed about 50,000,000 gross tons, the cost to the country was $50,000,000, compared with the tax of approximately $47,000,000 levied by the new tariff on one item alone. In round numbers there are required 100,000,000 tons of coal for household use in the United States. In effect, therefore, the new sugar tariff is equivalent to raising the price of coal to householders 47c. per ton.

The Road to Understanding

IT IS profitable occasionally to go back to the beginning for a fresh start in the discussions of the coal question. Intermittent periods of high prices are the manifestations of the trouble with coal. The causes of these high prices are perfectly well known to those who take the trouble to inquire into the questions seriously —shortage of supply in times of greatest demand, caused in the case of bituminous coal by lack of ability of the railroads to meet the peak demand for cars and transportation and in the case of anthracite by lack of labor and mine capacity. In the past two years strikes of mine labor have been factors of no mean importance contributing to the shortage of supply and consequent high prices.

There are now being held in Washington a series of conferences between the several committees representing the coal industry—producers of anthracite and bituminous, wholesalers and retailers—on the one hand and the secretaries of Commerce and the Interior and Senator Frelinghuysen, representing the Government and the public, on the other hand. These men are discussing the coal question in general and the Frelinghuysen coal stabilization bill in particular. As we have previously pointed out, this bill undertakes to do two unrelated things—require certain performance on the part of the coal industry and reorganize Government departments. The bill (S.1807) is admittedly tentative, subject to change in almost every respect. The actual terms as contained in the printed document are not therefore so important as the recorded positions of the several arbiters, if we may so term them, who are remaking the measure.

Senator Frelinghuysen has advised Congress that the purpose of his bill "is to direct the Department of Commerce and the Bureau of Mines to make a careful study of all conditions pertaining to the coal industry, in order that the Government may assist in stabilizing the coal industry and in working out the problems which now exist in the mining, distribution and sale of coal. The object is not to interfere in any way with the business of the coal industry, but, rather, to help it through co-operation and advisory effort."

Mr. Hoover has nowhere more clearly stated his position than in his message to the convention of the National Coal Association (*Coal Age*, May 26, page 962), wherein he said: "It is my belief that both the coal operator and the public will be better protected by regular, prompt and monthly publication of fundamental facts than by extension of legal regulation beyond existing anti-trust acts. . . . The outstanding economic difficulty of the coal as well as some other industries of the country is the cost and risk imposed both on the industry and the community by highly intermittent production. I do not imagine that publicity is a cure-all to intermittency or any other economic ill, but at least it is an assistance toward sounder and more stable industry." Secretary Fall may be expected to bring to the conference the same sound ideas of service that have characterized the history of the Department of the Interior through forty years of contact with the mining industry.

On this record how can we do otherwise than concede that these representatives of the Government are proceeding in good faith and that they seek not to shackle but to help the coal industry? We fully appreciate that in the background are those in Congress who would have drastic regulation, socialistic and destructive in the extreme, imposed on coal—some, like Senator La Follette, because they really believe in it, and others, like Senator Calder, because it may be considered good politics.

No individual and no group of coal men entering this conference on the coal question desires or favors regulation of the industry. The producers, middlemen and retailers are alike opposed to regulation and the beginnings of regulation. This conference between Government and coal, the most important ever held in times of peace, is to consider not the regulation of coal but

how to help the industry without regulation. From the representatives of the American Wholesale Coal Association, who are there as spectators, because so instructed, to the coal operators who, because given power by their constituency to act, are in position to be constructive, the coal industry has been invited in to help in the shaping of its future relation to the public. It is a golden opportunity for the coal industry that may never return.

To go back again to the fundamentals of the question, we believe we can summarize the opinion of those directly concerned by saying that the coal "question" is economic and not political, that legislation offers no answer because all the laws of the land cannot prevail upon a consumer to buy coal when he does not want coal, that regulation of price is unfair to seller, contrary to American ideas of business and in the long run to the disadvantage of the buyer. The hope of betterment lies in better understanding of coal on the part of the consuming and buying public and of more tolerance and self-restraint on the part of the coal seller. There is no panacea for the coal problem. Better understanding all around is the only way to promote that ideal condition in which the consumer may have his fuel regularly at prices that permit industry to thrive and afford the coal industry the profit to which it is entitled.

Opinion among coal men as to the wisdom of sitting in with the Government on such a discussion varies from the one extreme of those who see possible real benefits accruing from such negotiations with friendly interests to those who are "forever and amen" in opposition to the minutest concession to the idea that the consumer has any right to knowledge of any detail of the coal man's business. With the theory of those who fight the "beginning of beginnings" of Federal regulation of industry we have sympathy. It seems to us, however, that there is more opportunity for the present discussions to result in permanent benefit to the coal industry than there is chance for a beginning of regulation of the business.

We find a real sentiment in the coal industry, from end to end, to go through with a constructive program —to accept at face value the helpful sympathetic avowals of Hoover and Frelinghuysen. We are even hopeful that, if Premier Briand can go to the French people with protestations of the ultimate good faith of the German Government and if George Harvey can occupy Wilson's seat on the Supreme Economic Council, George Cushing will see his way clear to leave his crusader's pen hung high in the Woodward Building and lend his genius, understanding and persuasive powers—for which none has great appreciation and more regard than we—to help advance the common cause.

J. G. Bradley, newly-elected president of the National Coal Association, would stand "four square" with ex-Governor Cornwell, who said to the operators "It is your job . . . to put that question before the country and to impress it upon the public mind and to impress it upon the mind of your legislators . . . that the remedy for this question lies with the people themselves rather than with the creation of new statutes. . . . So you have a task in front of you, but the biggest task, the immediate task, in my judgment, is a campaign of education intelligently conducted and based upon absolute square dealing; and I believe if you will conduct it in that way, in due time your problem may be solved and worked out just as we hope all other industrial problems of this country may be worked out, without governmental interference."

Safety in Hydraulic Filling

SOLUTIONS of the mine-cave difficulty in Scranton are hard to suggest and harder still to put in operation. It might have been readily possible to have filled the working hydraulically with surface material had steps been taken earlier. By this time, however, Scranton is so extensively undermined that the work of filling would be an immense job.

No attempt appears to have been made to ascertain what earth and rock can be dug for and how much it will cost to put in condition for flushing. There is no question but that such excavation could be so planned as not to be a total loss. Those who have been paying for injuries to buildings would be spared that expense. Coal would be withdrawn more completely than in the past, and the pits from which the material was obtained might be placed either where coal would be uncovered or rough ground be rendered more habitable, which would minimize the enormous expense.

It is interesting to note that filling has been found advisable under many foreign cities and has been used in mines like the one N. Yamaoka described last week, where no property has to be saved and where the only advantages attained are an increase in the amount of coal obtained and freedom from expensive heading upkeep, spontaneous combustion and dust explosions.

It is true that the conditions in the anthracite region do not parallel those in the Fushun Colliery so well described in last week's issue. The cost of heading upkeep in the mines under Scranton is by comparison low, for the pillar coal is hard. The dangers of spontaneous combustion and dust explosions are absent, and the extraction even without second mining is probably larger. But it is certain that experimentation on a working scale might well be justified, and with such information at hand the companies would be able to decide whether it would pay in dividends of coal saved, voluntary compensations made unnecessary and good will acquired.

Coming of the Solid Car

WHEN the Bureau of Mines was first started it announced itself as in favor of the solid car and showed how generally it was in use abroad. The new wagon appeared to be a reasonable substitute if only the old cars could be scrapped and a different type of dump adopted. The matter was passed along as a good suggestion, but as not essentially practical.

Ten or twelve years have passed and now without heralding or any further effort of the bureau the solid car is coming thousands strong. The manufacturer is providing the dump and the machinery. He will dump the solid car singly or in trips; he will provide it with a cage from which it can be automatically dumped; he has the car as one of his standard designs. The trouble with the Bureau of Mines proposal was that it was not backed with a commercial follow-up. It was a suggestion; nothing more. Industry no longer goes forward on suggestions. It demands completed machinery.

Th ideas must be concrete—they must be wrought into iron or steel or be forgotten. It is useless to develop a Gibbs apparatus, for instance, unless there is someone at hand to construct it. Fortunately in that instance the manufacturer was found, but too often the ideas fall on sterile ground because the bureau, to succeed, must not only find operators ready to adopt but manufacturers willing and able to supply.

Rosita, Mexico, a Carefully Planned City; Pleasing, Comfortable and Hygienic—I

Village for Employees at Coal Mines and Byproduct Plant of American Smelting & Refining Co.—Careful Analysis Made of Probable Population and Its Needs Before Any Building Was Done—Description of Town Site and Materials of Construction

By Hjalmar E. Skougor*
New York City

SOME time ago the American Smelting & Refining Co. acquired the interests of the Madero family and others in the Compañía Carbonifera de Sabinas, S. A., a coal property situated at Rosita, State of Coahuila, Republic of Mexico. As acquired the underground and surface works were found to be of a type not in conformity with modern operating methods and efficient working conditions generally. The same remark applies to conveniences and accommodations for the personnel necessary for the operation.

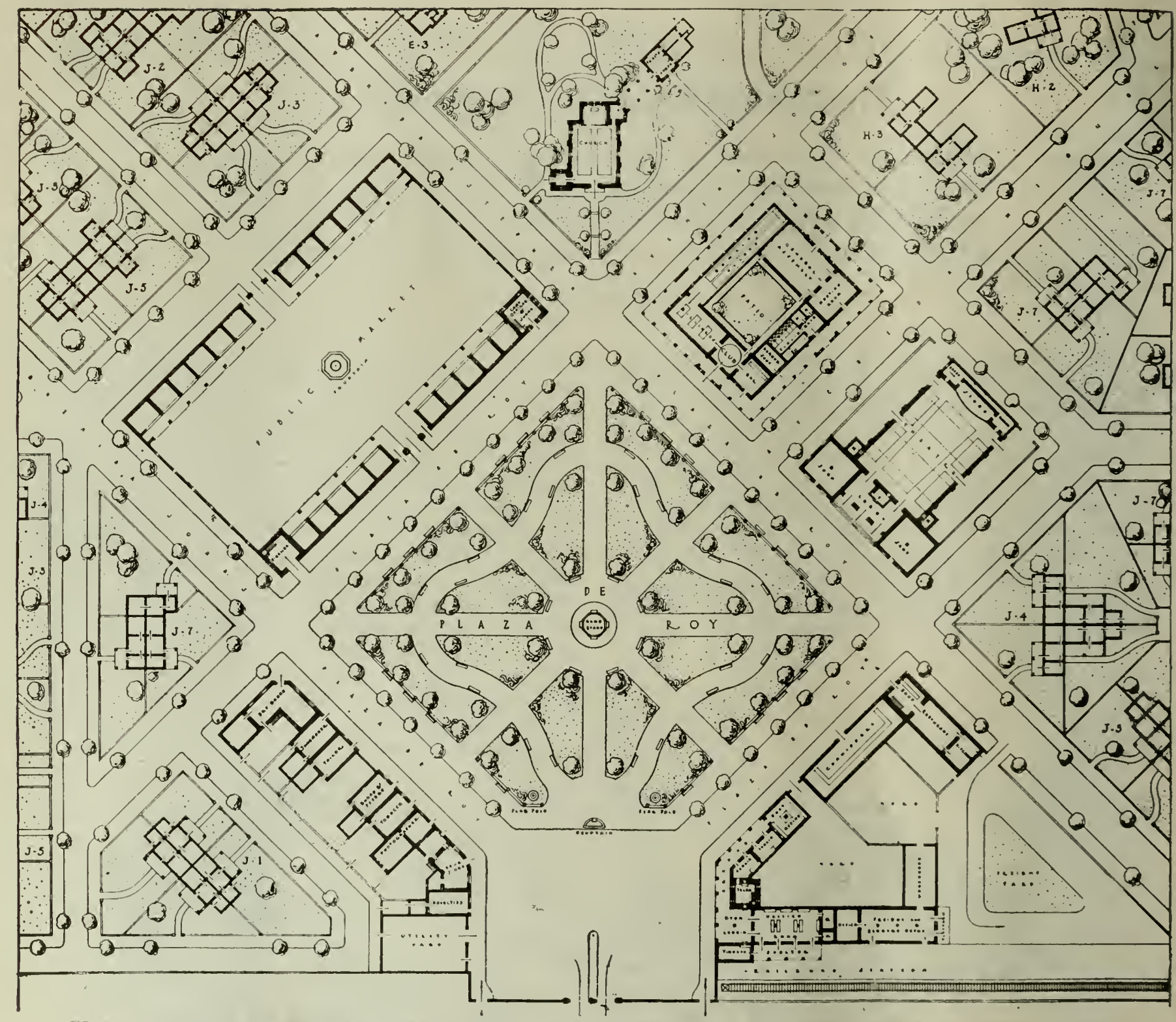
With the improvements contemplated in the welfare program, the coal company's resident and general manager, G. P. Bartholomew, with the full co-operation of the directors of the smelting company, has endeavored to provide the Mexican miners and laborers with conveniences, accommodations and considerations commensurate with such improvements as are gradually being adopted by similar industries in the United States. In this, however, due account, of course, has been taken of local conditions and the racial and national characteristics of the employees.

While the general subject of mine operation is not to be discussed here, it may be of interest in passing to

*Mr. Skougor was architect of the work described.

VILLAGE OF ROSITA, COAHUILA, MEXICO, FOR WORKMEN OF AMERICAN SMELTING & REFINING CO.'S COAL MINES

The town site is situated some 2,000 ft. due east of the plant at the foot of the rugged edge of a large plain. On the top of the hill are situated staff quarters, the hospital and the hotel, the residences of the natives forming two wings from the center on the easy slopes below. Note how the lines are laid as far as possible to accord with the irregular topography and at the same time so as to radiate eastwardly from the Plaza de Roy



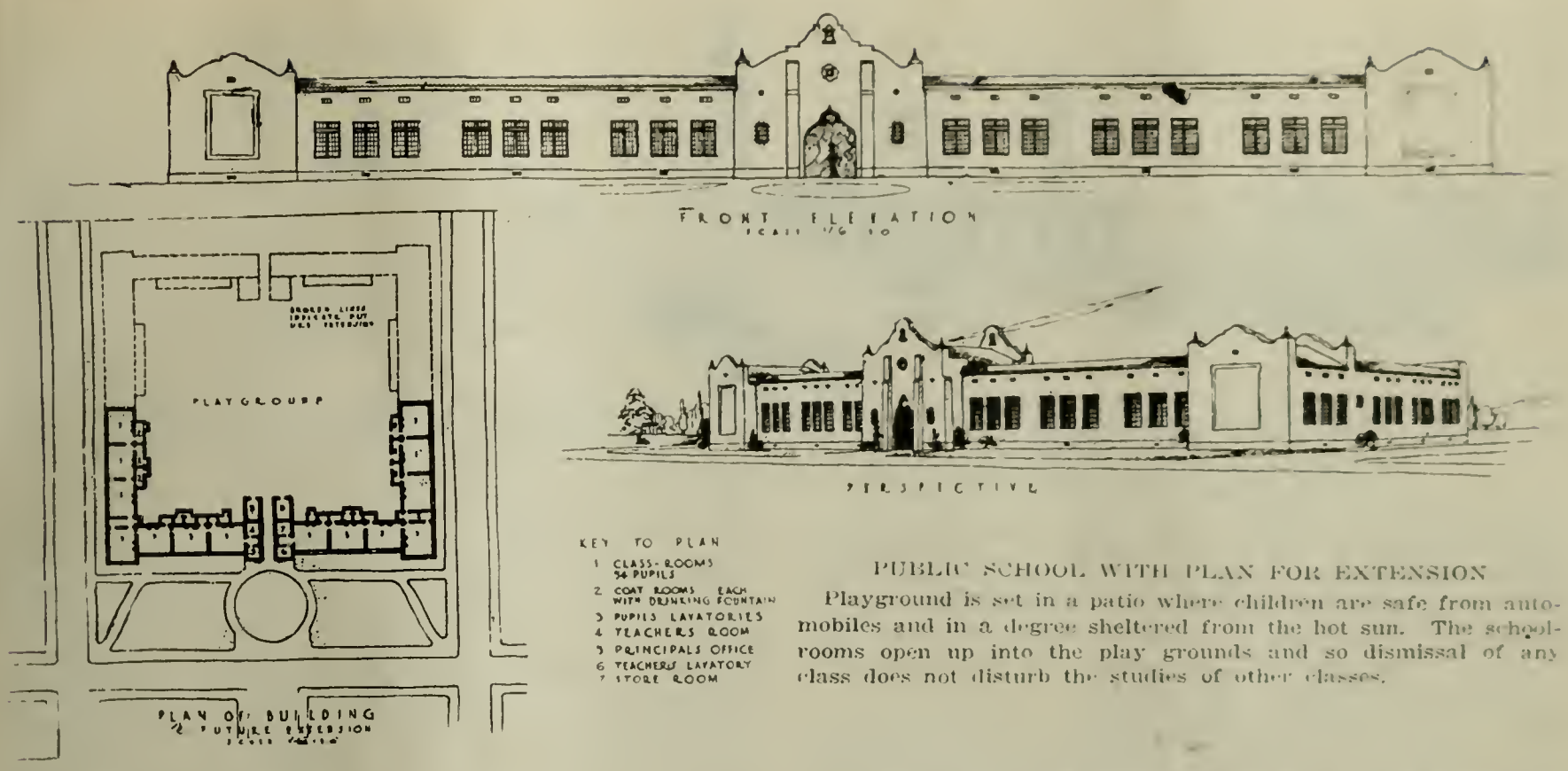
PLAZA DE ROY WITH ITS BANDSTAND, FOUNTAIN AND FLAGPOLES SERVES AS TOWN'S MEETING PLACE
Here are all the principal buildings, church, public market, club, public bath, theater, assembly room, commissary, post office, telegraph office and stores. In the northern half space is reserved for a dry-goods store, for shoemaking, tailoring, the sale of books and papers, for a tobacconist and photographer, for a drug store and for the sale of novelties.

state that the plan contemplated embraces a cycle of operations that will compare favorably with the most modern plants in this country in the way of labor-saving and safety appliances tending to foster the health and protection of the workmen. From two to three thousand tons of coal will be mined daily, crushed, washed and coked in byproduct ovens and the waste gases used as fuel for metallurgical purposes.

In order to provide suitable accommodation for the operating force a careful survey was made of the entire staff from common laborer to manager. The personnel necessary for the operation of this plant was found to be as follows:

Department	Americans	Mexicans
Administration	1	7
Accounting	5	24
Maintenance	8	125
Mining	1	835
Byproduct	5	135
Welfare	1	10
Hospital	1	7
	31	1,173
Grand total		1,204

For the accommodation of the above force the following types and numbers of houses are provided: One manager's residence; eight houses for department heads, accommodating the operating engineer, the chief surgeon, the mine superintendent, the chief accountant, the superintendent of the byproduct plant, the welfare superintendent, etc.; fourteen houses for division heads, accommodating the master mechanics, the chief draftsman, the chief electricians, the coal-washery superintendent, the assistant superintendent of the byproduct plant, the mine foreman and the power-house engineer; two hotels, one to accommodate eighteen single American men and another to house twelve single Mexican men; ten residences for the occupation of American married clerks and foremen; twenty-two houses for married Mexican clerks and foremen; forty-five houses for Mexican mechanics (married), two families in each; 208 houses for married Mexican miners and laborers, four families in each, and twenty-one public toilets or comfort stations. The following public buildings also have been provided: A community building,



PUBLIC SCHOOL WITH PLAN FOR EXTENSION

Playground is set in a patio where children are safe from automobiles and in a degree sheltered from the hot sun. The schoolrooms open up into the play grounds and so dismissal of any class does not disturb the studies of other classes.

stores, theatre, club, public market, public school, hospital and church.

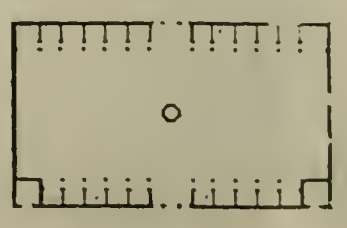
The climatic conditions prevailing in the Sabinas district may be compared with those of Texas, where in the winter season rather heavy and cold northerly winds are encountered, the temperature rarely reaching the freezing point and snow being practically unknown. Heavy rains occur during part of the spring and autumn and occasionally during some of the summer months. The fertility of the soil is a highly pleasing characteristic of this territory, as water in sparing quantities will readily cover the countryside with flowers. Corn, vegetables, trees and a large variety of flowers are easily grown.

In deciding upon the building material for the town site the natural development of building operations in this territory for the past fifty years was strictly adhered to. Adobe masonry, plastered, with wood shingle roofs, has by virtue of its endurance proved superior to any other modern building material, and for that reason was adopted. In places stone masonry has been used, as excellent building stone may be found within easy reach of the town site.

In this part of Mexico the natives are of rather an industrious disposition and adapt themselves readily to agricultural pursuits. This is evidenced by their diminutive flower and vegetable gardens reared among the huts and shanties which were found on the property when it was taken over by the American company.

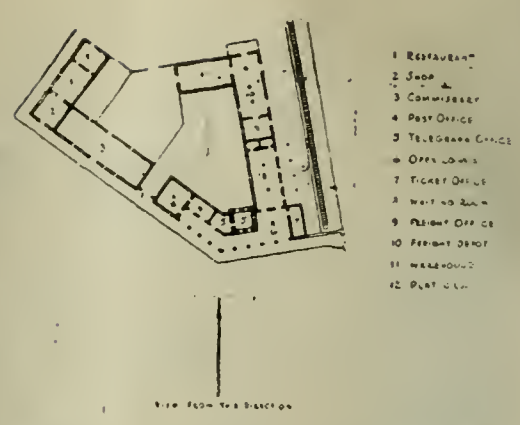
The new town site will be situated some 2,000 ft. due east of the plant, at the foot of the rugged edge of a mesa land. Along the top are situated the staff quarters, the hospital and hotel, with the native quarters forming two wings from the center along the easy slopes below. The town is reached from the plant by a main highway leading directly into the plaza. This plaza is bordered on its four sides by the community building, theater, club, church, market and general stores. The main avenues radiate from this point with the public school lying in a northeasterly direction.

To the north the town is bordered by an arroyo which during the rainy season carries a considerable volume of water. To the east lies a slight hill beyond which future extensions may be accommodated. The main railroad to the plant borders the town site on the west.



PUBLIC MARKET FACING PLAZA ON NORTH EAST

The near tower is to be occupied by the firemen and the far one by the camp officer and judge. In the center of the market is a fountain as can be seen in the plan. On the left of the illustration is an enlargement of the entrance.



PUBLIC UTILITIES BUILDING WITH PART OF THE PLAZA IN THE FOREGROUND OF THE ILLUSTRATION
The righthand corner is the bakeshop and restaurant. Adjoining it to the right is the commissary. To the left of the gateway is the post office and a series of railroad offices. A wall screens the railroad from view, the road being a spur abruptly ending at the station, as may be seen in the town plan.

The mesa land, which terminates in four rugged knolls directly above the main town site, provides the ideal setting for the staff houses, hospital and hotel, affording an unobstructed view for thirty miles. It, of course, overlooks the town proper, yet is reached by an easy grade on foot or by vehicle.

Due consideration has been given to the inherent habits of the natives of the country. As a result the customary plaza and bandstand which invariably form the center of any community and constitute the general meeting place and point of amusement have been provided. Around this is situated such public buildings as have been previously mentioned.

The community building is located at the lower right-hand corner of the plaza and accommodates the railroad station with its baggage room, telegraph and post office, the company's commissary and a public restaurant with sleeping rooms upstairs. Adjoining this group of buildings will be found the theater, which has a seating capacity of 500 and at each corner of which, facing the plaza, has been provided two stores for general use.

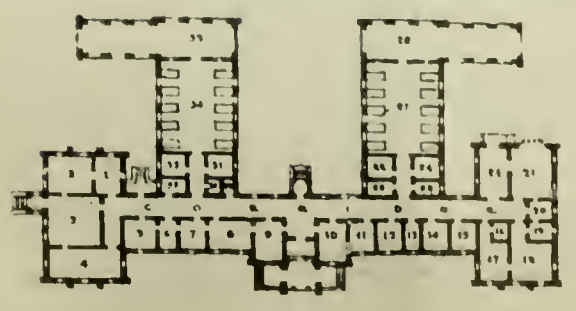
The native club immediately adjoins the last-named building. It includes a bowling alley, poolroom, barber

EAST END ELEVATION

REAR ELEVATION

FRONT ELEVATION

PERSPECTIVE



PLAN

KEY TO PLAN

CLINIC
1 DRUG LABORATORY AND STORAGE
2 DENTAL EYE AND EAR ROOM
3 WAITING ROOM
4 CONSULTATION ROOM
SERVICE
5 SERVANTS' DINING ROOM
6 DIET KITCHEN
7 STORES
8 KITCHEN
9 STAFF DINING ROOM
10 HOSPITAL OFFICE
PRIVATE WARD SECTION
11 PRIVATE WARD
12 PRIVATE WARD
13 BATH ROOM PRIVATE WARD
14 PRIVATE WARD
15 PRIVATE WARD
OPERATING
16 X-RAY ROOM
17 X-RAY ROOM
18 DOCTORS' BATH
OPERATING CONT
19 DOCTORS' BATH
20 STERILIZING ROOM
21 OPERATING ROOM
22 EMERGENCY ROOM
WOMENS WARD
23 BATH ROOM
24 NURSES' STATION
25 CLOTH ROOM
26 WOMENS BATH
27 WOMENS WARD
28 CONVALESCENT WOMENS PORCH
MENS WARD
29 CLOSET
30 SLOP SINK CLOSET
31 MENS BATH
32 ST EY
33 MENS TOILET
34 MENS WARD
35 CONVALESCENT MENS PORCH

COMPANIA CARBONIFERA DE SABINAS S.A.

HOSPITAL

ROSITA COAHUILA MEXICO

MALCOLM STEWART
CONSULTING MINING & CIVIL ENGINEER
150 NASSAU ST. NEW YORK CITY

FROM THE HOSPITAL AN UNOBSTRUCTED VIEW FOR THIRTY MILES OVER A BROAD PLAIN IS OBTAINED

This building has rooms carefully grouped according to needs. Four rooms, comprising one section, house the clinic; five rooms in another section provide for the domestic service, five other rooms in a third section are private wards. Similarly the seven operating rooms are grouped together, one of them being for X-ray work and one for the sterlizing of instruments. There are six rooms for the accommodation of women patients and one more for the care of the men. Like all the rest of the buildings this is built in the interesting Mexican style with stepped fronts duly buttressed. Note the wide open rooms in the rear which serve as convalescence parlors for those whose return to home and industry draws near.

shop, large and small assembly rooms, as well as public baths, these latter being merely showers provided with hot and cold water. The church, which of course is for those of the Roman Catholic faith, is situated directly between the general manager's house and the east corner of the plaza. It adjoins the residence of the priest, which is connected to it by a cloister walk.

The public market is totally inclosed within a wall having two towers facing the plaza. One of these towers has been arranged to house the apparatus of the volunteer fire department, while the other at the opposite corner will house the camp manager on the ground floor and the "presidente," or local magistrate, in the upstairs apartment.

The main market is reached through a portal at both front and rear, opening into a central court, where the merchants will exhibit their wares for sale. A water fountain for man and beast is found in the center of the market proper.

For the accommodation of such permanent general merchandising establishments as a drug store, dry-goods store, cobbler's shop, etc., one continuous row of buildings is provided along the northwest side of the plaza. Some of these have been provided with living quarters in the second story.

For tne education of the children of this community (numbering approximately 1,500 when the mines are working to full capacity) a public school 350 ft. square has been provided containing a total of twenty-eight school rooms, each of which accommodates fifty-six children. The school rooms are reached from the inside court through a hat and cloak room, while passage from room to room also is provided. The principal and teachers have a general room at the central entrance of the building.

It is intended at some later time to utilize the schoolhouse during the evening for safety lectures and educational courses designed for adults. Two rooms also have been equipped for manual training.

A modern and fully-equipped hospital is provided for in the plans. This will accommodate twenty natives in the public wards and also contain three private rooms. The hospital furthermore embraces a public clinic with an operating, sterilizing, and X-ray department.

A system of sanitary sewer mains is provided throughout the town site. The sewage from this system together with that from the plant proper is treated in a sewage disposal plant, the purified water from which will be used for agricultural purposes.

Factors in Stoker Design Which Must Be Satisfied if Dirty Coals Are To Be Burned Successfully

Undisturbed Combustion, Continuous Ash Discharge and Graduated Draft Pressure Necessary to Best Results in Burning Low-Grade Fuels—Agitation of Fuel Bed Usually Results in Clinker Formation

By Joseph Harrington
Chicago, Ill.

TO THOSE possessing a broad view of the national coal situation a trend is discernible toward the utilization of lower grades of fuel of all kinds. This arises not only from the approaching exhaustion of those mines which produce the highest grades of coal but from the desire to utilize fuels of lower cost and greater availability.

Every mine produces a certain amount of substance containing fuel value but which is too low in combustible constituents to render commercially profitable its shipment over great distances or its consumption in power plants using ordinary existing equipment. This refuse material is variously known as bone, laminated-coal, bug dust, machine cuttings, partings, etc. It consists ordinarily of carbonaceous material intermixed in various proportions and in various ways with clay or slate.

The coal measures undoubtedly were submerged at certain times during deposition, and silt or mud washing in from the sea formed a deposit of sediment that penetrated or intermingled to a certain depth with the coal below, eventually making the substances above referred to. It is difficult in many cases to separate mechanically the good from the bad, and there is a growing demand for some mechanical stoker that will satisfactorily handle such fuels.

To define more precisely what is meant by the word "satisfactorily," I would say that in general such a stoker must be capable of receiving this dirty fuel, of introducing it into the furnace, of allowing it to burn down to an ash which must be discharged without the formation of clinkers, or of side-wall accretions. The fuel must be burned at a sufficient rate to develop boiler capacities commensurate with modern requirements.

Much Heat and Fuel Agitation Form Clinker

My analysis of the means by which such a stoker should meet these requirements is as follows: In the first place, this grade of fuel, having a large percentage of ash-forming material, must be allowed to burn quietly on the grate surface until combustion is complete. More often than otherwise the ash will melt, or at least soften at a temperature considerably below those which normally develop in the furnace. Any exposure of the ash to such heat will, therefore, result in its fusion, and a disturbance of the fuel bed at such a time will bring adjacent sticky particles into contact.

This, in turn, results in these particles adhering and gathering others in their passage through the furnace until clinkers of serious and highly-detrimental size are formed. It is a fact too well known to require elaboration here that any stoker which develops high furnace temperatures and at the same time violently agitates the fuel bed will form clinkers so large that they will put the device out of business.

The advantage gained by allowing the fuel to burn

quietly to ash depends on the following phenomena: Starting with a layer of coal at rest upon a grate, ignition originates at the surface of the layer, but penetrates rapidly downward until the entire stratum is undergoing combustion. The air for this reaction, however, invariably comes up from below through the fuel-supporting element, and encounters first the burning fuel at the under surface of the layer. It is axiomatic that combustion proceeds where and in proportion to the amount of oxygen supplied; consequently in such a case combustion proceeds most rapidly at the bottom of the fire, and ash is first formed at that point.

Ash Should Not Be Mixed with Burning Coal

As the ash is formed it loses its capacity for absorbing oxygen, and the entering air simply passes up through the ash already in place until it encounters glowing carbon, which in turn is reduced to ash. Thus the process continues. In the course of time, therefore, the combustion will gradually travel from the bottom to the upper surface of the fuel, leaving ash behind it as it proceeds and stopping only with the layer at the top. It is obvious to anyone following this analysis that the ash as formed is kept both cool and porous by the inflowing air, and clinker cannot be formed unless this ash is mechanically lifted into the furnace, where it is subjected to the full heat of the fire. Therefore, to obtain best results, low-grade coals must be left undisturbed throughout the entire course of their combustion from ignition to ash.

The second requisite, complementary to the first, is that the ash must be discharged as rapidly as it is formed, in order that it may not accumulate in the furnace, with consequent inevitable projection upward into the high-temperature zone.

Much of the ash substance of low-grade fuel forms pasty clinker, even when burned under the foregoing conditions. Of necessity, the first layer formed, as above described, is in direct physical contact with the fuel-supporting element of the stoker, and highly-clinkerous coals will develop an ash that attaches itself to the grate surface. With the properly-designed stoker, this is not a fusing together of ash and iron, but a mere adhesion between the two that can be readily broken if mechanically disturbed. If, however, they are not disturbed, such adhesions continue until the opening or air gap in the grate surface is so completely closed that air can not pass through it.

Passage of Air Alone Saves the Grate

The air necessary for fuel combustion is a life-saver for the grate, and whenever such air is cut off, the grate surface will rapidly heat and burn out. It is vital, therefore, that the air spaces be kept clean. The third fundamental of proper stoker design, therefore, is that these air spaces must be continuously and automatically freed from all ash accumulations and kept open for the passage of air.

The fourth fundamental of stoker design is the suitable application or distribution of the air for combustion. It is obvious that the high-ash content offers a definite mechanical resistance to the flow of air. This resistance is too great for the draft pressures obtained in installations relying on natural draft, and combustion as a result largely ceases because of the inability of the air to force itself through the fuel bed after the ash has begun to form. A mere thinning down of the fuel bed does not suffice to relieve this condition because it results in irregular porosity, a leaky fire, and consequent low efficiency. Fuel-bed thicknesses must be maintained, and enough air pressure applied to overcome the resistance offered.

Modify Force of Draft to Suit Resistance

The method of applying air should be governed by the natural changes in a quiet fuel bed undergoing combustion. As the volatiles and carbons are burned out the fuel bed changes in thickness and in its resistance to air flow. It becomes necessary, therefore, in order to obtain the proper air distribution to divide such a grate surface or fuel bed into certain zones wherein the character of the resistance does not materially change, but which are of sufficient number to allow a graduated application of air pressure. We have, then, as the fourth fundamental the graduated application of forced draft.

The fifth condition, which will be thoroughly appreciated by many engineers, is the necessity of having a grate surface so designed as to prevent the finer particles of coal from filtering through, causing holes to develop in the fuel bed and keeping the hot, incandescent fire in direct contact with the grate surface. Many of the semi-waste products of the mine are naturally fine, and if any portion of them can run through an opening in the grate surface, the result is an early short-circuit of air with coincident loss of fuel into the pit, and a retardation of the combustion around such a short-circuit.

This causes three distinct kinds of loss: The actual loss of fuel through the hole, the excess air dilutions caused by the short-circuit, and the loss due to retarding combustion in the area immediately surrounding the hole.

The importance of each of these losses will appear to the thoughtful reader. I can only emphasize the fact that they must all be eliminated simultaneously in the stoker that is to burn successfully the lowest grade of coal. They are strictly fundamental and cannot be overlooked.

Important Details in Furnace Design

Utilization of low-grade coals involves a number of minor matters pertaining especially to machine design but which I will not dilate upon because of their secondary importance. They may be briefly summarized as follows: Conditions conducive to melting the ash must be reduced as far as possible through a furnace design that will keep the temperatures down to a reasonable degree.

The inevitable depreciation of the grate surface must be met by building up this part of the stoker from light elements, thoroughly cooled, and readily removable while the machine is in operation. All brickwork must be kept from physical contact with the hot fuel bed in order to avoid side-wall and bridge-wall accretions. Extra large ashpit accommodations must be provided. The fuel must be prepared in fairly uniform size, so that the good and bad particles may be evenly mixed, thus obtaining a homogeneous fuel bed.

The ability to utilize the lowest grades of coal will add tremendously to the fuel resources of the country and become a factor in our national conservation policy too important to be overlooked. All encouragement possible should be given to those who have attempted to solve the problem of efficiently utilizing low-grade fuel waste.

Kingston Plant Designs Its Locomotives to Suit Its Needs And Charges Them All in a Single Station

Gathering from Rooms Widely Separated, the Storage-Battery Locomotives Are All Brought to One Central Point for Charging —This Has Been Found Advisable Even Though Some of These Machines Must Travel Down Slopes and for a Mile or More

By Dever C. Ashmead
Wilkes-Barre, Pa.

IN INTRODUCING any new mechanical device or system many things, as a rule, have to be carefully thought out and studied before satisfactory results are obtained. Back in 1914 the Kingston Coal Co. introduced electric storage-battery locomotives into its mines. Prior to that time trolley locomotives and mules had been used for haulage purposes. When the country went to war and the men were called to their country's defense, mule drivers were hard to obtain. This led the coal company to introduce storage-battery locomotives to replace the mules.

The first locomotive placed in operation in this company's mines supplanted nineteen mules. After a year of experimentation the company purchased more of these machines, but it was not until some time after the war broke out that it procured the large number that it now operates.

At all of the mines of this company storage-battery locomotives are used, but the largest installation is located at mines Nos. 2 and 3. Shaft No. 2 has three locomotives, the Old Slope three, the Orchard vein one, and the No. 3 shaft has six, making a total of thirteen machines in all.

Company Makes All Its Own Locomotives

Five different makes of locomotives are being used, namely, General Electric, Westinghouse, Jeffrey, Ironton and the company's own make. All the locomotives now being installed are being built in the company's own shops. There are two reasons why this company is making its own machines rather than buying them from some one of the many manufacturers. The first is because a large force of machinists must be maintained to take care of regular repair work, and as at times there is not sufficient work of this nature to keep these men busy the company, rather than lay them off during slack times, employs them in making storage-battery locomotives.

The second reason is that the coal company has not been able to induce the manufacturers to construct the type of locomotive that it considers best adapted to the needs of the anthracite coal fields. An official of the Kingston Coal Co. tells me that the storage-battery locomotive manufacturers appear to think that the same design of machine that is successfully employed in the bituminous regions is entirely applicable in the anthracite fields. This is not so, as the mining conditions even in the flat beds of the anthracite region differ radically from those existing in the bituminous fields.

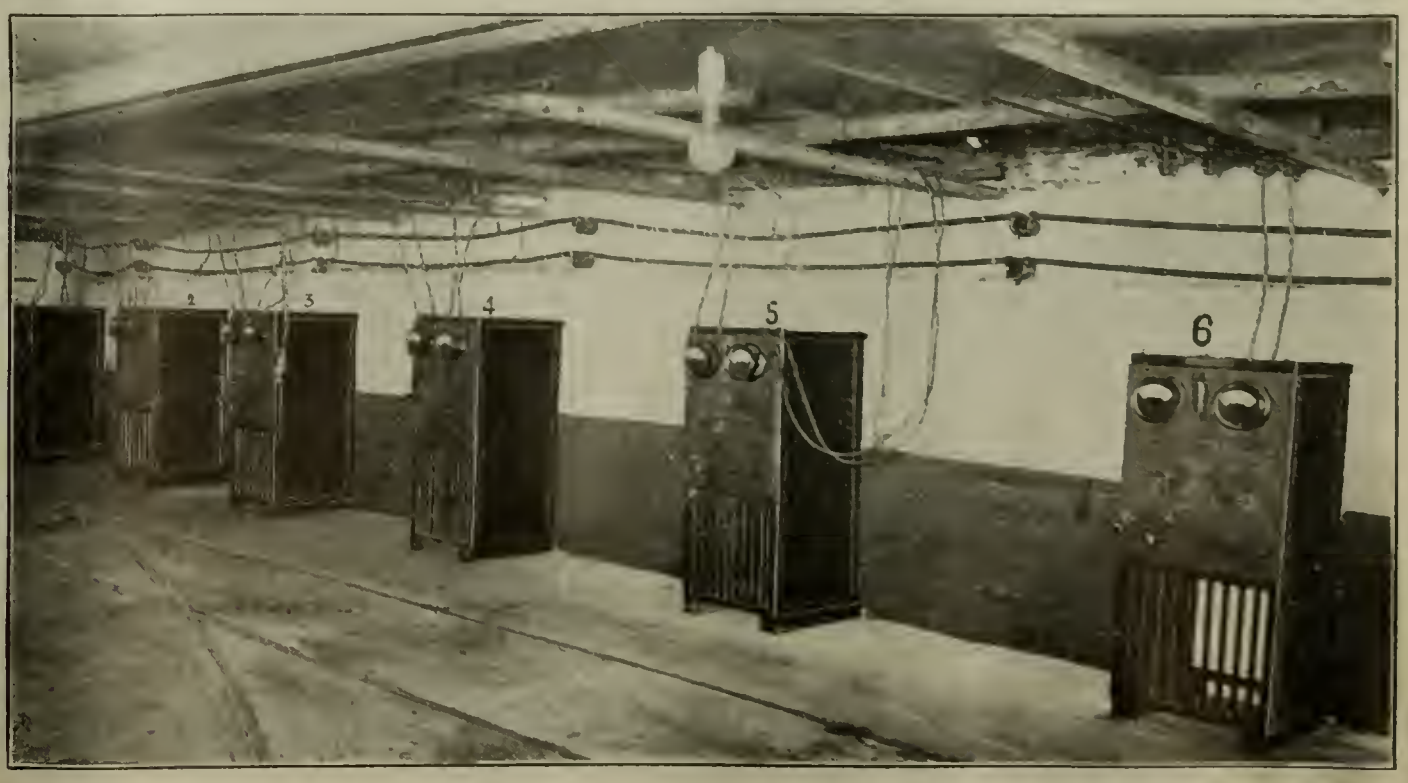
Travel Crooked and Narrow But High Roads

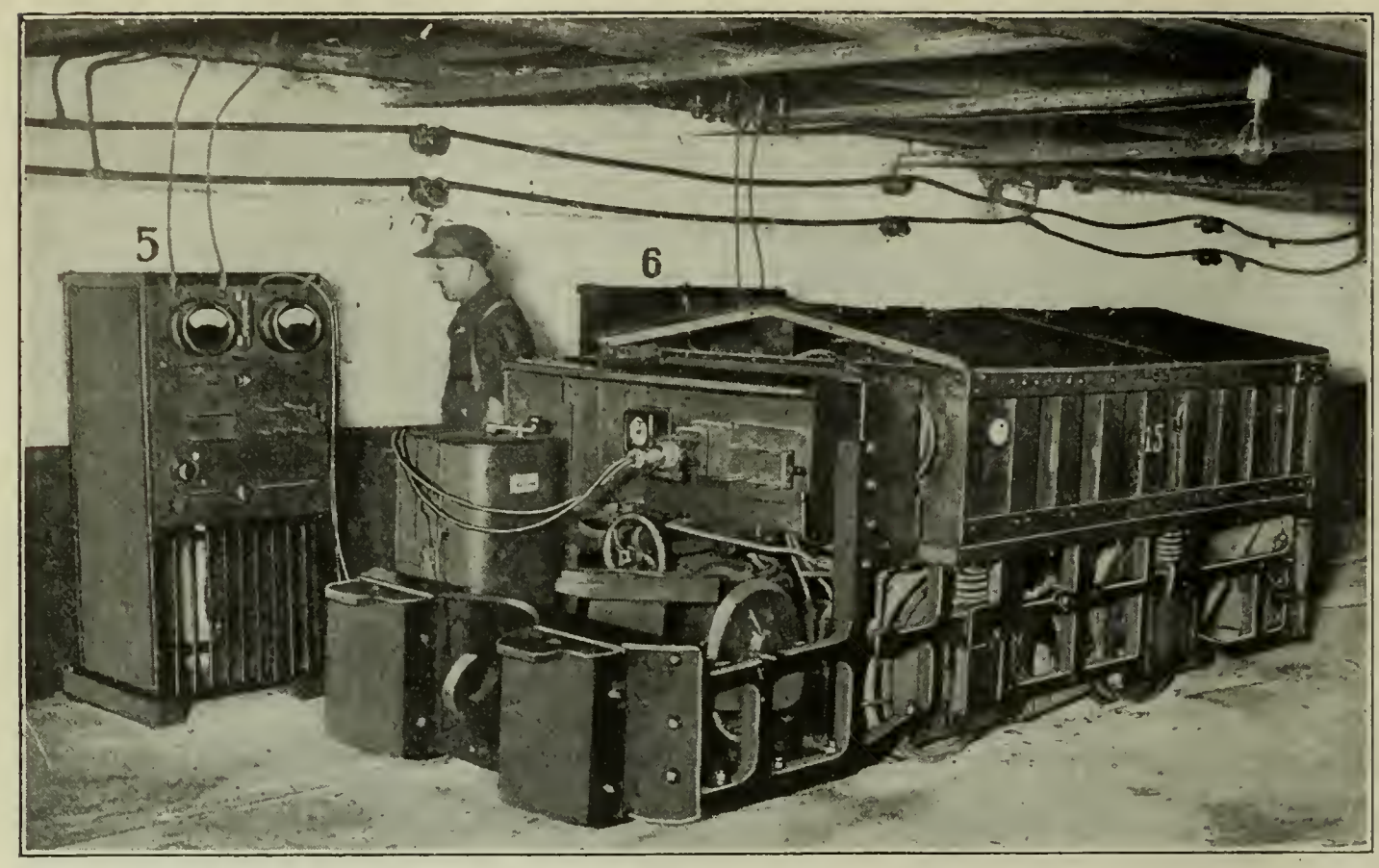
Developments in the anthracite region are all old, and the headings are not ordinarily as straight and as wide as they are in the bituminous fields. Room curves also are much sharper. The height of the headings usually is greater in anthracite than in bituminous mines. Consequently, instead of using a long low locomotive a much higher one can be employed, which must be much shorter than those used in the bituminous fields in order to permit the machines to make the turns into the rooms and chambers of an anthracite operation.

Mining in an anthracite mine is conducted at seat-

Central Charging Station

When a chargeman attends several stations he cannot give them effective supervision, for he cannot tell just when a battery will be fully charged. Overcharged and undercharged batteries are sure to result, the latter because with absentee charging it is necessary to charge batteries slowly. Hence the central station.





Charging a Battery

Charge room is at No. 3 shaft, R. A. vein. Locomotive is of Westinghouse make with a battery box specially designed to suit local needs and manufactured at the company's machine shop. Six locomotives can be charged at one time and room is provided for extending the station as fast as need dictates. A station such as this is far safer than the mule barn with bales of hay and wooden stalls.

tered points, two or three men working here, four men there and ten in another heading, etc. Thus the coal has to be gathered from places that are widely scattered. Comparatively few of these storage-battery machines take the coal to the shaft bottoms. On the contrary, they deliver it to the top of some underground plane or to some slope or to a main-line haulage locomotive. This means that it is difficult to bring these machines to any one point for charging.

Of course, when the locomotives are working on different levels in the mine it is difficult to assemble them in this manner. Even when they are operating on the same level it is inconvenient to collect them, as in many instances they would have to be either lowered down or hoisted up a slope. The scene of their daily operation may be as much as two miles from the shaft bottom.

Experimented with Local Charging Stations

With these considerations in mind the Kingston Coal Co. rather naturally decided to have each locomotive charged at a point near the workings in which it operated and did not try to bring them all to a central station for charging. After trying out this system for some time it found that it was not satisfactory, as the locomotives, when they were charged, did not receive the proper care. The man performing this work had to travel from one locomotive to another, and when he had six to look after in widely scattered portions of the mine none of them received proper treatment. He might fail to visit a machine at the proper time because it was too far away and accordingly he would trust to luck and fervently hope that everything would be all right. The results obtained were not satisfactory, and for this reason the coal company decided that it was necessary to make other arrangements.

One end of the mule stable was selected as the location for a chamber to serve as a central charging station and storage barn for the locomotives. Now, each night after completing their work the storage-battery machines are run to this charging station. Some are hoisted up slopes, some must travel more than a mile to be charged, but nevertheless all come to the same point each night. Here a man is always in attendance, and consequently the locomotives receive the proper oversight.

This charging station is quite complete and well arranged. All of the charging panels are on one side of the room. This permits the operator to watch them more carefuly than if a few were placed on each side of the station. The charging room is double-tracked and at present has a capacity for six locomotives as well as six charging panels, built by the Cutler-Hammer Manufacturing Co.

Although there is now a capacity for only six motors it would be exceedingly easy to enlarge the station to accommodate any number of machines. All that such an addition would entail would be the removal of the rear wall, separating the station from the mule barn, thus extending the charging space down the barn to any desired point.

Henry B. Fernald, an accountant of New York, discussed the sales tax on coal in opposing the sales tax before the Senate Finance committee. "Coal will be subject to the sales tax, with one or more turnovers before it reaches the miller or the baker, so that in some form or other the sales tax applicable to coal must be reflected in the cost of bread," he said. "But we cannot consider merely the tax on the sale of coal itself; we must consider the tax involved in every item which enters into the cost of coal. Railroad freight is an important item both in coal and wheat and we cannot expect railroad freight not to be increased if the railroad is having the cost to it of all the materials it uses increased even two to three per cent by the sales tax." He also referred to the cost of coal entering into the cost of steel rails, saying: "When we attempt to figure the increase of freight due to the sales tax on steel rails and the cost of rails increased by the sales tax on coal and coke and by the increase in freight on coal and ores, we get into an endless chain." Senator Smoot, author of the proposed tax, said the amount of tax entering into the manufacture of bread would be very small. F. R. Plumb, of Philadelphia, opponent of the tax, said the miller's flour cost would be increased by the increased taxes on things which he buys, including coal. The costs of the baker would be increased by the tax on coal for his ovens.

By Rapid Vibration, Caused by Electric Motor, Wire-Cloth Screen Is Made to Afford Large Capacity

Screen Uses Little Power Yet Vibrates 3,600 Times Per Minute—Passes Large Quantity of Material for Floor Space Occupied and Does Not Sway Building in Which It Is Housed, as Does Reciprocating Screen

SCREENING is perhaps today the major operation involved in the preparation of coal. In former years the revolving screen was quite popular. This device, however, consumed an excessive quantity of power and by its action appreciably increased the percentage of small coal produced. It accordingly gave way to the inclined oscillating screen. Recently the vibratory, or, as it is sometimes jocosely called, the "shimmying" screen, has made its appearance and is meeting with a fair degree of favor.

The Mitchell electric vibrating screen differs radically in construction, appearance and operation from those which operate by oscillation. It was developed at the plant of the Utah Copper Co., Garfield, Utah. The screening surface, which is wire cloth instead of perforated metal, is stretched transversely from a cast-iron frame. Below the screen and mounted upon the frame by a ball-and-socket joint is the "vibrator unit" containing a motor of 1 hp.

The shaft of this motor is extended both ways about one-fourth the transverse width of the screen. At each end this shaft carries a small hard-fiber cylindrical ball cage having radial bored holes of uniform diameter and depth. Into the holes upon one side of the ball cage at one end of the shaft and into corresponding holes on the opposite side of the ball cage on the other end of the shaft, loose fitting steel balls are inserted, each ball being restrained by and rolling in a suitable steel race. The whole mechanism—motor, shaft, fiber ball cages, balls and races—is inclosed within a dust- and water-proof casing. This is designated as the "vibrator unit."

It will be evident from the foregoing that when the motor is started the balls upon both ends of the shaft fly out against their respective races. As these balls on one end of the shaft are at 180 deg. from those on the other—that is, are upon opposite sides of the shaft—they throw the "vibrator unit" out of balance, so that both ends of the device describe small circles, the amplitude of which depends upon the speed of the motor.

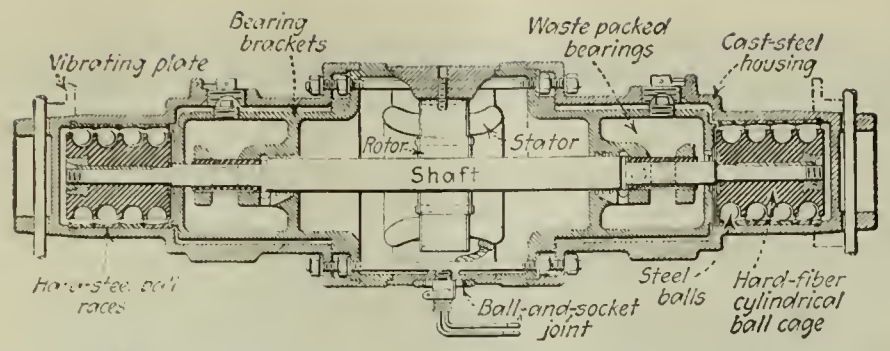
Upon each end of the motor housing plates are fastened to bear against the wire-cloth screen. Perhaps it should rather be said that the screen is stretched across the plates exactly as the strings of a violin or similar instrument are drawn taut over the bridge of a sounding board. With the violin, vibration of the string, transmitted through the bridge, causes vibration of the "belly" of the instrument. With the Mitchell screen, however, the "bridge" is vibrated by the motor and its movements in turn transmitted to the "string," which in this case is the screen cloth. To the screening surface, therefore, is imparted a small but rapid undulatory, sinusoidal or "shimmying" movement.

Vibration Gives Screen Large Capacity

In the screening surface each wire of the screen cloth has a circular movement of small amplitude, and in consequence of this motion the screen "clears itself" with extreme ease. Its capacity also is many times greater than that of an oscillating screen of the same area. As

Screening Fine Coal

As installed in the Mineral Spring breaker of the Lehigh Valley Coal Co. Screening capacity is hard to attain with fine wet coal because it has such a marked tendency to pack. This screen was invented and installed in the Arthur copper-concentrating plant by B. A. Mitchell, chief mechanical engineer of the Utah Copper Co.



VIBRATING MECHANISM BY WHICH AN UNDULATORY MOVEMENT IS IMPARTED TO THE SCREEN

This vibrating mechanism is attached to the screen frame at the center of the base by means of a ball-and-socket joint. Within the casing is an induction motor provided with a long shaft, on either end of which is a hard-fiber ball cage. One row (or two adjacent rows) of openings or pockets in the cage at one end of the shaft is supplied with balls, as is also the row (or rows) on the opposite side of the shaft at the other end. When the shaft is revolved rapidly the balls naturally fly out against the races encircling them, putting the entire mechanism symmetrically out of balance and causing the ends of the housing to wabble—that is, to describe small circles. Undulatory motion is thus transmitted through the vibrating plates or "bridges" to the screen surface. As the motor is completely incased within a cast-steel housing, it is not exposed to dust or dirt, which if admitted would greatly shorten its life.

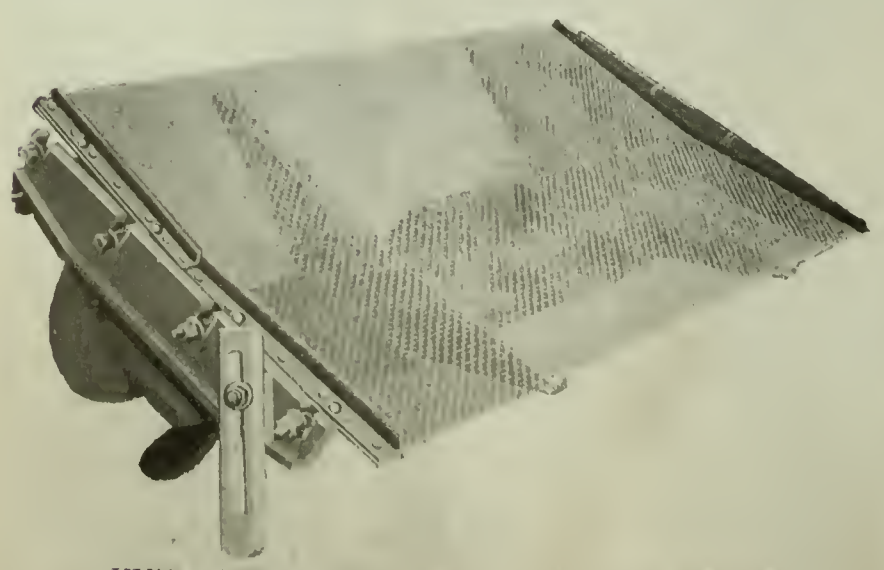
the motor and mechanism are incased watertight, the screen may be used with equal facility upon either wet or dry material. For the same reason the supply of lubricant for the bearings may be made large. In fact the driving motor ordinarily is oiled only once in three months.

Designed originally for use in the treatment of copper ore, this machine proved so efficient that about a year ago it was placed upon the market. Since that time it has been applied in several industries and is now in use in sizing a wide diversity of products. It attracted much attention in the coal industry, both anthracite and bituminous, and several of these machines have been installed and are being used for coal sizing.

Screen Relieves Crusher, Improves Coal

In bituminous operations these screens as a rule are installed in plants crushing coal preparatory to coking. The screens are so placed that the discharge from the crusher passes across them, the oversize being returned to the pulverizer for further reduction. In washeries the use of this device insures a feed to the jigs or tables that is at least approximately uniform in size, thus assuring a high efficiency to the washing units.

In some cases where crushers have been overloaded these screens by removing the small sizes from the crusher feed have relieved that machine of an appreci-



VIBRATORY SCREEN AS SEEN FROM ABOVE

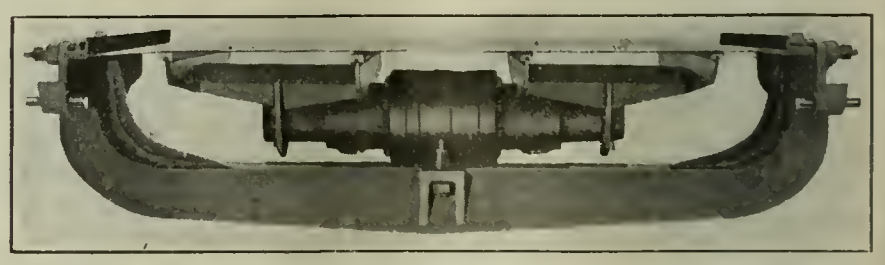
Screen is set at an angle and the rapid vibration of the wire cloth prevents the coal from adhering to the wires and bridging over the spaces, as wet and even dry material is prone to do. The effect is as if a boy was engaged to belabor the screen and could do it sixty times a second. The work of the screen as vibrated by the motor, however, is more effective and not destructive to the wire cloth. Vibration also is distributed over the whole screening surface.

able burden. Such an installation not only enables the crushing rolls or mills to serve a large output but in large measure lessens the production of extremely fine material, which in some cases is objectionable. Coke is highly amenable to separation on the Mitchell screen. Many steel companies now use this device in preparing both breeze and domestic sizes.

Will Save Much Space in Breaker Buildings

Only recently has the utilization of this screen been attempted in the anthracite field. One of the large producing companies, however, has installed one of these machines in one of its breakers and has planned a series of exhaustive experiments in order to determine what capacities can be developed. These tests have been under way for only a short time, but highly encouraging results have so far been obtained. If these trials prove as favorable as the tests thus far conducted would appear to indicate, they will mean much for anthracite preparation.

For example if this screen be adopted the size of breaker buildings can be greatly reduced, as the capac-



TWO TYPES OF THE MITCHELL VIBRATING SCREEN

The motor is attached to its supporting frame by a steel strap, which does not in any way interfere with the shimmying of the motor casing by which the wire cloth is vibrated.

ity of this screen per unit of area is many times that of the shakers now employed. Furthermore, power consumption will be lowered, and no mechanical apparatus whatever, outside of that under the screen, will be necessary. In view of these possible benefits much interest attaches to these tests, and the results achieved are being watched with more than usual interest.

Capacities attained with this machine, of course, vary with the size of screen cloth used as well as with the composition of the coal treated. When equipped with a screen surface having ½-in. square openings and fed with a half-and-half mixture of undersize and oversize the machine will successfully handle a feed amounting to two tons per square foot of screening area per hour. The capacity of the device per square foot of screen area increases as the size of opening is enlarged, although possibly not in exact proportion.

This device is manufactured and sold by the Stimpson Equipment Co., of Salt Lake City, Utah.

Nova Scotia is being asked by the British Admiralty to quote lowest prices, f.o.b., and to state where the coal can be delivered. On behalf of the British Empire Steel Corporation, the Dominion Steel Co. has been negotiating with the Admiralty, which has been assured of what coal was needed in the event of a shortage. The Admiralty is sounding out the situation as a result of the miners' strike

In Flotation Process Fine Coal Attaches Itself to Oil and Bubbles, Thus Floating Away with Froth

Gravitational Methods Formerly Were Used in Separating Coal From Its Impurities—It Is Now Proposed to Use Oil to Collect Coal and to Make a Froth to Which Coal Will Adhere

By E. G. Hill*
Pittsburgh, Pa.

ENGLISH journals note the reading of a paper on the cleaning of coal by froth flotation before the Society of Chemical Industry by Arnold F. Bury and Arthur Bucknell. From these reviews it would appear that the process, which has been such a complete success in the metal-mining industry, is now being successfully applied in England to the treatment of coal.

In writing the following description of the process it is assumed that many coal-mining readers are unfamiliar with the process, as it has been confined in this country to the treatment of metalliferous ores, except at a few plants where non-metallic materials, such as graphite, are being treated.

Powdered Coal Floats If Gently Deposited

It has long been known that certain minerals, when finely ground, tend to float on the surface of water, although they have specific gravities exceeding that of water. No doubt many have noticed how readily powdered coal will float if gently deposited on the surface of water.

For some time before the introduction of the "flotation" process this power of some minerals to float had for a long time attracted the attention of men engaged in treating ores, mainly because the floating particles constituted in most cases the valuable contents of the ore. Of course, in treatments which depended upon the greater specific gravity of the valuable material as a means of separating it from the worthless gangue, this caused considerable loss.

This tendency of metallic minerals (usually the sulphides) to float, and that of the gangue, or earthy materials, to be wetted by the water and sink, naturally led to the development of processes to utilize this principle. It also was observed that the metallic particles were more easily coated with oil than was the gangue.

Some Particles Disposed to Float in Oil

This last property especially appealed to the inventor, as he knew that the oil, being lighter than water, would float. So a process was evolved which consisted of mixing an ore with large amounts of oil and then allowing the oil and ore to fall onto water. The sulphides attached themselves to the oil, and the oil, being lighter than water, rose to the surface, carrying the sulphides with it. The sulphides, having much heavier specific gravities than water, naturally required relatively large amounts of oil to float them. This fact with other difficulties prevented the process from being a commercial success.

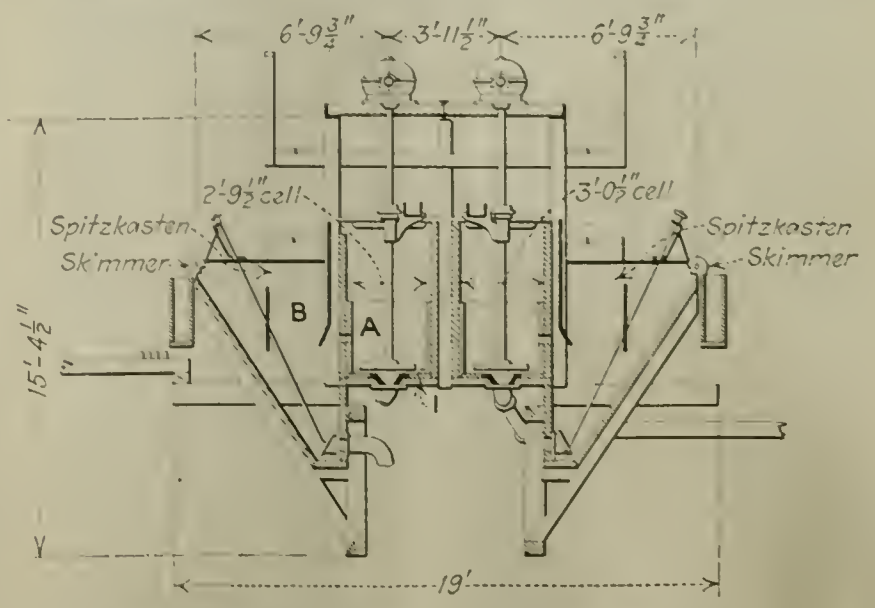
About this time (1902) another important principle was discovered. It was observed that in treating a ground ore which in the presence of acid gave off small bubbles of carbon dioxide, the gas bubbles would attach themselves to the sulphide particles and thus float them to the surface, while the gangue minerals would not be attached, so remained at the bottom.

At this period of the development of flotation there had been utilized all the basic principles of the modern process, namely: (1) Tendency of sulphides to float in water; (2) selective action of oil for sulphides; (3) tendency of sulphides to attach themselves to gas bubbles.

Process Utilizes All Three Principles

However, no process had been evolved combining all these factors. The next step was the development of such a process. It is interesting to note that the process was invented while trying to apply the principle of the selective action of oil. Oil, water and ore were mixed together in a mechanical agitator, the purpose of the agitator being to give a better coating of oil to the particles. At first a large amount of oil was used, but during the experiments the amount of oil was decreased until only a small amount was being used. As the oil was decreased, instead of an oil scum accumulating at the surface, as formerly, there appeared a mass of bubbles carrying sulphides. At this stage the sulphides were no longer held up by the buoyancy of the oil but by that of the gas bubbles, the gas in this case being air introduced by the agitation.

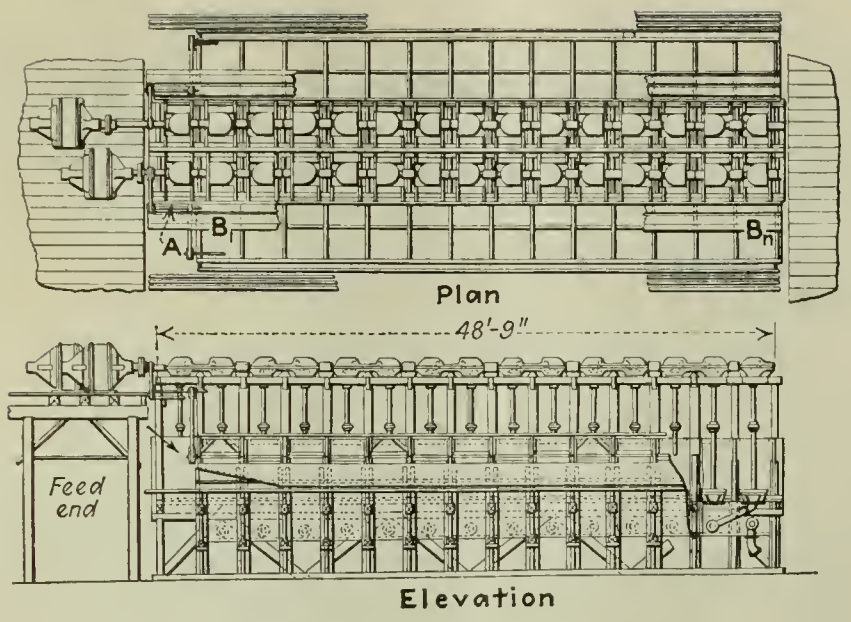
Thus the process developed into one wherein water, ground ore and a small amount of oil (less than 1 per cent of the amount of ore) were beaten together by an agitator. The sulphides received a thin coating of oil, were attached to the air bubbles and floated to the



AN ELEMENT IN A FLOTATION BATTERY

There is an agitating chamber (A) in which an impeller (1) mixes coal, water and oil together. The mixture goes into spitzkasten (B). It is a froth resembling beaten egg but black with particles of coal. The top of this mixture is skimmed off. What remains goes to another compartment (A).

*School of Mines, University of Pittsburgh.



BATTERIES OF FLOTATION ELEMENTS

The material taken off from the various compartments varies in composition. From the first few only the pure coal is taken. As the pulp flows through cell after cell the quality of the froth declines, but by varying the impeller speed and the frothing reagent various products can be taken off at the different spitzkasten.

surface while the gangue minerals were not oil-coated or attached to the bubbles and remained in the pulp. This proved to be a commercial success and further development has made it applicable to many minerals. The patent is held by the Minerals Separation Co.

Other processes have been evolved and the patenting of the various processes has led to a great deal of litigation which still continues. Most of the suits being brought against operators by the Minerals Separation Co. are for infringement of the above patent. At present the general statement might be made that an operator is held to be infringing upon the Minerals Separation patent if he utilizes violent agitation and less than 1 per cent oil.

Being Applied to Coal as Well as Metals

There has been much opposition to the paying of royalties to the owners of the above patent, the validity of the patent as applied to many processes being questioned. The Minerals Separation Co. is said to have been arbitrary in the matter of contracts, royalties, etc. Accordingly many operators have varied their practice so as to avoid the payment of the royalties. Many use more than 1 per cent of oil, while others employ machines that do not give violent agitation. The above process is the one referred to in the first paragraph of this article as being now utilized in the cleaning of coal.

The accompanying sketch shows an ordinary form of machine for the Minerals Separation process. It consists of a series of so-called cells. Each cell except the first consists of an agitating chamber (*A*) and a settling box (*B*). Agitation is accomplished by means of a rapidly revolving impeller (*I*). The first cell has only the agitation chamber (*A*), no froth being taken off from this cell. The coal, water and oil are fed into the compartment *A*, where they are beaten together. The pulp is then drawn into the next compartment, etc. Thus the pulp travels successively through each compartment (*A* and *B*), being finally discharged from the last compartment (*B*).

The froths taken off from compartments $B_{1\text{-}2\text{-}3}$ vary in composition. The first few compartments carry pure coal only. Naturally, as the pulp flows through the series of cells the froth gets poorer in quality. In ordinary ore concentration practice it is possible by varying the frothing reagents used, the impeller speed, etc., to take off various products at the different compartments designated *B*. If a froth is found to be too poor to be taken off as a concentrate it is returned to a cell that stands higher up in the series. It is probable that in the test referred to the first few cells deliver a froth carrying good coal, the next a froth carrying high-ash coal, and the last one is so poor that it must be returned to the preceding cells. The discharge is shale and very impure coal or bone.

Oils Divided Into Collectors and Frothers

The oils used are reported as being coal-tar, creosote, amyl-alcohol, soaps, etc. In the concentration of ores, the oils are divided into two groups, namely, collectors and frothers.

The collector is supposed to perform the function of coating the particles. The function of a frother is to alter the water so as to allow of the formation of a good froth. Some oils have the properties of both a collector and a frother. It is impossible to foretell with any accuracy how a certain oil will act with an ore until tests have been made. As a rule mixtures of oils are used, the best mixture being found by testing. Among the collector oils that have been used are coal-tar, coal-creosote, pine-tar, hardwood-tar, crude petroleum and many of its fractions. The amounts used are usually very small, being 1 or 2 lb. per ton of coal treated.

Among the frothers are pine-oil, pine-creosote, hardwood-creosote, turpentine, resin-oil and certain coal-tar fractions like phenol, cresol and tar acids.

The coke producer should note that many of the reagents used for frothers and collectors are byproducts of coking. For instance, coal-tar would be a cheap reagent at a byproduct coking plant, and there should be no objection to using it in rather large amount, as it would add its calorific value to the coal. This might be of advantage if it were found necessary to use more than 1 per cent of oil.

The froth is collected in tanks and the froth broken down, fine water sprays sometimes being employed. The mineral content settles to the bottom. Drying usually is necessary. In coal treatment where the cleaned coal is dried by filters and driers this operation has given much trouble, but this is true wherever fine wet coal is handled.

An article entitled "Froth Flotation for Cleaning Coal Being Tried Out in England," appearing on p. 497 of the issue of *Coal Age* of March 17, 1921, shows the results obtained as given by Bury and Bucknell in an address before the Society of Chemical Industry, of England.

Pyrite Tends to Float as Readily as Coal

Costs are said to be reasonable and several companies are reported to be using the process. A plant to treat 1,000 tons daily is now being erected in England to prepare coal for making metallurgical coke.

It will undoubtedly be some time before the process will be applied to American coals, as it is limited to materials not readily cleaned by the usual coal-washing machines, which depend on the relative specific gravities of the particles for their separating action. There are several obstacles to be overcome. Pyrite tends to float as readily as the coal. The draining and drying of the products also present difficulties. However, these are being overcome and undoubtedly will be eliminated.

There can be little doubt that the time will come when it will be applied to the reclaiming of fine coal from waste products and to the preparation of low-ash coal from high-ash coal. The process should appeal to metallurgical coke producers, especially if the sulphur be also reduced. The sulphur elimination probably will be a fairly hard problem, but when one considers that in ore concentration pyrite has been made to sink in a pulp while other minerals were floated, its solution would appear possible.

Experiments on some Pennsylvania coals are now being carried on in the laboratories of the School of Mines, University of Pittsburgh. Upon the completion of these tests we hope to be able to give more detailed information as to reagents, action of materials, etc.

Borehole Delivers Clean and Dry Sand to Locomotives in Shaft Mine

AT THE majority of bituminous-coal shafts sand for the locomotives is not efficiently handled. Where coal is brought out through drift entrances the necessary abrasive is supplied from a drying oven without appreciable loss of time on the part of the locomotive driver and without any special provision on the part of the management. Common practice at such operations is to locate the sand house in such position that the

FIG. 1. ONE ROOM SHED SHELTERS DRYING OVEN

A cannon-ball stove skirted with a sheet-iron casing is all the equipment needed. The sand piles up within the casing until it dries, when it trickles down to a tin-lined container.

locomotive in switching may either pass through the drier building or close beside it.

Where the underground workings are accessible only through a shaft, the methods employed in transporting the sand to the point of use are many and varied. In Illinois a car specially constructed for the conveyance of this material often is employed. But no matter what the diversity of the practice in this respect, unless the sand is handled in the aggregate direct from the surface by way of a borehole, it is certain to pick up impurities and absorb moisture.

Transportation of sand from the surface to the shaft bottom becomes an operation of the simplest nature as well as one highly effective when a borehole has been drilled and a suitable diameter of iron pipe is used to deliver this material by direct descent. At the mine of the Panther Creek Co., near Springfield, Ill., may be found a good example of a cheap but effective sand drying and handling installation.

No cars need be used for its transportation and the drying process is merely a part-time job for one man. An inexpensive small one-room shed has been built to house the drying oven. This consists of a cannon-ball

FIG. 2. DRIED SAND FED TO BOREHOLE THROUGH BOX

The pipe is not made vertical because if so set it is apt to buckle from expansion during the summer months.

stove equipped with a sheet-iron casing so that the sand in quantity is held close to the stove wall. As fast as it dries it sifts out at the bottom of the casing and into a tin-lined container. Fig. 1 shows this sand house.

When the sand has been dried it is shoveled into a small wooden hopper fitted with a funnel-shaped bottom that is connected to the pipe leading down the borehole. Once it is deposited in the box and started down the pipe there is no chance of its absorbing moisture or picking up dirt. As will be noticed in Fig. 2, the pipe connecting with the box is on an angle of 45 deg. until it reaches the vertical near ground level. This provision prevents the pipe from expanding and buckling during the summer months.

At the shaft bottom the pipe protrudes from the roof

FIG. 3. PIPE IS ALLOWED TO PROTRUDE FROM ROOF

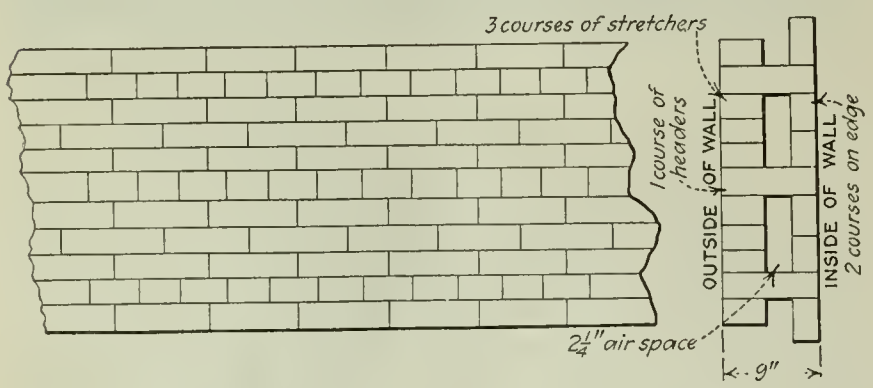
A small piece of sheet iron is operated as a valve by means of a lever. Sand is taken from the pipe only as needed. The locomotive driver fills up his sand bucket direct from the pipe.

for several feet, as is shown in Fig. 3. At this point a flanged fitting is connected to the main body of the line and forms the outlet. A channel is cut through the flange so that a small piece of sheeting may be operated as a valve by means of a lever. The device is now complete and requires no further attention. The sand is taken from the pipe only as it is needed. At such times the locomotive driver holds a bucket beneath the end of the pipe and operates the handle of the valve.

By this means the sand is delivered to its box in the locomotive dry and free from dirt, as should be the case if it is to serve its purpose most efficiently.

Suggestion for House Walls

REALIZING that a solid wall is likely to be wet and cold, especially if the brick should happen to be absorptive, Carl Scholz has suggested the following layup which he proposes to use in building the new town for the Raleigh-Wyoming Coal Co.: Three courses of brick on the outside wall correspond to two courses on the inside, and stretchers between these groups hold the two together and provide for air spaces. The water can pass through the stretchers, but the 2½-in. air space provides for the rapid drying of the brick.



TO PREVENT BRICK WALL BEING DAMP

Solid walls of brick or concrete are apt to absorb large quantities of moisture and care should be taken to keep the water on the outside of the wall and leave an inner lining of dry material. There remains the difficulty of bonding. This shows one way in which the problem may be attacked.

What Is a Truly Automatic Substation?

COAL AGE is in in receipt of the following communication from Graham Bright, general engineer, Westinghouse Electric & Manufacturing Co.:

"In the May 12 issue of your publication an article appears 'From a Pittsburgh Correspondent.' It deals with a so-called 'automatic substation,' which has been in operation for two years. This correspondent confuses the remote-control substation with those which are truly automatic. The article which I contributed to the April 7 issue of your publication describes a substation of what is known as the fully automatic type, whereas that by a Pittsburgh correspondent in the May 12 issue details an installation which might more truly be termed a substation operating under remote control but embodying a few automatic features.

"The following is a list of the devices and provisions which are contained in the modern automatic substation and which do not exist in that at Cordova described in the the May 12 issue:

"(1) Thermostat relays on bearings. The description of the Cordova installation goes into the question of the bearing thermostat relay at great length but admits that this type of apparatus was not installed in that station, though it has been in operation for two years. (2) Provision for the automatic starting of the substation when—and only when—power is required. (3) Provision for the automatic shutdown of station when power is no longer needed.

"Nos. 2 and 3 are the most important features of the modern automatic substation and without them it cannot truly be called automatic. There are many hours during the day when a substation may not be required and there are also times when it is necessary to start a station on short notice. This can be done much more economically by automatic than by manual means. The Cordova station must be started and stopped by some person at a particular point, whereas the modern automatic substation is arranged so that it starts operation the moment that current is required and will operate only as long as necessary. This effects quite a saving in power and also in the wear and tear on the apparatus.

"(4) Provision for shifting the load when overload occurs. When a particularly heavy load comes on the Cordova station the automatic reclosing breaker will open. This may cause serious delays, especially where heavy trips are being started back in the mine. When this happens on a station similar to that of the Lincoln Coal Co., a resistance is automatically inserted in the feed lines, which shifts part of the load to one of the other stations and keeps the substation in question from becoming dangerously overloaded. This operation simply lowers the voltage a small amount and does not interfere with operations inside the mine. There are, however, many cases where the automatic reclosing breaker will provide satisfactory protection.

Safeguard Needed Against Continuous Overload

"(5) Provision for protection against a continuous overload. The direct-current breaker of an ordinary substation usually is set for about double the capacity of the generator. With the ordinary substation equipment it is quite possible to have an overload which is not sufficient to open the breaker but will nevertheless be destructive to the machine. The common time-element circuit breaker in the alternating-current side of the line will not take care of this situation. The modern automatic substation contains thermal relays that permit of a long-continued overload until the temperature of the machines reaches a certain predetermined value, whereupon the station will shut down and so remain until the machines cool down a definite amount. This operating feature is not obtained in ordinary remote-control substations.

"(6) Provision against low voltage. If the voltage of an alternating current continues low for any length of time, the truly automatic substation will shut down and remain thus until the voltage reaches a predetermined value which is safe for operation.

"(7) Provision for parallel operation of machines. The truly automatic substation where more than one machine is located is arranged so that the second machine will be called upon to operate only when the load is too great for the first or when trouble occurs in the first machine. The truly automatic substation contains lock-outs that prevent the apparatus from starting when such operation would be injurious to the machines.

"From the above it will be seen that there is a wide difference between the truly modern automatic substation and what might be called a remote-control substation. The protection given in these stations has, however, not been sufficient to make them popular, as appreciable risk is involved in their operation."

Problems of Operating Men

Edited by James T. Beard

Robbing Pillars with Machines

Safety in Robbing Pillars Has Changed the Practice of Mining from the Gob End That Affords Only Timber Protection to Working Under Coal Protection as Far as Practicable

READING the inquiry of J. D. Rogers, *Coal Age*, Apr. 28, p. 757, relating to the robbing of pillars with machines by starting the cut on the outby rib under the protection of solid coal, instead of mining from the gob side under timber protection calls attention to the dangers experienced in mining rib coal.

Present practice is striving to adopt methods of mining that consider, first of all, the safety of the workmen and, second, the largest possible extraction of coal in the best condition. An increased regard for safety has led to the more general adoption of cutting the rib under the protection of the solid coal, rather than from the gob side of the pillar.

Purpose of Setting Posts

Post timbering affords but slight protection at the best. The timbers are not supposed to support the entire weight of the overburden. Their purpose is merely to steady the action of the roof and give timely warning when it is necessary to pull stakes and find safer quarters.

The plan advocated by Mr. Rogers and shown in Fig. 2, where the rib cut is started on the outby side of the pillar, is the system we used when I was working in the Pittsburgh district, some time since, except that we did not drive the headings to the boundary and work back on the retreating system as he has stated.

Our practice then was to turn No. 1 room as soon as the headings were driven far enough for that purpose and other rooms were turned in succession as the headings were developed. The rooms were driven up until they reached the limit when the pillar in No. 1 room was cut through to the room adjoining. If I remember rightly, the Leith shaft, near Uniontown, operated by the H. C. Frick Coke Co., was worked on this plan, the rooms being turned as the entries advanced.

In time, however, trouble was experienced by gas accumulating on the gob in the worked-out portion and, in order to avoid the danger of hauling the coal past the gob section, the retreating system was adopted. The headings were driven to the boundary or limit of a panel where the first rooms were turned. All rooms were turned to the right and worked outby, these being called "right-hand rooms."

In this system, the track was laid along the left-hand straight rib, which afforded a good opportunity for the machine to start the cut on that rib, as stated by Mr. Rogers. About 90 per cent of the coal was taken out in this way under coal protection. I believe the system was also conservative in the use of timber.

Advantages and Disadvantages in Advancing and Retreating

Regarding the relative value of the advancing and retreating systems of mining, the latter presents one practical advantage that is often overlooked. It affords a constant supply of coal from each heading, as every room having a switch laid is sending out coal steadily until finished. The slump comes when the rooms are stopped and only the entry pillars and room stumps remain to be taken out, that work being both dangerous and difficult.

In the retreating system, the robbing of pillars does not begin until the first rooms on the inby end of the panel have reached the limit. The line of pillar work is kept straight by regulating the driving of the rooms so that each pillar is started back at regular intervals. New rooms are turned on a fixed schedule to make this possible.

When the retreating system is properly carried out it comes nearest to being the safest, most practical and least dangerous of all the systems. Moreover, it affords an opportunity to mine the heading pillars when the line of fracture across the rooms reaches them. I have mined pillar coal on the headings when the coal was as hard and firm as in driving a breast. This is only accomplished, however, by keeping a straight fracture line across the ends of the pillars.

The advancing system, while possessing the advantage of affording a good supply of coal in the early development of the headings, has the disadvantage of developing loose top, which makes dirty roads over which coal must be hauled for some time to come. Also, when gas accumulates on the gob it adds another danger.

Gans, Pa. R. W. Lightburn.

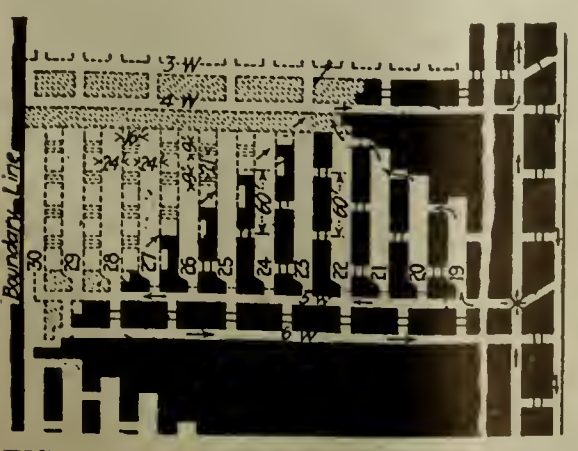


FIG. 1. MACHINE STARTS TO CUT ON INBY RIB OF PILLAR

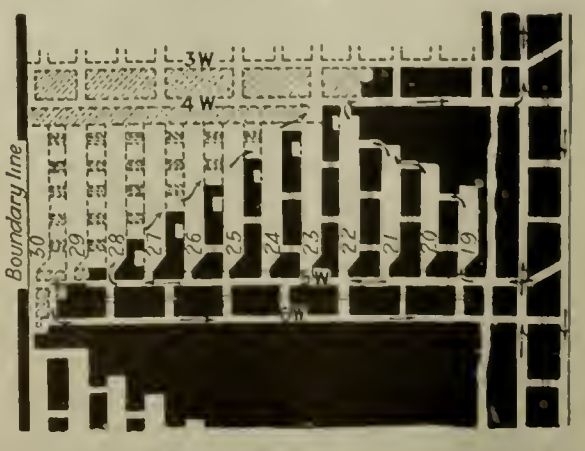


FIG. 2. MACHINE CUT STARTED ON OUTBY RIB OF PILLAR

ANOTHER LETTER

REFERRING to the question of whether a machine cut should be started on the outby rib, when drawing pillars in the retreating system, where the men will be protected by the solid coal; or on the inby rib or gob side where the men are protected only by the posts set behind them, let me say that my preference is the former.

When drawing pillars my practice has been to drive the butt headings to the boundary line, and turn a set of five or ten rooms, which are driven up to the air-course of the next pair of headings, leaving what we call a "back-heading pillar" of 30 to 40 ft. in thickness to protect the air-course.

Cutting the Pillar with Machine

A cut was then made through the pillar from the rib side to the gob side of the next adjoining room. When that was done, we fell back about ten yards and started another cut-through, from three to four yards in width. The stump of coal thus left was afterwards taken out with a pick by the miners. In my opinion, this was the safest and most economical system that could be used. It gave a higher percentage of coal extraction, with the least danger to the machine runners and the miners.

It is my belief that where the rib cut is started on the gob side of the pillar, not only will it be necessary to

move the gob each time a cut is to be made, but a curve will have to be laid in to that side before the cut can be started, which will greatly increase the cost of robbing. It would also be necessary to support the roof and lay the track across the width of the room, which would make the work more dangerous in case the roof started to work suddenly while the machine was cutting.

On the other hand, when cutting from the rib side next to the track, both the machinemen when making the cut and the miners when taking out the stump of coal left have but a short distance to travel to reach safety should the roof start to work.

In my opinion, this latter method of cutting the rib will produce a more uniform fall of roof in the abandoned workings and it will be possible to keep a fairly straight line of fracture. But, the falling roof will have a tendency to squeeze the back corners of the pillars and crush the coal. This would cause a considerable loss in the last end of the stump and make its recovery dangerous. FRED W. SAKON.

Johnstown, Pa.

THIRD LETTER

MY IDEA of cutting pillars with machine is to start the cut from the track close to the rib and cut through to the gob. Of the two plans shown in the figure in the issue of *Coal Age*, Apr. 28, p. 757, that in Fig. 2 is the method I would employ.

In my opinion, the method shown in Fig. 1, where the cut is started on the gob side of the pillar is wrong and unsafe. LESLIE, JOHNSON,
Assistant Foreman

David, Ky. Dudley Coal Co.

FOURTH LETTER

WHEN drawing pillars with machines it has always been my plan to keep the road well within the line of fracture as far as it is possible to do so. For this reason, I would adopt the method shown in Fig. 2, in preference to that in Fig 1, where the ends of the track will extend to or over the fracture line.

In each of the methods shown the projecting corner of the small stump of coal left after the machine has cut through a pillar, will undoubtedly be much crushed by the roof pressure and make the mining of that coal dangerous.

The amount of coal that can be recovered when drawing back pillars depends on the length of time we can keep men working in such places. They will stay no longer when they begin to feel that there is not open to them a safe "getaway."

There is, without doubt, a large amount of coal lost in this state, because of the contract between the miners and operators, which requires the track being laid in the center of the place. The distance of the track from the pillar gives the men less chance to reach safety when they observe the weight coming on that means a cave-in.

My opinion is that the position of the track in a working place is most important. When carried up the center of the room, as in this state, much labor is required to remove the gob when drawing back the pillars and this increases both the cost and the danger of the work. MACHINEMAN.

Linton, Ind.

[In the discussion of these two methods of starting the rib cut, safety is the first consideration and the complete extraction of the coal second. In cutting from the gob side (Fig. 1), the track is laid as close to the rib as in Fig. 2, and there is no extra work required to remove gob or lay track. The writer of the second letter appears to have missed this point.

In support of the plan of cutting from the gob side, it can be stated that greater care will then be taken to keep the necessary timber behind the men, in an effort to properly control the advance of the fracture line. The result will be that there will be less crushing action on the stumps left by the machine to be removed with the pick.

The condition presents little if any more danger than is common in working a longwall-retreating face where the pillars are cut with machines and two rows of posts are maintained behind the workmen. The point to be borne in mind is that the greater care given to this feature in properly controlling the fracture line, should afford the desired protection of the workmen and a more complete extraction of the coal.

Without doubt, there are conditions of roof that will not warrant the attempt to do this; and coal must be sacrificed by adopting the second method, bringing the fracture line across the exposed corners of the stumps crushing the coal and causing a greater loss in extraction.—EDITOR.]

Chief Factor in Americanization

Complexity of immigrants regarding American ideals. Need of an Americanization campaign appealing to an unshaken faith in the principles of rightcousness and the practical application of the Golden Rule.

AFTER reading with deep interest the letter of Richard Bowen, *Coal Age*, Feb. 17, p. 319, in which he places much emphasis on the kind treatment of foreigners, I want to add a few words along that line as I am myself of foreign birth but now enjoy the privileges of American citizenship.

Coal mining more than any other one industry has received a large influx of foreign labor. This fact makes it apparent that a vigorous Americanization campaign is extremely necessary to offset the political influences thrown about the immigrant on his arrival in this country.

The present effort now carried on by industrial and labor organizations, having for their object the Americanization of this great class of foreign labor, is far from what can be rightly called a success in inspiring in the heart of the foreigner a right conception of the highest American ideals.

After a close study of the authorized doctrine of many of the "kindred societies" mentioned by Mr. Bowen as having a good influence on the immigrant, I am led to conclude that the average foreigner becomes greatly perplexed as to what really constitutes a true American citizen.

To my mind, there is but one solution to this great question and that was given by President Harding in one of his speeches prior to election. As nearly as I am able to quote his words, they were as follows:

> There never was a time when the world stood more in need than it does today of the consolation and reassurance that can only come through a firm religious faith. The present is a time of uncertainty, of weakened faith in the efficiency of our industrial institutions through an economic hypothesis of doctrine and dogma. In view of this, whatever our realm, let not our engrossment with those things that are concerned merely with the matter and mind distract us from giving proper attention to the things that relate to the spirit and soul.

These are heroic words, coming as they do from our foremost American citizen, who is now our President. The thought conveyed is that the present uncertainty and weakened faith in existing conditions is the result of a gradual drawing away from God's truth as revealed in the gospel of His Son.

There is but one way to dispel the present uncertainty and darkness, which leads to confusion and strife, and that is to bring back the true gospel that is the embodiment of American ideals and the soul and spirit of her institutions.

Today, we are observing a concerted action on the part of Capital to break the power of organized labor. We can well remember the time when there was no need for "collective bargaining," but personal liberty gave to every man an equal chance. Arbitration of labor disputes has given way to the selfish control of that organization by irresponsible leaders whose selfish purposes are now the dominant factor in its proceedings.

Such a condition has alienated the sympathy of the people and led to the demand for the enactment of laws requiring the compulsory arbitration of all industrial disputes. From outward appearances, both parties to these disputes profess to uphold American ideals and principles; but they fail to remember that those ideals and principles are expressed in the Golden Rule, which to them applies only to the other fellow.

History has taught us that unless a people or nation is devoted to a fundamental principle based on the Golden Rule it will fall. Let us strive, therefore, to make that principle a chief factor in the Americanization of the foreign element among us.

Staunton, Ill. HENRY BOCK.

Violations of Rules in Blasting Should Be Punished

Misunderstanding of mining laws often owing to their incorrect expression. Rules and regulations in blasting should be clear and any violation of them punished to insure a safe mine discipline.

MINING the coal before blasting is the subject of an inquiry, *Coal Age*, April 14, p. 676, drawing attention to a misleading expression in the Pennsylvania Bituminous Mine Law relating to the blasting of coal.

The question is asked, When is the coal properly mined, in the meaning of the law? It is explained, in Art. 4, Sec. 9 of the law, that a shot to be properly mined "shall be undercut, centercut, topcut or sheared, by pick or machine, and in any case the undercutting shall be as deep as the holes."

Use of Wrong Word in the Laws

The term "undercutting" is misleading and its meaning easily misunderstood. As stated in the reply to the inquiry, it is probable that the word should be *cutting*, instead of "undercutting." The reference is clearly to the cut being made parallel to the stratification, whether in the top, center or bottom of the seam.

To shear the coal, in preparing a shot for blasting, is to make the cutting at right angles to the bedding plane or floor of the seam. It will be noticed that, in the second paragraph of the same section, a shot to be properly mined, in a five- or six-foot seam, in an entry less than ten feet wide must be sheared on one side as deep as the undercut.

While laws are necessary to hold miners in restraint and prevent carelessness in preparing a shot, the wording of the law should be clear and admit of but one meaning, which will allow of no excuse that the law was misunderstood. Any violation of the law or the rules regulating the blasting of coal should be promptly punished.

Disregard of the Mining Law by Miners in Indiana

In this state, in the mining of the No. 5 and No. 6 seams, where pickwork is general, it is my belief that not five per cent of the shots prepared by miners conform to the law.

This is a strong statement; but we have had many fatal accidents from windy shots, by which I mean shots that have blown their tamping and the force of the charge has been expended on the air instead of breaking down the coal. The result is that a more or less local explosion of dust is caused and men are burned or killed.

One would think that the prevailng idea among the pick miners in these seams must be, as the old saying goes, "When in Rome, do as the Romans do." Anyone who may be inclined to take exception to this assertion can easily verify it, as there is ample opportunity to observe the conditions that exist in the two seams mentioned.

In this connection I am reminded of what happened to the miner, twenty years ago, in the North of England where the coal was required to be properly mined according to the law and colliery rules. Any violation caused the man to be fined or discharged. Even there, however an instance attracted my attention, which I could not regard in any other light than as being a violation of the law on the part of the management.

Going to my work one morning and crossing the heapstead (tipple) I observed a large chunk of coal that had been bound together in order to prevent its falling apart in transportation. If my memory serves me, this large chunk was to be sent to the Glasgow Exposition.

It was evident that the coal had not been properly mined, but the shot was well gaged and placed in a manner to produce this exhibit, even though in so doing the law was violated. Passing on, I reflected, What must be the moral effect of this act of the management on the miners? Does it not tend to close the eyes of the miners to violations of the law and will not disaster follow as the result?

My conclusion is, that any act of the management or officials of large collieries that is clearly in violation of laws, rules and regulations is the undoing of many good laws intended to safeguard the work of mining.

Again, it is often true that too many of our laws do not discriminate between gaseous and non-gaseous mines; but are made to apply alike to all mines, whether or not they generate gas. The result is to tempt men working in non-gaseous mines to disregard the law in respect to taking certain precautions and this cannot fail to have a serious moral effect on the work in other mines where gas is generated and where the law's requirements are none too strict.

Linton, Ind. W. H. Luxton.

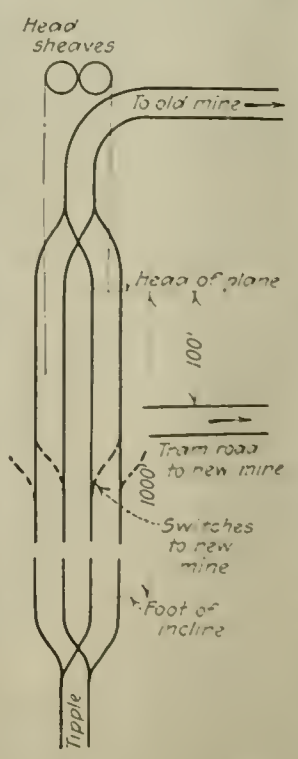
Inquiries Of General Interest

Gravity Plane to Serve Two Mines

A New Mine Being Opened at a Point 100 Ft. Below Another Mine Operating an Incline for Lowering Its Coal to the Tipple. A Plan Is Desired by Which the Incline Will Serve Both Mines

KINDLY permit me to submit a proposition that has puzzled us to know how to solve successfully. We have been and are still operating a drift mine opening on a hillside. The output of the mine is lowered over an incline, or gravity plane, 1,100 ft. to the tipple.

Recently, another opening has been made at a point 100 ft. lower down the hill. In order to save building another plane, it has occurred to us that we should be able to utilize the one now serving the upper mine, by adopting some arrangement that would enable it to serve both mines.



GRAVITY PLANE

This is the problem with which we have wrestled for a short time, without being able to devise a scheme by which it can be worked out. Believing that some of the practical readers of *Coal Age* can help us, we desire to ask that the proposition be submitted to readers that we may have the benefit of their ideas and suggestions.

As shown in the accompanying diagram, the rope passes over two head-sheaves located at the level of the upper mine. There are two tracks extending the entire length of the incline, and these are joined by switches at the top and bottom of the plane. This enables the ascending empties to pass the descending loaded cars safely.

The system has worked well and we shall very much appreciate any assistance that can be given, or information of a similar system or arrangement installed elsewhere. Superintendent.

———, Pa.

We are pleased to submit this proposition to the practical readers of *Coal Age*, who are invited to give their ideas of the practicability of utilizing the same incline to serve both mines and any suggestions as to how this can be done.

In the present arrangement, it is clear that the same length of rope now used to lower the loads and hoist the empties belonging to the upper mine will not serve to perform the same service for an opening lower down the hill. As far as the rope is concerned, it will be necessary to provide an extra length, reaching from the upper landing to the landing at the new-mine level.

Assuming a trip of loaded cars has just been lowered from the upper mine to the tipple and an empty trip has reached the upper landing, and it is desired to lower a trip from the landing at the new mine, it will first be necessary to couple on the extra length of rope lying at the side of the track and reaching from the upper landing to the new-mine level. The lengthened rope will then be what is required to lower and hoist cars at that level.

Adjusting the length of rope, however, is the simplest part of the problem. The chief trouble will be to devise a suitable arrangement for handling the cars as they leave and arrive at the level of the new mine. There must be some method employed for pulling them over the knuckle, which is necessary before they can be unhooked from the hoisting rope or cable.

The only scheme that suggests itself at present is to install a switch in each track on the incline, a short distance below the new landing, as indicated by the dotted lines in the figure. At this point the car or trip might be securely blocked, by a suitable device for that purpose, while an auxiliary rope operated from the new landing is being attached, whereby the cars can be pulled through the switch and over a knuckle onto that landing, after uncoupling the main rope, which must be done before the cars take the switch.

Any arrangement of this kind would require excavating a level space in the hillside at the new landing. This excavation would extend under the incline and provide suitable trackroom for handling the cars as they come from either track of the plane.

The entire plan would have to be worked out by a competent engineer and extra precautions taken in the handling of the cars to and from each landing, which would require the services of a good headsman at each landing and an efficient signal system, in order to avoid accidents. We shall be glad to hear from others.

Examination Questions Answered

Examination, Mine Foremen and Firebosses, Bituminous (Pa.), April 5-8, 1921

(Selected Questions)

QUESTION — *What instructions would you give to the cutter and scraper of a mining machine for their safety?*

ANSWER — Both the machine runner and his helper should be warned of possible danger of shock by the grounding of the current of an electric coal-cutting machine. The machine runner must take every precaution to avoid this condition. He must also see that his helper keeps out of the way and performs his work in a manner that he will not be in danger of being caught in the teeth of the cutterbar, or come in contact with any portion of the machine. Care must be taken to avoid damage to the insulation of the power cable when operating or moving the machine from place to place. Special attention must be given to the condition of the roof above the machine and if it is necessary to remove any timbers to allow the machine to pass, these must be reset as quickly as possible.

QUESTION — *What special attention should a mine foreman give in the drawing of room and entry pillars?*

ANSWER — In drawing pillars, the foreman must employ only experienced men for that work. It is important to keep the line of pillar work as nearly uniformly straight as possible, in order to avoid an excessive pressure on the end of any of the pillars. The foreman should see that the men keep the necessary timbers behind them to insure their safety. He should examine closely for any slips in the room and instruct the men to do the same. Where there is any danger of gas collecting on the falls, only safety lamps should be used by the men. In any case, the fireboss should examine the top of the falls for gas, each day, to see that there is no accumulation at that point. Particular attention must be given to the circulation of air around the pillars, and the men should be cautioned to use extra care in approaching a crosscut in the pillar. The work of drawing pillars should be continued without cessation in order to maintain a uniform pressure and avoid unduly crushing the coal, which would render the work more dangerous.

QUESTION — *What maps should be kept at the mine? What data should be shown thereon; and how often should an extension be made on said map? If the scale was 100 ft. per in. and the main headings on said map measured 6 ft., what would be their entire length?*

ANSWER — Blueprint copies of the mine map should always be available at the mine for inspection. The mine map should show all openings, excavations, shafts, slopes, drifts, tunnels, planes, entries, airways, roads and travelingways, together with all worked out and abandoned territories and the relation and proximity of the workings to adjoining mines or coal properties. The map should show by arrows the circulation of the air currents throughout the mines, together with the location of all doors, air bridges, regulators, stoppings, crosscuts and breakthroughs in rooms and entries. In inclined or irregular seams the elevation of the coal should be shown at different points throughout the mine.

In addition to the underground workings, the mine map should show all surface improvements, buildings, property lines and natural features, such as river courses, lakes and ponds, together with surface elevations. The location of all boreholes should be accurately given, together with the depth and thickness of the coal in each hole.

The map should show the direction of the meridian and the scale and be extended at least every six months.

For a scale of 100 ft. per in., a measurement of 6 ft. on the mine map would indicate $6 \times 12 \times 100 = 7{,}200$ ft. in length in the mine.

QUESTION — *What precautions would you adopt to reduce to a minimum the production and distribution of coal dust in a mine?*

ANSWER — All fine coal and slack should be loaded out of the mine in dustproof cars and the working face kept clear of such accumulation. All roads and travelingways should be cleaned at regular intervals. Where blasting is performed strict regulations should be made and enforced to prevent the excessive use of powder and avoid the unnecessary shattering of the coal. Conditions at the coal face should be carefully studied with a view to taking out the coal in a manner that will reduce the fine coal and slack to a minimum. The advisability of sprinkling the coal face and roadways should be carefully considered.

QUESTION — *When and where should timber be drawn and what instructions should be given the workmen?*

ANSWER — All timber should be drawn as pillars are being taken out so as to permit the roof to fall in the waste and abandoned portions of the mine, where no timber should be left standing. Only experienced workmen should be employed to draw timber, and they should be instructed to use a chain-puller for that purpose and take every precaution to avoid being caught by a fall of roof. Where a post cannot be drawn with safety to the men, a hole should be bored in the post and a short stick of dynamite used to destroy the timber and allow the roof to fall.

QUESTION—*What parts in the hoisting plant should be examined and how often to insure their being in a safe condition, in shaft openings?*

ANSWER — All hoisting ropes, cages, safety catches, safety gates, winding drums, brakes and other appliances used in hoisting, including the cage-wings or keeps at each landing, in a shaft opening, should be carefully examined at regular intervals. The more important parts, such as ropes, safety catches, and cages should be examined at least once a day to see that they are in safe condition.

Further Fields Inviting Expansion of Overseas Coal Trade of the United States*

Markets Opened Up in Europe and South America by the War Have Only Been Tapped—Spain, Turkey and Switzerland in Receptive Mood Toward American Product

By Dr. Henry M. Payne†

PETROLEUM is rapidly superseding coal in Mexico, even for railroad fuel distant from centers of production. There is one gas coal mine at Rio Escondido, Coahuila, which has produced 10,000 tons per month. Most of the output is used at Monterey and Saltillo and on the railroads to the north.

From 1900-1910 the British supplied about 25 per cent of the coal used. In 1912-1913 the importations were: Germany, 9,594 tons; Australia, 26,801 tons; Canada, 2,999 tons; United States, 364,536 tons; Great Britain, 31,978 tons, and Japan, 14,620 tons.

Before the development of petroleum, the British coal was briquetted and burned principally by British-owned railways. The dredge Mexico, permanently employed in Salina Cruz harbor, uses Pocahontas coal. The United States is the normal source of all coal imported for bunker purposes.

Until 1914 the west coast ports kept about 2,000 tons stacked for bunkering purposes. This came irregularly from the Pocahontas field and from Wales and Australia. At present only about 600 tons are kept in stock, coming principally from the mines in Coahuila. This native coal is reported as about 16 per cent less efficient than Pocahontas coal. It also is unloaded from railroad cars one-quarter mile inland and must be hauled to the quay. Eighty per cent of the shipping touching these ports uses fuel oil.

The consumption of coal in the Netherlands is 10 per cent gas coal, 65 per cent steam coal, and 25 per cent anthracite coal and briquets. Screened coal is preferred, as only 12½ per cent of the industrial plants have automatic stoker equipment.

The railroad fuel situation has been so acute that any kind of coal, including lignite and briquets, has been used. The normal requirements are one-third high-volatile, and two-thirds low-volatile. Supplies are usually obtained in the summer months and stored for winter.

Importations in tons of the last four years have been as follows:

	Germany	England	Belgium	U. S. and Canada
April 1, 1916—April 1, 1917...	3,377,533	1,295,722	619,439	.....
April 1, 1917—April 1, 1918...	2,701,110	201,012	119,877	.....
April 1, 1918—April 1, 1919...	735,000	92,376	35,680	84,491
April 1, 1919—April 1, 1920...	1,230,000	411,200	1,293,000	694,400

It can thus be seen that the United States has not until recently been a material source of supply, but it is stated that if prices and quality can compete with British coal, a permanent footing may be had in the Netherlands market.

The gas plants, which consume 50 per cent of the gas coal imported, are of a widely diversified type of equipment, accustomed to using the high sulphur coal from Belgium, and averaging from 5 to 5.6 cu.ft. of gas per pound of coal. The manufacture of byproducts is extensively developed and high fusing point of ash is a decided inducement in the purchase of coal.

In 1916 the government assumed control of coal distribution both for industrial and domestic purposes. Since the armistice, importing firms have been allowed to import coal, but a license is required for the transportation of coal in the Netherlands, which license must be obtained from the Coal Bureau. The government, therefore, still retains control.

The unloading equipment at the ports of Amsterdam and Rotterdam is excellent. Ships not only unload and leave without demurrage but usually with despatch. These ports are logical transshipment points for goods both to and from Germany and Switzerland, and to some extent Czecho-Slovakia and Austria.

American Coal Gained Ascendant in Norway in 1920

The large consumers are usually of sound financial standing and handle their purchases direct. Co-operative some irresponsible American exporter does not ruin the reputation of American business methods and American coal by chicanery, fraud and substitution.

The normal requirements of Norway are for 80 per cent steam and 20 per cent gas coal, screened preferred. Few mechanical stokers are used, as there are no smoke ordinances, and only coke and tar are sold as gas plant by-products.

Storage facilities are such that with care, sufficient supply for winter can be carried by stocking during the late summer months. The greatest demand is for high-grade coal at the breaking up of ice in the spring.

The United States was not until recently the source of any considerbale quantity of coal, but inability to obtain it elsewhere has opened up a very promising export field, provided, as has so unfortunately occurred in many cases, or collective buying is being introduced with a view to encouraging competition in bids from large concerns, by virtue of the tonnage involved.

The Norwegian harbors are well equipped with unloading facilities for handling 500-600 tons per day and at a few harbors 1,000 tons per day. Return cargoes of iron and other ores, paving stone, saltpeter, canned fish, fish meal, timber, and paper pulp are offered. The bulk of these goods, however, go to England and other European countries, from which other return cargoes are obtained.

In 1919 Norway procured coal from the United States, Canada and Australia. During 1920 the coal imports from the United States exceeded those from all other countries.

Turkey a Growing Market for American Coal

Prior to the war the coal market of Constantinople was controlled by Great Britain. Cardiff coal was well known and in demand. Newcastle, Belgian, German and Russian coals also had been used intermittently, but were never given serious consideration. Turkish coal is of a poor grade and is not acceptable for bunkering purposes on account of its high sulphur content. The earlier Turkish mines produced principally lignite, although the veins reached by sinking the shafts deeper have been somewhat better.

Soon after the armistice when England imposed an embargo, local importers began to look to America for coal. Pocahontas screened coal has since become better and more favorably known, although in one or two instances substitutions have been made which reflect seriously on American coal and American ethics.

At the time this information was obtained (November, 1920) American coal was costing from $35 to $42 per ton c.i.f. Constantinople, and about 10,000 tons per month were being consumed. Washed Turkish coal costs about $35 per ton. American coal, however, compares so favorably with English coal, and is so superior to Turkish coal, that con-

*The first instalment of this article, entitled "American Export Possibilities Denoted by Sidelights on the Coal Situation in Foreign Countries," appeared in *Coal Age* April 14.

†Consulting engineer, Andrade-Eyre, Inc., 300 Madison Ave., New York City.

sumers are gradually ordering more and more American coal through local importers and importing agencies. They state that Turkish coal contains only about 4,000 calories per ton, while American coal contains from 7000-8000.

About three hundred merchant vessels per month arrive at Constantinople. Of these 40 per cent come from the Black Sea and 60 per cent from the west.

The approximate daily consumption of coal in Turkey is given as: Gas companies, railroads, electric light companies, water companies and arsenals, 600 tons; coal bunkering, 800 tons; factories and shops, 120 tons; mills, 100 tons; Imperial palace, schools, ministries, municipalities and institutions, 90 tons; military shops, 190 tons; Imperial navy, 110 tons; total, 2,010 tons per day.

In the majority of cases credits are established in New York. In some instances local importers have obtained through London five to six months' credit to finance their coal purchases in the United States. An American bank was recently established in Constantinople which is of great service in clarifying the exchange situation.

About 15 per cent of the total coal imported is gas coal. The only storage facilities are five coal depots on the quays of 10,000 tons maximum capacity. The port is always crowded and shipping is congested. Demurrage rates are very high. Passenger vessels may unload along the quay, but cargo vessels must lighter. The cost of lighterage, labor and loss from spillage greatly increase the price of coal on the dock.

A return cargo always is available both at Constantinople and at Black Sea ports, consisting of wool, hides, gum, opium, poppy seed and tobacco.

Lighterage facilities are controlled by the Levant Stevedoring Co., which is a combination of six shipping agents representing the principal British lines. Prices for lighterage range 10 ltq. to 15 ltq. per lighter per day.

High-grade American coal, however, is so satisfactory, and the coal business so new in Turkey, that even with no embargo on coal in England, there is opportunity for the development of big business by reputable firms in America.

Peru a Promising Market for American Coal

The use of gas and steam coal in Peru is about equally divided, screened coal being used exclusively by the gas plants, and run of mine for steam purposes. Briquets also are in favor, and are reported as giving 14,500 B.t.u.

The city of Lima uses 80 per cent gas coal, but has no smoke ordinance. All the gas coal now in use comes from Australia. It is said to be exceedingly hard and blocky, standing handling well. Its cost is about $6 per ton more than American coal, and there seems no reason why American coal of similar grade should not be introduced without difficulty, as steam coal from the United States already meets with favor.

The usual west coast demurrage charges obtain. The port of Callao is a good safe harbor. Paita also is fairly good. Chimbote is land locked. All other ports are open roadsteads.

Until 1914 all Peruvian coal came from Great Britain. The trade being now divided between Australia and the United States indicates another opportunity for the introduction of high-grade product.

There are considerable quantities of sugar, cotton, and ores exported, and no difficulty will be experienced in procuring return cargoes if sailing dates are advertised in advance.

Poland's Coal Needs Purchased by State Coal Offices

The situation in Poland is somewhat anomalous. The gas-coal requirements are 57,000 tons per month. The railroads use screened lump and the industrial plants use slack. More than 75 per cent of these industries are equipped with automatic stokers, to whom slack screenings are allotted by the government.

There are no storage facilities, no smoke ordinances, no limits on sulphur in gas, and the development of byproducts is given great attention.

The principal source of supply is from Germany and Czecho-Slovakia. All coal is bought through the State Coal Offices, paid for by the government, distributed to consumers and collected for at arbitrary rates.

The principal port is Danzig, where only fair unloading facilities exist. In view of the very low grade of coal which Poland has had for some years past, an excellent opportunity is presented for the introduction of American coal.

Spain in Receptive Mood Toward Pocahontas Coal

The Spanish railroads, like the Italian, use low-volatile coal. The specifications are 12-20 per cent volatile, not less than 14,400 B.t.u., and ash not exceeding 8 per cent. Shipments are taken at regular intervals throughout the year. About twice as much steam coal is used as gas coal. There are no smoke ordinances.

The Madrid gas plant specifies coal running from 30 per cent-32 per cent volatile and not exceeding 18 per cent ash. The older portion of the plant has hand-charged inclined retorts. Within the past three years two new series of 27 Hovine retorts each, 6 meters long, with a 24-hour capacity of 11,000 cu. meters (388,454 cu.ft.) have been installed. The average yield is 300 cu.meters (10,594 cu.ft.) per ton. No attempts at making water gas have been made. Pitch, tar, ammonia and tar byproducts are efficiently produced and marketed.

The railroads and larger gas and steel plants import their coal direct. The smaller consumers, such as glass works, etc., buy through local importers.

The usual rate of discharge at Spanish ports is 400 tons per day. Steamers discharge into lighters which are towed alongside loading wharves and discharged by small cranes.

British coal at one time dominated the Spanish market. American coal, especially Pocahontas, met a ready reception, and, if c.i.f. prices could be quoted (August, 1920) under 185 pesetas, would still find strong demand.

Return cargoes are not frequent. Pyrites from Huelva are transported to Baltimore at about one-half the rate to Great Britain.

United States Supplies Half Swiss Needs

The railroads and principal industries of Switzerland prefer gas coal. Deliveries are about equally divided throughout the year. The heavy consumption in winter is offset by the use of smaller amounts from spring to fall, so that a reserve stock of two to six months is usually available.

Switzerland will for many years require the importation of American coal, the quantity, however, depending on conditions in the European coal fields. With this in mind, the Swiss Coal Association in Basle has an office known as the Official Purchasing Office of the Legation of Switzerland in New York.

Transportation also is taken care of by this association and deliveries are made to Swiss consumers f.o.b. the Swiss frontier, price quoted in Swiss currency.

All types of gas retorts are in use and coal containing up to 2½ per cent sulphur can be used, although usually mixed with lower sulphur coal when possible. The average yield is 360 cu. meters (12,713 cu.ft.) of gas per ton. The sale of gashouse coke furnishes a material income, so that a good gas coking coal is especially desired.

Most of the coal is shipped via Antwerp, Rotterdam or Genoa, with occasional cargoes to Cette or Dunkirk. At present England is supplying 25 per cent and the United States 50 per cent of the total Swiss requirements.

In conclusion the writer cannot refrain from voicing deep regret at the many instances in which good permanent markets for American coal have been jeopardized by the greed and dishonesty of human vultures masquerading as American coal exporters. To establish a high standard both for quality of coal and for business dealing which shall not only assist in building up a merchant marine but shall also place America in an important position as a coal exporting nation is the duty of every operator, transshipper and exporter who would claim America as his country.

The writer is indebted to the Bureau of Foreign and Domestic Commerce at Washington, D. C.; Hugh D. Butler, now Trade Commissioner at the Embassy at London; Captain A. J. Fisk, coal expert to the American technical adviser to the Polish government; the reports of Trade Commissioner Whitham, and various commercial attachés for corroboration of much data contained in this article.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

BUSINESS is on the up-grade but not yet "running on high," declares Archer Wall Douglas in his monthly review of business conditions in the current number of *The Nation's Business*. "The great mass of the people are looking the facts squarely in the face," the review continues. "There are no delusions as to any sudden return to prosperity, nor of advancing prices, nor of scarcity in any lines. There is the realization that both time and patience are required to work out the problems which confront us. The many have accepted the situation, and are adapting themselves to the inevitable, which is that much progress made in the way of readjustment.

"In many of the large centers there is the curious paradox of much unemployment accompanied by growing savings accounts. The explanation seems to be that those who have jobs are none too certain of them, and are casting consequent anchors to windward in the shape of less spending.

"The financial position of the farmer grows stronger as he is gradually liquidating his obligations, decreasing his cost of production, and finding more economical methods of distribution, largely through his co-operative associations.

"Conditions are much spotted, both as to localities and lines of trade. In the retail trade, buying is better in the large cities than in the country towns. As is usually the case, surface indications in the great centers, such as crowded stores and places of amusement, with the vast number of automobiles on the streets, give scant indication of real underlying economic conditions.

"There is much construction of hard surface roads under way as most communities seem perfectly willing to tax themselves for this purpose. These permanent highways open up far reaching future possibilities of cheap and efficient transportation to the motor truck, but which for the nonce is content to bide its time.

"The automobile and rubber industries have come back in a very definite fashion when some false proprets thought they had taken the full count for the time being. So far they have disappointed those who forecast a mere spurt instead of a continuous performance. There are still few belated thinkers who have overstayed their time and who fail to realize that automobiles are neither a fad nor a mere luxury but an essential and inherent phase of modern life."

Loading of Freight Is Gaining

An increase of 32,133 in the number of cars loaded with revenue freight during the week which ended on May 14, compared with the previous week, was shown by reports just received by the Car Service Division of the American Railway Association from the railroads of the country. The increase was largely due to increased loading of coal and ore principally for Lake movement. The total for the week was 750,158 cars, which was however 92,987 below that for the corresponding week in 1920 but 10,213 more than that for the corresponding week in 1919. Increases during the week were reported in the loading of all commodities except grain and grain products and livestock, compared with the previous week. Merchandise and miscellaneous freight, which includes manufactured products, totaled 451,062 cars, or an increase of 4,000 over the week of May 7.

Cotton Mill Idle 5 Months Reopens

The Greylock Cotton Mill, at Williamstown, Mass., which had been closed since December, reopened Monday, May 23, on a forty-eight-hour-a-week schedule, it has been announced. The mill normally employs 250 persons

Reading Ry. Re-employs 700 Men

The Philadelphia & Reading Railroad Co. on May 19 authorized the re-employment of about 700 men on its track and work train forces. This has been done, it is understood, to place the roadway in the best condition for an expected early increase in business.

Pearl Button Factory Runs Steadily

A leading pearl button manufacturer announced last week that his factory at Grayville, Ill., which had been closed down last fall when the depression first made itself felt, is now being operated steadily. At present thirty cutters are employed. The manufacturer believes that the factory will be running at full capacity in the near future if the steadily increasing demand continues.

Re-employment Halts in Detroit

A net decrease of 1,776 men employed was shown by the labor report of the employers' association of Detroit May 20. It was the first week the employment situation had not improved by several thousand since the industrial revival began.

Rubber Goods Trade Improves

Although still below normal the gradual improvement shown in the condition of the mechanical rubber goods trade has led manufacturers to believe that the determined upward trend will continue. Trading is in small volume, with the railroads and mines buying only in piecemeal quantities. Further price cuts have been made, although the percentages could not be determined.

Textile Industry Is Improving

The State Department of Labor and Industries of Massachusetts announced May 25 that its reports indicated improved conditions in the textile industry, that the demand for boots and shoes persisted, although the majority of plants were still on reduced schedules, and that the metal and machinery trades were dull without signs of immediate improvement.

Watch Factories Running Again

The Robert H. Ingersoll & Bro. watch factories at Waterbury, Conn., and Trenton, N. J., which had been closed for two months on account of poor business conditions, have been reopened and 2,500 workers are put back on an earning basis, according to an announcement by Robert H. Ingersoll, president of the company, last week. Mr. Ingersoll also announced a reduction in prices, showing that the old dollar watch is getting back toward its pre-war price when a dollar was a dollar. The reduction is from $2.50 to $1.75.

Stocks of Coal Held by Public Utilities On April 1, 1921

OF ALL types of consumers the public utilities appear to have held the largest reserves on April 1, 1921, as indicated by the Geological Surveys' canvass of consumers' stocks. The supplies on hand at electric utilities and coal-gas plants, expressed in terms of weeks and days' consumption, are shown in the following table:

WEEKS' SUPPLY OF BITUMINOUS COAL IN HANDS OF PUBLIC UTILITY PLANTS IN THE UNITED STATES

Figures expressed in weeks and days at current rate of consump ion at time of stock taking*

	July 15, 1918	Oct. 1, 1918	Nov. 11, 1918	Jan. 1, 1919	Apr. 1, 1919	Mch. 1, 1920	June 1, 1920	Jan. 1, 1921	Apr. 1, 1921
lectric utilities	5–4	6–5	7–0	7–0	6–6	3–0	3–1	6–2	6–6
oal-gas plants	10–2	12–0	12–1	11–4	8–2	4–3	3–1	7–6	9–3

*The weekly rates of consumption used in calculating the weeks' supply are as follows: For the four dates, July 15, 1918, to Jan. 1, 1919, the average for the month following date of stock taking; for April 1, 1919, average for January, February and March, 1919; for March 1 and June 1, 1920, average for March, April, and May, 1920; for Jan. 1 and April 1, 1921, average for January, February, and March, 1921.

Both the electric utilities and the coal-gas plants took advantage of the depressed condition of the coal market to increase their reserves during the first quarter of the year. A group of representative gas plants had on hand 19 per cent more coal on April 1 than on Jan. 1, and 331 electric utility plants increased their stocks during the same period about 8 per cent.

On April 1 these 331 plants carried an average of 6 weeks' and 6 day's supply at the rate of consumption during the first quarter of 1921. New England utilities were heavily stocked with coal, the average ranging from 10 weeks in Connecticut to 15 weeks in Massachusetts. The Middle Atlantic States and the South Atlantic coastal plain were well stocked, as was the Lake dock territory, except Wisconsin. The States of the Central Mississippi Valley were less well supplied.

Records of stocks in terms of weeks' supply may be misleading when the rate of consumption is low, as at present. The varying rate of consumption, however, does not affect comparisons of the actual tonnage on hand. In comparison with Jan. 1, 1921, stocks held by a group of 268 plants on April 1 had increased in the Middle Atlantic States, in Virginia, the Carolinas, Alabama, Kentucky and Michigan. They had decreased in New England, the Lake dock territory, and practically everywhere west of the Mississippi. The increases, however, were more than sufficient to offset the decreases. In comparison with June 1, 1920, the condition on April 1 of the present year showed an almost universal improvement, the only important exceptions being Wisconsin, Kansas, Missouri, Oklahoma and North Dakota.

Perhaps the most significant comparison that can be made is between the present condition and that on April 1, 1919. The average stock for all plants was about 5 per cent greater on April 1, 1921, than it was two years before. The increase was general over the Middle Atlantic States, the Southeast and the Lake dock territory, again excepting Wisconsin. New England as a whole was slightly better stocked than in 1919. The Southwest and the Central Mississippi Valley were, however, less well supplied.

Retailers Oppose Elimination of Pea Size

THE committee of retailers on resizing of anthracite has submitted a report covering the results of a referendum on the subject.

One hundred and nineteen companies throughout the country say that they can successfully care for present pea-coal users if pea coal be eliminated, one-half of it going into range, the other half into buckwheat; seventy-three companies answer "No." These seventy-three companies represent more than 200,000 tons of pea-coal business as against 128,000 tons who believe the new sizing would be acceptable to present pea-coal users.

One hundred and eleven companies with 193,000 tons of pea-coal business say that they could not sell the new buckwheat to present pea-coal consumers. Only seventy-eight companies with 73,000 tons of pea-coal business believe they could sell the new buckwheat to pea-coal users.

Question No. 4, which asks point blank for approval or disapproval of this plan, resulted in a vote representing 186,700 tons of pea coal in disapproval as against 131,200 tons who approve. The net result of the referendum, therefore, is to disapprove of the plan to eliminate pea coal in this manner.

Many questionnaires were returned with notations to the effect that the original proposition of but two domestic sizes should be insisted upon. Others frankly stated that they preferred the Lansford sizing which the Executive Committee of the National Retail Coal Merchants Association inspected in the spring of 1920, but did not approve.

The committee recommends reiteratation of the original proposition in favor of but two domestic sizes of coal, and requests the operators to continue their experiments along this line.

REFERENDUM ON RESIZING OF ANTHRACITE CONDUCTED BY THE NATIONAL RETAIL COAL MERCHANTS' ASSOCIATION

(All tonnages are for pea coal only)

						Question No. 2 (a)					Question No. 3 (b)					Question No. 4 (c)				
						Yes		No			Yes		No			Yes		No		
	Companies Reporting	Total Tonnage of Pea	Domestic	Apartment House	Steam	Companies	Tons	Companies	Tons	No Expression	Companies	Tons	Companies	Tons	No Expression	Companies	Tons	Companies	Tons	No Expression
New England	37	36,800	29,790	5,340	1,670	14	8,750	21	28,050	2d	7	6,060	27	23,730	3d	13	9,100	24	27,700	d
New York State, abt., (1,200) (Unit report)		?	?	?	?	....	Yes	....	.....	...	Yes	.....	.....	.....	...	.....	.....	.....	No	e
Brooklyn, N. Y.	5	14,500	9,500	4,250	750	1	4,000	4	10,500	...	1	4,000	3	8,000	1	2	4,000	1	3,000	2
New Jersey	34	60,070	44,990	9,280	5,800	15	26,800	19	33,270	...	6	9,440	27	35,150	1	18	38,305	13	19,865	3
Pennsylvania	26	174,254	142,919	17,361	13,974	17	51,100	9	123,154	...	8	27,275	17	115,644	1	17	45,600	9	128,654	..
Philadelphia	(25)	(172,754)	(141,419)	(17,361)	(13,974)	(16)	(49,600)	(9)	(123,154)	...	(7f)	(25,775)	(17)	(115,644)	(1)	(16f)	(44,100)	(9g)	(128,654)	..
Maryland, Dist. of Columbia and Virginia	13	6,030	4,765	425	840	9	4,900	2	780	2	6	2,735	6	2,030	1	8h	3,200	5	2,830	..
Michigan (excl. Detroit)	33	8,575	6,830	1,365	380	26	8,125	3	250	4	22	4,280	7	2,150	4	27	7,175	5	1,200	1
Detroit	1	2,000	200	1,800	....	1	2,000	....	.....	...	1	200	....	.....	...	.....	2,000	....	.....	
Illinois and Wisconsin (excl. Chicago)	50	12,055	9,943	2,050	62	28	8,055	12	2,550	10	19	4,955	21	4,988	10	31j	7,405	15	2,200	4
Minneapolis—St. Paul	7	14,620	14,620	.....	.....	6	13,320	1	1,300	...	6	13,320	1	1,300	...	6k	13,320	1	1,300	
Miscellaneous (address not shown)	4	1,500	1,500	.....	.....	2	1,000	2	500	..	2	1,000	2	500		3	1,100	....	.....	1
	210	330,404	265,057	41,871	23,476	119	128,050	73	200,354	18	78	73,265	111	193,492	21	126	131,205	73	186,749	11

(a) Question 2 was: "Could you successfully take care of your present pea coal-users, if pea coal were to be eliminated, one-half going to range and one-half into buckwheat?"
(b) Question 3 was: "Could new buckwheat be successfully sold to your present domestic pea-coal trade"
(c) Question 4 was: "Does the following resizing meet with your approval?" (Meaning the Proposition covered by Question 2).
(d) Three companies say Lansford sizing preferred.
(e) Two domestic sizes preferred, per formal resolution taken at annual meeting
(f) Two say "If over ¾-inch mesh."
(g) Largest company says partially approve only.
(h) One company prefers Lansford sizing.
(j) Five companies prefer Lansford sizing
(k) One company says "very much in favor."

Bids for New York City Department Coal Requirements, Opened May 10, Show Wide Variation

BIDS were opened by the Board of Purchase of New York City on May 10 for supplying several city departments with 16,946 tons of egg coal; 4,163 tons of stove, 1,116 tons of chestnut, 2,744 tons of pea; 7,212 tons of buckwheat No. 1; 23,433 tons of buckwheat No. 3; 8,323 tons of semi-bituminous mine-run; 157 tons of blacksmith coal and 536 tons of coke. Proposals were made on a basis of net tons and the specifications provided for a deduction in the event of any future cut in freight rates.

Bids received for furnishing the Department of Plant and Structures, Borough of Brooklyn, with 101 tons of stove, 64 tons of chestnut and 50 tons of blacksmith coal ranged from $13.23 to $13.75 for stove; $13.23 to $14 for chestnut and $9 to $9.95 per ton for blacksmith coal. The same prices were named for supplying stove and chestnut to the department's buildings in the Borough of Queens.

For supplying chestnut coal to the department's buildings in the Borough of Richmond bids ranged from $13.24 to $14.50 per ton.

Bid of $15.25 Received for Chestnut

For furnishing coal to the department buildings in the Harlem River Division, the bids ranged as follows: Stove, $12.07 to $13.85; chestnut, $12.07 to $15.25, according to place of delivery; egg, $13 to $13.40, and blacksmith, $7.75 to $11.50.

Other bids received for city departments included the following: Department of Correction—Blackwell's Island Penitentiary—3,440 net tons buckwheat No. 3, from $4.28 to $5.99; 101 Centre St., Manhattan, 1,360 tons buckwheat No. 1, $5.95 to $7; 318 tons semi-bituminous, $8.89 to $9.69; Jefferson Market Court, Manhattan, 224 tons pea, $10.75 to $11.40; 149 Raymond St., Brooklyn, 1,360 tons Buckwheat No. 1, $5.14 to $6.99; 318 tons semi-bituminous, $7.75 to $9.69; Blackwell's Island Penitentary; 2,156 tons semi-bituminous, $6.54 to $8.99; 536 tons coke, $10.30 to $12.47; Rikers Island Municipal Farm, 908 tons semi-bituminous, $6.62 to $9.25.

Blackwell's Island Workhouse bids were as follows:

	3,000 Tons Buckwheat No. 3	500 Tons Semi-Bituminous
Majestic Coal Co.	$4.28	$6 62
Penn Fuel Co.	5.44	8.70
Stephens Fuel Co.	4.77	6.89
V. H. Youngman & Co.	....	6.98
Commonwealth Fuel Co.	5.23	8.56
Wyoming Valley Coal Co.	4.94	7.39
Farrell & Son	5 99	8 99
G. D. Harris & Co.	....	6 54
Inter City Fuel Co.	5 24	8 04
B. Nicoll & Co.	....	7 04
Coney Island Coal Co.	5 20	...

Street Cleaning Department—Manhattan, 1,235 tons stove, $13.33 to $13.60; 69 tons blacksmith, $9.69 to $11.80; Brooklyn, 352 tons egg, $11.86 to $13.25; 598 tons stove, $12.77 to $13.73.

Hart's Island Reformatory Prison bids ranged:

	6,173 Tons Buckwheat No. 3	168 Tons Stove	2,640 Tons Semi-Bituminous
Majestic Coal Co.	$4 50	....	$6 62
Penn Fuel Co.	5 94	$13 00	9 25
V. H. Youngman & Co.	....	....	7 13
Stephens Fuel Co.	4 87	13 25	6 99
Commonwealth Fuel Co.	5 38	....	8 65
Wyoming Valley Coal Co.	4 94	....	7 49
Farrell & Son	5 99	12 47	8 99
Inter-City Fuel Co.	5 34	11 86	8 14
B. Nicoll & Co.	....	....	7 18
G. D. Harris & Co.	....	....	6 65

N. Y. City Reformatory, New Hampton, Orange Co., N. Y., 1,620 tons, buckwheat No. 3, $5.29 to $5.90; 368 tons, semi-bituminous, $7.02 to $10; Department of Parks, Bronx, 1,232 tons pea, $10.75 to $12.12; 2,240 tons buckwheat No. 1, $7.74 to $8.48.

Police Department—Manhattan, 2,586 tons egg, $13.24 to $14; 770 tons pea, $10.75 to $11.40; Brooklyn; 2,109 tons egg, $11.86 to $13.23, 144 tons pea, $10.18 to $11.05; Queens, 487 tons egg, $12.60 to $14.16; 151 tons pea, $10.45 to $11.50; Richmond, 117 tons egg, $12.85 to $14.50.

Fire Department—Manhattan, 3,324 tons egg, $13.24 to $14; 404 tons chestnut, $13.24 to $14; Brooklyn, 3,104 tons egg, $11.86 to $13.25; 188 tons chestnut, $12.15 to $13.25; Queens, 1,265 tons egg and 134 tons chestnut, $14.16 each; The Bronx, 1,437 tons egg and 37 tons chestnut, $13.33 to $13.83.

Department of Health—Manhattan, 127 tons egg and 75 tons stove, $13.33 to $13.85 each. Brooklyn, 55 tons egg and 106 tons stove, $12.75 to $13.48.

Department of Water Supply, Gas and Electricity—Milburn Pumping Station, Baldwin, L. I.—302 tons semi-bituminous, $8.73 to $8.83. Massapequa, L. I., Pumping Station—187 tons semi-bituminous, $8.43 to $8.52. Pumping Station, 98th St. & Columbus Ave., Manhattan, 1,493 tons buckwheat No. 3, $5.89 to $6.99; 747 tons semi-bituminous, $8.49 to $9; 747 tons buckwheat No. 1, $7.87 to $8.23. Mt. Prospect Pumping Station, Brooklyn—168 tons buckwheat No. 1, $7.59 to $8.73. Jerome Park Pumping Station—635 tons buckwheat No. 3, $6.87 to $6.99; 635 tons semi-bituminous, $9 to $9.99. Flushing, L. I., Pumping Station—226 tons buckwheat No. 1, $8.78 to $8.88. Bayside, L. I., Pumping Station—122 tons buckwheat No. 1, $8.78 to $9.43. Clove Pumping Station, Richmond—1,325 tons buckwheat No. 1, $8.34 to $8.72. Grant City Pumping Station, Richmond—1,867 tons buckwheat No. 1, $8.38 to $8.52. Tottenville Pumping Station, Richmond—101 tons buckwheat No. 1, $8.34 to $9.43. 179th St., Manhattan, Pumping Station—Alongside, 1,512 tons buckwheat No. 3, $5.29 to $6.99; 1,512 tons semi-bituminous, $8.24 to $8.99.

Bituminous Coal Loaded Into Vessels at Lake Ports as Dumped by Docks for Season to End of April*

(In Net Tons)

Ports	Railroads	1921 Cargo	1921 Fuel	1921 Total	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total
Toledo	Hocking Valley	253,024	6,610	259,634	0	0	0	273,310	8,250	281,560
	Toledo & Ohio Central	47,754	1,408	49,162	7,872	338	8,210	11,095	346	11,441
	Baltimore & Ohio	106,530	2,537	109,067	0	0	0	11,827	240	12,067
Sandusky	Pennsylvania	32,552	1,109	33,661	0	0	0	56,219	1,700	57,919
Huron	Wheeling & Lake Erie	133,374	3,634	137,008	87,860	6,054	93,914	104,511	3,428	107,939
Lorain	Baltimore & Ohio	175,517	9,242	184,759	93,138	12,524	105,662	127,795	5,125	132,920
Cleveland	Pennsylvania	159,472	8,040	167,512	6,196	2,514	8,710	95,494	15,531	111,025
	Erie	24,983	1,564	26,547	0	0	0	0	0	0
Fairport	Baltimore & Ohio	0	0	0	0	0	0	0	914	914
Ashtabula	New York Central	108,633	4,755	113,388	8,113	803	8,916	116,785	7,672	124,457
	Pennsylvania	97,831	4,017	101,848	766	1,566	2,332	180,618	5,637	186,255
Conneaut	Bessemer & Lake Erie	40,393	292	40,685	95,055	2,883	97,938	77,955	237	78,192
Erie	Pennsylvania—West	60,403	2,383	62,786	0	0	0	22,040	1,821	23,861
	Pennsylvania—East	2,306	797	3,103	2,572	948	3,520	4,534	119	4,653
Totals		1,242,772	46,388	1,289,160	301,572	27,630	329,202	1,082,183	51,020	1,133,203

* Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, Manager.

Coal Production Costs and Profits in Great Britain

Costs of production, profits and other statistics of the British coal industry for March, 1921, compared with the two preceding months and the year 1920, are given in the following table, published by the *Colliery Guardian:*

	Month Ended March 31, 1921		Month Ended Feb. 28, 1921		Month Ended Jan. 31, 1921		Year 1920	
Output:	Gross Tons		Gross Tons		Gross Tons		Gross Tons	
1. Tonnage raised	17,408,000		17,126,000		19,249,000		229,063,000	
2. Mine consumption and miners' coal	2,115,694		1,957,580		2,122,463		23,792,598	
3. Tonnage disposable commercially*	15,292,306*		15,168,420§		17,126,537 ‖		205,270,402 ¶	
	Amount	Per Ton Disposable Commercially	Amount	Per Ton Disposable Commercially	Amount	Per Ton Disposable Com'ercially	Amount	Per Ton Disposable Com'ercially
Costs of Production:								
4. Wages	£21,256,923	27s. 9.61d.	£22.223.764	29s. 3.63d.	£27,046,305	31s. 7.01d.	£264,721,632	25s. 9.50d.
5. Stores and timber	5,619,784	7s. 4.20d.	4,611,271	6s. 0.96d.	4,738,748	5s. 6.41d.	55,162,608	5s. 4.49d.
6. Other costs**	2,544,033	3s. 3.93d.	2,202,601	2s. 10.85d.	2,298,832	2s. 8.21d.	24,906.628	2s. 5.12d.
7. Royalties	523,381	0s. 8.21d.	504,093	0s. 7.98d.	556,425	0s. 7.80d.	6,605,083	0s. 7.72d.
8. Total costs	£29,944,121	39s. 1.95d.	£29,541,729	38s. 11.42d.	£34,640,310	40s. 5.43d.	£351,395,951	34s. 2.83d.
9. Deduct proceeds of miners' coal †	146,239	0s. 2.29d.†	142,565	0s. 2.26d.†	171,577	0s. 2.41d.†	1,540,777	0s. 1.80d.†
10. Net costs	£29,797,882	38s. 11.66d.	£29,399,164	38s. 9.16d.	£34,468,733	40s. 3.02d.	£349,855,174	34s. 1.03d.‡
Proceeds:								
11. Commercial disposals	24,538,673	32s. 1.11d.	24,862,768	32s. 9.39d.	29,579,402	34s. 6.51d.	383,947,511	37s. 4.90d.
12. Balance:‡								
Debits	£5,259,209	6s. 10.55d.‡	£4,536,396	5s. 11.77d.‡	£4,889,331	5s. 8.51d.‡	.....	.....
Credits	.....	.....	.....	.....	.....	.....	£34,092,337	3s. 3.87d.‡
13. Number of work people employed	1,197,765		1,218,798		1,224,486		1,185,108.5	
14. Tonnage raised per person employed	14.53		14.05		15.72		193.28	
15. Earnings per person employed	£17 15s. 0d.		£18 4s. 8d.		£22 1s. 9d.		£223 7s. 5d.	

* Of the 15,292,306 tons disposed of commercially, 3,024,083 tons were shipped for export and foreign bunkers, mainly from South Wales and Monmouthshire, Northumberland and Durham.

† The proceeds of miners' coal, so far as it is supplied at special prices, are treated as a reduction of the cost of producing the coal disposed of commercially and the deductions in the "per ton" columns have been calculated by dividing the proceeds of miners' coal by the tonnage disposable commercially.

‡ In addition to the deficit shown in Item 12, provision has to be made for:—depreciation; interest on debentures and other loans; capital adjustments under the Finance Acts; and the profit to which the owners are entitled under the Coal Mines (Emergency) Act, 1920-21.

§ Including 2,767,880 tons shipped for exports and foreign bunkers.

‖ Including 2,741,714 tons shipped for exports and foreign bunkers.

¶ Including 38,772,213 tons shipped for exports and foreign bunkers.

** Management, salaries, insurances, repairs, office, selling and general expenses, etc.

A Few English Miners Return to Work

SIX hundred Shropshire mine workers returned to the mines on May 25 under a temporary wage agreement with the colliery owners. The Government on May 24 was of opinion, however, that it was useless to try to bring the parties together as long as their propositions were so grievously variant. When Parliament met on that date Austen Chamberlain, Government leader in the House of Commons, being asked if Lloyd George could make a statement, requested that the question be put again on May 26. Rumors were circulating that by May 27 a renewal of the conferences might be expected, and on May 25 Mr. Chamberlain announced that the Government had actually summoned the conference.

Among the strikers the desire for pooling of costs and earnings still persists in some quarters, and the men are still in hope of being successful in obtaining a national pool, but in other sections, according to labor leaders, their desire is simply to obtain a wage scale better than that now offered. Safety gangs in some sections are doing work preparatory to a resumption.

Many London street-car men were talking of a sympathetic strike, but when the question was put to a vote it was so discouraging that the leaders have refused to announce the outcome, so clearly did it evince a lack of interest in the mine workers' cause among the employees of the London street railways. The lack of coal has made further cuts in train service and the London subways are now closed down after 11.45 p.m. For a while the volunteers who were unloading foreign coal and the dockworkers in Glasgow refused to go to work, but now, having been assured that they will not be victimized by the strikers, they have decided to return.

Canada Reduces Coal Freight Rate 10 Per Cent for Summer

CANADA'S Board of Railway Commissioners, in session at Ottawa, May 23, ordered a 10-per cent summer reduction in freight rates on coal moved in the prairie provinces. The lower rate is effective from June 1 to Aug. 21.

Alabama and Mingo County Men Look to Washington for Assistance

CERTAIN influences are being used in an attempt to transfer the Alabama wage dispute to Washington. A body, taking the attractive name of the American Civil Liberties Union, has appealed to Secretary of Labor Davis for an investigation of the labor troubles in the coal fields of Alabama, declaring the Governor's recent award "a gross injustice to miners" and alleging that it "perpetuates conditions that may break out at any time into open industrial conflict."

The appeal declares that the Governor's orders were in open violation of the civil rights of the mine workers and that the whole power of the state was thrown against the workers from September, 1920, to February of this year, the purpose being "to crush the effort of the workers to obtain decent conditions and the right of organization."

Fred Mooney, the district president of the United Mine Workers of America in that part of West Virginia to which Mingo County is assigned by the organization, has been in Washington seeking to obtain a Congressional investigation of the mine troubles of Mingo County. Last session Senator Johnson, of California, introduced a resolution for an investigation into the strike, but no action was taken, as Chairman Kenyon, of the Education and Labor Committee, frankly stated that no time remained for disposal during that session. President John Lewis of the United Mine Workers is conferring with Secretary of Labor Davis in the hope that he will assist in a settlement agreeable to the wishes of the mine workers' organization. A Senatorial investigation was ordered May 26. Both operators and mine workers are anxious for it, and Senators Sutherland and Elkins are outspoken in its favor.

Operators, Wholesalers and Retailers to Be Represented at Conference on Coal Bill

THE CONFERENCE which is to consider the scope of fact-finding which is to be included in the Frelinghuysen bill is to be held at the Department of the Interior in Washington, June 7. Senator Frelinghuysen will preside. Secretaries Hoover and Fall will be in attendance. In addition there will be three representatives of each of the following organizations: National Coal Association, American Wholesale Coal Association, National Retail Coal Merchants Association. The anthracite industry also will have three representatives in attendance. The National Coal Association will be represented by W. K. Field, E. E. White, and Ralph Crews. The American Wholesale Coal Association will be represented by W. R. Coyle, Noah H. Swayne and George H. Cushing. The retailers will be represented by Roger Stevens, John Lloyd and Homer D. Jones. The anthracite industry will be represented by S. B. Warriner, William L. Connell and W. H. Williams.

No formal plans are to be made for the conduct of the meeting. Senator Frelinghuysen has expressed the desire that it be a round-table discussion. He has expressed a willingness to alter his bill if it can be shown that the bill in its present form works a hardship out of proportion to the value to be derived. He is anxious to have it in just as simple form as will accomplish its purposes and protect the interests of the public.

A preliminary conference will be held June 6 at the Washington Hotel by the representatives of the coal organizations.

Manufacturers' Counsel Says Compulsory Fact Finding Is Unconstitutional

ANY law providing for compulsory collection of production statistics is distinctly beyond the power of Congress and clearly unconstitutional, according to an opinion rendered by Nathan B. Williams, counsel for the National Manufacturers Association, in connection with the Frelinghuysen bill providing for compulsory fact-finding as to coal production. Mr. Williams states that it has been held repeatedly by the Supreme Court of the United States that, under the commerce clause of the constitution, Congress has no control whatever over production, as "production" is not "commerce." He cites various opinions to sustain his contention.

The Calder Committee on Reconstruction and Production, in its final report states that it abandons the idea of government control of coal and recommends in its stead legislation providing for the securing, collecting and publishing of information with respect to the coal business.

Government Files Brief in National Coal Association Injunction Case

LERT SLACK, special assistant to the Attorney General, has filed his brief with the Supreme Court of the District of Columbia in the injunction proceedings brought by the National Coal Association. Mr. Slack develops in detail the arguments which he made orally at the time the case was heard. Counsel for the National Coal Association is completing the brief which will be presented in behalf of the National Coal Association's contention.

Creditors of Old Tidewater Exchange Fail To Devise Means to Collect Charges

CREDITORS of the old Tidewater Coal Exchange held a meeting at the Whitehall Club, New York City, on May 24 to formulate a course of action regarding the proper method of assessing demurrage charges. There were about twenty in attendance. No definite action was taken and no date was fixed for holding another meeting. After the meeting Charles S. Allen, secretary of the Wholesale Coal Trade Association of New York, Inc., who had issued the call for the meeting, said it had been suggested to him that a committee to represent the debtors of the old Exchange, against which a petition in bankruptcy has been filed, be appointed.

Charles A. Owen, of the Imperial Coal Corporation, who was the chairman of the meeting, in stating the objects of the gathering said he believed it would be unwise to appoint a trustee who would bring suits against debtor members of the Exchange as lawyers' and other fees would eat up all moneys which might be coming to them. On the other hand if the matters in litigation were given to juries to decide, the Exchange would lose out in many instances. He favored compromising the claims. Others spoke in the same strain, favoring the appointment of a trustee who would endeavor to bring about an amiable settlement without taking the matter into court.

Convention of Coal Wholesalers to Consider Establishment of Traffic Division

THE program of the convention of the American Wholesale Coal Association is practically in its final form. The opening session, June 7, will be devoted largely to the discussion of the market situation. D. B. Wentz is scheduled to discuss the Eastern situation; C. M. Modderwell, the Western situation, and H. Y. Saint, the export situation. George H. Cushing, the managing director, will present at that session a printed statistical report dealing with the subject of the discussion. C. L. Couch, president of the organization, will deliver his annual address. The reports of the managing director and of the treasurer will be distributed in printed form. The report of the managing director will show that the membership of the association is now well above the six hundred mark.

The subject of the afternoon session will be traffic. At that session it will be decided whether or not the association will establish a traffic division, which will involve the employment of an expert traffic man to be stationed in the Washington office of the association. The discussion will revolve around talks by Wm. A. Wimbish, G. N. Snider and Judge Arthur B. Hayes. The report of the traffic committee will be presented.

The event in the evening will be the banquet, which is to be held at the Washington Hotel. Noah H. Swayne will be toastmaster. Speakers will be C. L. Couch, J. G. Bradley, Ty Cobb and Irwin S. Cobb.

Officers of the association for the ensuing year will be elected on Wednesday morning. The morning discussion will be on "The Future of Associations." J. D. A. Morrow and Ellery B. Gordon will furnish some of the material to be taken up for general discussion. C. C. Carlin will discuss legislation, after which the representatives of the association who will have attended the Frelinghuysen conference will report. The convention then will be called upon to vote on resolutions.

Governor Sproul Signs Mine-Cave Bills; Will Operators Absorb Coal Tax?

GOVERNOR SPROUL of Pennsylvania signed the Kohler and Fowler mine-cave bills on Friday, May 27. Apparently the Governor was considerably in doubt as to the right course and possibly was governed more by his early promise to sign the bills than by his judgment as to their value. S. J. McDonald, president of the Scranton Central Labor Union, says they will be of as much benefit to the community as an epidemic of smallpox.

Unconfirmed rumors that are circulating declare that it is the intention of the anthracite companies to absorb without increase in price the anthracite coal tax until the constitutionality of the act has been finally determined by the courts. They intend to fight it, believing it unfair to the consumer.

F. H. Alfred Urges Summer Delivery of Next Winter's Coal

"THE Pere Marquette Ry. has just completed contracts for company coal for the ensuing 12-month period, and we are already storing fuel for next winter's operation. This prompts me to appeal to manufacturers and coal dealers to begin now to buy and store coal in adequate volume, rather than wait until later in the year." Frank H. Alfred, president of the Pere Marquette, thus urges manufacturers and coal dealers in the territory served by the company's lines to push "summer delivery" of next winter's supplies.

"There are economic advantages," continued Mr. Alfred, "in purchasing coal for winter use during the summer months, and two of these are of the greatest importance: The usual lower prices that prevail during the summer months and the certainty of timely delivery.

"We are all hopeful of better business conditions returning shortly and so in moving every ton of freight possible during the summer months, when the transportation machine is at its maximum of efficiency, we can then dispose of the worries about its adequacy to meet the demands of a returned prosperity."

Representative Linthicum Asks Inquiry Into Baltimore Coal Prices

REPRESENTATIVE J. CHARLES LINTHICUM of Maryland in a letter to States Attorney Robert F. Leach, dated May 25, asked an investigation by the Grand Jury to determine whether illegal or unjust methods are pursued by Baltimore retail coal dealers to maintain the present prices of anthracite coal.

The request was made, Mr. Linthicum said, on the ground that prices should be and could be decreased somewhat if the dealers wanted a decrease.

Mr. Linthicum points out that there is a uniform price for anthracite coal offered by the Baltimore dealers and an absence of competition on a price and value basis. He says it "has been asserted and it would appear that there is a centralized body which not only fixes the price of coal for each month but also in some manner prevents competition by independent dealers through an understanding with coal operators from whom the dealer obtains his supply."

Retail coal dealers in Baltimore have insisted that the margin between the final sale price of anthracite coal and the purchase price paid by them was about $2.83 a ton.

Details of Reading Dissolution Settled

TWO important points decided by the Federal District Court in Philadelphia on May 21 in the Reading dissolution case were that equal rights be given to common and preferred stockholders in receiving the stock of the new coal corporation taking over the Reading's (a holding company) equity in the P. & R. Coal & Iron Co., and that the majority of the stock of the Central Railroad of New Jersey be put into the hands of a trustee to await a favorable time for its disposal.

The Reading Company after its holdings in the coal company and the Central Railroad of New Jersey are disposed of, is to be merged with the P. & R. Railroad Co., which will subject it to regulation as a common carrier.

The common stockholders, however, contend that they are entitled to more than the preferred stockholders, and have appointed a committee to carry the plan before the U. S. Supreme Court.

Ohio Men Ask Flexible Differential in Rates From Pennsylvania and West Virginia

COAL rates from Pennsylvania and West Virginia points will be considered at a hearing to be held in Columbus, Ohio, June 11 by an examiner of the Interstate Commerce Commission. The Southern Ohio Coal Exchange has attacked all these rates, which has precipitated a proceeding which may have a far-reaching effect. The petition filed with the Interstate Commerce Commission presents a novel theory, in that it proposes to substitute a flexible differential for the fixed differential. It is generally conceded that the 40c. differential fixed in 1917 on the basis of the rates in effect at that time should be wider, so as to maintain a corresponding relationship, now that higher rates are in effect.

J. D. A. Morrow to Represent Coal in International Chamber of Commerce

IT IS understood that J. D. A. Morrow, vice-president of the National Coal Association, will leave for Europe early in June as representative of the coal association on the Raw Materials Division of the International Chamber of Commerce, which will hold its first meeting in London during the week of June 27.

"Restoration of the World's Commerce," the main theme of the conference, will be discussed by some two hundred delegates from all parts of the United States and representatives from eleven other countries. Some of the delegates from the United States have already sailed for Europe, but the majority will leave during the early part of June.

Walker D. Hines, Director General of the U. S. Railroad Administration, will be chairman of the conference on transportation and communication.

Mine Workers in Central Pennsylvania Refuse to Discuss Lower Wages

A REPLY has been made to coal operators around Du Bois, Pa., in answer to their request that the mine workers of District No. 2 meet their employers and discuss a readjustment. John Brophy, president of the district, which is otherwise known as that of Central Pennsylvania, sent the reply and said the request was somewhat vague, the questions to be discussed at the proposed conference not being specified. He added that the scale now in force had been endorsed by the national organization and could not be amended till March 31, 1922.

SECRETARY OF COMMERCE HOOVER in explaining before the House Appropriations Committee his plan to create divisions in the department to co-operate with industry in developing domestic and foreign trade, referred to the fact that in foreign countries there existed combinations for imports by which one group buys all articles of a certain kind, including coal, which groups dictate prices in the United States. He proposed the addition of specialists to the department to work out plans in co-operation with industries to meet these forces. Director Stratton, of the Standards Bureau, referring to fields for investigations looking to elimination of waste in industry, said that in ceramic work and other industrial processes not more than 25 per cent of the heat is utilized. He suggested investigations as to the utilization of low-grade fuels and the saving of the expensive fuels for more important uses. Secretary Hoover said that if the Government could turn the sulphur gases from furnaces into sulphur it would save the country $50,000,000 a year. Director Stratton referred to the fact that two or three firms had used waste heat to dry a product where before the product was dried by burning fuel.

AN INFORMAL DISCUSSION of the effect of Lake coal rates at Lake points not covered by the 28c. reduction took place in Washington May 26 between representatives of the various interests affected. There were separate conferences with Interstate Commerce Commission officials and with representatives of the railroads. Discrimination against Milwaukee, Detroit, and other points is created by the rate authorized on coal for the Northwest, it is alleged.

In *Coal Age*, May 19, page 916, the Georges Creek & Phoenix Mining Corporation, Philadelphia, was reported as bidding on 14,000 tons of Maryland coal for the Government Fuel Yard. The amount should have been 140,000 tons.

Industrial Buyers Are Incredulous at Coal Man's Urging to "Buy Now or All Is Lost"

Purchasing Agents Defer Purchase of Coal in Large Quantities Until Labor Costs Are Deflated—Altruistic Reasons for Buying Make Little Impression —Offer of Exceptional Value Would Make Consumer Anxious to Buy

By Elwood Sampson*
Written for *Coal Age*

WHY doesn't the industrial buyer buy coal NOW? Why does he not take advantage of the present low prices and thereby avoid the higher prices and all of the griefs of the winter season? These and many similar questions are undoubtedly being asked by almost everyone in the coal trade.

As it is an almost invariable rule for the industrial buyer either to remain silent or to give an offhand superficial reason for his action, the coal trade as a whole is kept in almost complete ignorance of the underlying reasons which govern the course that industrial buyers are pursuing. Because he has remained silent, most coal operators and dealers assume that he is short-sighted in his policy, and is "lying down on the job" in being indifferent to the gravity of the situation.

The industrial purchasing agent was never more alert than he is today. He has never more carefully watched each day's developments and weighed each and every factor which has any influence on the buying situation. He, therefore, has a certain definite understanding of the whole situation in general and in detail. As this is the result of a carefully worked-out analysis, and is constructive in principle, elucidation of the purchasing agents' viewpoint will help the present buyers' position in relation to the coal situation.

This can best be done by presenting the basic points brought out at our recent meetings, when only industrial purchasing agents were present, and we, therefore, were free to discuss openly our own problems and viewpoints.

Conclusions Based on Large Michigan Industries

Purchasing agents are not unanimous upon every point affecting them any more than any other class of business men. So I will pass by the various points on which we could not agree and present only those of far-reaching importance upon which there was an almost unanimous crystallization of opinion when the discussion was completed. As more than 90 per cent of Michigan's largest industrial concerns, which rank as "top notchers," were represented at at least one of these several state meetings held within the last three weeks, this presentation, while unofficial, is a true one.

The industrial purchasing agent's viewpoint is unavoidably radically different from that of the coal trade. There is the universal difference of viewpoint between buyer and seller. Also, there is the great difference in degree of importance to each side. To the coal trade the problems of coal production and sale cover the entire horizon. For us they form only a small portion, inasmuch as we have many other problems of equally great importance. For this reason the coal man gives his entire time and energy to solving his particular industrial problems. The difficulties are therefore magnified till they seem all-embracing.

When we consider them, we do so in relation to our many other equally important problems. In so doing we naturally reduce the size of these coal problems to a small percentage of what they mean to the coal industry. We, therefore, cannot begin to be so greatly excited over them as you are; or else we would lose the proper perspective, which it is necessary for us to keep in order to meet all of our various problems.

Because of the all-importance of the coal industry to the coal trade, you try out new methods for promoting sales and for protecting your industry. These often strike you as the inspiration of the moment, and should be wonderfully effective. However, in our buying positions we have long ago learned that human nature is basically the same. Every industry goes through the same course of events, whether coal, copper or steel, etc. The things you are doing have already been done or are still to be done by all of the other industries. This regular order of events tells the professional buyer what is the coal situation, both present and future.

Coal Industry Is in Propaganda Stage

You have just been going through the stage which buyers call the "propaganda stage." This propaganda stage always expresses itself in two dominating lines of thought. One is an aggressive defense of the position of that particular industry. The other is telling the professional buyer why and how he should handle his work of purchasing. Long ago we learned that any industry carrying on an aggressive defense has some improper conditions which the industry itself knows about but which it hopes to keep concealed by directing attention in some other direction. For this reason, even if his own judgment told the professional buyer that prices had reached bottom, for instance, he would know that his judgment was mistaken so long as that aggressively defensive propaganda was being carried on.

The other parallel line of action of telling the buyer how he should handle his professional work is the expression of a certain panicky state of thought. This occurs when an industry has gone through prosperous times which have produced a general letting down of ability. The man, or the firm, or the industry that has become soft through a long period of prosperity is panic-stricken when the bottom starts to slip out from under. This causes the party so stricken to place the burden of saving the situation upon someone else's effort instead of on his own. Accordingly as each industry has gone through a period of serious deflation it in turn has "grabbed" at the buyer, demanding that he "buy now or all is lost."

Everyone in a normal state of mind knows that sales are not made through the seller reciting his troubles. instead they are made when the seller first presents

*National chairman, Public Relations Committee, the National Association of Purchasing Agents.

something of exceptional value to the buyer and thereby causes the latter to want to buy.

There is no surer way of stopping sales than by starting a propaganda campaign.

Taking up the important points set forth in the coal trade's propaganda campaign let us consider the industrial buyers' reaction to them and analysis of the situation.

First is the propaganda statement that a large portion of next winter's requirements must be bought now or there will be a severe shortage of coal this winter with rapidly soaring prices. Industrial buyers do not believe this will happen unless there is a quick radical change in the underlying economic situation. Should any business concern have certain strong, well-organized department and others unable to function properly the lack of proper co-ordination would almost certainly produce a heavy business loss.

The economic situation today is exactly parallel to this. Prices and costs in most of the raw material industries are completely deflated. On the other hand, retail prices are about half way deflated and rents scarcely more than 5 per cent. This being true, the consumers' purchases will continue at a minimum. Every individual who still maintains a home, paying highly inflated rent, has such a large percentage of his income thereby used up that he must do without a corresponding percentage of other things, whether he so desires or not. High rents on business property also help greatly to reduce the consumers' purchasing power, because they represent the major portion of inflation still present in retail prices.

Economic Situation Curtails Purchasing

This distorted condition in the economic situation prohibits the normal spreading out of the purchasing power of the consumer. This greatly reduces consumer buying. This then results in few orders and plants scarcely running. So long as the high rents continue, we cannot get back to a nationally prosperous condition or to a basis of ordering in sufficient volume to cause a severe coal shortage. If all rent and land prices were 50 per cent lower than their present level we would figure on 100 per cent increase in coal consumption.

Second is the propaganda claim that coal prices have reached bottom; therefore, any change in price must be an upward one.

Industrial buyers know that deflation applies to more things than commodity prices. The economic law is that when the price trend turns downward, it goes considerably below the cost of production and *stays there* until deflation in profits, in labor, and in other production costs is completed.

The coal trade believes complete deflation has taken place in the coal industry. Industrial buyers do not believe this, because of their wide range of knowledge concerning what has happened in each of the many important industries. Labor costs are too high on account of the strongly unionized condition of the coal miners.

The coal trade has a particularly difficult task to bring about the necessary deflation in wages. This must be undertaken, however, for the general industrial welfare of the country. There must necessarily be a properly balanced exchange of commodities, so that the workers in each line can exchange their labor through the medium of money for the proper amount of the necessities of life. Accordingly, as a matter of protecting the industrial welfare of the whole country, as well as that of their respective firms, industrial buyers feel it would be the wrong thing to order coal in heavy quantities until coal labor costs have been completely deflated.

A particularly important factor to be straightened out before the industrial buying of coal will begin in heavy quantities is that of high freight rates. In no other commodity used in most industrial plants is the freight rate itself such a large part of the commodity cost. To overcome this condition the coal trade should join hands with the industrial buyer in making the railway executives understand their clear duty. They are now sending out a large amount of propaganda showing that railway rates cannot come down because operating costs are too high. Instead they should cease this aggressively defensive propaganda and direct their efforts toward reducing high labor costs, so that freight rates can be lowered, with resultant benefit to every industry, transportation included.

A matter of vital concern in a situation like the present is that of money or credit. Every firm, large and small, is working under tight credit conditions. This limits each one to a certain small amount of money to invest in future needs when they feel that the trend of price warrants this. Therefore, a careful analysis is made of each of the various raw materials necessary and the expenditure made in the direction which promises the best net return on the amount of money available.

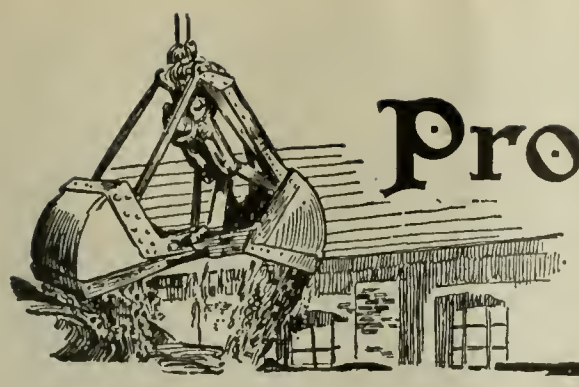
Accordingly, in the competition of the various industries to obtain a portion of money spent for future needs, the coal trade is at a disadvantage compared with copper, tin, lead, cotton and other raw materials, for in those industries the deflation of profits, labor and all producing costs have been carried much further relatively than they have in the coal business.

Altruism Is a Poor Business Getter

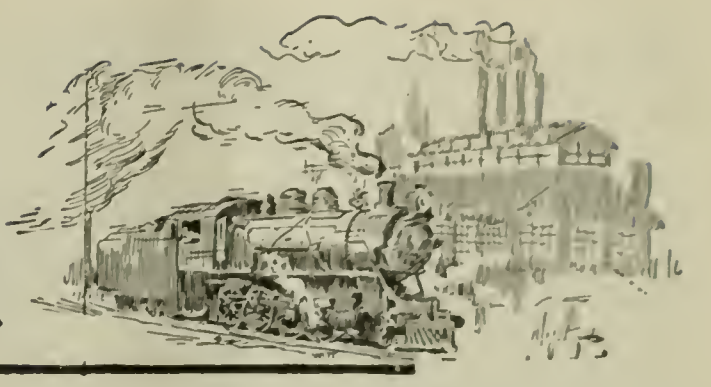
Moreover, every business man knows that when anyone has a limited amount of money to spend, and one party shows how he can produce a profit; whereas, the second party wants it spent for an altruistic purpose, the former always wins out. For this reason every effort on the part of the coal trade to get industrial purchasing agents to buy coal now from the altruistic purpose of not overloading the railroads when winter comes is not getting results, for the other industries are holding forth the reward of a direct and *sufficient* monetary gain.

Industrial buyers are following closely the course of events, keenly although silently. They are all sharply alert to observe when the next step in the cycle of events will be taken in the coal trade. That next step will follow the recognition that the spreading of propaganda is purely a wasted effort. Then the energy devoted in that direction will be directed toward producing as rapid a deflation as possible in wages and other production costs and of coal commodity rates. When this has taken place, industrial buyers will be able to safely plan their purchases ahead, knowing that no big drop in prices *can* take place suddenly.

This brings us to the final stage of the present cycle through which the whole industry is passing—that is, large and regular purchases of coal by the industrial buyers. Whether that is one month or twelve months away depends upon how quickly the necessary preceding steps are completed. At least it will occur within that range of time.



Production and the Market



Weekly Review

CONSISTENT but slow gains in output of bituminous coal on a market anything but active is a sign of normal recovery. In the past two weeks production, which reached 8,000,000 tons in the week of May 14, dropped slightly to 7,957,000 tons the week of May 21 and, according to preliminary information, again picked up to the 8,000,000-ton mark during the last week of May. Prices in the meanwhile have eased off. *Coal Age* price index, which indicates the trend of the whole spot market, stood at 103 in the second and third weeks of May but dropped three points to 100 in the last week of the month. Since Feb. 1, when the market had completed its drop from the dizzy heights of last autumn, *Coal Age* index has advanced and declined within the narrow limits of 104 as high and 98 as low, but two-thirds of the time has been above 100. In the Middle West, where five out of the nine declines in spot prices are reported this week, oversupply of steam coal resultant from preparation of domestic lump is the cause of the slump.

Despite the relatively heavy call for coal at Hampton Roads on foreign account, prices show no strength. Inland commitments for smokeless coal are light and plenty of free coal is available for Tidewater. Heavy shipments to Tide during the past three weeks have prevented any spurt in prices, but the trade seems satisfied with moving this grade at around $6.25 a gross ton f.o.b. vessels.

Little trading is taking place in Lake coal, but loading at the mines and shipments up Lake continue heavy, largely on account of companies either owning docks or affiliated with large dock interests.

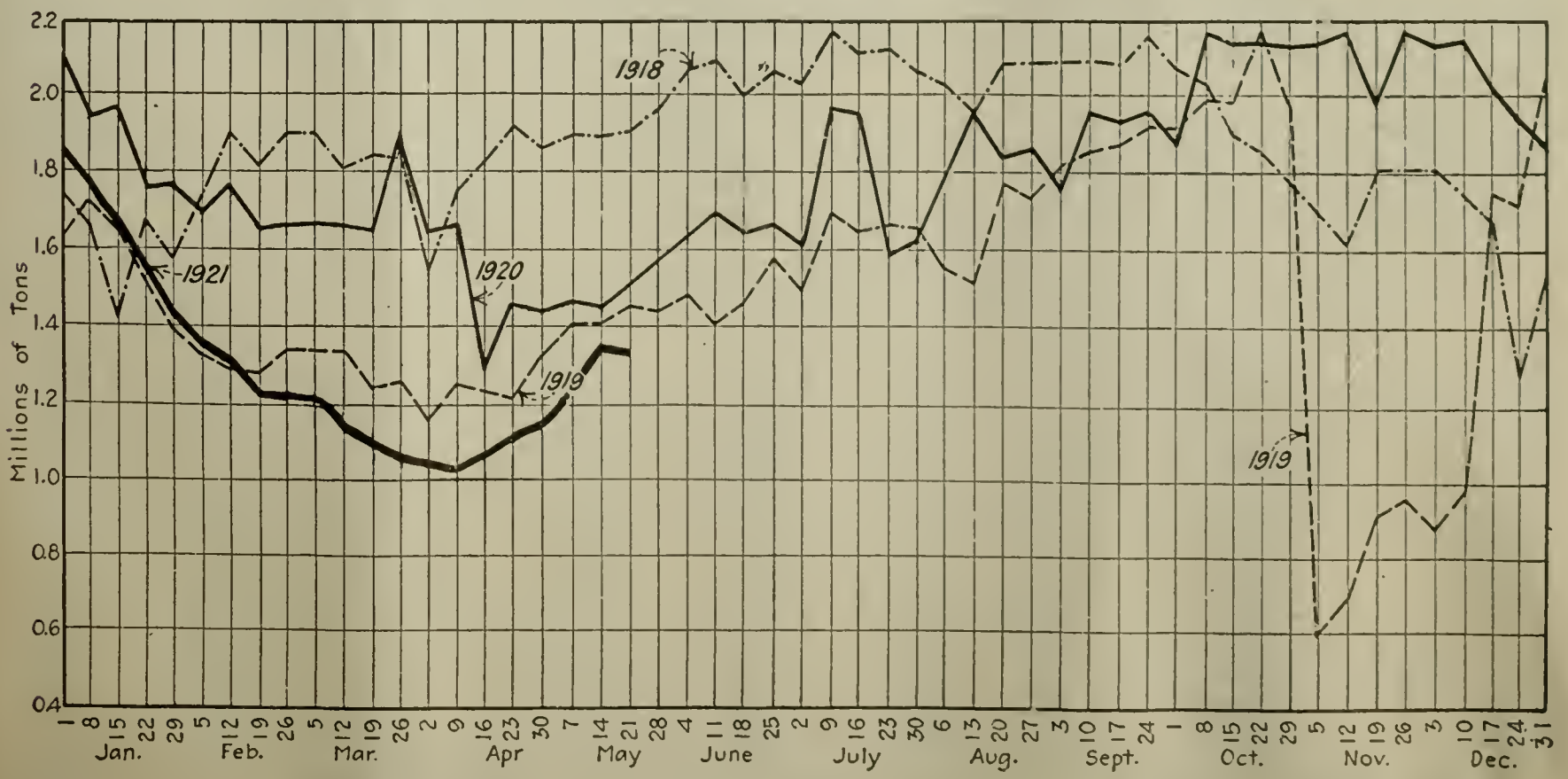
It is reported that dock companies with mine connections are endeavoring to get coal forward to head off the possibility of an acute congestion during the autumn months and that the coal operators are pressing the boat companies to fill their outstanding contracts for deliveries on this market in expectation of a strike by the railroadmen's unions in the event of a reduction in wages becoming effective July 1. Dock prices are off 50c. a ton for summer movement in an effort to keep coal moving and the docks clear for additional receipts.

N. Y. Central and Seaboard Place Contracts

The contract market is slow. Among the railroads the New York Central lines west have closed for 1,000,000 tons of Ohio No. 8 mine run at less than $3 per ton. The Seaboard has closed for 780,000 tons of Alabama coal and the Southern is asking for bids.

All Inland trading is very dull. Retail stocks are growing top-heavy and steam buying is lagging. It is becoming apparent that purchasing agents are delaying

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

placing any orders which are not absolutely necessary for current consumption for the next few weeks in the hope of a possible readjustment of railroad wages and freight rates.

Everything considered, the bituminous coal market is expected to continue to be very slow, at least through July, while anthracite, which is moving well, is expected to fall down soon after July 1.

BITUMINOUS

It is plainly indicative of conditions in the soft coal trade that of the gain in output of 6,000,000 tons, from 7,400,000 tons the first week of May to 8,000,000 tons the following week, 25,000 tons, or nearly 90 per cent, was in the Northern and Middle Appalachian fields. According to the Geological Survey the most marked improvement was in the eastern Ohio field where average mining time increased from 56.6 to 71.2 per cent. In the Pittsburgh field, the average hours worked increased from 64.0 to 72.5 per cent. Southern Ohio, and both high and low volatile fields in southern West Virginia and the Maryland district gained. Outside of the Appalachians the gains appear to have been in Indiana and the Rocky Mountain region.

Production of bituminous coal in the third week of May is reported as 7,957,000 tons with indication for better than 8,000,000 tons the week ended May 28, as the first two days' loadings exceeded by 2,294 cars the first two days of the preceding week.

It is interesting to note, as pointed out by the Geological Survey, that in the first 120 working days of 1921, production of bituminous coal has been 152 million tons, compared with 164 million in the dull post-armistice period of 1919 and with 210 million in 1917, 215 million in 1918 and 198 million in 1920.

Reports to the Geological Survey from the three coal exchanges at Hampton Roads show that exports of bituminous coal continued to increase during the week ended May 21. A total of 402,034 net tons was dumped for foreign account, consisting of 309,635 tons of cargo coal, and 92,399 tons of foreign bunker. The total was an increase of nearly 11 per cent over the preceding week. Dumpings for foreign account were thus at a rate exceeding that in September, 1920, and approaching the high-water mark set in October of that year.

EXPORT AND FOREIGN BUNKER COAL DUMPED OVER PIERS AT HAMPTON ROADS

(Net Tons)

	Export	Foreign Bunker	Total Foreign
Weekly average:			
September, 1920	271,321	49,756	321,077
March, 1921	87,732	38,744	126,476
April, 1921	137,632	67,960	205,592
Week ended:			
May 7	226,159	135,710	361,869
May 14	283,620	78,785	362,405
May 21	309,635	92,399	402,034

With demand so weak the railroads had little difficulty in supplying the cars asked for, and reports of transportation disability were local in character and negligible in importance. Losses of mine-operating time ascribed to absenteeism of labor, which had increased slightly during the preceding week because of the observance of May Day, dropped down again to less than 1 per cent of full-time capacity.

A general improvement marked the all-rail movement to

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

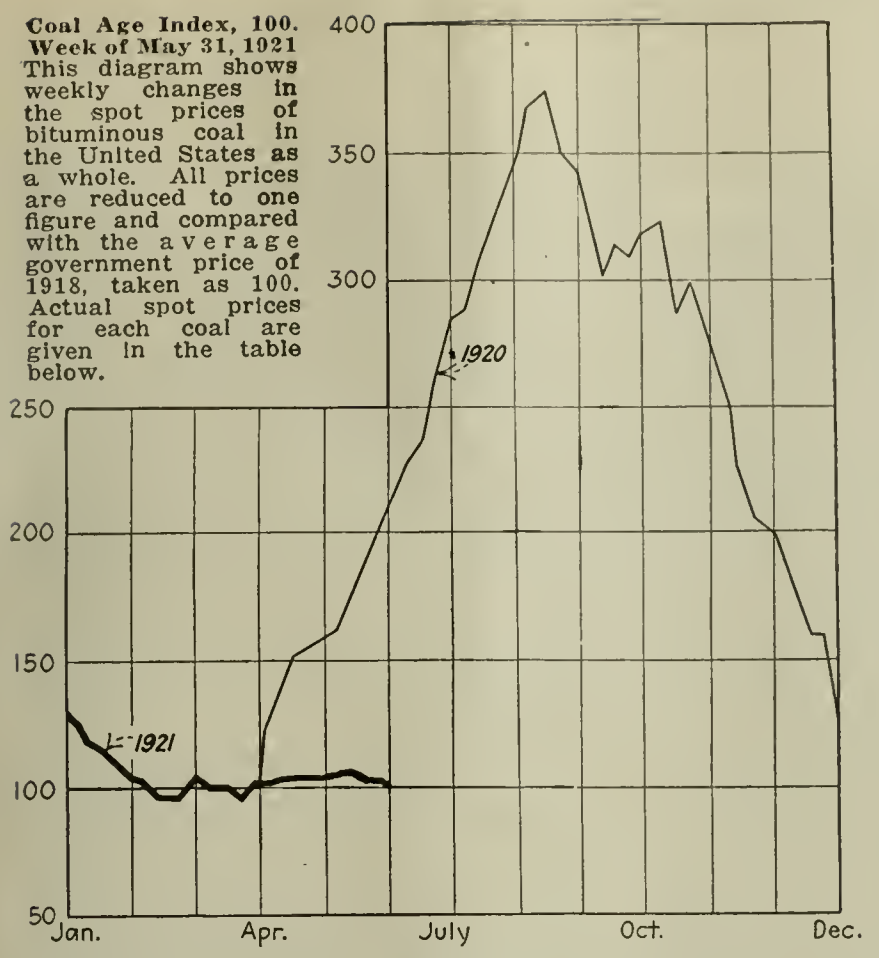
	Market Quoted	Apr. 26 1921	May 17 1921	May 24 1921	May 31 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$3.35	$3.60	$3.50	$3.50
Pocahontas lump	Columbus	5.25	5.60	5.50	**5.50@ 6.00**
Pocahontas mine run	Chicago	4.00	4.00	3.75	3.00@ 4.50
Pocahontas lump	Chicago	5.00	5.25	5.25	5.00@ 5.50
*Smokeless mine run	Boston	5.75	6.40	6.40	**6.25@ 6.70**
Clearfield mine run	Boston	2.20	2.40	2.40	*1.85@ 2.80*
Somerset mine run	Boston	2.80	2.90	2.90	**2.60@ 3.25**
Pool 1 (Navy Standard)	New York	3.50	3.40	3.55	*3.55@ 3.50*
Pool 1 (Navy Standard)	Philadelphia	3.40	3.25	3.25	**3.00@ 3.65**
Pool 1 (Navy Standard)	Baltimore	3.10	3.30	3.35	*3.30*
Pool 9 (Super. Low Vol.)	New York	2.75	2.80	2.85	*2.65@ 2.85*
Pool 9 (Super. Low Vol.)	Philadelphia	3.05	2.90	3.00	*2.75@ 3.10*
Pool 9 (Super. Low Vol.)	Baltimore	2.95	3.00	3.05	*3.85@ 3.10*
Pool 10 (H. Gr. Low Vol)	New York	2.55	2.55	2.60	2.40@ 2.75
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.75	2.70	2.70	*2.45@ 2.75*
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.45	2.55	2.50	*2.40@ 2.50*
Pool 11 (Low Volatile)	New York	2.20	2.15	2.25	*2.00@ 2.25*
Pool 11 (Low Volatile)	Philadelphia	2.45	2.45	2.45	*2.25@ 2.40*
Pool 11 (Low Volatile)	Baltimore	2.30	2.30	2.25	2.20@ 2.35
Pool 71 (Navy Sup'mntal)	New York	2.95	3.00	3 00	2.75@ 3.25
Pool 71 (Navy Sup'mntal)	Philadelphia	3.30	3.00	3.00	2.00@ 3.10
Pool 71 (Navy Sup'mntal)	Baltimore	3.00	3.20	3.20	*2.76@ 2.95*
High-Volatile, Eastern					
Pool 34 (54-64) (H. Vol. Gas and Steam)	New York	2.00	2.00	2.05	*1.85@ 2.10*
Pool 34 (54-64) (H. Vol. Gas and Steam)	Philadelphia	2.15	2.10	2.10	2.00@ 2.20
Pool 34 (54-64) (H. Vol. Gas and Steam)	Baltimore	2.15	1.90	1.90	1.80@ 1.95
Pittsburgh mine run	Pittsburgh	2.25	2.10	2 10	*1.85@ 2.00*
Pittsburgh sc'd gas	Pittsburgh	$2.85	$2.70	$2.80	*$2.50@$2.75*
Kanawha mine run	Columbus	2.25	2.30	2.65	*2.25*
Kanawha lump	Columbus	3.50	3.40	3.40	**3.25@ 3.75**
Hocking mine run	Columbus	2.20	2.20	2.40	*2.25*
Hocking lump	Columbus	3.35	3.30	3.25	**3.25@ 3.50**
Pitts. No. 8 mine run	Cleveland	2.20	2.30	2.25	2.15@ 2.35
Pitts. No. 8 lump	Cleveland	3.40	3.15	3.25	3.00@ 3.50
Midwest					
Franklin, Ill., mine run	Chicago	3.40	3.25	3.15	*2.50@ 3.50*
Franklin, Ill., lump	Chicago	3.55	3.70	3.70	*3.45@ 3.85*
Central Ill., mine run	Chicago	2.75	2.60	2.60	*2.00@ 2.75*
Central Ill., lump	Chicago	3.00	3.25	3.25	*2.75@ 3.25*
Ind. 4th Vein mine run	Chicago	2.75	3.10	3.10	*2.50@ 3.25*
Ind. 4th Vein lump	Chicago	3.25	3 50	3.50	*2.75@ 3 50*
Ind. 5th Vein mine run	Chicago	2.75	2.50	2.50	2.25@ 2.75
Ind. 5th Vein lump	Chicago	3.00	3.25	3.25	*2.25@ 3.25*
Standard mine run	St. Louis	1.80	1.90	1.75	1.75
Standard lump	St. Louis	2.40	2.50	2.40	2.25@ 2.50
West Ky. mine run	Louisville	2.25	2.00	2.20	*1.90@ 2.25*
West Ky. lump	Louisville	3.00	2.65	2.65	*2.35@ 2.75*
South and Southwest					
Big Seam mine run	Birmingham	2.95	2.95	2 95	2.85@ 3.10
Big Seam lump	Birmingham	3.60	3.70	3.70	*3.55@ 3.75*
S.E. Ky. mine run	Louisville	2.75	2.60	2.60	*2.25@ 2.50*
S.E. Ky. lump	Louisville	3.75	3.75	3 90	*3.75@ 3.85*
Kansas mine run	Kansas City	4.40	4.40	4.15	**4.25**
Kansas lump	Kansas City	5.00	5.00	5.00	5 00

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in heavy type, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

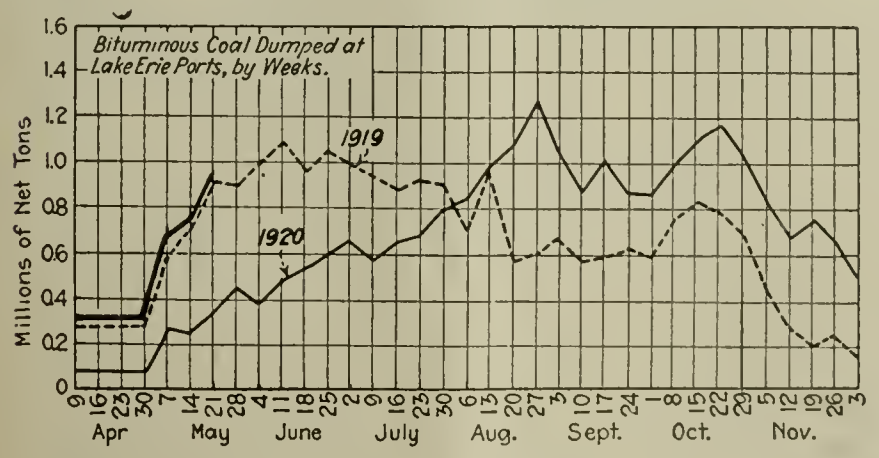
	Market Quoted	Freight Rates	May 17, 1921 Independent	May 17, 1921 Company	May 24, 1921 Independent	May 24, 1921 Company	May 31, 1921† Independent	May 31, 1921† Company
Broken	New York	$2.61	$7.45@$7.75	$7.20@$7.75	$7.45@$7.75	$7.20@$7.75	$7.45@$7.75	$7.20@$7.75
Broken	Philadelphia	2.66	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75	**7.90@ 8.20**	7.35@ 7.75
*Broken	Chicago	5.62	12.65	12.40	12.65	12.40	12.65	12.40
Egg	New York	2.61	7.45@ 8.35	7.20@ 7.75	7.45@ 8.35	7.20@ 7.75	7.45@ 8.35	7.20@ 7.75
Egg	Philadelphia	2.66	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75	**7.90@ 8.20**	7.35@ 7.75
*Egg	Chicago	5.62	12.70	12.35	12.50	12.35	12.50	12.35
Stove	New York	2.61	7.70@ 8.35	7.50@ 8.10	7.70@ 8.35	7.50@ 8.10	7.70@ 8.35	7.50@ 8.10
Stove	Philadelphia	2.66	7.85@ 8.35	7.70@ 8.10	7.85@ 8.35	7.70@ 8.10	**8.15@ 8.60**	7.70@ 8.10
*Stove	Chicago	5.62	13.00	12.70	13.00	12.70	13.10	12.70
Chestnut	New York	2.61	7.85@ 8.35	7.50@ 8.10	7.85@ 8.35	7.50@ 8.10	7.85@ 8.35	7.50@ 8.10
Chestnut	Philadelphia	2.66	7.85@ 8.35	7.65@ 8.10	7.85@ 8.35	7.65@ 8.10	**8.15@ 8.50**	7.65@ 8.10
*Chestnut	Chicago	5.62	12.85	12.60	12.85	12.60	12.85	12.60
Pea	New York	2.47	5.25@ 6.00	5.75@ 6.10	5.00@ 5.85	5.75@ 6.10	**5.00@ 6.00**	5.75@ 6 10
Pea	Philadelphia	2.36	6.00@ 6.25	6.00	5.75@ 6.00	6.00	**5.75@ 6.25**	6.00
*Pea	Chicago	5.62	10.80	10.70	10.80	10.70	10.80	10.70
Buckwheat No. 1	New York	2.47	3.00@ 3.75	3.50	3.00@ 3.75	3.50	*3.00@ 3.50*	3.50
Buckwheat No. 1	Philadelphia	2.36	3.50	3.50	3.25@ 3.50	3.50	*3.00@ 3.50*	3.50
Rice	New York	2.47	2.40@ 2.50	2.50	2.25@ 2.50	2.50	2.25@ 2.50	2.50
Rice	Philadelphia	2.36	2.50	2.50	2.50	2.50	2.50	2 50
Barley	New York	2.47	1.15@ 1.50	1.50	1.15@ 1.50	1.50	*1.15@ 1.35*	1 50
Barley	Philadelphia	2.36	1.50	1.50	1.50	1.50	1.50	1 50
Birdseye	New York	2.47	2.50	2.50	.....	2.50	.....	2.50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago. † Advance over previous week shown in heavy type, declines in *italics*.



New England during the week ended May 21, according to the American Railway Association. Shipments of 3,461 cars of anthracite and 3,088 cars of bituminous coal were forwarded through the rail gateways over the Hudson. This was an increase over the preceding week of 163 cars and 388 cars, respectively. Anthracite shipments were well in excess of those in the corresponding week of 1920, but bituminous shipments were less by 1,297 cars.

According to the Geological Survey, stocks of gas coal in the hands of gas plants, other than byproduct, in New England ranged from more than 12 weeks' supply in Massachusetts to over 17 weeks' in Maine and New Hampshire on April 1. This represents a substantial increase as of April 1 over Jan. 1 of this year for New England.



Spot buying is weak in New England, but is steady in the New York market. Further south, at Philadelphia and Baltimore, steam demand is weak, as is true at Columbus and all Middle Western cities.

ANTHRACITE

Production declined during the week ended May 21, the total output being 1,794,000 net tons as compared with 1,938,000 tons for the week preceding, a decrease of 144,000 tons, attributed to labor conditions. The cumulative output for the calendar year stands at 35,585,000 net tons, about a million and three quarter tons ahead of 1920.

Midsummer Slump in Anthracite Likely

Current demand is strong for all domestic sizes but indications point to a mid-summer slump. Independent coal is going at a premium—in Philadelphia last week the market on these grades advanced almost 75c. Steam sizes are moved with increasing difficulty although not much is going to storage. Quotations for independent steam coals show a slight softening, but company schedules are being maintained. Domestic coals will be advanced this month although at this writing no announcement has been made as to the amount of the increases for June.

COKE

Beehive coke output is apparently at the irreducible minimum, having been around 70,000 tons a week for some time past. H. C. Frick has shut down all ovens in the Connellsville region and is shipping coal by water to the Steel Corporation's Clairton byproduct plant. The present meager output of beehive is going in driblets to iron furnaces and foundries, for which business competition is quite sharp. Were it not for the differentials in freight, favoring beehive coke over byproduct oven coal, it is understood the ovens would be more generally shut down at this time than is the case.

The Seaboard Air Line Ry. has not awarded contracts as yet for its fuel for the coming year. The proposals call for a minimum of 1,132,000 tons and a maximum of 1,548,900 tons. About four hundred bids have been received, according to officials of the company, but all of them have not been checked over. The purchasing agent declines to discuss the low bids as yet, but stated that the high bids ranged from $3.75 to $4 at the mines. It is reported, however, that some bids were as low as $2.40 for large tonnages. It should be noted that the Seaboard buys in Alabama, where costs and therefore prices are higher than in Virginia and West Virgnia, where the greater part of the fuel for this road is obtained. Until complete details of bids by fields are available, no estimate of the contract market can be considered finally disclosed by these reports.

Director Bain of the Bureau of Mines in favoring an appropriation for investigation of heavy clay products said it was hoped to continue the effort to cut fuel consumption which was started during the war in connection with the Fuel Administration. He said that from 30 to 50 per cent of the cost of making brick was chargeable to fuel and that progressive brick plants were cutting down fuel costs by using waste heat. Engineers of the Bureau say the use of fuel can be reduced in brick plants, which would mean a saving of 20 to 30 per cent in that regard.

Estimates of Production

From the Weekly Report of the Geological Survey

(Net tons)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date(a)
May 7 (b)	7,391,000	136,461,000	9,167,000	180,171,000
Daily average	1,232,000	1,266,000	1,528,000	1,664,000
May 14 (b)	8,003,000	144,464,000	8,764,000	188,935,000
Daily average	1,334,000	1,269,000	1,461,000	1,653,000
May 21 (c)	7,957,000	152,421,000	9,246,000	198,181,000
Daily average	1,326,000	1,272,000	1,541,000	1,647,000

(a) Less 2 days' production during first week in January, to equalize number of days covered for the last two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
May 7	1,633,000	31,853,000	1,891,000	30,105,000
May 14	1,938,000 (b)	33,791,000	1,774,000	31,879,000
May 21	1,794,000 (b)	35,585,000	1,847,000	33,726,000

(a) Less 2 days' production during first week in January to equalize number of days covered for the last two years. (b) Subject to revision.

BEEHIVE COKE

Week Ended May 21 1921(a)	Week Ended May 14 1921(b)	Week Ended May 22 1920	1921 to Date	1920 (c) to Date
70,000	69,000	416,000	3,059,000	8,503,000

(a) Subject to revision. (b) Revised from last report. (c) Less 2 days' production during New Year's week to equalize number of days covered for the last two years.

Foreign Market And Export News

Shanghai Market Report

Japanese Coal Quiet, But Receipts Too Heavy for Storage Facilities—Kaiping Situation Better—Prices Are Firm.

Demand for Japanese coal is very low, according to Wheelock & Co.'s Shanghai market letter of April 21, 1921. Stocks are increasing so rapidly that it is difficult to find accommodation at the wharves for new cargoes arriving. A certain amount of Fushun unscreened coal is still available, but no more dust. There is no market change in Fuchung anthracite.

Kaiping coal is in better call at firm prices. Railway facilities in the North have steadily improved and deliveries are being made readily.

Prices are quoted as follows:

	Taels per Ton ex Wharf
JAPAN COAL	
Miike lump, Miike small, Miike dust	Contracted for
Kishima lump	16.00
Shakano lump	15.00
Arate lump	14.00
Shimoyamada kirigomi	13.00
Shin Shakano kirigomi	13.00
Yoshinotani No. 1 lump	14.00
Yoshinotani No. 2 lump	12.00
Ochi lump	14.50
KAIPING COAL	
No. 1 lump	Contracted for
No. 2 lump	$11.50
Washed nuts	13.50
Washed slack	10.50
No. 1 slack	8.50
No. 2 slack	8.00
FUSHUN COAL	
Dust	10.00
Kirigomi	No stock; contract 11.50
Lump	No stock
FUCHUNG (ANTHRACITE) COAL	
Nos. 1, 2 and 3 cobbles	14.00
Boiler coal	13.50
Dust coal	9.50

Germany's March Output Declines

But First Quarter's Production in 1921 Approaches Pre-War Basis—Communist Outbreaks Cause Loss—Negotiate Extra Shift Question.

Production in the Ruhr Basin and Upper Silesia in March fell considerably short of that for the preceding month. In the Ruhr Basin this was caused by the discontinuance of the extra shifts from the middle of March, and by the communist troubles of that month. Numerous mines were for days out of operation on account of attempts at intimidation. Upper Silesia suffered from the general unrest of the province due to the plebiscite. The smaller districts registered an advance in most cases.

Ruhr producton was 7,535,000 tons in 25 days, as against 8,174,600 tons in 24 days of February. Transportation improved in spite of the low water level of the Rhine. The relation of the first three months of 1921 to the corresponding period of preceding years, and to pre-war production, is shown by the following figures, in thousands of metric tons:

	1914	1918	1919	1920	1921
January	9,585	8,629	6,263	6,688	8,073
February	8,910	8,017	5,431	6,876	8,175
March	9,451	8,469	6,300	6,398	7,535
Total	27,946	25,115	17,994	19,962	23,783
Per cent	100	90	64.5	71.6	85.2

These figures illustrate the steady recovery since the slump in 1919. Returns from January to March, 1921, have reached 85.2 per cent of those of the corresponding time of the last pre-war year, however, it must be considered that the number of miners has increased by nearly 100,000 since then.

The March output in Upper Silesia was 2,696,072 tons, as against 2,835,934 tons in March, 1920, and 3,722,699 in March, 1913. In the Lower Silesian Basin it was 416,957 tons, compared with 483,448 tons in March, 1913. The Saxon fields produced 376,322 tons as against 372,511 in the same month of last year, and 416,066 tons in March, 1913. The output of the Lower Rhine fields was 219,245 tons, compared with 264,380 tons in March 1913. Total March production was as follows:

	Tons
Ruhr Basin	7,535,000
Upper Silesia	2,696,072
Lower Silesia	416,957
Saxony	376,322
Lower Rhine	219,245
Total	11,243,596

Production for the first three months of 1921 was as follows:

	Tons
January	11,985,534
February	11,943,371
March	11,243,596
Total	35,172,501

The new agreement which has been in course of negotiation between the Colliery Owners' Union and the miners' representatives in the Ruhr has not yet been definitely settled. As provisionally approved, the agreement provides for the working of overtime, beginning with four hours weekly and gradually declining to two hours per week, down to the period ending with March 31, 1922. Underground men are to receive extra wages for this overtime to the amount of 100 per cent, and surface workmen 50 per cent. In addition, food products at reduced prices will continue to be supplied, and the wages will be increased for time workmen by from 1.50 marks to 8 marks per shift for those over 20 years of age.

SOUTH WALES operators are making no export quotations and owners generally are refusing to consider any business on deliveries running far in the future.

Hampton Roads Clearances

The following vessels cleared with coal during the week ended May 25:

Taizan Maru, Jap., for Lisbon, 3,567 tons; Sierentz, Fr., for Leith, 7,177 tons; Gaelic Prince, Br., for port in England. 7,869 tons; Bradavon, Br., for Algiers, 7,043 tons; Yselhaven, Du., for Hamburg, 6,728 tons; Andalusia, Swed., for Santiago, 2,134 tons; Hofuku Maru, Jap., for Port Said, 7,123 tons; Valdura, Br., for Alexandria, 6,402 tons; Cohaset, Am., for Falmouth, 6,798 tons; Jomar, Am., for Glasgow, 5,789 tons; Lord Dufferin Br., for Aberdeen, 5,835 tons; Novington, Br., for Buenos Aires, 4,838 tons; Fremantle, Fr., for Rio de Janeiro, 7,133 tons; Karen Roegenes, Nor., for Cork, Ireland, 3,243 tons; Georges Mantacas, Gr., for Gibraltar, 4,878 tons; Africanic, Swed., for Rosario, 4,826 tons; Piave, It., for Dakar. 6,855 tons; Iskra, It., for Gibraltar, 5,775 tons; Athanasios, Grk., for Rio de Janeiro, 6,203 tons; Catinat, Fr., for Rio de Janeiro, 10,031 tons; Eirene, Br., for Algiers, 5,473 tons; Penrhys, Br., for Rio de Janeiro, 5,006 tons; Guilford D. Pendleton, Am. Schr., for Faya, 1,987 tons; Pacific, Nor., for Rio de Janeiro, 8,068 tons; Ancona, It., for Italy, 6,115 tons; Lexington, Br., for Liverpool, 954 tons; Grelisle, Br., for London, 6,372 tons; Albany, Br., for Buenos Aires, 5,256 tons.

C. I. F. prices, quoted at this port, for the same period were reported as follows: United Kingdom $12,75, Copenhagen 12.75, Antwerp and Rotterdam $11.50, French Atlantic $12, Lisbon $12, Algiers $13, West Italy $13.25, Marseilles $13.25, Piraeus $14, Port Said $14, Alexandria $14, Gibraltar $12.50, Rio de Janeiro $11.75, Buenos Aires $11.75, Havana $9.50, Kingston $10, St. Thomas $10.50.

South African Market Is Better

Good Stocks on Hand—Pooling System Favored—Another Freight Reduction for Bunker Coal.

Improvement in the South African coal situation is reported in a cablegram from Capetown. Bunker coal is quoted at 42s. 9d. and export coal at 29s., free at ship, Durban, with good stocks on hand. The Government Coal Commission in a report recommends the formation of a pooling system as tending toward a stabilization of prices and greater regularity in output, etc. The report is accompanied by a short draft bill, which it is understood will shortly be introduced in Parliament.

The total coal sold in February in the Union of South Africa amounted to 894,230 net tons, as compared with 979,990 tons in the first month of 1921.

A reduction, effective April 6, has been made in the railway rate for bunker coal to Union ports and Laurenço Marques. The reduction amounts to 6s. 6d. per net ton. There are no changes in existing rates for export cargo coal or for fuel utilized in bunkering ships carrying full cargoes of export coal. The foregoing reduction in bunker coal rates makes a total reduction of 15s. 5d. per ton from the rates in force prior to Feb. 7, 1921.

SPAIN'S NEW TARIFF REGULATIONS, effective May 20, raise the tariff on foreign coal 5 pesetas per ton for briquets and 10 pesetas for nut coal. Run these 4 copies continuous

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THE SWISS FEDERAL GOVERNMENT has recalled all restrictions as to the importation of coal, which may now be imported again by the general trade.

Reports From the Market Centers

New England

BOSTON

Fewer Purchases — Occasional Weakness in Prices — Coastwise Tugs Practically All in Operation — Anthracite Retail Trade Confined to Larger Orders.

Bituminous—While a week ago there developed scattering spot purchases, there is today much less interest in the current market. Operators are trying hard to secure business for June and July, but steam-users are disposed now to wait another month or six weeks before adding to their present stocks. In certain special lines of textiles there is more business in sight than hitherto this year; most of the industries, however, suffer from the same inactivity that is characteristic of steam coal this season.

Here and there may be recognized new low figures for medium to fair Pennsylvania grades, particularly for all-rail delivery. This condition is spotty and is by no means horizontal. The better established producers as a rule have not yet been forced to modify spot quotations, but it is quite possible they too will be obliged to meet conditions during this month. Spot quotations are shown in the Weekly Review.

Factors here have about given up trying to make contracts on a ten-month basis and buyers are besieged by salesmen who urge the great need of piling up fuel while it can be had. Producers are not so much impressed because they know their present stocks average larger than in January and with no favorable turn in general business in near prospect there is every inducement for them to postpone buying.

Demand for Pocahontas and New River is also easier than a fortnight ago. There is less inquiry off-shore, and notwithstanding the marine strike there is no anxiety whatever over the light tonnage lately dumped for New England. There are plenty of large schooners available in place of steamers that are tied up and since these sailing vessels are able to operate at a much lower cost there is reason to think they will be more generally used the balance of the season than was thought possible in April.

So far as coastwise tugs are concerned, the marine strike has virtually petered out. The last remaining boats that were affected by the strike order sailed from Norfolk last week and even certain of the larger steam colliers have been able to operate with non-union help. The bituminous market is in altogether too comfortable shape for buyers to be caused any uneasiness now merely because of union action against the reduction of wages.

Anthracite — Domestic sizes, especially egg and stove, continue in good request, but there are signs of a slightly less demand the latter part of June. Much depends upon the public attitude toward retail buying; just at this time small householders in general are taking coal only for temporary needs.

Dealers in the cities find that the average family is influenced partly by lack of ready money and partly by the newspaper stories that anthracite, in line with other commodities, is certain to be lower in price. It is quite probable that there will be a market let-up in demand during July, if not earlier.

Tidewater—East

NEW YORK

Good Demand for Anthracite, Domestic —Some Expect Early Slump in Activity—Bituminous Quiet—Demand Slow, but Quotations Firm—Gas Coal Wanted for Export.

Anthracite—There has been no let up in the demand for domestic. More coal could be easily taken care of by the dealers as most consumers now realize that the chances of buying at lower prices are small. The yards contain large stocks of chestnut and pea but the supply of egg and stove is limited.

Despite the present activity for the prepared coals there are some in the trade who look for a slowing down soon. Producers have plenty of orders to keep the mines going for several weeks and shippers of independent coals are flooded with orders. Inland demand is active. All sizes with the exception of pea are quickly absorbed. Buying is reported slow in New England.

The independent mines, in nearly all instances, are working five days or better. Consumers in this state are not likely to pay the new Pennsylvania State Tax on anthracite until the law has been tested through the courts by State Attorney General Charles D. Newton.

Some shippers of independent coals are booking orders for July delivery at the then current prices. The movement of steam is slow and no relief is expected until September. Barley is the longest of the three coals. There are many loaded boats here and it is expected they will force quotations lower. Loaded cargoes of rice were quoted $4.50@$4.90 and barley $3.50@$3.90. Current mine quotations are reported in the Weekly Review.

Bituminous—While buying for local consumption is light the movement in some grades shows a slight improvement. Distress coal caused an easing in the quotations towards the end of the week but there was a quick recovery. Some of the cheaper coals are scarce, due to the mines not working while the better grades are not being allowed to accumulate.

Demand for export is not developing as rapidly as expected, although the better grades of gas coals are being sought. Westmoreland gas was quoted around $3 for export and Pool 10 was quoted $6.15@$6.50 for export from the lower ports.

Loaded boats are increasing and unless demand shows considerable new strength soon these will have a tendency to still further lower quotations.

So far as deliveries are concerned, the Marine strike in this harbor did not cause any trouble. Transatlantic liners and other vessels suffered no delay in sailing because of the non-delivery of fuel, but there was a slight decrease in the demand for bunker fuel because of delay in some instances to secure full crews for the ships.

There was a good demand for the better grades of gas coals for domestic consumption and an easing in the call for slack. Wholesalers are receiving many inquiries regarding the present market conditions and the future prospects of getting coal. While orders have been slow shippers look for a revival in the near future.

Quotations, gross tons, f.o.b. this harbor range about as follows: Pool 71, $6.05@$6.15; Pool 9, $5.80@$6; Pool 10, $5.60@$5.80; Pool 11, $5.35@$5.50. For Pool 10 outside of the pool loaded in bottoms quotations from $5.85@$5.95 were reported.

PHILADELPHIA

Anthracite Demand Continues Brisk—Some Indications of Falling Off—Independent Price Increases — Bituminous Remains Quiet — Slight Price Fluctuations.

Anthracite—Some retail dealers say that conditions are actually slow, others report a slackening of orders, but there are still a few who claim to be quite busy and see no reason why they should not continue so. On the whole we are certain that there has been a slowing down and that it will continue from now on to mid-summer.

The trade has really been buoyed up lately by an agitation in the local newspapers, several of them taking the stand that there is a "buyer's strike" among the consumers. First-page prominence has been given to "investigations" warning the operators that it is all due to high prices. All in the trade know that for the entire spring the demand has been extremely active, and far from being a buyer's strike, they have been unable to get sufficient coal to fill their orders right up to this time. The newspaper articles have actually given temporary stimulus to the buying rather than otherwise.

Some of the independents have announced new price schedules effective June 1. Some of the increases were quite heavy, in a few instances as much as 75c. Customers of these concerns were surprised at the advances, for while they expected something, no one thought it would be more than 25c. at the most. It also seems likely that at least two of the larger companies will add 10c. to their prices for June, but up to this time no announcement has been made.

Steam coals are still heavy, with buckwheat the best seller, but even much of this size is going into storage. Company price holds firm, but some independent buckwheat has been sold at $3. Rice and barley fail to improve.

Bituminous—There is no actual sign of change in the market. There is undoubtedly much improvement in certain industrial lines, but even those concerns are only buying meagerly.

Producers are making every effort to induce storage and even though the buyer realizes the necessity, he fails to act in sufficient volume to make any noticeable improvement in trade. So far as contract coal is concerned more coal men are becoming converted to the attitude that the more free coal they have by next fall the more profitable their showing for the year will be.

There have been some spot fluctuations recently, although the prices on an average are quite close to those obtaining for the past six or eight weeks. If anything there has been a tendency to a strengthening and most dealers have learned the futility of shaving the figures any lower to induce business. At Tide there is little activity outside of bunkering and even this is much below normal.

BUFFALO

No Change in Bituminous Situation—Business Awaits Further Adjustment—Buying Is Very Light—Anthracite Dull—Independents Get Premium.

Bituminous—Demand is as light as ever and there is no indication of improvement right away. The small stir that some members of the trade thought they saw some weeks ago has come to nothing. The inference is that the business of the country does not warrant the use of more coal as yet and that a pretty general stir must be made all along the line to set coal moving.

Complaint is heard of the Canadian trade. It is not only small in volume, but the pay is slow, when it ought to be prompt, for the shipper must make all freight payments in advance to the boundary line and then take chances on rejection or some complaint that will cut down the profits to nothing, if any existed to begin with.

It is agreed that stocks are running down and if something should happen to reduce rail efficiency there would be any amount of consumers out of coal in a very short time. So the jobber urges his customers to keep a fair supply on hand, though he has to stand in with the consuming trade pretty closely to escape the inference that he is merely trying to make a sale. Prices are unsteady on the basis of $3.50 for Youghiogheny gas lump, $3 for Pittsburgh steam, and $2.75 for No. 8 lump, $2.60 for Allegheny Valley steam mine run, and $2 for slack. Freight rates added are $2.36 for Allegheny Valley and $2.51 for all other districts.

Anthracite—Shippers complain that the buying is not sufficient to keep mines running as they should in order to make sure of a safe supply in cellars when cold weather comes on. Consumers feel that prices are so high that they cannot afford to buy, and also that lower prices will be made before winter. So, as they do not need coal now, they hold off.

The Lake trade shows satisfactory activity, so far as loading coal is concerned. A good many of the coal cargoes are allowed to lie here indefinitely, waiting till there is freight to bring down. Shippers do not like the idea, as it ties up a large amount of coal, perhaps for some months to come.

Lake loadings for the week ended May 21 were large, totaling 155,100 net tons, of which 61,900 tons cleared for Duluth and Superior, 56,500 for Milwaukee, 26,300 for Chicago, 7,500 for Escanaba and 2,900 tons for Racine.

Coke — The market continues dull, only now and then an order being obtained by local jobbers. As a rule the furnaces are closed. They are now shipping out some iron by canal, when at the opening they reported none to ship.

BALTIMORE

Export Situation Promising and Will Surpass April Record—Soft Coal Trading at Home Very Flat—Prices Fall—Retail Anthracite Trade Again Assailed.

Bituminous—The rapidly enlivening export market relieves the otherwise extremely flat trading situation at Baltimore. For the first twenty-three days of May, as tabulated by the Custom House, twenty-six ships sailed with coal cargoes for foreign ports, carrying a total of 150,631 tons cargo and 20,853 tons bunker. Nine of the cargoes were destined to England and two to Ireland. This shipment is already considerably in excess of the April movement, for which the re-checked figures of the railroad dumpings were 103,736 tons cargo. The total dumping as reported by the railroads at this point in April was 227,015.

Outside of the export situation soft coal trading is very listless. Pool 9, which under the abolishment of Pool 71 took over those fuels, is offering in many cases below the $3 mark. Good coals running to Pool 10 are on the market around $2.40 in many cases. Gas coals are also very weak, excellent 3-in. lump of Pennsylvania origin offering as low as $2.85.

Anthracite — The hard coal men of Baltimore, despite the fact that in May they absorbed some heavy wholesale advances and made no increase at retail from the April schedule, are the subject of attack. One of those intermittent kind of Congressmen whose voice must sometimes reach the galleries has asked the State's Attorney of Baltimore to investigate the price of hard coal at retail in this city, charging that there is an unholy combination for unjust profits.

The move is taken none too seriously in view of the fact that the gross profit of dealers is now less than that set by the Government under Federal regulation as a fair margin of trading. As for June prices, the situation at this point is awaiting action of the wholesale interests, both company and independent. If the June wholesale increase is small this might be absorbed, but the prospects seem to be that the wholesale advance will be such as to force a higher retail schedule. Meanwhile the public continues to show lack of buying interest.

HAMPTON ROADS

Increased Movement to Piers — Prices Soften — England Gets Bulk of Shipments.

A total of 445,407 tons passed over the piers during the week ended May 25, which is a high record for the last six months. In spite of this increasing activity, the prices of Pools 1 and 2 failed to hold, being offered as low as $6.30 at the end of the week.

Shippers, realizing the increased activity, rushed large tonnages to Tidewater, with the result that the local market is threatened with a surplus. Pools 5, 6 and 7 held this week at the usual price, $5.50@$6. Inquiries have been more frequent than at any time for the last two months.

Shipments to England have consumed almost the entire market during the week—together with movement to ports for ultimate consignment to British possessions. American ships are now moving easily in spite of the efforts of the American seamen to tie up shipping until the steamship owners should come to their terms.

The week ended May 26 showed the situation at the coal piers as follows:

N. & W. piers, Lamberts Point—	
Cars on hand	1,555
Tons on hand	74,436
Cars dumped May 1 to 25, incl.	9,563
Tons dumped same period	573,933
Tonnage waiting	23,985
C. & O. piers, Newport News—	
Cars on hand	1,854
Tons on hand	92,360
Cars dumped May 1 to 25, incl.	8,946
Tons dumped same period	481,048
Tonnage waiting	23,200
Virginian Ry. piers, Sewalls Point—	
Cars on hand	1,527
Tons on hand	76,350
Cars dumped May 1 to 25, incl.	8,456
Tons dumped same period	422,827

Canada

TORONTO

Trade Light for the Season—Moderate Supplies Coming Forward—Shortage of Stove Coal.

The coal trade continues light for the season with orders for anthracite coming in slowly but in sufficient

volume to keep dealers fairly busy. Moderate supplies of anthracite are being received from the mines and the yards are generally well stocked with nut and egg, although the supply of stove is not equal to the demand. There is no change in the situation as regards bituminous, which is selling very slowly.

Quotations for short tons are as follows:

	Retail
Anthracite egg, stove, nut and grate	$15.50
Pea	14.00
Bituminous steam	11.25@11.75
Domestic lump	12.50
Cannel	16.00
Wholesale f.o.b. cars at destination	
3-in. lump	7.76@ 8.75
Slack	6.50@ 7.00

Northwest

MILWAUKEE

Market Is Quiet, with Light Demand—Contracts Awarded for City Supplies—Receipts by Lake Continue Liberal.

There is little demand for present use, as the weather is very warm. Dealers are doing their best to stimulate buying for next winter's needs, but it is a little too early to expect consumers to take to this seriously.

Contracts calling for 68,949 tons of bituminous and semi-bituminous for the use of city departments and the school board have just been awarded. The prices are much lower than those paid last year. In the accepted bids semi-bituminous will cost $7.73 per ton, and screenings $5.85. Bids submitted for 1,964 tons of anthracite were rejected because the low bid was qualified and did not name a fixed price. Prices ranged from a maximum of $15.65 down to $11.35. New bids on anthracite will be requested. Smithing, coke and various other grades of coal for special purposes were offered at prices ranging from $5.49 for screenings to $14 for coke.

Receipts by Lake continue heavy. Thus far this season 189,146 tons of anthracite and 541,032 tons of soft coal have been received, against 96,490 tons of anthracite and 125,158 tons of soft coal, during the same period last year. Coal men are combating the bill now pending which, if passed, would make it necessary for dealers to specify the amount of heat units represented in their product.

DULUTH

Slow Movement Off Docks—Bituminous Prices Drop—Anthracite Situation Unsatisfactory.

Because of the slowness of the movement of coal from the docks, and the consequent crowding of the landing and storage piers a probable shortage is looked for by dock men at the Head of the Lakes, and steps are being considered to better the situation by whatever methods possible. Shipments to the harbor continue strong, with 44 boats docked in the past week, six of which were loaded with anthracite, and 30 on the way from lower lake ports, five of these being hard coal.

The rock bottom price in bituminous was reached this week dock men believe, when a further cut of 50c. a ton was announced. This brings the dock price for Youghiogheny, Hocking and Splint to $7 at the dock with run of pile at $6.50. Screenings are selling $4.75@$5.

The lack of demand, which is filling the docks, bears little or no hope for an early increase in business, and dock men are even less optimistic now than a week ago. Contracts are few and far between and dealers seem to be waiting for even further reductions in prices before laying in their winter stocks. Dealers are buying now in a ratio of about one car this year to ten cars at the same time last year.

The situation in hard coal is especially serious and wholesalers are doing their utmost to get supplies in on time.

MINNEAPOLIS

No Interest in Coal Buying — Lake Movement May Be Curtailed—No Efforts Being Made to Store Coal.

Every dull period while current seems worse than any other one. Hence the present difficulties with handling the coal traffic for the Northwest seem a great deal more trying and impossible of solution than do those of previous years, which have been disposed of. The public proposes to wait until it is convinced of the need and the desirability of buying, and of these two the desirability is still placed first.

Of course public opinion on trade matters is not a safe guide, although if the opinion is held strong enough and long enough the accomplishment of last fall and early winter may be repeated, when coal prices were forced down, aided by a providentially mild winter.

The present situation is paradoxical. There is more coal moving to the docks on Lake Superior than for several years at this time. But there is every indication of a sharp falling off of the coal tonnage. There has been a minimum of ore business, a small amount of grain and some little miscellaneous lumber and other freight. But it is not enough to keep the vessels busy, and they are refusing to go forward with coal unless they can see what they are to bring back.

Hence with coal moving fairly free, there is every chance of a sharp reduction of tonnage soon and nothing can be done to avert it. Even placing of orders for coal would not help bring forward more coal if there were no return freight. Orders if placed by consumers would repeat the experience of two seasons ago, when they simply waited until the coal was available. Orders placed in March were filled several months later, and at the price ruling at the time of shipment. These experiences have soured coal buyers. They feel that an order placed early may be of aid to the seller, but it has not worked to any advantage to the buyer. Any appeal to them on the ground of helping out the distribution or the people of the trade falls upon ears exceedingly deaf.

It cannot be denied that there is no evidence of great faith in the predictions of shortage being shown by the members of the coal trade. Dock concerns are not making any strenuous effort to stock now, and thereby have coal on hand to meet the certain demand of the fall when the anticipated shortage would begin to squeeze. Retailers are equally indifferent to the opportunity to make good money by stocking now at low prices and making something on the rise which surely comes with a scarcity. It therefore resembles ardent prayers for rain following which none of the faithful ever carry an umbrella.

Inland West

CHICAGO

Steam Market Declines — Domestic Trade Only Fair — Retail Stocks Are Heavy — Outlook Is Not Promising.

The trend of the steam market is still downward. Last week a great many experienced operators thought that the market had reached the lowest possible level, but this week has proved very conclusively that their opinion was wrong. Industrial depression prevails throughout the city, and it is not so much a question of price when it comes to selling as it is of finding a manufacturer who is in a position to use some coal under existing circumstances. The tendency on the part of the public is to put off purchasing.

Domestic coals are moving a little more freely than the steam sizes. The volume of tonnage sold is, however, far below the ordinary average for this time of the year, but when compared to steam coal, the domestic market is good. The favorites with the retail dealer at this writing are Franklin County coals, anthracite and Pocahontas, named in the order of their importance as related to present conditions. Retailers have large supplies on hand both of hard and soft coals.

The consensus of opinion is that the coal market will have to wait until the industrial situation is straightened out, but this will show no signs of improvement until the railroad controversy has been settled, wages and rates reduced, and purchases once more started by the roads. As it looks today, the market on coal will be dull for at least the next six weeks, provided, of course, there is no outlook for a strike on the part of the railroad brotherhoods.

ST. LOUIS

Warm Weather Brings Market to Standstill—No Storage Activity—Production Weakens Coal Prices.

Domestic storage of coal, which was good up until a week or so ago, has slumped until there is not much mov-

ing. Most of the dealers have their yards pretty well stocked up, so that there is no demand for domestic in St. Louis and a somewhat similar condition exists in the country. Many plants are going light on fuel, with the result that screenings are going begging. This condition prevails all over the Middle West.

There is nothing to indicate that there will be a change at any time in the next few weeks and the future looks exceedingly poor. Some anthracite is moving through. The Frisco bought 1,250 tons for May shipment for their branch lines.

Something like 25 cars of smokeless have been ordered the last week. The demand for coke is improving. There is no change in retail prices, although two or three dealers have a price war on, but this has little effect.

CINCINNATI

Smokeless Slack Weakens with Heavy Production of Prepared Sizes — Industrial Buying Unimproved — Retail Prices Firm.

Increased demands from both the Lake and seaboard for smokeless prepared sizes have undoubtedly put more nut and slack on the market than can be absorbed. New River and Pocahontas are having trouble in competing with the lower priced bituminous from southeastern Kentucky and West Virginia. Few sales of spot nut and slack have been made lower than $2.20. Steam users still are not inclined to buy heavily and further reductions may follow.

With the resultant selling at new low figures the costs are being tacked on prepared sizes. The few companies here that had block and lump to offer are asking $6 for it. Egg has also advanced 25c. to $5.50. Mine run is held at $3.50, also an advance, with few sales.

Requirements of gas coal for Eastern shipment to Tidewater somewhat strengthened the mine run of West Virginia, and left the splint producers a free way in the Western market. While reports here are that the gas coal operators are getting $2.25@$2.35 for mine run, $2.10 on this market was high, with splint and lower grades selling down to $1.75. Eastern Kentucky low grade slack could be had as low as $1.15 and the price varied up to $1.35. For higher grade coals it appeared that $1.65@$1.75 was the top of the market.

June prices are being conned over by retailers, though from present indications there seems little possibility that there will be any great changes except possibly on bituminous screenings.

DETROIT

Buyers' Indifference Continues — Reserves Being Consumed — Prices Are Unchanged—Anthracite Is Sluggish.

Bituminous—Offerings of steam and domestic are not awakening interest among buyers that the local wholesalers and jobbers believe should be manifested if adequate provision is to be made for fuel requirements for the coming winter.

Many industrial plants are running on shortened production and are providing for present requirements by taking coal from reserves. In doing so, they are placing themselves in a position where they will have to have prompt service when they start to buy. It is feared that in their attempts to get coal they will bring about another period of rising prices and uncertain supply.

Three-inch lump from Ohio mines is quoted $3.25, 2-in. lump is $3.15, ¾-in. is $3, mine run $2.25 and nut, pea and slack $1.90@$2. Four-inch lump from West Virginia is about $3.50, 2-in. is $3.25, ¾-in. $3, mine run $2.50 and nut, pea and slack $2. Smokeless lump and egg is $5.50, mine run $3.50 and nut and slack $2.25.

Anthracite—Householders are apparently holding back to a greater extent than usual as some retailers find that customers who ordinarily stock up early have not yet placed orders.

CLEVELAND

Operations Increase As Lake Movement Grows—Lower Lake Docks Congested—Industrial Market Weaker.

Bituminous—The last week seems to have brought a further slackening in plant operations. The spurt in the automobile and parts industries which took place earlier in the spring appears now to have been seasonal. Numerous plants for which much promise was held a few weeks ago are now slowing down. Various concerns supplying material to the automobile trade have only a few weeks work ahead and some see the necessity for closing down in sight.

Most industrial leaders believe that the present slump is merely a reaction from the too great optimism of a month or more ago and that business should see the beginning of a gradual permanent recovery soon. In the meantime, however, the needs for coal are diminishing and the demand is extremely light. Slack has weakened slightly in the last week and is now being quoted $1.50@$1.65. Other grades are holding their own.

Pocahontas and Anthracite—Dealers continue to talk of a price advance to come in anthracite shortly. This is expected to be about 25c. a ton. The demand has improved slightly. Pocahontas prepared sizes are not in over abundance.

Receipts of bituminous coal at Cleveland during the week ended May 21 were 1,153 cars; divided, industrial 803, retail 350, as compared with 1,001 cars the preceding week.

Lake—The adjustment of freight rates has had the desired stimulating effect. Operations at Ohio mines are continuing at their highest rate for the year as a result of the heavy movement of coal to Lake docks. This movement is resulting in congestion as coal is arriving twice as fast as it is being dumped.

At the present time the outlook is for a more meager ore movement than had been expected earlier in the season. This means that coal cargoes will continue scarce. Some of the large steamship companies are planning to retire about half of their fleets now operating owing to the discouraging ore prospects. The United States Steel Corporation, it is reported, is not expected to bring down more than 10,000,000 tons of ore this year, compared with around 30,000,000 last year.

COLUMBUS

Domestic Buying Increases — Steam Sizes Are a Drug—Lake Movement Is Heavy.

A better tone has developed in the coal trade. Retailers are disposed to buy more freely for stocking. There is a good demand for Pocahontas and some West Virginia splints. Retail prices show no tendency to soften. Hocking rescreened lump sells for $6.75, while ordinary lump is $6.25@$6.50. West Virginia splints are $7.50@$7.75, while Pocahontas is $9.50@$10. Anthracite is $14.50@$14.75.

A fair movement of Lake vessels is reported, although the dullness of the ore industry is holding up a more active trade. The H. V. docks at Toledo during the week ended May 21 loaded 186,563 tons as compared with 43,526 tons the previous week, making a total of 616,653 tons for the season. Loadings up to May 22, 1920, amounted to but 91,848 tons. The T. & O. C. docks during the same week loaded 41,691 tons as compared with 17,353 tons the previous week, making a total of 104,768 tons for the season.

Steam business is dragging in all sections. This is due partly to reduced consumption of steam grades and also because of the heavy production of screenings in providing for the Lake trade. Screenings from all fields are selling lower than for some time and the tendency is still downward. Prices have reached as low as $1.25 and in certain cases even lower. Manufacturing is not resuming to any extent.

Production has shown a slight increase in all fields, although the output is still extremely low. In the Hocking Valley, the output is about 23 per cent of normal. Cambridge and Crooksville are producing from 20 to 25 per cent.

West

DENVER

Prices Increased — Domestic Demand Lags—Industrial Activity at Standstill.

Colorado retailers are making a summer drive for the sale of more storage coal, if possible, now that the price has gone up again from 15 to 25 cents a ton at the mine, and a corresponding increase realized by dealers.

Market conditions, however, are unfavorable to heavy shipments out of the state, on the part of operators, or for

the encouragement of anything like normal traffic in intrastate points, due to the assembling of cars for the early summer fruit and spring crops.

Industrial activity is down to a near standstill, and the regular storage in sugar beet factories for the fall campaign is the only indication of a part-time working basis in lignite fields.

Southwest

KANSAS CITY

Retailers Stocking Domestic — Poor Steam Market — June Schedules Announced.

Dealers are placing orders for domestic grades for storage, but the consuming public is buying very little coal. Already some of the Kansas operators report their inability to care for all the domestic orders they are receiving, due to lack of demand for steam grades.

Mines are running about two or three days a week in Kansas but are doing better in north Missouri. Mines in Arkansas are operating about one and a half to two days a week.

Arkansas coal prices for shipment in June range, lump $6.50, mine run $4.50, slack $2.75; Kansas lump and nut $5, mine run $4.25. slack $3.75; north Missouri lump $4.50, mine run $3.85, washed slack $3.85.

South

BIRMINGHAM

Steam Trade Very Dull — R.R. Contracts Closed — Slight Advance in June Domestic Prices.

The only business of consequence taken on during the past week was the contract of the Seaboard for the year beginning July 1 for 680,000 tons, 450,000 of which will be furnished by the Pratt Consolidated Coal Co., 200,000 by the Pratt Fuel Co. and Empire Coal Co., and 30,000 by the Bankhead Coal Co. Figures at which contracts were closed are not available at this time. Big Seam mine run was taken for the most part, only a small tonnage of washed coal being included in the contract. Bids have been submitted on the requirements of the Atlantic Coast Line and the Southern and awards are expected in the course of a week or ten days.

Sales other than the above are confined to the spot market for a few hundred tons here and there, as commercial interests continue to buy only such quantities as are needed for immediate use. Steam quotations have not changed materially, prices being shown in the Weekly Review.

Householders are very slow in laying in coal for next season and dealers are finding themselves in a position where they will soon be compelled to suspend shipments until they can move some of the coal on hand. Quotations for June are as follows, for lump and nut sizes: Black Creek $4.80@$5.05, Cahaba $4.80 @$6.65, Carbon Hill $3.95@$4.25, Big Seam $3.55@$3.75, Big Seam (Mt. Carmel) $3.55@$4, Corona $4.80@$5; Montevallo $6.80@$7.

LOUISVILLE

Steam Demand Weakened by Heavy Screenings Production—Lump Movement Declining—Prices Range Lower.

Steam demand is now weaker than at any previous time this year. In filling Lake orders for lump and the good run of retailers orders, experienced in the past six weeks, the production of screenings has been heavy, with the result that many industrial consumers are fairly well stocked on cheap screenings, causing a comparatively poor demand for mine run.

Retailers are now fairly well stocked on prepared sizes and with the reduced production of lump the steam market stands a better chance of taking up excess production of screenings resulting from Lake movement.

Prices of many producers are merely quotations and are well undersold. Improvement in industrial activity is badly needed to force movement of coal. Railroads are on a minimum consumption. No line of buyers are consuming anything like normal supplies, with the result that the so-called low production comes closer to representing overproduction.

One jobber stated that while screenings were quoted at prices ranging $1.25 @$1.75, the low price could be reduced to $1 on any quantity business, on Hazard No. 6 and some West Virginia coals. Eastern Kentucky mine run is quoted at as low as $1.85 and West Virginia $1.75@$1.85, although some of the best grades are not quoted at much under $2.40@$2.50.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Independent Operations Increase — Steam Coals Sluggish—Buying Mostly for Prompt Delivery.

There has been considerable improvement in the independent operations during the past week. The washeries have not resumed operations as the market for steam coal is still sluggish.

None of the companies are storing coal at the present time. Operators are not contracting their steam sizes, waiting for a better price. As a result of talk of a reduction in freight rates, buying is mainly from hand to mouth.

More of the river washeries have opened operations but these are not going the way they were during the war, and it seems doubtful if they will ever regain the amount of business that they have had.

PITTSBURGH

Lake Shipments and Line Demand Decreased — Operations Decline — Prices Easier.

With a decrease in shipments to the Lake on account of the heavy accumulation of cars there awaiting vessel movement, and with further decrease in line demand, production has declined further and is hardly above 30 per cent of rated capacity, against about 40 per cent at the beginning of May. River mines have been nearly altogether idle all the month, while in point of number more than half the rail mines are closed.

Consumers are absolutely indifferent, and make purchases only as they must have coal. In no quarter is there any serious disposition to stock against future requirements, nor is any direct issue raised as to price. The consumers are simply without interest in the future.

Market prices are made by the relatively few operators who desire to run whether they make a profit or not, and perhaps the best that could be said of the operating mines is that they are losing less by operating than they would by closing. Prices have been softer in the past week, $2 representing the top rather than the bottom in actual sales of steam mine run. Byproduct has been freely available at $2 while in actual purchases the price has been shaded. Gas coal is lower but maintains a very substantial price lead over steam coal. Prices are shown in the Weekly Review.

UNIONTOWN

Frick Ovens Blown Out—R.R. Freight Cuts Anticipated—Buying Curtailed.

That industrial conditions in the coke region are no longer gaged by the number of beehive ovens in blast is reflected by the action this week of blowing out the remainder of their 19,000 ovens. While there are now no Frick ovens in blast, plants of the company are running at more than 25 per cent capacity, shipping raw coal to the Clairton byproduct plant.

Before the advent of byproduct plants the blowing out of all Frick ovens would have created a sensation. This week it was of no more than passing interest. It is now easily conceded that the day of the beehive oven is fast waning and while those already constructed are expected to be used yet for a number of years, no others will be built.

The announcement that railroad wages are to be reduced July 1 has caused a still further decline in the

fuel markets in this district. It would seem that consumers not having immediate need for tonnage, have withdrawn entirely from the market in expectation of benefiting by lower freight rates when their need does appear.

Operators are doing their best to stimulate buying at present low prices and easy transportation conditions but are meeting with no success whatever. Quotations for all grades of fuel are nominal, coal at $1.80@$2.25; furnace coke $3.25@$3.75 and foundry $4.50 @$5.25.

EASTERN OHIO

Heavy Lake Coal Shipments Increase Production—R.R. Buying—Slack Softens—Congestion at Lake Docks.

Despite continued depression in the coal trade, mines during the week ended May 21 again set a new high record in production for the current year. The field reached 70 per cent of capacity, the output being 437,000 tons, an increase of 7,000 tons over the preceding week. Output for the year up to May 21 amounts to 6,160,593 tons or an average of 50 per cent of capacity.

Lake coal is arriving at lower docks in much larger quantities than it has been possible to clear, with the result that there is now estimated to be on the docks enroute over 1,500,000 tons. The Ore & Coal Exchange, it is understood, requested operators to hold off shipping the last four days of this month in order that the situation may be cleared up.

Railroads are more active in both open buying and contract inquiries. The New York Central (Lines West) has just closed for about 1,000,000 tons of No. 8 coal to come from mines on their line of railroad, at a figure said to be slightly under $3.

Industrial contract inquiries continue very light and these buyers seem content as yet to supply their needs in the open market. There is an increased supply of slack in the market, with a consequent softening in the price on this grade.

Transportation facilities have been ample, with the possible exception of the Wheeling & Lake Erie, where some car shortage has developed because of the large quantity of Lake coal under load both at the docks and along the line.

CENTRAL PENNSYLVANIA

Miners Refuse Wage Conference Requested by Operators — Production Slightly Increased.

The United Mine Workers of District No. 2, through their officials, have refused a joint conference with the operators, in a communication directed to the producer's association. The worker's officials state that their position is in line with that of J. L. Lewis, international president, who said recently that the contract is binding until March 31, 1922.

The statement intimates that they will refuse to meet to discuss business conditions at this time. The coal operators recognize that the cost of living has been materially reduced; that wages have been reduced in practically every industrial activity except coal, and that the economic conditions are such as to justify the coal industry as a whole in bearing their fair share of the burden imposed by these conditions. It has not been intimated whether any further action would be taken to bring about a conference.

Production has been increasing slightly during the month of May. Up to and including May 20, there were 37,164 cars loaded, as compared with 30,346 in the corresponding period in April.

FAIRMONT AND PANHANDLE

Larger Lake Movement Aids Production—Slack Is Being Overproduced—Other Prices Unchanged.

Fairmont

Production was slightly increased the week ended May 21, the output reaching about the same figure as was observed in February. Larger companies were shipping more heavily both to the Lakes and to Tidewater. Neither spot nor contract buying was on a very large scale and prices were as soft as ever; mine run $2.25@$2.50 and as low as $1.90 had been offered for mine run for Lake delivery in some instances.

Northern Panhandle

Coal continued to move to the Lake in fair volume but there was so much slack remaining and so little demand that prices on this grade were down to $1.75. Production at the most was not more than 50 per cent of potential capacity. Spot mine run brought $2.50 and lump $2.75.

CONNELLSVILLE

Coke Market Awaiting Iron Trade Developments — Low Phosphorus Coke Bought—Production Very Light.

The coke market continues to mark time, it being realized that nothing can develop until there is heavier consumptive demand. Nearly all the merchant furnaces are idle, most of them having stocks of pig iron that will last quite awhile with the present extremely light buying, while operations at foundries have continued to decrease.

Stocks recently existing are now fairly well liquidated except for some coke that has weathered so long that it is simply waiting to be absorbed for general heating purposes. The demand for spot lots for blast furnace consumption being practically nil while some demand continues for small lots for miscellaneous purposes, the curious condition exists that sales for outside purposes are sometimes made at higher prices, for standard furnace grade, than are obtainable from blast furnaces.

Report has it that the Robesonia Iron Co., which makes low phosphorus pig iron, has bought a four months' supply of coke of the special grade necessary at $3.75. If this is correct it would tend to support the appraisal of the ordinary furnace coke market at $3.25 @$3.50. Foundry coke of standard grade continues quotable $5@$5.50.

The *Courier* reports production in the week ended May 21 at 18,900 tons by the furnace ovens and 23,780 tons by the merchant ovens, making a total of 42,680 tons, a decrease of 610 tons.

Middle Western

SOUTHERN ILLINOIS

Carterville June Prices Announced—Production Declines with Weaker Demand—Steam Sizes Sluggish.

In the Carterville district the only thing that seems to move at all is a little lump. Egg, nut and screenings are heavy. Railroads are taking a little mine run, but it is not enough to do much good. Effective June 1, the association prices will advance to $4.05 for domestic sizes. The price on screenings is supposed to be about $2.85 and mine run about $3.50, but there is no indication that any coal is going at these figures.

In the Duquoin field the situation is worse. One and two days a week is the most that some mines get and several are idle. One or two of these mines are holding to the Carterville association prices, but most of them are meeting the Carterville independent figures, which are as low as $3.25 for lump and egg, $3 for nut, $1.75 for screenings and $2.50 for mine run.

In the Mt. Olive field one to two days per week is the best right now. All sizes are hard to move. Country shipments on domestic sizes are $3.25, St. Louis shipments $3 and screenings mostly on contract.

In the Standard field screenings are down to $1, mine run to $1.75, 2-in. lump $2@$2.25 and 6-in. lump $2.35@ $2.50. If anything, conditions are becoming worse There is practically no coal going north or west to speak of.

MIDWEST REVIEW

Steam Market Poor—Price Cutting Is Frequent—Domestic Call Is Normal—R.R. Spot Buying.

In spite of the fact that more coal is being produced throughout the country, this has not proved to be the case with mines either in Indiana or Illinois. In round figures, production in Illinios has hovered between 36 and 38 per cent, whereas the Indiana mines have been running only from 33 to 35 per cent. Coal conditions have not improved during the past few weeks in the Middle West.

The news that the Frick people had closed their coke plants for the first time since 1894 and had laid off between 19,000 and 20,000 men came as a very disquieting piece of news to the Middle West coal trade. Operators realize that the Eastern coke plants were closed on account of the present stagnation of the steel industry. It had been hoped in the West that the steel industry was on the mend and would show signs of rapid improvement. It is now believed that steel will be

very quiet for the next three months. There will be no improvements whatever in the market on steam coal until the industrial situation improves.

All operators now realize that it is a question of time, and we will all have to wait with as much patience as we have until the railroad question is out of the way. It is believed that when reduced rates are put into effect, the railroads will come into the market to purchase coal. Industries which have been putting off action from day to day will set a definite date for resumption of operations, and conditions generally will be very much improved. Price cutting has been very marked in the Middle West during the past few weeks, and it has made some people feel that the lessons of the war were not taken very near to heart, and that the operators are rushing right back to pre-war conditions and selling their coal at figures considerably below actual cost.

The domestic market continues to be about normal for this time of the year. Domestic shipments, however, are showing some signs of improvement as the majority of dealers put off their May buying until the last minute, and placed orders for prompt shipment at the May quotations, which are from 10 to 15c. lower than the proposed June quotations.

Railroads are purchasing coal in considerable quantities on the open market, but we have heard of no new railroad contracts being placed this week. One or two industrial concerns of minor importance have placed small contracts for perhaps one-third to one-half of their normal requirements.

INDIANA

Poor R.R. Equipment Causes Slight Car Shortage—Steam Demand Poor—Prices Unchanged.

Operators are predicting a runaway market later in the year. Last week the situation was that of an actual car shortage where two mines situated on the Monon were forced to suspend operations for two days because of a lack of cars. The real reason was that there was a shortage of cars that were in condition for service, other cars that were available for the two mines being out of repair.

Prices are virtually the same, both at the mine and retail for all grades, but there is a distinct cut in coke. Gas companies are making every effort to market the large supplies of coke that have been piling up at the plants. Steam coal is sluggish, due to a reticence on the part of industries to increase production.

WESTERN KENTUCKY

Slight Improvement in Production—Weakness Shown in Steam Market—Rail Consumption Slightly Better.

Overproduction of screenings in the eastern Kentucky and West Virginia fields in producing lump and block for the Lake and retail trade has resulted in a generally weak market on all steam coal, making mine run harder to sell, and forcing very low comparative prices on screenings.

In spite of arguments of coal operators relative to stocking early in which the principal point made is that production this spring has been far off, some of the coal men claim that it means nothing, as small production this spring has been more than offset by weakness in general industrial operations.

Producers are working two to two and a half days, many companies not operating but a part of their mines, where they have more than one. This week's quotations are shown in the Weekly Review.

Middle Appalachian

HIGH-VOLATILE FIELDS

Production Shows Slight Gain—Lake Movement Growing—Prices More Firm—Tug River Lawlessness Affects Work-Time.

KANAWHA

There was an almost imperceptible improvement in market conditions during the week ended May 21. Production remained on about the same level, although it was possible, owing to a slight stiffening of prices, for a few more operations to resume work. Comparatively little coal was moving to the Lake.

LOGAN AND THACKER

A better demand was noticed in the Logan region. Production increased to 60 per cent of capacity, a large amount of River and Lake coal being shipped for storage. Lake shipments were gaining steadily in size and the Tidewater movement was becoming somewhat more general. Prices remained unchanged and there was little or no call for slack coal.

Williamson field production was limited by the trouble along Tug River. Frequent attacks on the mining camps demoralized operations and cut production, just at a time when it was beginning to reach normal again. It was not possible to take care of many orders, either spot or contract.

NORTHEASTERN KENTUCKY

Reduction in Lake freights was conducive to a larger production, particularly on Beaver Creek. A number of companies found it possible to resume operation and with this resumption a shortage of mine labor is developing, as a large number of the men have left the field recently.

VIRGINIA

Production rate was unchanged and there was very little spot demand in evidence. Furthermore spot prices were such that even the smaller concerns were not disposed to accept any new business.

LOW-VOLATILE FIELDS

Marine Strike Bars Larger Output—Conditions Show Improvement—Western Demand Picking Up.

NEW RIVER AND THE GULF

New River production declined during the week ended May 21. This was not caused by any diminution in demand but because of the Marine strike. There continued to be many inquiries with prices climbing upward slightly. Export coal ranged $3@$3.75, Inland quotations were $3, all for mine run. Western demand was becoming more active.

Although the Marine strike interfered to some extent with the Gulf output yet there was little change in market conditions. Companies were making arrangements to increase their working time, with some concerns working on a full-time basis. Prices showed a tendency to advance with a growing demand for export coal. Some additional inquiries for contracts were noted. Many companies, however, are refraining from quoting on contract until prices become more stabilized.

POCAHONTAS AND TUG RIVER

With more coal under contract and demand both East and West growing, further gains were scored in the Pocahontas region during the week ended May 21. Much of the coal was going to Tidewater. This call has not reached such proportions, however, as to increase prices on mine run. A better Western domestic market caused a slight raise in lump prices, $5@$6 now being quoted.

Tug River production held up to 100,000 tons, the output being maintained despite the fact that one of the largest operators had closed down. There was a growing demand for the output and particularly for prepared sizes in the Western markets. It was also easier to market mine run at Tidewater than it had been.

West

UTAH

No Storage Buying — Public Awaits Further Price Cuts — Production Rate Unimproved.

As was predicted, the drop in the retail price of 50c. a ton has not induced buying for storage purposes. The only effect it has had, according to some prominent retailers, was to enable purchasers of emergency coal during the cold snap of the past week to get it for less than they would otherwise have had to pay.

One of the large operating companies has started to urge people to store coal, through advertisements in the newspapers, but regarding prices it only says there is a very slender chance of their coming down. Many coal men are of the opinion that so long as there is one chance in a hundred of prices coming down, the public will not buy for some months.

MINE And COMPANY NEWS

ALABAMA

The Central Iron & Coal Co., of Holt, Tuscaloosa County, has donated a free site, water, gas and lights and $10,000 in cash toward the erection of a grammar school at that point to cost approximately $40,000.

The Garnsey Coal Co. has been incorporated at Birmingham with a capital stock of $2,000. Brewer Dixon is president, K. E. Cooper, vice-president and J. W. Dickinson, secretary-treasurer.

INDIANA

The coal contract for Indianapolis schools for the ensuing year has been awarded to the **Indianapolis Coal Co.**, which has held the contract for several years. The bid of the company was $5.15 per ton on egg and lump; $4.95 per ton on mine run and $4.75 on nut and slack. These figures were the lowest among those submitted by eight companies, with the exception of the nut and slack. **The Stockton Coal Co.** bid $4.50 on this, but it was explained that the stock bid on by the latter company was not fitted for consumption in plants such as are installed in some schools. The school city uses about 3,000 tons of egg and lump a year; 14,000 tons of mine run and 5,000 tons of nut and slack.

The Active Coal Co., Indianapolis, has filed papers with the Secretary of State, showing a capitalization of $150,000, for the purpose of maintaining and operating coal elevators. The directors are P. M. Gale, William M. Bosley and Warren K. Mannon.

Articles of incorporation have been filed with the Secretary of State showing the organization of the **Rockville Coal Mining Co.**, at Rockville, with a capital stock of $100,000. The company will engage in the mining of coal, clay, shale, etc. Directors are H. L. Hancock, E. M. Woodward, W. M. Scank, Harry Rice and W. P. Harrison.

Articles of incorporation have been filed with the Secretary of State by the **Persons Coal Co.**, of Jasonville, showing a capitalization of $150,000, and will engage in the operation of coal mines. The directors are James H. Persons, Frank B. Harrison and Homer O. Bedwell.

The motion of the defendant for a change of venue from Shelby County, of the case of the **Atlas Mining Co.** against the Indianapolis Heat & Light Co., has been granted by Judge Alonzo Blair and the case was sent to Rush County for trial. The complaint was received on a change of venue from Marion County.

Papers have been filed with the Secretary of State showing the organization of the **Catlett Burnett Heirs Corporation,** of Indianapolis, with a capital stock of $10,000, for the drilling and mining for coal, gas and oil. The directors are Harry Bowen, C. S. Burnett, G. C. Burnett, J. H. Wooley Harrison Adams, L. A. Brown, J. O. Adams, F. O. Harris, Sam Kinnett, O. W. Stanley and Everett Warner.

KENTUCKY

The L. P. Kleiderer Coal Co. was sold at Henderson at a Federal bankrupt sale. B. G. Witt, of the Ohio Valley Banking & Trust Company purchased the mining property and 3,354 acres of coal rights for $25,000. Because of the low price received it is doubtful whether the sale will be confirmed by the referee in bankruptcy.

The Kentucky and West Virginia Power Co., of Hazard is planning increased facilities for production of coal and furnishing power to other industries. Amended articles of incorporation have been filed increasing the capital of the company from $6,000,000 to $10,000,000 in order to supply funds for expansion.

The May Coal Co. is a new $100,000 corporation organized at Alphoretta, for development in the Beaver Creek Valley coal field. A. J. May is the head.

The Elkhorn Mining Corporation has shut down until September its extensive coal mines on Beaver creek, throwing many out of employment. Unprofitable operations under prevailing conditions is given as the reason.

The Hignite Coal Co., with operations in Bell County and elsewhere in Kentucky, held its annual meeting recently. John Hoffman, who has been its president since it was acquired by the new corporation was re-elected as well as the old board of directors.

Because the **Virginia Iron, Coal & Coke Company, the Hazard Coal Corporation** and the **Montgomery Coal Corporation** have failed to keep their contract and pay the cost of the construction of a six-mile railroad spur in Perry County in excess of $200,000, the petition in the case alleges, the L. & N. has brought suit against them for $158,156.77.

H. W. Bennett, Massachusetts, has filed suit in the Lexington Federal Court, claiming a one-half interest in properties operated by the **Beaver Creek Consolidated Coal Co.**, and asks the court to decide the questions at stake.

There is a good deal of development going on in the Carr's Fork neighborhood beyond Hardin, six or seven miles out of Hazard in Perry County. **The Wisconsin and Millers-Haskins Coal Co.'s** are building several hundred houses, while the **Knott Coal Corporation,** beyond Sassafras, is building tipples, grading tracks, etc. **The Scuddy Coal Co.** is about ready to begin operating several miles beyond Hardin on Carr's Fork.

MINNESOTA

W. C. Brown, formerly manager of a Duluth stock exchange house, F. E. Bryan and John Pears, both of Minneapolis appeared before the Duluth Commercial club industrial committee recently and presented details of their plan for organizing the **Duluth Atomized Fuel Co.**, which would turn the peat of northern Minnesota into fuel. They are asking the committees' indorsement of their plan for selling stock. The capitalization of the company will probably be about $400,000.

Despite some very low figures named in competition for 7,500 tons of coal for the **Board of Education of Minneapolis**, the bids were rejected, and the city purchasing agent will buy coal in the open market for the city schools.

The State of Minnesota has awarded contracts for coal for state institutions. **The Inland Coal & Dock Co.**, of Minneapolis, received 21,000 tons; the **North Western Fuel Co.**, of St. Paul, 10,000 tons; and the **Pittsburgh Coal Co.**, 2,150 tons.

The Ender Coal & Coke Co., Chicago, received a contract at New Ulm, for furnishing coal for the city power plant, for southern Illinois screenings, 1¼ in., at $6.75 f.o.b. New Ulm. This was 30c. under the next figure.

MISSOURI

The Morton Coal and Mining Co. has been formed and has applied for incorporation papers. Peter Morton is the president; F. L. Leapley, vice-president, and I. N. Novinger, secretary-treasurer. The company plans to take over Mine No. 21 near Novinger.

OHIO

The Department of Justice is investigating the circulation of anarchistic literature among coal miners of Ohio, Indiana and other states, which advocated overthrow of the government. Representative Cooper, Ohio, denounced the circulation of the literature, saying the miners were loyal and that labor unions had no part in it. He said he represented a district in which there were 18,000 union coal miners and that 305 of the 392 coal mines in southern Ohio are idle. Representative Sanders, Ind., said he had heard the same petition had been circulated in Indiana. It was signed by the Communist Party.

The Carter Coal Co., whose mines are located in the smokeless district of McDowell County West Virginia, have opened a sales office in the Dixie Terminal Building in Cincinnati. W. S. Denham is in charge as sales manager and H. G. Fitzgerald as his assistant. The company formerly marketed its output through an Eastern selling agency.

An amended answer and cross petition has been filed in the case of the **Ohio & Kentucky Fuel Co.** against the **Monpassro-Warrior Coal & Coke Co.** The defendant asks for judgement of $5,203, alleging a breach of contract in the delivery of certain coal stocks.

The East End Coal Co., of Nelsonville has been chartered with an authorized capital of $20,000 to mine and sell coal. Incorporators are George Adamson, Alonzo Coakley, Lewis P. Rice, Jeffrey D. Adamson and Charles G. Shapard.

Cleveland dealers and jobbers are conducting quite an advertising campaign to induce domestic and other consumers to lay in their winter's supply of fuel. It is reported that increases have been anounced in the mine prices on Pocahontas as a result of increased buying on the part of dealers in anticipation of better demand. It is expected this will stimulate some buying on the part of consumers.

OKLAHOMA

For the purpose of lending financial support to concerns engaged in developing oil and coal resources of the Okmulgee district, a group of well known men of Okmulgee have organized a general financial corporation under the name of the **Leland Corporation of Okmulgee** with an authorized capital of $1,000,000. The officers and directors are all affiliated with the Kingwood Oil Co., the Citizens and the Central National banks and are as follows: George Leland, president; W. C. Newman, vice-president; L. W. McLean, secretary and treasurer; J. T. King, W. E. Wood, M. F. Graham and H. E. Kennedy, directors.

PENNSYLVANIA

The Keister-MacQuown Fuel Co. of Pittsburgh has been made the exclusive sales agent for the **Bessemer Fuel Co.** with mines located at Portersville on the W. A. R.R., Butler Mercer district.

Conditions in the Connellsville coke region are about the same, with local up and down changes. Thompson No. 1 plant of the **Redstone Coal & Coke Corp.**, which has been mining part time, is now running full. The Alicia No. 1 coke plant of the **Pittsburgh Steel Co.**, which has been mining full for several weeks, is now down to 50 per cent.

In the Irwin Gas Coal basin in Westmoreland County, Edna No. 1 and 2 mines of the **Hillman Coal & Coke Co.**, which have been operating about two days a week, are now down entirely. At Edna No. 1 they are taking advantage of the shutdown to gunite the main haulage slope.

In the Pittsburgh District the **Pittsburgh Coal Co.** are mining full, or nearly so, on Lake shipments, made possible by the 28c. freight rate reduction on shipments of coal to Lake ports.

No. 8 breaker of the **Lehigh Coal & Navigation Co.** at Coaldale was entirely demolished recently by a fire of unknown origin. An alarm was sounded at once but before help could arrive the building was a sheet of flames.

W. J. Rainey, Inc., has closed its Pittsburgh office and appointed the **Bixler Coal & Coke Co.** as exclusive sales agents for Rainey foundry coke in the states of Michigan, Ohio and Western Pennsylvania.

The motor barn and three electric mine motors, with electric equipment belonging to **Burns Brothers** at Grampian, were totally

destroyed by a fire, entailing a loss of $20,000, on May 10. The mine has been idle for more than a month, but the men had decided to go to work at the district scale price. The loss makes a resumption of work impossible for several months.

The Dorothy mine of the **H. C. Frick Coke Co.**, closed down since February, has been reopened, furnishing employment to a force of 200 miners. The mine is being operated in full. A number of improvements were made during the idle period.

One of the most important coal transactions in recent years in the central Pennsylvania field was consummated recently when the **Penelec Coal Co.** and the **Conemaugh Smokeless Coal Co.**, both of Johnstown, merged interests. The Penelec company operates mines at Lockwood, Clearfield, Philipsburg, Johnstown and Seward with an annual output of approximately 18,000 tons. The officers are: F. T. Hepburn, president; P. J. Morrissy, vice president; L. A. Wood, secretary; A. E. Walbridge, treasurer; directors, John W. Walters, George T. Robinson, Stephen C. Pohe, P. J. Morrison and W. A. Reiber. The Conemaugh company is interested in Indiana County, largely in the Robindale district. The Robindale holdings were sold to H. D. Walbridge & Co., on July 1, 1920, for $1,000,000. The present output is from 600 to 800 tons per day. The mines will be operated more extensively and the product will be used by the Penn Public Service Co.'s mammoth plant at Seward. The Penelec officers will have charge of the new concern.

TEXAS

The J. B. Robertson Coal Co., recently organized at Calvert, has secured leases on several large tracts of land near Calvert and is preparing to carry forward extensive developments. Tests are now being made for the sinking of a shaft four miles northeast of Calvert. The company expects to make Calvert its chief shipping point.

The lignite mines about Rockdale are now running full time with about 2,000 operatives employed. Companies now operating the Rockdale mines are: **International Coal Co., Ira Perry Coal Co., Rockdale Lignite Co., Texas Coal Co., Big Lump Lignite Co., Hicks Coal Co., Rockdale Consolidated Coal Co.**, and **Federal Fuel Co.**

UTAH

The State of Utah is to make efforts to establish its title to certain coal and oil lands in Emery and San Juan counties, occupied by **Lewis H. Stohr, L. W. Kelly** and others. The question involved is whether or not the land had "a known mineral value" at the time the state's title would otherwise have attached. The applications of **W. R. Hensleigh, the American Fuel Co.** and the **National Coal Co.**, involving coal lands in Grand and Carbon counties, have also been set for hearing in the coal land office.

The first sale of a lease of 2,080 acres of coal land to be held in the U. S. Land Office under the coal mining lease law of February last year, has been effected. This marks the beginning of the sale of many designated coal land areas within the state. The lease just granted is in the Castlegate district of Carbon County. The price was $10 an acre, to the **Cameron Coal Co.** on a royalty basis of 10c. a ton.

Five operating companies in the Spring Canyon district have ready for use a fully equipped motor rescue car, which is believed capable of reaching any point in the district within fifteen minutes on call. The truck will carry six men and will be operated by an organization representing the companies which will be known as the **Spring Canyon Mine Rescue Association.**

WEST VIRGINIA

A large tipple at the mine of the **Willis Branch Coal Co.**, at Willis Branch, Fayette County, was destroyed by fire recently.

Coal produced in the Pocahontas region will be sold by the newly organized **Atlantic & Pacific Fuel Corporation** which has a capital stock of $50,000. The general office is to be at Bluefield for the time being. Those having an active part in organizing this company were: Rucker Jennings, C. J. Kilgore, L. A. Mann, C. W. Scott, of Bluefield; J. E. Rhodemyre, of Ashland, Ky.

Impetus will be given to development of coal territory on Milam's Fork, through the leasing of coal in that section by two different companies. **Harvey Morris**, of Huntington, has leased a tract on Milam's Fork and is perfecting plans for the development of the property. Mr. Morris is president of the West Virginia Standard Coal Co., with headquarters at Huntington. The second lease on Milams Fork coal land was taken up by **J. T. Morris**, of Beckley, well known in smokeless circles, who until recently was one of the principal figures in the Morris Smokeless Coal Co. which operated at Morco on the line of the Virginian Ry.

John Laing and associates are making a test on the holdings of the **Beaver Coal Co.** between Maben and Harper on the main line of the Virginian, this being in smokeless territory. There are 3,000 acres in this tract and if the test proves satisfactory it is assumed that Mr. Laing will arrange to develop the property.

Organized not long ago for the purpose of operating on Coal River, the **Stone Castle Coal Co.** is now engaged in making active preparations for the initiation of development work at Peytona where the company will operate. This concern has a capital stock of $50,000 and has holdings at the point named amounting to about 500 acres. At a meeting held a short time ago E. B. Snider of Charleston was elected president and general manager and W. S. Wood of Charleston vice-president. There will be no delay in driving a heading into the No. 2 gas coal. About four months will be required to install a plant and have the mine in readiness for operation.

In order to permit the expansion of activities the following companies have secured the necessary authority from the Secretary of State to increase their capital stock: **Wet Branch Mining Co.**, of Charleston, J. P. Cameron, president, from $150,000 to $300,000, the company also being authorized to move its headquarters from Charleston to Pittsburgh, Pa.; **Hazy Eagle Collieries Co.**, of Charleston, F. W. Truscott, president, from $200,000 to $400,000; **Purity Pocahonats Coal Co.**, of Bluefield, from $150,00 to $300,000; **Woodland Coal Co.**, of Scottdale, Pa., Charles H. Loucks, president, from $400,000 to $600,000; **El Grove Mining Co.**, James A. Paisley, Cleveland, president, from $1,000,000 to $2,000,000; **South Penn Coal Co.**, of Morgantown, T. B. Henderson, president, from $25,000 to $100,000; **Forest Coal Co.**, of Fairmont, H. W. Showalter, president, from $100,000 to $300,000; **Pittsburgh-Wellsburg Coal Co.**, J. A. Dahlburg, president, from $50,000 to $75,000; **Bakertown Coal Co.**, of Keyser, James E. Cross, president, from $5,000 to $25,000.

In the nature of new equipment just secured by the **Fairmont & Cleveland Coal Co.** for use at its Parker Run mines near Rivesville are ten gathering locomotive motors, these motors having been secured from the General Electric Co.

BRITISH COLUMBIA

Production for the month of April stands at about the same figure as that for March. In the Vancouver Island fields the March output was 134,837 tons while for April it was 135,669 tons. The most notable increase is in the Nicola-Princeton Field, where the production of the Middlesboro Collieries, the Fleming Coal Co., and the Coalmont Coal Co. have all risen. In the Crow's Nest Pass there has been a decline of 8,678 tons, the figures being 68,739 as against 60,061 tons.

COAL OUTPUT FOR APRIL, 1921

Mine	Tons
Vancouver Island Collieries	
Canadian Western Fuel Co.	39,773
Canadian Collieries (D) Ltd.	
Comox	40,336
South Wellington	7,756
Extension	17,512
Nanoose-Wellington Coal Co.	2,792
Granby Colliery, Cassidy	26,584
Old Wellington (King & Foster)	916
Total	135,669
Nicola-Princeton District	
Middlesboro Collieries	5,133
Fleming Coal Co.	2,507
Coalmont Collieries	6,278
Total	13,918
Crow's Nest Pass District	
Crow's Nest Pass Co.	
Coal Creek	32,979
Michael	20,818
Corbin Coal & Coke Co., Corbin	6,264
Total	60,061
Grand Total	209,648

The Canadian Western Fuel Co., of Nanaimo, has been reorganized as a $5,000,000 corporation to be known as the **Western Fuel Corporation of Canada, Ltd.** The head office will be in Nanaimo. It formerly was at San Francisco, Cal. but at the time of the last reorganization, in the first years of the war, was transferred to Nanaimo.

NOVA SCOTIA

The Dominion Coal Co. has received an order for 25,000 tons of coal to be landed in British ports. This is the first coal order received by Dominion since the coal strike started in England. The cargoes will be shipped from Sydney.

An order or 60,000 tons of coal has been placed by the Canadian National Rys. with the **Indian Cove Coal Co.**, according to Manager T. J. Hartigan.

Traffic News

In the case of the **Mathieson Alkali Works**, relating to rates on coal from Clinchfield and other Virginia, Kentucky and West Virginia mines to Marion, Saltville and Mathieson Alkali Works, Va., the commission has authorized the **Virginia Iron, Coal & Coke Co.**, to intervene.

In the case of the **Corona Coal Co.**, relating to rates on coal to New Orleans and Mobile by rail and water, the commission has allowed the Alabama Coal Operators' Association to intervene.

The question of differentials on coal rates on commercial shipments from the Ohio fields, the inner and outer crescent of West Virginia will be opened before a special examiner of the I. C. C. who has been assigned to take testimony on the matter at Columbus, July 11. The hearing is on a complaint filed by the **Southern Ohio Coal Exchange**, seeking to secure different differentials as between the three districts. The present differential between Ohio districts and the inner crescent is 40c. and between the Ohio fields and the outer crescent, 60c.

The more the revision of coal freight charges into Minnesota and Dakota points from the Lake Superior docks is studied, the less intelligible the matter becomes. The I. C. C. made its order on rates covered by interstate commerce which applies to shipments handled by the Great Northern, the Soo Line and the Omaha. The fact that the order was given ninety days before it became effective seems to point to the commission not regarding it as final. Study of the order seems to indicate that it does not lower the rate to Minneapolis, but instead it raises it about 18c. while St. Paul is not mentioned. Inasmuch as St. Paul has the same short mileage by two roads that Minneapolis has by a third, it is probable that the same thing would result. However, railroad men are working over the order and are trying to interpret it as best they can, presumably with the intention of submitting their findings to the commission for a ruling before the effective date of July 6.

It is announced that the Burlington road is surveying for an extension from O'Neill, Neb., to Yankton, S. D. where connection would be made with its connecting line, the Great Northern. This would give direct connection from the Twin Cities to the Coal fields of Wyoming.

The Coal, Coke & Iron Committee, Central Freight Association territory, has docketed the proposal to cancel rates on bituminous coal from mines in West Virginia on the Kanawha & Michigan R.R. to stations on the B. & O. R.R.-Newark, Ohio, to Sandusky, Ohio, incl., leaving no through rates in effect. Requests for hearing must be made not later than June 4.

Cincinnati and Louisville have both filed protests through local organizations against the announced increases in freights of the L. & N. R.R., effective June 16. **The Cincinnati Purchasing Agents Association** has filed a protest with the I. C. C., as it is interstate commerce to that point, while through the **Louisville Board of Trade** protests are being filed both with the commerce commission and the State Railroad Commission, asking that increases be held up pending investigation of the reasonableness of the rate.

The Southern Appalachian Coal Operators' Association and others of Knoxville, Tenn., in a complaint to the I. C. C. attack as unreasonable the rates on Lake cargo coal from its mines in Kentucky and Tennessee to Toledo, for the trans-shipment by vessel.

The Procter & Gamble Mfg. Co., of Cincinnati has complained to the I. C. C. against unreasonable rates on coal from Mt. Olive and Staunton, Ill., to Kansas City.

In the **Perry Coal Corporation** case before the I. C. C., relating to rates on coal from complainants' mines in Illinois to points in the St. Louis and East St. Louis districts, the Central Illinois Coal Traffic Bureau has been allowed to intervene.

The Supreme Court of Alabama recently rendered a decision in the case of the **Mobile & Ohio R.R. vs. Zimmern Coal Co.**, Mobile, in which it was held that a railroad company has not the right to confiscate coal being transported for filling contracts already executed. The decision is the first of its kind ever rendered in Alabama and is of unusual interest to the coal trade. The railroad contended that it seized the coal for the operation of its trains during the shortage in 1920.

Personals

C. K. Brown, of Moundsville who had been in charge of mining extension work in the northern Pan Handle District for the State University was transferred to Morgantown and has been appointed assistant director of the mining extension work at the university.

William McKell, president of the McKell Coal & Coke Co., has been appointed a member of the Capitol Building Commission of West Virginia by Governor E. F. Morgan. Mr. McKell lives at Glen Jean.

T. H. Johnson, of Bellaire, Ohio, president of the Chesapeake Coal Co., operating near Barrackville, W. Va., was looking over this plant during the latter part of May.

Gail Fishback, Fairmont representative of the Valley Camp Coal Co., has recovered from a sick spell which confined him to his home for several days during the early part of May.

J. D. Huddell of New York has been appointed eastern sales manager of the Brady Coal Corporation and will make his headquarters in Philadelphia.

J. R. Blackburn has been appointed as general superintendent of the Clarion Coal Mining Co. and of the Victor Coal Mining Co. The main offices of the companies named are in Philadelphia.

T. C. Wilcox, who has been appointed manager of the New York office of the Tidewater Coal Co., and who will soon take over that office, was a recent visitor in the Pittsburgh field.

Harry B. Martin of Elkins, secretary of the Green Coal Co., Elkins, W. Va., spent a few days in Washington during the early part of May.

Among the officials of the various coal associations gathered in New York for the National Convention were: **G. H. Caperton**, Charleston, president of the New River Operators' Association; **A. Lisle White**, of Clarksburg, president of the Northern West Virginia Operators' Association; **J. G. Bradley**, Dundon, president of the West Virginia Coal Operators' Association; **J. C. McKinley**, of Wheeling, president of the Northern Pan Handle Operators' Association; **Walter Thurmong**, of Logan, president of the Logan Operators' Association; **C. C. Benry**, of Charleston, treasurer of the New River Operators' Association; **Garner Fletcher**, of Huntington, member executive committee of the New River Association; **C. H. Jenkins**, of Fairmont, director of the National Coal Association; **W. H. Cunningham**, of Huntington, secretary of the West Virginia Coal Association. **T. L. Lewis**, of Charleston, secretary of the New River Operators' Association; **George S. Brackett**, of Fairmont, secretary of the Northern West Virginia Coal Operators' Association.

R. R. Wilson, superintendent and resident manager of the Granby Consolidated Mining & Smelting Co.'s collieries at Cassidy, Vancouver Island, has resigned and his duties will be assumed by **Charles Campbell**, one of the company's well-known officials.

Announcement has been made that **W. B. MacQueen** has become associated as a member of the firm of C. W. Williams Fuel Co., Inc., New York City, and that **O. W. Seaberg** has been appointed sales manager of the New York office of the same company. Mr. MacQueen is well known in the coal trade and goes to the Williams Fuel Co. from the office of W. A. Marshall & Co. Mr. Seaberg was formerly sales agent of the Seaboard By-Product Coke Co. of Jersey City and is well known among the trade.

Wilbur A. Marshall, president of W. A. Marshall & Co. accompanied by **Raymond Havemeyer** of his sales force, are in Montreal where the Canadian offices of W. A. Marshall & Co., of Canada, Ltd., are located.

L. A. Stephens, formerly manager of the coal department for M. A. Hanna & Co., has resigned his former position and accepted the managership of the Inland Coal & Dock Co., at Duluth.

E. R. McMillan of the Seattle station of the Bureau of Mines has visited recently coal washing plants in Illinois and Pennsylvania in connection with coal washing work at his station.

Charles A. Owen, president of the Imperial Coal Corporation, has returned from a visit to Washington and Johnstown. In the former city he had a conference with George H. Cushing, secretary of the American Wholesale Coal Association.

J. W. Blower, president of the Hisylvania Coal Co., of Ohio, and allied corporations is on a tour in England, France and Belgium. Mr. Blower will visit his birthplace in England.

T. S. Crockett, president of the Leckie Coal Co., of Columbus, who was seriously ill for several months is now rapidly recovering. His many friends are congratulating him on his recovery as his life was dispaired of for a week or more.

D. O. Wing has been appointed by the Holdred Collieries of West Virginia as local manager of the operation at Blair, Logan County.

R. P. Gillham, vice-president of the Campbell's Creek Coal Co. and long identified with that corporation, was married recently to Miss Edith P. Ohlmann, a niece of his first wife. The Cincinnati coal trade offered its congratulations to its sterling member.

The Cincinnati branch of the Amercian Wholesale Coal Association has offered three candidates for election to the directorship made vacant by the recent resignation of Tom Burke. **George Kearns** of the Kearns Coal Co., **Fred Legg**, president of the Logan and Kanawha Coal Co. and **Robert Magee** will be chosen by the ballots of the local members.

C. W. Henry, manager of the Cincinnati office of the Amherst Fuel Co. is in New York attending to trade matters. Another Cincinnatian on a visit to the eastern metropolis is **A. G. Polk**, vice-president of the Kentenia Coal Sales Co.

The Central Pennsylvania association of operators was well represented at the meeting in New York of the National Coal Association. Among those who attended were **Col. Fred B. Kerr** of Clearfield; **J. W. Wetter** of Philipsburg; **G. W. Shillingford** of Clearfield; **H. J. Mehan** and **Enoch Carver** of Johnstown; **J. S. Somerville** of Robertsdale; **R. H. Somerville** of Winburne; **James H. Allport** of Barnesboro, **Charles O'Neil and W. A. Jones** of the central Pennsylvania association.

Association Activities

Hazard Coal Operators' Association

Lower costs of production and means to bring it about were the principle items considered by the executive committee of the Hazard Coal Operators' Association at a recent meeting in Cincinnati. One proposal is to take up the matter of lower costs of power with the companies in the Hazard field supplying this. The committee also determined upon pressing a claim before th Interstate Commerce Commission against increasing the freight rate to Cincinnati.

Michigan-Ohio-Indiana Coal Association

The program for the annual convention of the association, which will be held at Cedar Point, Ohio, June 15, 16 and 17 has been announced by Secretary B. F. Nigh. Registration and reception of members will take up the first day. The first business session will start at 10 A. M. June 16 with an address of welcome by President Homer C. Gill, report of Secretary B. F. Nigh and the appointment of the committees. Tom L. Lewis, secretary of the New River Coal Operators' Association, E. C. Maurer of the Glen Runs Coal Co., of Cleveland and D. F. Williams, vice-president and general sales agent of the Hudson Coal Co., Scranton, Pa., will be on the program. On the program for the second day will be A. L. Allais, president of the Hazard Coal Operators' Association; Samuel Weiss of the Semet-Solvey Co., Detroit and Walder D. McKinney, secretary of the Southern Ohio Coal Exchange.

Monongahela Valley Association

An important meeting of the association, a coal organization, was held at Clarksburg on May 16. At that meeting the principal topics under discussion were coal conditions and freight rates. It was the consensus of opinion among members that there would be a revival of demand before long but that so far conditions have undergone little improvement.

Northern West Virginia Operators' Association

An important meeting of the transportation committee of the association was held in Fairmont for the purpose of discussing the assigned car question from all sides, the transportation committee desiring to make a report to the association as a whole so that there would be unity of action in connection with the consideration of this question by the National Coal Association at its annual meeting in New York.

Information was received by George S. Brackett, secretary of the association that the Pittsburgh & Lake Erie Railroad had reduced its rate to New England points in order to meet competition on the part of the Pennsylvania. Operators along the Monongahela Railway and the Morgantown & Wheeling will receive the benefit of the reduction.

Utah-Idaho Retail Coal Merchants' Association

The Western States Coal Journal is the name of a monthly periodical representing the association, the first number of which is just off the press. The co-operation of all engaged in the coal industry is earnestly sought in this issue, as it is claimed that this is the only way to meet the common problems of the day. The new president of the association is H. F. Fernstrom. The editor is S. L. Billings, Jr., the secretary.

Coming Meetings

American Institute of Mining and Metallurgical Engineers will meet at Wilkes-Barre, Pa., Sept. 12 to 17. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

Michigan-Ohio-Indiana Coal Association will hold its annual meeting June 15, 16 and 17 at Cedar Point, Ohio. Secretary, E. F. Nigh, Brunson Bldg., Columbus.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York City.

West Virginia Coal Mining Institute will hold its semi-annual meeting June 7 and 8 at Fairmont, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

Rocky Mountain Coal Mining Institute will hold its summer meeting beginning June 26 at Salt Lake City, Utah. Secretary, F. W. Whiteside, Denver, Col.

Mine Inspectors' Institute of America will hold its twelfth annual meeting at Charleston, W. Va., July 12 to 15. Secretary, J. W. Paul, Bureau of Mines, Pittsburgh, Pa.

Illinois and Wisconsin Coal Dealers' Association will meet at Chicago, Ill., July 13 and 14.

American Society for Testing Materials will hold its annual meeting at the New Monterey Hotel, Ashbury Park, N. J., June 20 to 24. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

Illinois Mining Institute will hold its spring outing the early part of June on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on June 3 and returning on June 5. Secretary, Martin Bolt, Springfield, Ill.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

American Institute of Chemical Engineers will hold its spring meeting, June 20 to 24 at Detroit, Mich. Secretary, Dr. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7 and 8. Secretary, G. H. Cushing, Woodworth Bldg., Washington, D. C.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Tell the Miners the Whole Truth

SOME time between now and April, 1922, the coal operators representing some 70 per cent of the bituminous output and all of the Pennsylvania anthracite will be face to face with representatives of the United Mine Workers to discuss a new wage scale. No one, not deaf, dumb and blind, but knows that the operators, whatever may be their personal feeling or inclination, will be forced by the inexorable trend of events to ask the miners to take a reduction in wages. Whether the time of that asking be next March or April or sooner no one knows, but there is now no widespread disposition to anticipate the termination of the contract at the end of the first quarter of 1922.

It is too much to expect that the miners' leaders will welcome next spring any more than now the suggestion that they sign up, for their constituents, a contract for lower wages. Where the operators of union mines have, as in central Pennsylvania, made a move toward discussion of a reduction in the union scale, being so driven by the competition of coal from non-union mines, where wages have recently been lowered, the union leaders have repulsed the overtures. In fact these leaders have more than rejected the idea of a conference on wages at this time and have begun a campaign of "education" among their members with the idea of strengthening the opposition to adjustment of wages of coal mine labor.

According to reports the president of the local union in central Pennsylvania recently issued a pamphlet setting forth the miners' program with respect to future relations of union labor with the coal-mining industry. This program, which reiterates the now familiar demand for nationalization of the mines, the six-hour day and the five-day week, is both a challenge to the miners to rally to its support and to the operators to prepare to meet such demands.

The way to get this program advocated by the pamphlet, according to one report, is a campaign of education. By this is meant the issuance of pamphlets, workers' education, establishment of a labor newspaper, and research into facts. Workers are urged to form groups in their local unions to discuss nationalization and other topics. The checkweighman on the job is urged to distribute the pamphlets, as are the presidents and secretaries of the locals. "If the rank and file know the facts and how to act as a unit in changing conditions they can obtain every just and reasonable demand," says the pamphlet.

The pamphlet is further reported to state that "Our challenge to the present basis of the coal industry is this: The private ownership of the great natural resource of coal is morally indefensible and economically unsound. It means that coal is mined for the profit of a comparatively few 'owners,' instead of for the use and service of the public. It results in chronic mismanagement of the mines. It results in exploitation of the miner, through overwork, underpay, inadequate safeguards, bad housing, accidents, and then long and unnecessary periods of enforced idleness. It results in unemployment when millions of consumers need coal. It results in high prices for coal when democratic methods of production would reduce the cost, increase the production, and give a good American life to the miners."

We cannot but commend the officers of the United Mine Workers for their forehandedness. They are preparing well in advance for an argument that, doubtless, will be very much against them. If the doctrine they are spreading be acceptable to the operators, then it should be allowed to go uncontroverted; if it be false teaching or unsound economics, then the operators are false to their trust in letting it pass without the maximum effort to reach the men, not the leaders, who are wise indeed already with those things the operators believe to be the facts.

It is hardly necessary to point out that facts collected by the Government will be more efficacious in meeting the arguments of the union officials than those assembled in any other way. Less than two years ago the operators, unprepared with facts, saw oratory fail to effect a peaceful settlement. A day of reckoning is coming and the public wants no repetition of the strike of 1919.

Byproduct Coke

IN SHUTTING DOWN all its beehive coke ovens in the Connellsville region, the H. C. Frick company has definitely established the old wasteful type of coke making in the stand-by class. Until the war the Steel Corporation depended almost entirely on coke from the Connellsville region, but changed conditions with respect to the market for byproducts, particularly the light oils, furnished the incentive for the erection of the largest byproduct coke plant in the United States at Clairton, and now this plant is being operated for the coke supply of the corporation's furnaces, and the beehive ovens are indefinitely cold. What is true of the largest iron producer is true also of the lesser companies, so that today we find beehive coke production at a rate but one-sixth that of last year, when beehive coke was but 40 per cent of the total. At the present rate it would appear that when the record for 1921 is cast up, beehive coke will have made a very poor showing indeed,—perhaps but 10 per cent of the country's total.

From 1893, when the first new-type ovens were started in this country, to 1914 the proportion of coke from the byproduct ovens increased to but 32.5 per cent —in 1901 it was 5.4, in 1910 it was 17.1, in 1912 it was 25.3 per cent. Early in 1915 the Allies placed large orders in this country for light oils for munitions manufacture and impetus was given the byproduct industry, which, however, did not reach its maximum until we entered the war, in 1917. The proportion of byproduct coke was but 33.8 per cent in 1915, 35 in 1916 and 40.4

in 1917. In 1918 it had increased to 46 per cent and was 60 per cent in 1920.

What this means in conservation is indicated by the figures of byproducts recovered per ton of coal charged into the retort ovens. In 1919 with each ton of coal made into coke in byproduct ovens there was recovered 20.8 pounds of ammonium sulphate, 8.1 gallons of tar, 2.7 gallons of crude light oil and 11,600 cu.ft. of surplus gas. Expressed in totals, this means, according to preliminary estimates by the Geological Survey, that in 1920 through the use of byproduct ovens the recovery of ammonium sulphate or its equivalent in other forms of ammonia was 458,500 net tons, and there also was saved 357,000,000 gallons of tar, 119,000,000 gallons of light oil and 511,400,000,000 cu.ft. of surplus gas.

The passing of beehive ovens, hastened by the war, means more than the extinction of a wasteful type of coal carbonization—it means the passing of an industry from the hands of coal producers to the hands of coke consumers and gas producers. The producers of beehive coke must now turn shippers of byproduct coal. The natural semi-monopoly of the Connellsville region is gone because with retort ovens the coke makers with plants at the points of coke consumption can pick and choose their coal and the producers of coal in the Connellsville region must compete with other coal fields for the business of these ovens. Instead of a beehive coke industry we have a new byproduct coal industry, with the field greatly widened and more entrants for the business.

One heritage the beehive coke industry still holds, it appears, and that is freight rates giving Connellsville coke an advantage over coal from the same mines shipped to byproduct ovens and then shipped out as coke. This will be corrected in time to the advantage of the producer of byproduct coal and the consumer of retort coke. No obstacle should be permitted to stand in the way of the complete development of an industry that in producing 25,000,000 tons of coke valued at $164,000,000, as in 1919, also saved byproducts valued at nearly $64,000,000, as against a process that burns or wastes these valuable tars, oils, gas and fertilizer.

Without and Within

MINING plants like that described in this week's issue provoke thought as to what might happen if as much scheming were bestowed on the underground workings as is lavished on the landing, the shaft and the upper works of modern mines. Large as are the advantages of suitable surface equipments, the economies to be obtained from proper underground layout and methods would be far greater. The big problem in mining is mining. That does not mean so much that we need new and better machinery but that we must learn more efficient ways of using what we have. In this progress might be far greater than it has yet been. The more surface equipment is elaborated, the more important it is to provide it with a life made longer by complete extraction. Certainly, other things being equal, it is better to double the production per acre than to double the acreage. To mine every ton in the ground would decrease the coal land to be bought, would lower taxes, decrease haulage costs, lighten the cost of timbering and reduce the amount spent on rails, copper and substations.

Whether it would pay in Middle-West mines to obtain those economies at a considerable expense for sand filling is questionable. So far as is known hydraulic backfilling has not been tried in Illinois, where the plant described in the article referred to is being erected. Perhaps the cheaper plan would be to buy both mineral and surface, to completely extract the coal and sell the surface as fast as extraction is completed, but with the price of coal in the ground as low as it is, the price of farm land as high as it is and the progress of extraction as protracted as it is, the profit would have to come not from the saving effected in coal so much as in the cheapening of production by the use of a substitute for the costly room-and-pillar mining.

Works Steadily But Does Not Work Long

OLDEST and most essential of the machinery in mines is the mine pump. A few drift mines might continue to work without pumps, but only with difficulty and about 50 per cent strong. A few shaft mines also in dry to arid regions might successfully operate without voiding the small amount of water entering their workings. But on the whole little could be done were an attempt made to work a coal mine without mechanical provision for the removal of water.

The old mines in China and the earlier mines in the Georges Creek regions were worked till water got the better of them and they had to be closed down. A little more than a century ago Great Britain's coal mines were saved to that country by a providential discovery of mechanical pumping. The time had about come when British mines had reached their limit and would soon have had, one and all, to close down. Thereby the steam pump prevented a premature suspension of the nation's industries.

In the British strike now in progress, the importance of the pump again became painfully apparent to the public, which, however, had fully realized it in the strike that preceded the present suspension. Whether coal came from the pits or stayed there, the water must be pumped out. In France the Germans could do no greater harm than to flood the mines and in America the importance of pumping is made evident by the fact that the contracts between the mine workers and operators make it obligatory to the union to see that the pumps are kept in operation even though a strike suspend the production of coal.

Whether the mine works or not the pumps must run. It is true that they may not pump all the time. In case of a complete closure small dips in the mines may be allowed to fill up, and even in busy plants stand-by pumps may be kept idle for weeks, even months, at a time, but in nearly every mine an essential requirement is that the main pumps run every day if not all day, and the small pumps also must run if the mine is to work even intermittently. Regardless of operation or of idleness occasionally or for long periods certain pumps must do this diurnal duty.

It is an unhappy fate that this machine, which of all others is most essential, should suffer most from the condition under which it works—the acid and the grit. Perhaps only the chemical industry gives pumps severer service, but that industry uses few and small pumps for its chemicals and consequently does not need efficient machinery and can use pumps made of silicon iron, which so far has been considered too fragile a material for use in coal mines. However, the pumping problem, as far as small pumps are concerned, will be greatly eased when longwall methods are adopted.

SURFACE PLANT OF DONK BROTHERS COAL & COKE CO.'S NO. 4 MINE, EDWARDSVILLE, MADISON COUNTY, ILL.

Donk Bros.' No. 4 Mine Embodies Many Needed Reforms In Bottom and Surface Coal-Handling Methods

Planned for an Ultimate Capacity of 6,000 Tons Daily, It Will Produce Only About 2,000 Tons Per Day Through the Airshaft Until Development Warrants Further Expenditure

BY ANDREWS ALLEN
Chicago, Ill.

MANY interesting and novel features are embodied in the new No. 4 plant of the Donk Brothers Coal & Coke Co., at Edwardsville, Ill. This operation is situated in a tract of about 4,500 acres, the coal bed being from 5 to 7 ft. thick and lying about 200 ft. beneath the surface. The three mines already operated by this company were all sunk about the year 1900. Decision was made to open this new mine in order that from it the existing tonnage might be maintained and increased as desired. Plans for the new operation were started in the summer of 1918, and although the country was still at war and

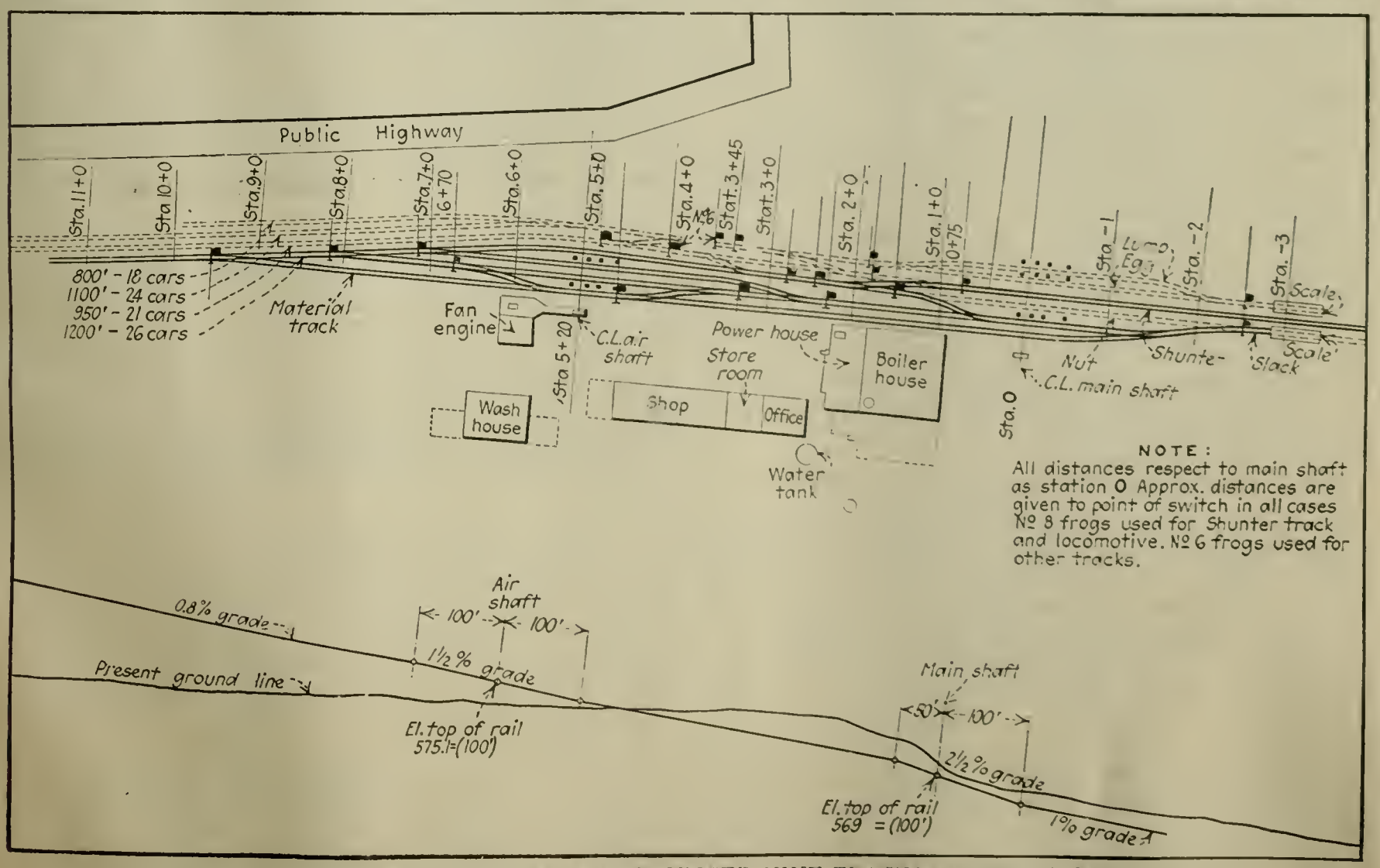


FIG. 1. SHOWING PRESENT AND PROPOSED MINE TRACKS AND BUILDINGS

The distances along the track are from the main shaft as zero, the airshaft, which at present has the only headframe constructed, being at Sta. 5+20. The grades are increased under the tipples so as to facilitate handling past the chutes. With the tracks outlined fully constructed and with the other extensions planned, completely built and in operation, a tonnage of 6,000 per eight-hour day can confidently be expected.

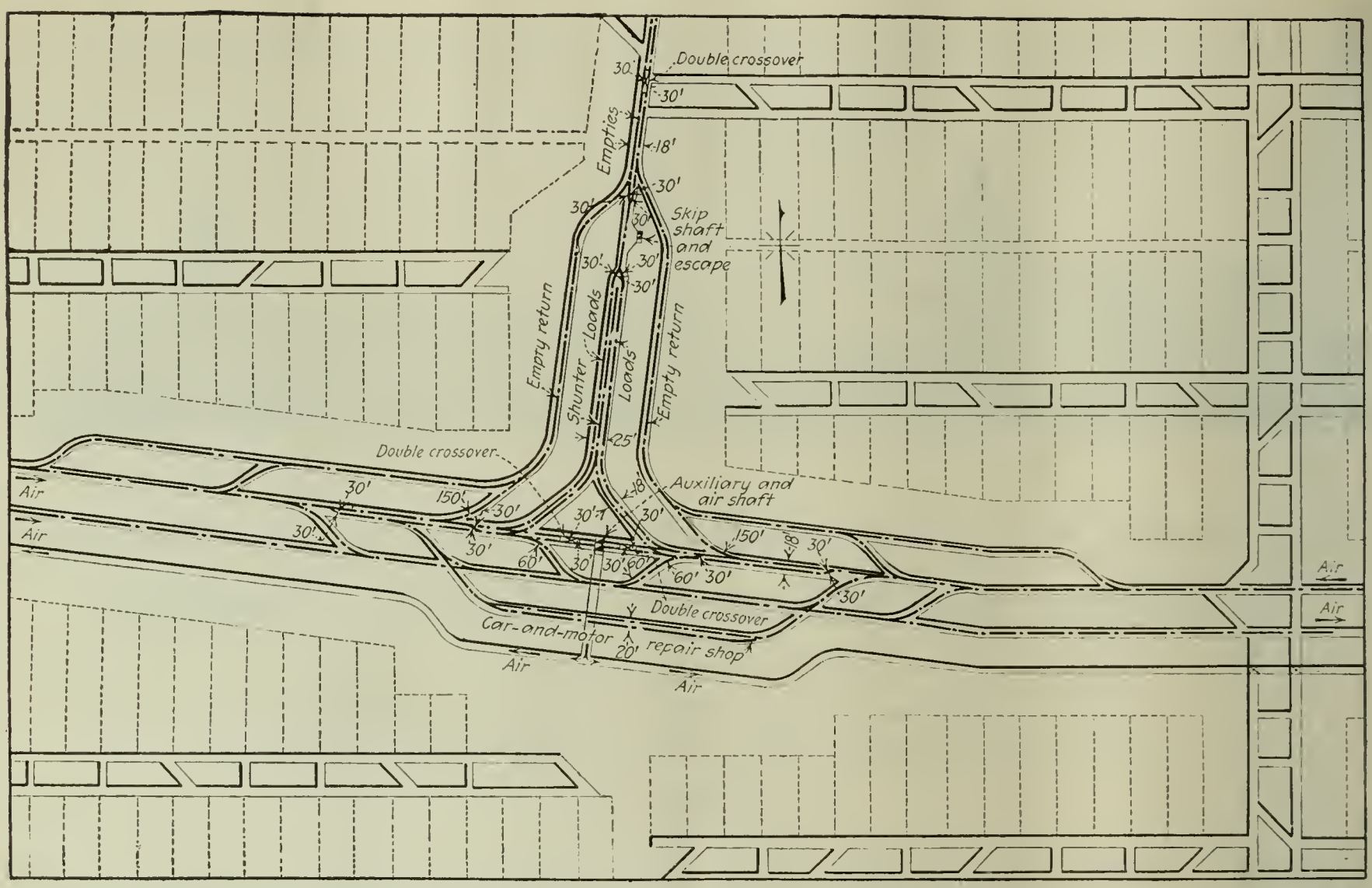


FIG. 2. SHAFT BOTTOM LAID OUT FOR HOISTING BY TWO SHAFTS

It will be seen there is only one track near the main or skip shaft, and it passes by and parallel to the long side of the shaft, whereas at the other shaft, which accommodates two cages, are two tracks which pass up to and across the shaft, when the cages are at the lower landing. The layout with a skip shaft is quite different from that when the shaft is fitted with cages. For the most part the figures given are the radii of the curves shown, but when arrows are placed on both sides of a roadway the figure is to be interpreted as the width of the heading thus marked. Thus certain roadways are 25 ft. wide.

materials and labor were difficult to obtain it was decided to begin construction in a limited way so as to obtain a small output at minimum cost. At the same time a future development was planned on a scale warranted to produce at least 6,000 tons per day.

It is the intention to hoist coal in 8-ton skips from the main shaft when all the developments planned have been completed. It has been decided, however, to postpone this portion of the operation, developing the mine and operating it for some years from the airshaft. This program presents many advantages. In the first place a large part of the plant investment will be postponed until the output and earnings warrant the necessary outlay. Secondly, it was thought that prices of material and possibly rates of labor would be more favorable later.

Rely on Airshaft Till Tonnage Is Heavier

In an orderly and progressive development of the mine it would not be possible to obtain economically a daily output of more than 2,000 to 3,000 tons for two or three years at the least, nor to obtain the maximum tonnage in less than four or five years. It was decided, therefore, to equip the airshaft for producing from 2,000 to 2,500 tons per day and to prepare the coal over shaker screens. By this means the prevailing market prices for sized coal could be obtained during the development period. This program entailed the construction of the airshaft with two hoisting compartments adjoining the airway instead of the usual passages for single cage and counterweight.

This plan also necessitated the use of some means for dumping solid-end cars at this shaft, because, as already stated, the main hoisting shaft would later be equipped with skips and a rotary dump, which arrangement would fit in well with cars of this type. The stairway for emergency egress was placed at the main shaft. This affords two independent means of exit from the mine and leaves no legal or practical reasons for the immediate installation of a hoist at the main shaft.

Two Shaft Bottoms Not Found Necessary

The first part of the development and construction program has now been completed and the mine is producing from 1,500 to 2,000 tons of prepared coal per day from the airshaft. Plans are in preparation for the second construction program, which will involve the main bottom, with its rotary dump and skip, the main tipple and hoist and an enlargement of the power plant.

The general layout of the plant is shown in Fig. 1, and a general view is presented in the frontispiece. The two shafts were placed alongside the railway tracks and the bottom arranged so that coal can be brought to either with equal facility. The additional bottom development necessary to permit hoisting at the airshaft is almost negligible, as will be seen from the bottom plan, Fig. 2.

The contours of the ground favored a gravity layout, but it was decided to combine the advantages of a shunter system with those of a gravity yard by using a centrally-located shunter track as a run-around. The empties, therefore, will be pushed through the main tipple, and the switch engine, in order to move or assist in the movement of cars, will be able to pass

from end to end of the yard at will or to proceed upon any track desired. The power plant is located between the shafts. The boilers are in a double row at right angles to the tracks, so as to render possible unlimited expansion in case this plant should be made into a central station.

Night Hoist Engineers Attend Generators

The hoisting engine serving the airshaft is placed in the west end of the power house, the drum being 308 ft. from the shaft. To prevent too much sag in the rope this member is carried over idler stands to the tipple. The hoisting engineer, located in the power house, will attend to the generators during the night shift, thus rendering unnecessary the services of two men, as the airshaft and power house operate twenty-four hours per day.

The shop and store-room building, with an office in the second story, is located just south of the power house, 100 ft. from the first track and convenient to the airshaft. The washhouse has been built a little more than 100 ft. to the east of the airshaft and the fan lies to the south of it and alongside the railroad tracks.

All the buildings are of uniform style, being built of hollow "Natco" shale tile and covered with gunite. The sash are of steel throughout, and the roofs of gypsum "pyrobar" tile with Barrett specification composition. The buildings outside the "fire limit" are covered with 3-in. sheathing protected with gunite.

The material yard lies between the shop and the tracks. It is served by an unloading crane, extending over the material track and built as a part of one of the idler stands. Timber, rails and props will be stored immediately south of the fan and will be unloaded from cars on the high track. When the chutes are raised a locomotive can pass anywhere under the tipple. Water is obtained from a pond of which the railroad fill forms one side. It is intended to supplement this limited supply by additional storage or by a pipe line from the Mississippi River bottoms.

The main dumping station at the bottom as planned but not yet installed is shown in Fig. 3. This work is part of the future construction program, but is shown here as indicating the scheme of development. When the work projected is completed rock and a certain amount of coal for inspection and docking will still be hoisted from the airshaft.

Both shafts are lined with reinforced concrete throughout and are provided with steel buntons. The main shaft will be fitted with steel guides. These are shown in detail in Figs. 4 and 5. The channel wall plates, together with the buntons, were placed and accurately lined up during sinking and were used to support the forms. Curbing was employed only while passing through the soft material near the surface, the concrete being poured in sections as sinking advanced.

The airshaft tipple is a complete little installation arranged with shaker screens, mounted on pendulum hangers and provided with center-crank drive, for making lump, egg or nut and slack on three tracks. The lump coal is passed over a pivoted loading boom and picking table, and the egg over a hinged and telescoping

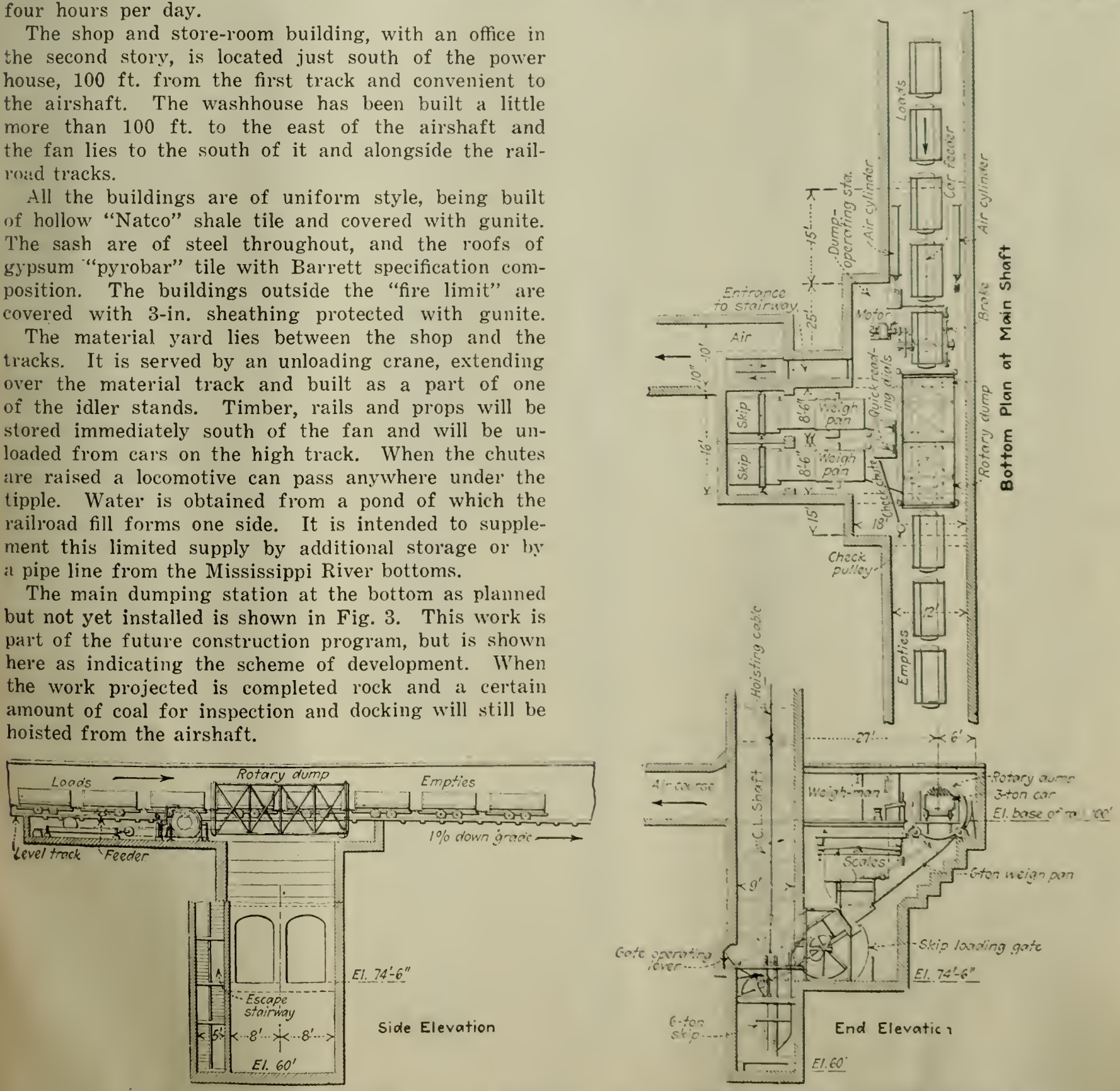


FIG. 3. DETAILS OF DUMP ULTIMATELY TO BE INSTALLED AT THE MAIN SHAFT WHEN TONNAGE IS LARGE ENOUGH TO JUSTIFY CONSTRUCTION

A car feeder delivers the coal to a two-car rotary dump. The discharge from each is then weighed by two scales with quick-reading dials and is dumped from the pocket by opening a gate into the skip below. Each pocket is capable of holding two carloads, or six tons, which is the capacity of the skip. It will be noted that the main road adjacent to the skip shaft is only 12 ft. wide. It is, however, fed by a double-track road 25 ft. in width.

chute. The slack is passed through a bin and large gate which also serves as a run-of-mine chute operated without running the screens. Fig. 6 shows the airshaft tipple. It will be noted that the tower is of the familiar Allen & Garcia type concreted around the rear and part of the sides, to protect the steel, give added stability and prevent the scattering of coal.

Rock is handled by means of a flygate in the chute. This opens into a bin holding a carload of this material. For the present this refuse is being used to extend the empty tracks and to fill the yard. It is removed in a larry running on a narrow-gage track between the slack track and the shaft. The direction of the chute can be altered, however, so that it can deliver to a car on the slack track. As has been mentioned, it was necessary, in order to carry out the main design of the plant, to devise some means for dumping a gateless mine car without removing it from the cage. In previous plants of this type it had always been necessary to take the cars off the cage at the upper landing, discharge their contents in a rotary dump and then return them to the cage. This meant small capacity, high first cost and higher operating expense. This method was out of the question here for the reason that it was desired to utilize the airshaft for hoisting coal for two or three years. Accordingly an overturning cage was designed and installed.

This cage revolves the car through an angle of 135 deg. instead of through the customary 45 deg. It operates approximately as easily as an ordinary cage, although a little slower, because of its longer movement. During its operation, now extending over more than a year, it has given no trouble and few improvements are contemplated in the next installation. Dumping is effected by means of a long overhead circle which revolves the cage until it rests on two fixed rollers over which it moves during the latter part of the cycle. The coal sustains no more drop than it does from an ordinary cage and any spillage is taken care of by a spill gate operated by the cage. This follows the movement of the platform during the dumping process.

The type of car used is shown in Fig. 10. As may be seen, these cars are of wood, heavily braced with steel and equipped with lugs for use in a chain car haul feeder to be installed at the main dump later on. The detail of particular interest is the cast-steel bumper and drawhead which was developed especially for this job. The steel bumper is of ordinary type, but at one end of the car it terminates in a round shaft, held by a heavy spring which operates both in pulling and pushing the car. This shaft also swivels so that cars can be dumped in trips without uncoupling. A special centering device is used so that the drawhead will resume a truly horizontal position after dumping. The drawbar is split so as to render possible a low mounting of the drawhead apparatus.

The drawhead at the other end of the car is fixed. This draft rigging has proven highly satisfactory in operation. The springs effectively cushion the impact of starting and stopping, thus

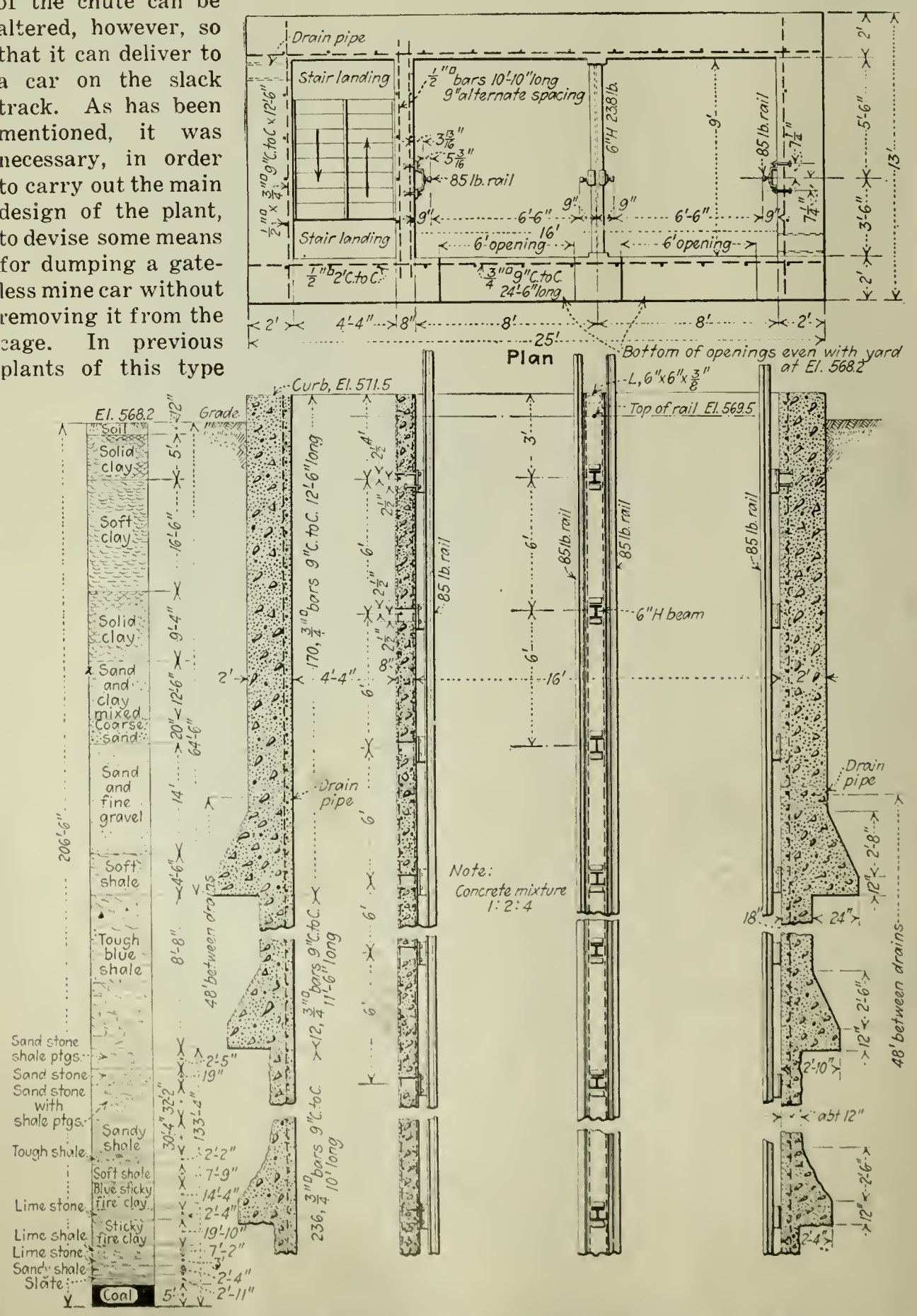


FIG. 4. PLAN AND CROSS-SECTION OF MAIN SHAFT AND A COLUMNAR SECTION OF THE MEASURE ENCOUNTERED IN SINKING IT

This drawing is not drawn to scale. It will be noted that in a cover of 206½ ft. as much as 64½ ft. is dead load—clay, loose sand and soft shale. The presence of overburden almost destitute of cohesion is the cause of much trouble in the shaft mines of Illinois.

relieving both the motor and the hitchings. Coupling with a single link is easy and attended by much less hazard than with any other sort of non-automatic hitching. The newest cars, as shown in this illustration, are equipped with Lincoln trucks.

In the boiler house, boilers will be set in two rows at right angles to the railroad tracks with a wide firing aisle between. Those already placed are equipped with "Harrington" stokers and Engineer Co. "balanced draft." The Harrington stoker permits the use of the very finest of coal without loss. The drive chain is below the grate bars and entirely protected from the fire. The grate is driven by a worm gear and is so connected with the dampers and the forced-draft fan as to pick up a varying boiler load automatically and maintain a steady steam pressure. A concrete stack 145 ft. high has been erected, and the boilers can easily be operated at from 200 to 250 per cent of their rating without producing smoke.

Fuel is fed to the stokers from two overhead bins of ample capacity which are filled by a "refuse chain conveyor" and elevator from a pit beside the track. Coal can be dropped down track from the airshaft tipple and dumped into this pit. It will eventually be fed from the main tipple by means of a conveyor.

Ashes are removed by a steam-jet conveyor to a concrete bin over the first track. The boiler installation at present consists of two 400-hp. batteries, with provision for two additional similar units connected to the same stack. Each of these batteries is made up of two ordinary 200-hp. return-tubular boilers in an extremely high suspension setting over one stoker. The return-tubular boiler was selected in preference to the water-tube type on account of its large water capacity. This makes this boiler especially suitable for hoisting plants which are subject to sudden and violent fluctuations of steam demand. Pressure is maintained at 150 lb., which is about as high as can be carried with boilers of this type and size.

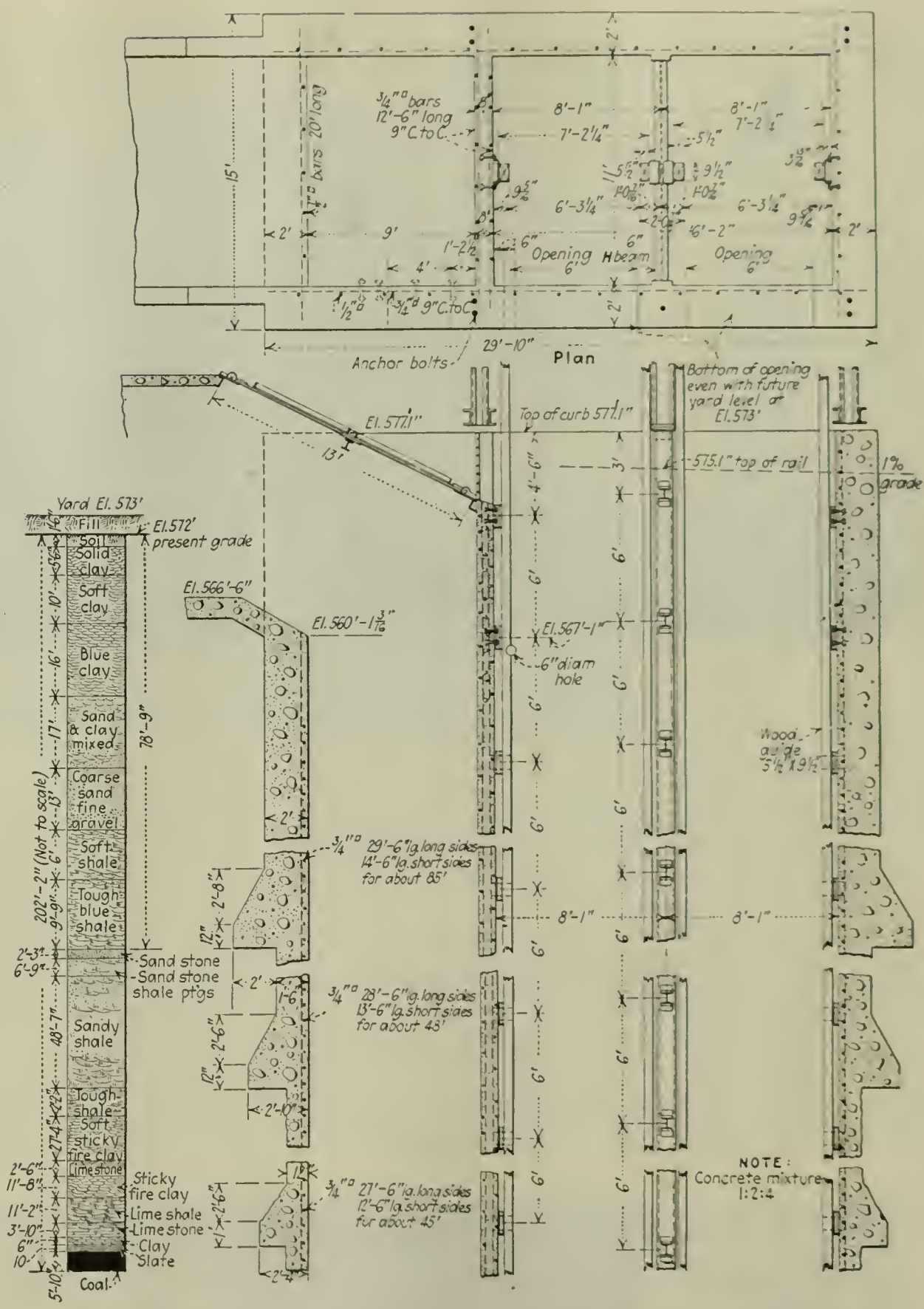


FIG. 5. PLAN AND CROSS-SECTION OF AIRSHAFT AND COLUMNAR SECTION OF MEASURE OVERLYING COAL

The left compartment is for air and is sealed all the way up. Note the explosion doors at the head of this compartment. The other two are furnished with wood guides, as they are used for hoisting self-dumping cages.

Fig. 8 shows the boiler plant as at present installed. This picture is taken from the point where the second stack will be located should it ever be necessary to more than double the present installation. Water as generally found in this section is extremely hard and quite muddy. At this plant it is filtered and softened by the "Permutit system," the apparatus for which is located in the end of the boiler house next to the track. The main hoisting engine will be installed in the northwest corner of the boiler house, which will be partitioned off for the purpose.

Generators Are Driven by Uniflow Engine

The only power units at present installed are a 50-kw. direct-current generator and a 450-kva. 2,300-volt alternator, direct-connected to a Chuse uniflow engine. These are shown in Fig. 9. The direct-current unit was purchased for use during construction but was

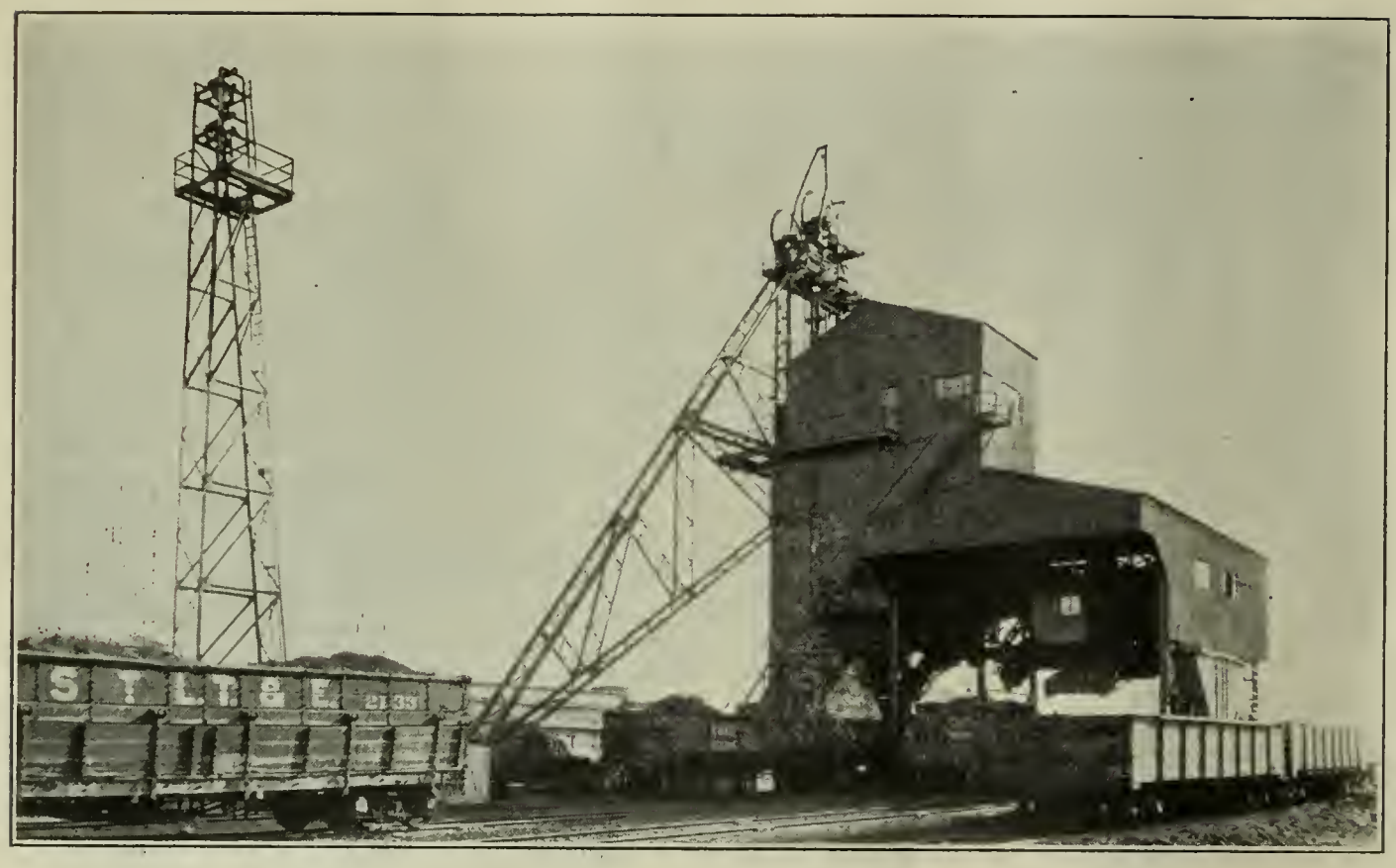


FIG. 6

Airshaft Tipple

The headframe is concreted around the rear and part of the sides so as to protect the steel, add to stability and prevent the scattering of coal. Note the idler stand supporting the hoisting rope. The drum is 308 ft. from the shaft and the idler is needed to prevent the rope from sagging.

given a permanent setting, so that it might carry the night load. All machines above ground are operated by alternating-current motors at 240 volts and all units below ground by direct current at 250-275 volts. One 200-kw. motor-generator set is located in the power house, and as the workings of the mine are extended it is planned to run high-tension cables underground and install additional motor generators in various sections of the mine as required.

This power plant is at present operated non-condensing, but provisions have been made for running the uniflow engine condensing and adding turbine units when they are needed. The first will be a 750-kva. mixed-pressure turbine with a regenerator. A space has been provided in the boiler house for this unit. The second additional machine will be high-pressure. The switchboard provides frames and buses for these future units, but only necessary panels are now installed.

The basement under the power-house floor is arranged for the installation of condensers. It now contains only a small air compressor and the levers and switches of the switchboard. The whole power house is spanned by a 10-ton traveling hand crane for use in handling the machinery.

Multivane Undershot Fan Ventilates Mine

The fan is a Jeffrey 12 x 5-ft. multivane undershot machine and is shown with its setting in Fig. 12. The setting, including the evasé chimney, is built of reinforced concrete, only the reversing doors and dampers being of steel. Both drives—for two are provided—are placed on the same side. An engine is belted to a large pulley on a stub shaft connected to the fan by means of a jaw clutch.

The main drive, however, will be a motor, belted to another large pulley mounted on a quill shaft supported

FIG. 7

Hanger Room

Hanger room is high and well ventilated. Light enters from the monitor, or clerestory, in the roof and the windows on one side. A commodious first-aid room and a bosses' bathroom with lockers also are part of this building. The basement is of flat-slab construction with walls of reinforced concrete, but this part of the structure is of gunited tile.

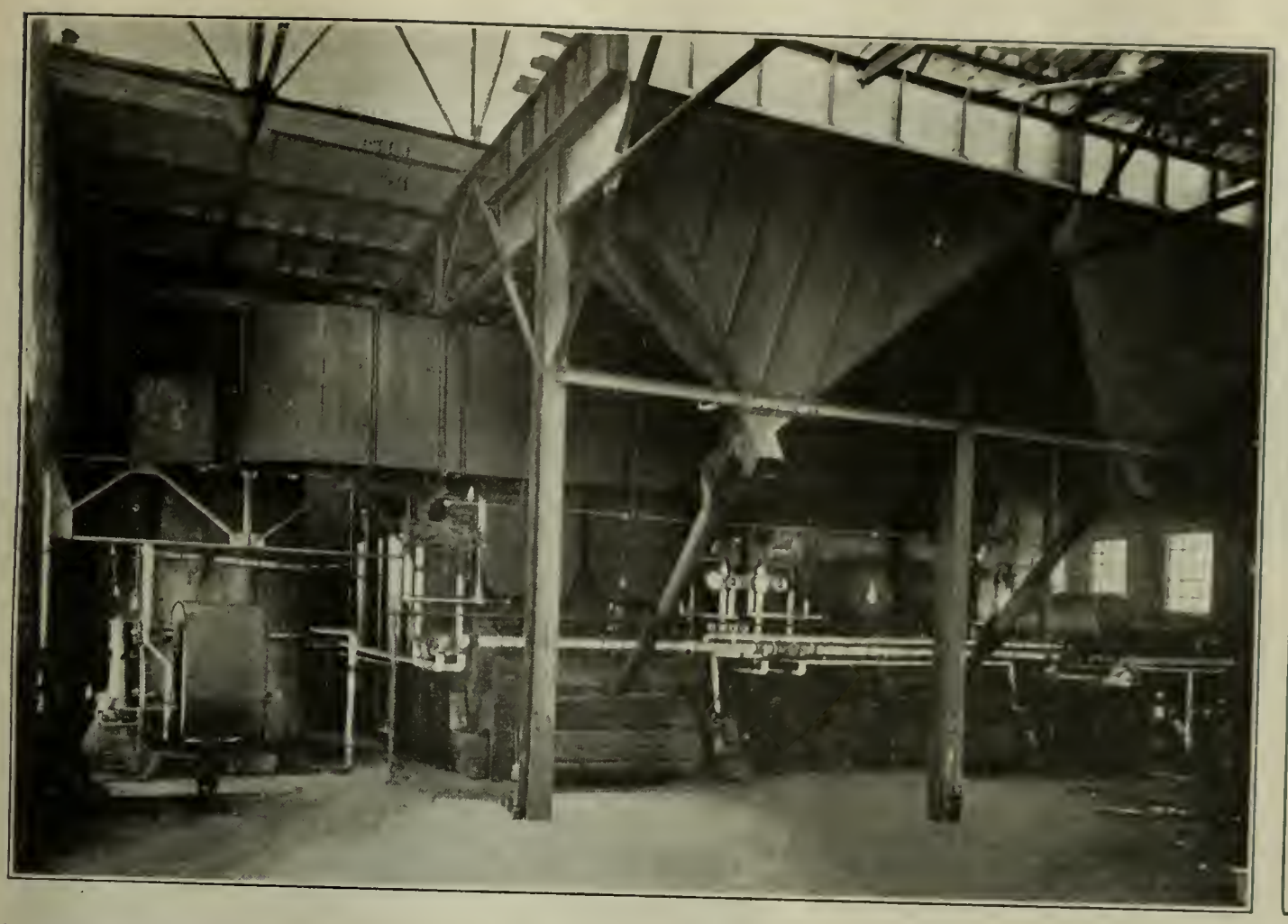


FIG. 8

Boiler Room

Boilers have stokers which will use economically the finest of coal and a balanced draft that delivers air to meet the needs of the fire. Return tubular boilers are used. Though not rapidly responsive when first fired up, they hold so much water that when under way they will respond to sudden and violent fluctuations in the demand for steam.

in two bearings and thrown into action by means of another jaw clutch. A small 9 x 12-in. slide-valve engine is now operating the fan, but it is planned soon to install a 200-hp. variable-speed motor, after which the engine will be retained as an auxiliary drive only.

The shop is of "daylight" construction. Its interior is shown in Fig. 11, while its exterior may be seen in the frontispiece. It has a full equipment of machine tools as well as room for four forges. All drives are of the overhead type. Material is handled through the shop on an industrial track extending from end to end and also through the storeroom. This is connected by turntables with tracks coming in from the yard through the side doors. Work is handled over the large tools at the north end of the shop by means of a 5-ton hand crane carried on the bottom chord of two trusses. Trolleys with chain hoists can be installed on the bottom chords of the other trusses wherever needed.

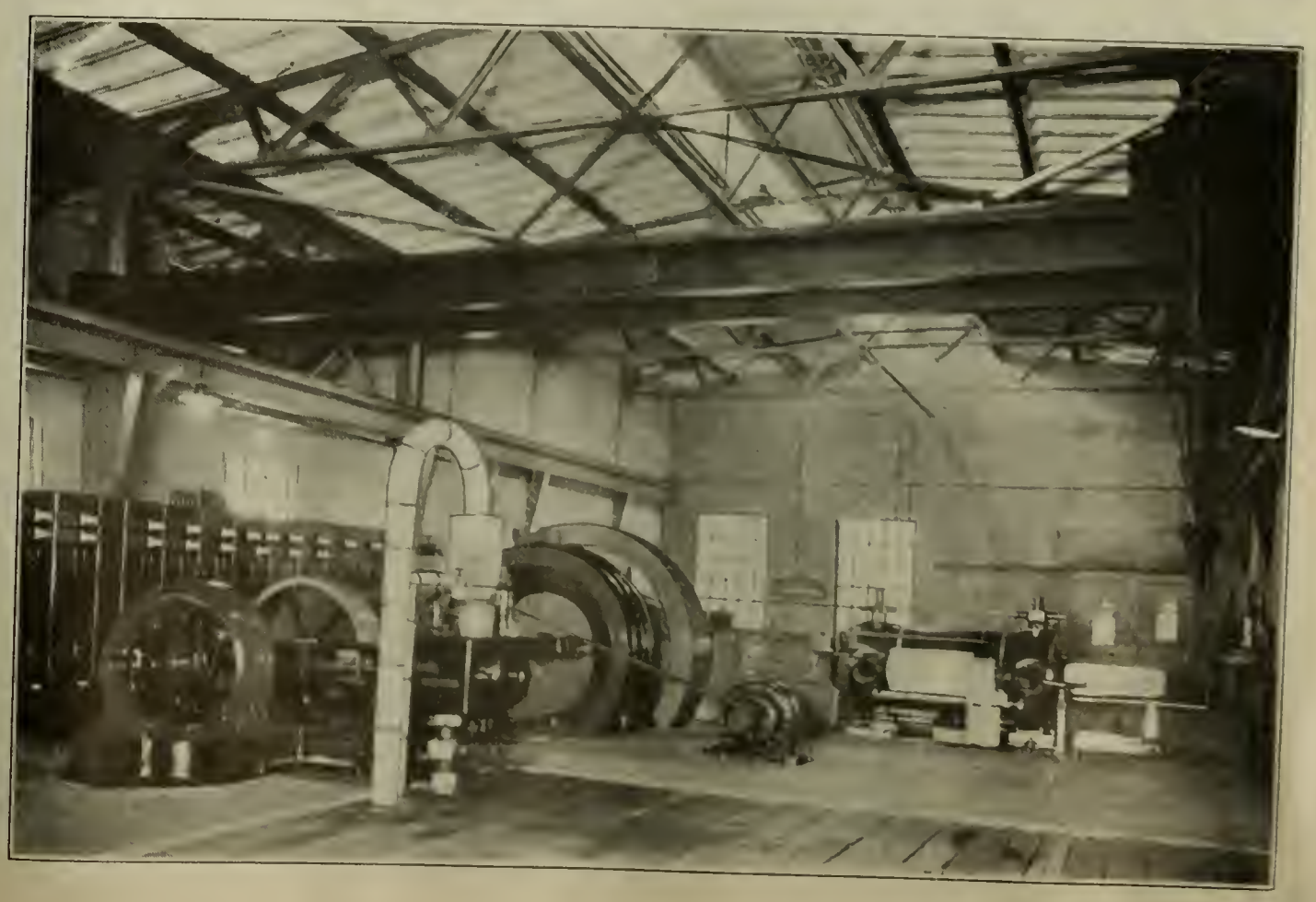
Several Shops and Offices Under One Roof

The adjoining section of the building is separated from the machine shop by a fire wall. Here are located the electrical shop, the storekeeper's office and the storage space for shelf materials. The next section forms the storeroom proper and is under the office. It is used for large and bulky materials and supplies. A track from the storage yard near the unloading

FIG. 9

Power-House

On the right a uniflow engine, now operating non-condensing, and on the left a 50-kw. direct-current generator provided during construction and now used for the night load. Between them a 450-kva. 2,300-volt alternator direct-connected to the engine. A 10-ton traveling hand crane traverses the building. A 750-kva. mixed-pressure turbine will be added later.



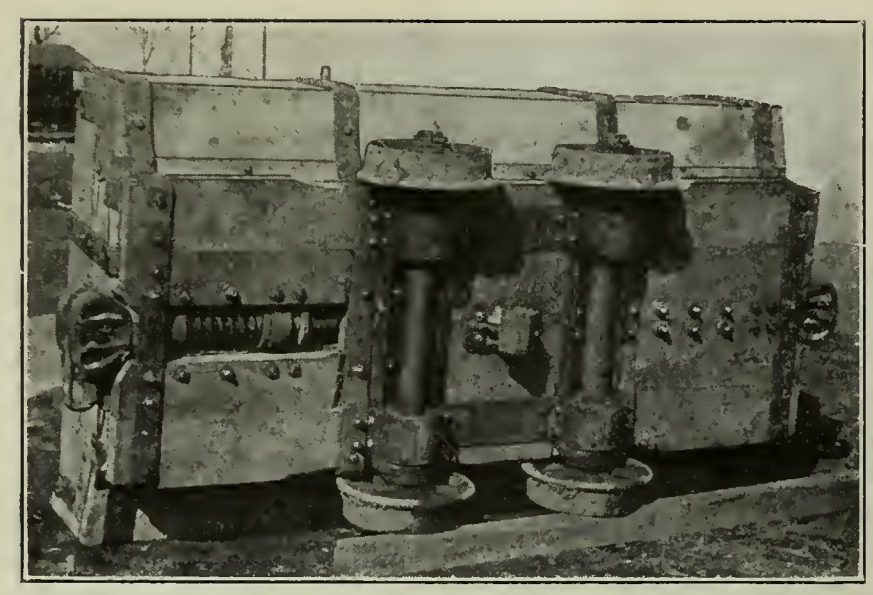


FIG. 10. MINE CAR HAS SPRING DRAFT RIGGING

Wood mine car heavily braced with steel and equipped with a lug midway between axles for use in a chain car-haul feeder which will be later installed. The steel bumper at one end has a heavy spring which cushions the blow when the cars come together and gives the necessary play to make it easy to start a trip. The drawhead swivels so that the car can be dumped without uncoupling.

crane runs directly across this room and is connected by turntables with that traversing the entire building.

The office is situated upstairs, but a pay office with vestibule is located in the northeast corner of the storeroom. This pay office is accessible only from the general office above by means of a private stairway. The upper story here contains a large accounting room as well as an engineer's office, with a vault for each; a superintendent's office and a private office, also lavatories for men and women.

The washhouse is shown in Fig. 13 and the interior of the hanger room in Fig. 7. This building at present contains accommodations for 400 men. The hanger room is high, well lighted and adequately ventilated. The shower room has a capacity sufficient for the ultimate requirements of the mine. This building also contains a commodious first-aid room and a bosses' bathroom with lockers.

This washhouse was built on a piece of low ground which was afterward filled in. Advantage was taken of this fact to put in a basement for use as a meeting and lecture room. The first floor is of flat-slab construction with walls of reinforced concrete. The upper story is of tile and gunite, similar to the other buildings. The mechanical equipment of the washhouse consists of an inclosed storage-type heater using either exhaust from the fan engine or live steam, as necessity may require.

All steam lines are run in concrete conduits which extend from the power house through the shops to the washhouse and fan building. All electric wires are carried in conduits underground, and the yard is thoroughly tile-drained and cinder-filled.

Water for all purposes is first softened, then pumped into a 40,000-gallon steel tank at a 50-ft. elevation. Thence it runs by gravity to the heater, washhouse, etc. A high-pressure fire line also is installed, with plugs and hose at convenient points.

Provision for future needs and expansion was one of the main considerations in laying out the plant as a whole. Everything not immediately necessary was omitted for the present, but provisions were made so that the various additions could be installed as required with minimum interruption and difficulty.

FIG. 12. FAN HOUSE WITH EVASE OPENING ON RIGHT

The fan is a 12 x 5-ft. multivane undershot ventilator. The setting, including the evasé chimney, is of reinforced concrete, only the reversing doors and dampers being of steel. Two drives are provided, both placed on the same side.

Ground was broken on this plant in 1919. The work of construction was interrupted by several strikes and by many difficulties in obtaining labor and materials, but the first coal was hoisted in December of the same year. The first stage of construction as herein described was completed in August, 1920.

Executive and operating officials of the Donk Brothers

FIG. 11

Blacksmith Shop

A well-illuminated building with overhead drive for all machines. Four forges and a full equipment of machine tools are provided. An industrial track extends from end to end. At the north end of the shop a 5-ton hand crane handles the work over the large tools.

FIG. 13. EXTERIOR VIEW OF WASHHOUSE

This building will accommodate 400 men at present, but there is room for all the men the plant will ultimately require. Note the basement story entered from the left. It is used as a lecture hall and meeting room.

Coal & Coke Co. in direct charge of this undertaking were: Edwin H. Conrades, president, and Edmund C. Donk, vice-president, both of St. Louis, Mo.; also Walter C. Clark, general superintendent, of Maryville, Ill. The plant was designed and constructed by the Allen & Garcia Co. of Chicago, H. B. Cooley being the engineer in charge.

Rope Rollers Must Not Be Set Too Close and Should Be of Manganese Steel

By John S. Watts
New Glasgow, N. S.

SPACING rollers at such intervals that they will carry the haulage rope on a slope or traveling way generally is accomplished by rule-of-thumb methods. Though at first sight this haphazard way may seem to give good results, and the whole problem appear to be of little importance, I hope to show that careful attention to the subject is well worth while and will be repaid in lengthened life of both rope and rollers.

As the function of these rollers is to keep the rope from dragging, obviously it is necessary to set the rollers so close together that the rope will not sag enough to touch the ground or the ties. On the other hand, to space the rollers closer than suffices to prevent this dragging is to incur needless expense by providing more rollers than are required.

Rollers Can Easily Be Placed Too Close

In the absence of exact knowledge as to what the correct centers should be, the tendency is to "play safe" and place the rollers sufficiently close to prevent any possibility of the rope dragging. This is done on the assumption that it is better to have too many rollers than too few. A study of the forces acting upon the rope and rollers will show that the above assumption—that close spacing is preferable—is a fallacy for the following reason:

Unless a roller actually rolls, and at the same speed as the rope, sliding friction will develop between the rope and the roller. This is the very condition that rollers are installed to obviate. Furthermore, if sliding friction is to exist at all it would be preferable to have it occur between the rope and the ties rather than on the rollers because with the roller the surface contact or area supporting the sliding rope is little more than a point, whereas at least line contact is afforded by the ties. Thus if there is to be any sliding whatever, the friction and the resultant wear on the rope will be less if this action takes place between the rope and the ties.

The only force present to compel the roller to revolve is the friction between it and the rope. The magnitude of this force is dependent upon the weight of the rope resting on the roller, which is the weight of a length of rope equal to the distance between the rollers.* Therefore the greater this distance the greater will be the force tending to cause rotation. At best, owing to the small area of contact between the rope and roller, this force is small, and to reduce it by too close a spacing is to invite failure.

Furthermore, close spacing of the rollers increases the number that must be revolved and hence augments the friction load or pull on the rope. In addition there is the increased cost of installation and the upkeep of the superfluous rollers. The more rollers installed over what are actually needed, the more wear from slippage, and slippage causes the life of the whole equipment to be shortened.

When stretched from one roller to the next the rope takes the form of a catenary curve. On a level road in order to ascertain the proper spacing it is only necessary to determine the deflection under minimum pull, this, of course, being the tension that will give the greatest allowable sag. This deflection is to all practical purposes given by the formula:

$$d = \frac{wl^2}{8p}$$

Where d = the deflection or sag of the rope in feet, w = the weight of the rope in pounds per foot, l = the span of the rope, or distance between rollers in feet, and p = the pull on the rope in pounds.

The proper procedure would be to place the rollers as high as possible without placing them so high that they would rub the cars in passing, then determine the maximum allowable center-to-center spacing of the rollers that will give a deflection such that the rope will just clear the ties. The formula may then be transposed to

$$l = \sqrt{\frac{8pd}{w}}$$

When the cable is on an incline it will be necessary to lay out the catenary curve for the minimum pull on the rope, and by trial to scale and lay off on this curve the maximum centers that the allowable deflection will permit.

In conclusion it cannot be too strongly emphasized that track rollers should be as near frictionless as possible, and that their rims should be composed of some wear-resisting material, so as to prevent the formation of a groove in the rim should the roller refuse to revolve for a short time through some accidental lack of lubrication or other temporary difficulty. A roller or pulley that once gets grooved is worse than useless because it will never revolve once the rope drops into the depression.

To expect the common wood roller, turning in two separate bearings, to fulfill such functions as are detailed above is absurd, as a walk along any slope fitted with them will show. While new they are of some little help, but their life is so short that they do not repay the cost of installation, and a really effective slope roller, though it cost twenty times as much, is far more economical. The bearings commonly used set up far too much friction. Even if they are in alignment when first placed, they do not and cannot be expected to remain so. The better arrangement is to cast both bearings together in some kind of frame, box or baseplate so as to insure permanent alignment, no matter

*It also depends on the angle of contact, and that increases with a greater sag between rollers.—Editor.

how much the ties to which this frame is bolted may move.

Any wood roller becomes grooved by the rope in a short time, whereupon its usefulness is ended. The ideal roller is one of manganese steel, which will not wear—beyond getting polished—and consequently always retains its circular shape. Such a piece of equipment will last indefinitely, the only renewals required being the brass bushings in the bearings. What is still more to the purpose, it will revolve at the slightest touch of the rope, thus reducing wear to a minimum.

Dangers in Using Carbon-Tetrachloride Extinguishers in Mine Fires

CARBON tetrachloride is given off by certain classes of fire extinguishers as it is a heavy gas and dampens flame. Such extinguishers have been used in fighting mine fires and also in fires in homes, mine buildings and automobiles. It is useful to know that a certain degree of danger accompanies their use. It must be remembered, especially in mine fires, that the army mask, which affords safety in the presence of carbon tetrachloride and its derivatives, phosgene, chlorine and hydrochloric-acid gas, gives no protection against the carbon monoxide that the fire itself is likely to generate.

The mask is, therefore, protection against the extinguishing gas and its derivatives but not against the poisonous atmosphere that may exist altogether apart from the use of the extinguisher. It is interesting to note what Fieldner, Katz and Kinney have to say in an admirable technical paper, No. 248, issued by the Bureau of Mines, and entitled "Gas Masks for Gases Met in Fighting Fires," from which the following extract is taken:

"At ordinary temperatures carbon tetrachloride is a volatile, sweet-smelling, colorless liquid. It readily vaporizes and the vapor is colorless and heavy; 7 to 9 per cent of the vapor mixed with air will extinguish fires. The heavy vapor tends to settle to the bottom of a room and form a blanket over the floor. This blanketing effect of the vapor on any material wet with carbon tetrachloride excludes air and so aids in extinguishing fires. Small fire extinguishers, holding about a quart of carbon tetrachloride, are widely used for extinguishing small or incipient fires and are very effective.

Great Danger in Case of Fire in Closed Area

"It is dangerous to inhale the gases formed by carbon tetrachloride when it is sprayed on heated materials. Experiments by the Bureau of Mines have shown that the decomposition products of carbon tetrachloride consist of phosgene, chlorine (sometimes), and hydrochloric- (muriatic-) acid gas. In addition, high concentrations of carbon tetrachloride itself are produced. Death may be caused by breathing the gases for only a short time. Danger is greatest when the fire is in a closed or confined space. The army gas mask protects the wearer in any concentrations likely to be met.

"Undecomposed carbon tetrachloride vapor arising from the use of the liquid in fire extinguishers when encountered in a small confined space probably will produce unconsciousness by its anaesthetic effect. The commercial product usually contains some carbon bisulphide, a residue of the carbon bisulphide used in the manufacture. Waller and Veley have found that the presence of carbon-bisulphide vapor with that of carbon tetrachloride greatly increased the toxicity, but comparatively large amounts of the carbon-tetrachloride vapor must be breathed before the effects become dangerous. For this reason the more serious danger in the use of carbon tetrachloride lies in the products formed from it rather than from the vapor itself.

"Lehman states that 159 parts per million (0.016 per cent) will cause slight symptoms when breathed for several hours; 3,980 parts per million (0.4 per cent) may be inhaled for about one hour without very serious effects; 23,850 parts per million (2.4 per cent) are dangerous in thirty minutes. An employee of the Bureau of Mines was overcome while using a carbon-tetrachloride fire extinguisher on an automobile burning in the open air. Two employees of the Navy Department died as the result of breathing fumes from carbon tetrachloride that had been used when the clothes of one of them caught fire when the men were working in a very small compartment.

"The army gas mask will protect the wearer against carbon tetrachloride, and its use is recommended when a fire extinguisher of this type is used in a small, unventilated space."

British Rules Require Stone Dusting

REGULATIONS promulgated by the British Government require that in all mines the roads or any part of the roads that may be accessible shall be treated with incombustible dust in such manner and at such intervals as will insure that the dust on the floor, roof and sides throughout the roadway shall always contain a mixture in which the combustible matter shall not exceed 50 per cent of the whole. They also must be treated with water in such manner and at such intervals as will ensure that the dust on the floor, roof and sides shall be combined throughout with 30 per cent by weight of water in intimate mixture.

The exceptions to these regulations are mines where the floor, roof and sides are naturally wet throughout and where anthracite is worked. Provision is made for frequent sampling—apparently about once a month is considered frequent enough—the samples being analyzed by the company if taken by a company employee, but sent to Eskmeals for determination if taken by a Government inspector. The samples are taken over an area of road not less than fifty yards in length.

It is said that the method of determination is unfair to limestone as a stone-dusting material, because the carbon dioxide burned off in the test is regarded as combustible with all the other material the combustion drives off or burns. It is not clear whether the water of constitution of clays which is driven off by the heat of burning is regarded as combustible. It certainly should not be, as it, like carbon dioxide, is a dampener of flame.

The Government of Great Britain also requires that the dust shall be of a character such as will not injure the men employed. Unfortunately, much of the rock coming from the mine produces dust which is harmful to the men who breathe it.

Senator Moses, of New Hampshire, has introduced a bill providing for an 8-hour day in the mining industry. It stipulates that 8-hours under contracts for labor and services shall be a day's work in any mine, quarry, etc., in the United States which are engaged in the production of wares which enter into interstate commerce. A fine of $100 to $1,000 and imprisonment for one year or both is provided as penalties for its violation.

FRONT AND REAR OF HOUSE FOR USE OF DEPARTMENT HEADS

Like all the houses, large and small, this is a one-story building. The terrace at the front and side of the main entrance is paved with brick. It faces to the north and so receives some protection from the sun.

Rosita, Mexico, a Carefully-Planned City; Pleasing, Comfortable and Hygienic—II

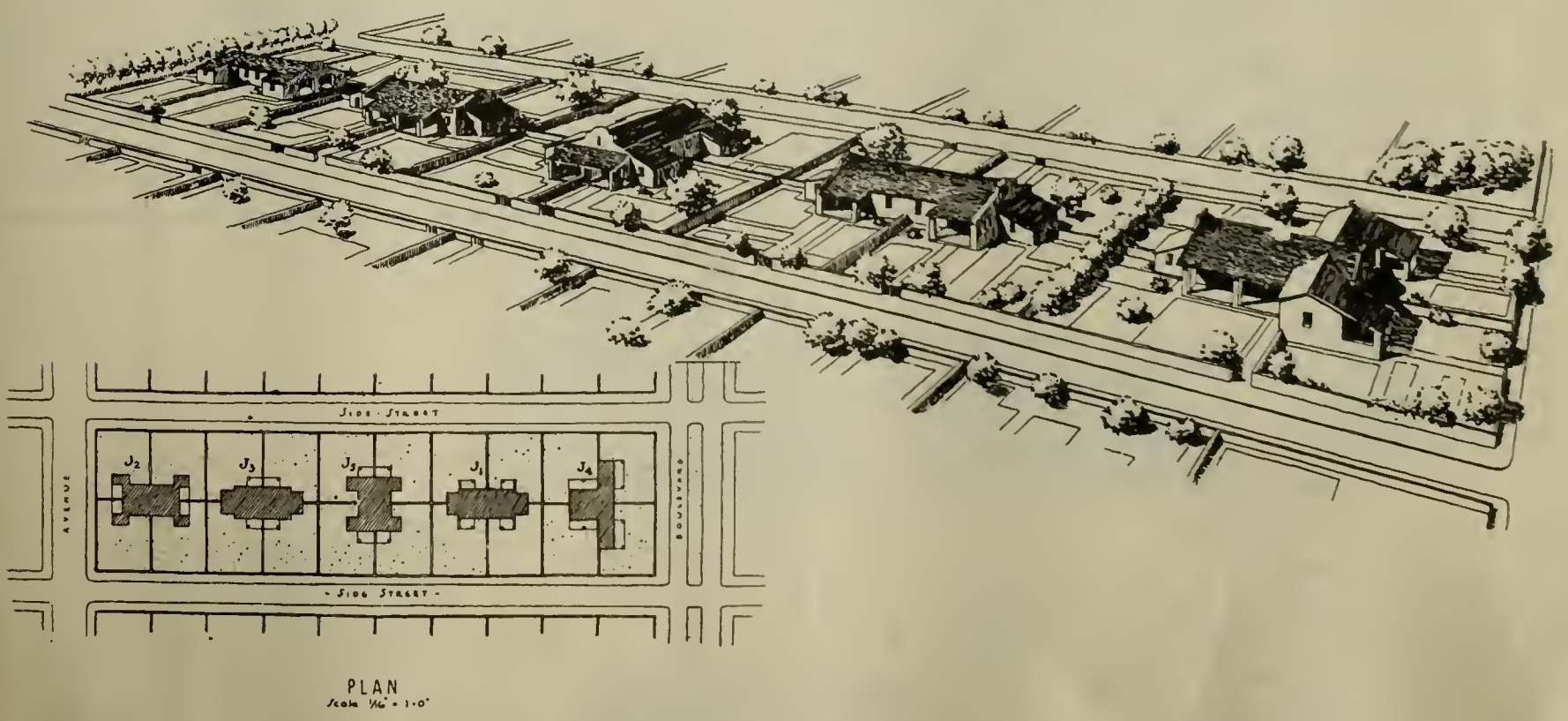
Three Types of Houses for Native Mechanics and Seven for Miners and Laborers Relieve Monotony — All Front on Spacious Avenidas — Each Family Will Have Lot 50 x 50 Feet and Share in Large Community Farm

By Hjalmar E. Skougor*
New York City

In the foregoing article were described the public buildings of the town of Rosita. The function of the present article will be to cover roughly the design of its private houses, which are in greater variety than the illustrations would suggest, as it is impossible to do more than select a few.

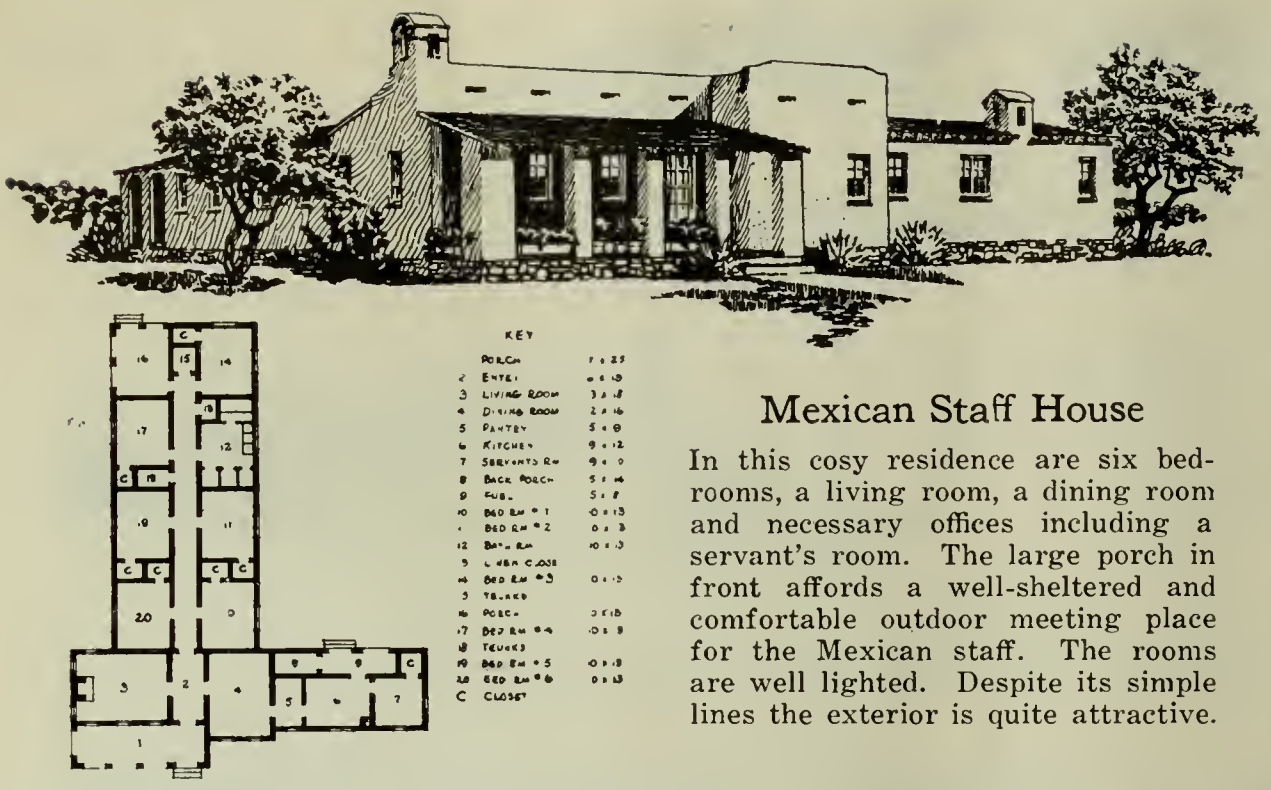
The manager's residence, division and department heads' houses, as well as the clerks' and foremen's dwellings are all constructed of adobe masonry, on stone foundations with wood-shingle roofs. They are plastered inside and out with a combination lime and cement mortar. Colonial Mexican architecture is strictly adhered to. Three distinct designs will be embodied in the houses for the division and department heads and each will be equipped with all modern conveniences. While open fireplaces are provided for each house, most of the heating will be accomplished by

*Consulting engineer, 150 Nassau St.



BLOCK OF TWENTY HOUSES FOR MINERS AND LABORERS IN GROUPS OF FOUR

In this can be seen the walls, which give the desired privacy. These house groups vary considerably in plan, as may be seen, and this makes the block far from monotonous. The arrangement of the rooms and porches is, however, about all the change made. It will be recognized that the miners' and laborers' group on the extreme right is that illustrated at the foot of page 1038



Mexican Staff House

In this cosy residence are six bedrooms, a living room, a dining room and necessary offices including a servant's room. The large porch in front affords a well-sheltered and comfortable outdoor meeting place for the Mexican staff. The rooms are well lighted. Despite its simple lines the exterior is quite attractive.

means of electric stoves. In every case garages and quarters for servants are provided.

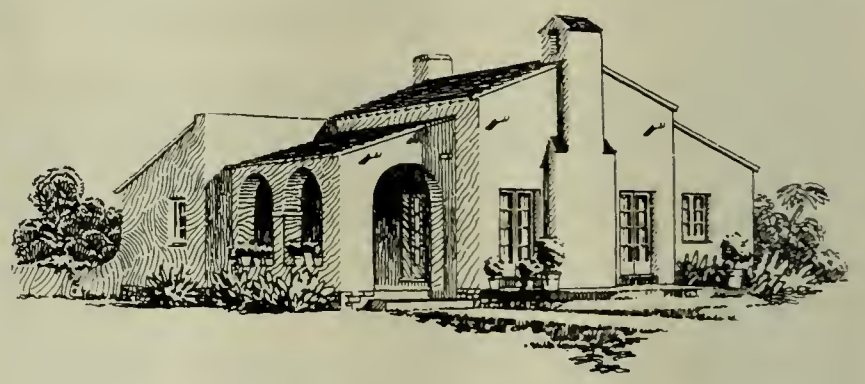
The houses for the manager, the division heads, the department heads, the clerks and the foremen while distinctive in architecture, differ only in the number and the size of the rooms. Each is liberally provided with space for gardening, lawns and shrubbery.

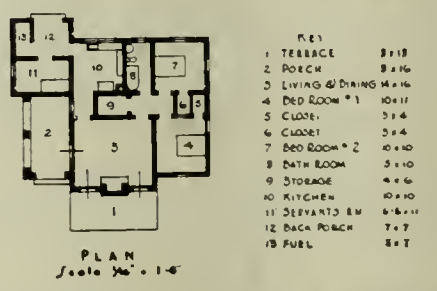
Native Mechanics' Houses of Duplex Type

The houses furnished for the accommodation of the native mechanics are in all cases of the duplex type, with three rooms, a kitchen and porch alloted to each family. The present status of education prevailing among the Mexican mechanics is such that bathrooms and running water in the houses were considered likely to be an occasion for uncleanliness. For this reason public comfort stations are provided. These are readily accessible throughout the town site with a certain number of people allotted to each, their exact location depending upon the density of population.

The water supply is provided in such a manner that one outlet will serve two to four families. Throughout the town site, back yards, side streets and alleys are totally dispensed with, each family dwelling fronting on a main street or an avenue. The mechanics' houses are like those previously mentioned, being constructed of plastered adobe masonry and built on stone masonry foundations, with roofs of timber construction covered with wood shingles.

To eliminate the monotony in appearance which would be inevitable if all houses were of one design, three distinct types will be provided for this class of workmen. The married native miners and laborers in Mexico today as a class are unaccustomed to comforts and hygienic conditions of any kind. This is evidenced by the condition under which they now live, not only in this particular district but throughout all Mexico. It is therefore considered a distinct and novel procedure to afford them the comforts which have been planned by the Compañia Carbonifera de Sabinas, S. A. Each of the houses for laborers and miners, of which

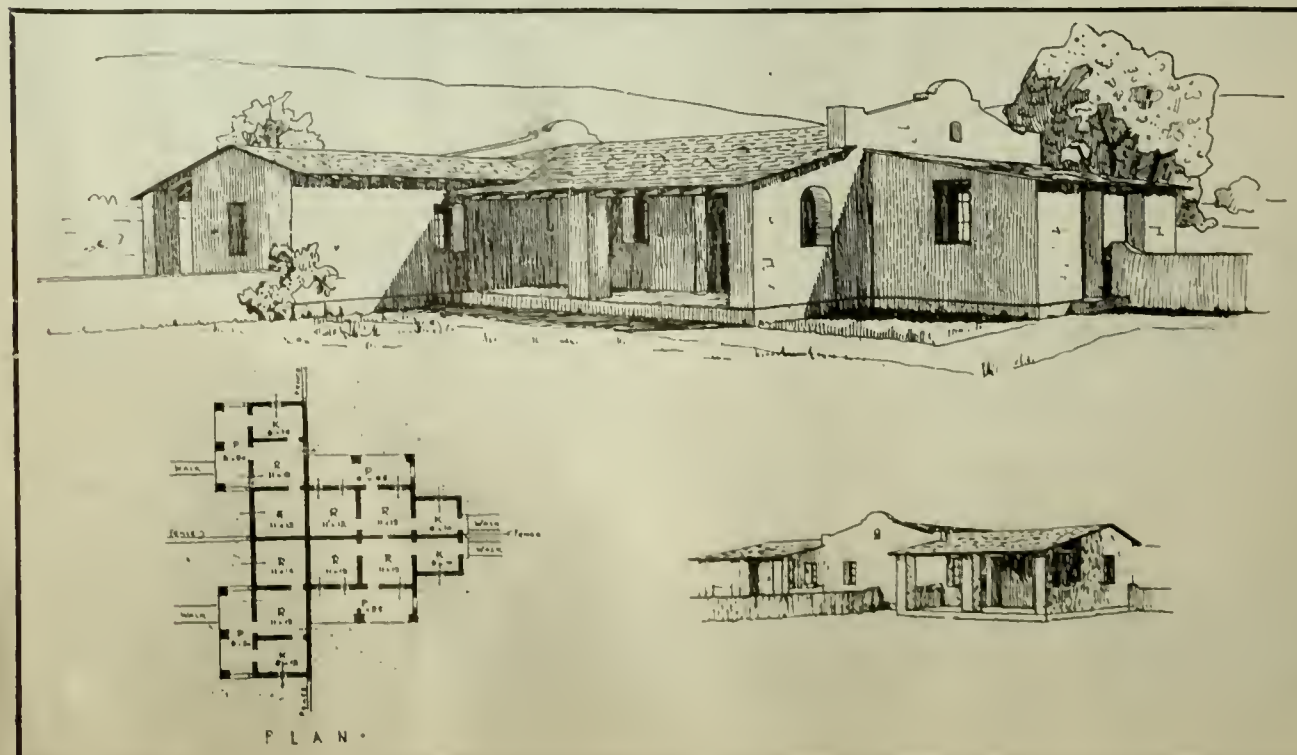




HOUSE FOR DIVISION HEADS

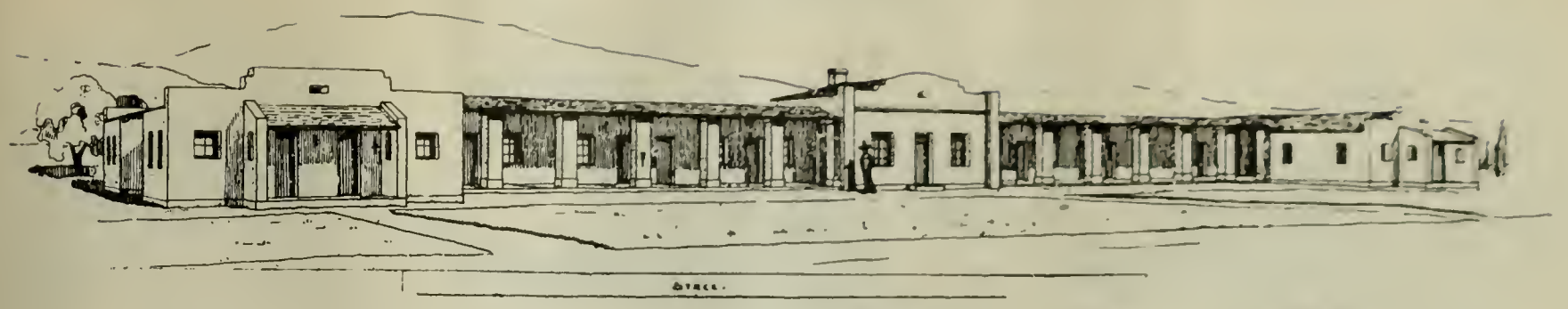
Again a comfortable porch, which probably will be made use of for most "living" purposes. With that in view the living room and the dining room are in one. There are two bedrooms and a servant's room and all the necessary addenda that a modern house must have.

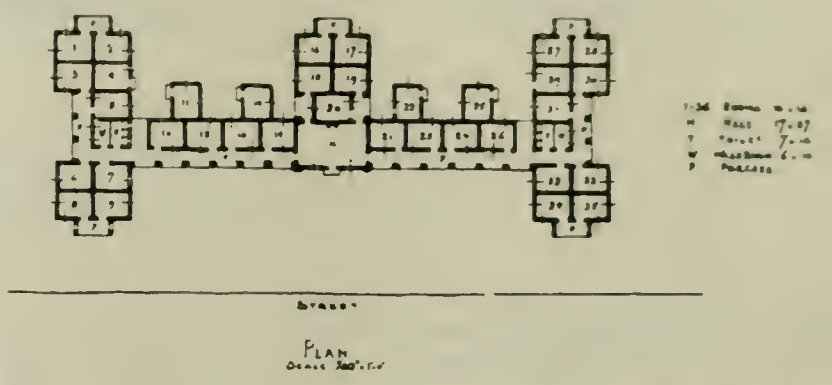
for the sake of variety and appearance seven distinct types have been adopted, has the same floor area and



Miners' and Laborers' Group

The near end group in the block on previous page. The upper is the view from inside the block and the lower the same house as seen from the side street. The units are the same but the arrangement a little different from that in the other groupings.





Quarters for Single Men Employed as Miners and Laborers

Thirty-five rooms and seven porches are provided in this house, with a central hall, two toilet rooms and washrooms. There is no kitchen, dining room or servants' quarters. Each man provides for himself in Mexican fashion.

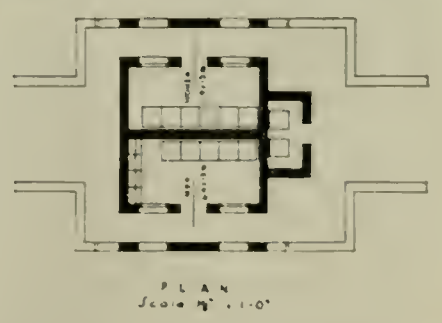
arrangement as far as the number of rooms is concerned. Each house accommodates four families, each family occupying two rooms, a kitchen and porch. The building fronts on two streets, so that a separate entrance will be provided for each dwelling. Each lot in turn is separated from those adjacent by a low adobe fence allowing a plot approximately 50 x 50 ft. for the cultivation of lawns, vegetables or other agricultural products. Electric illumination is provided in all rooms, and water is supplied at the intersection point of the four fences. In this manner water for four families, both for domestic use and irrigation purposes, will be drawn from one spigot.

Single Laborers Have Communal Dwelling

The management has considered that the area allotted to each family—namely, 50 x 50 ft.—will not suffice in some instances for their agricultural ambitions, and it is therefore planned that a community farm will be undertaken, allotting to each family a certain amount of ground where additional corn or other food products may be raised or where goats, pigs or other domestic animals may be kept.

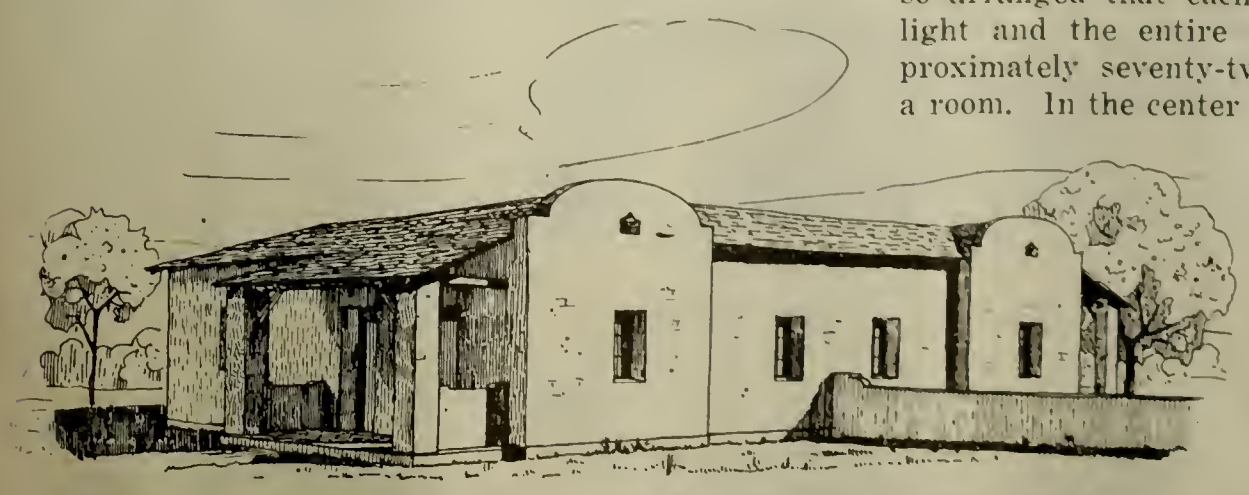
Public comfort stations or toilets, as spoken of previously for the mechanics, will be shared by the miners and laborers. These consist of two separate compartments, one each for men and women. Each compartment is provided with four automatic flush seats, each set in a vitreous enameled stall enclosure. These seats are ventilated by a pipe in the rear of each stool which passes up behind an enameled rear wall.

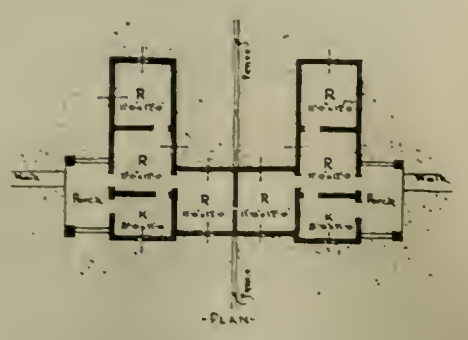
Unlike other mining camps in the United States, but little provision is necessary here for the accommodation of single men. This is because it appears to be an inborn trait and almost universal custom among Mexican bachelors to board either with their own families or with friends. However, in order to accommodate any possible floating population that could not be taken care of in this manner, a Mexican laborers' house of ample proportions will be erected. It will be so arranged that each room is supplied with air and light and the entire structure will accommodate approximately seventy-two men on the basis of two to a room. In the center of this building a large assembly



TOWN-SITE TOILET

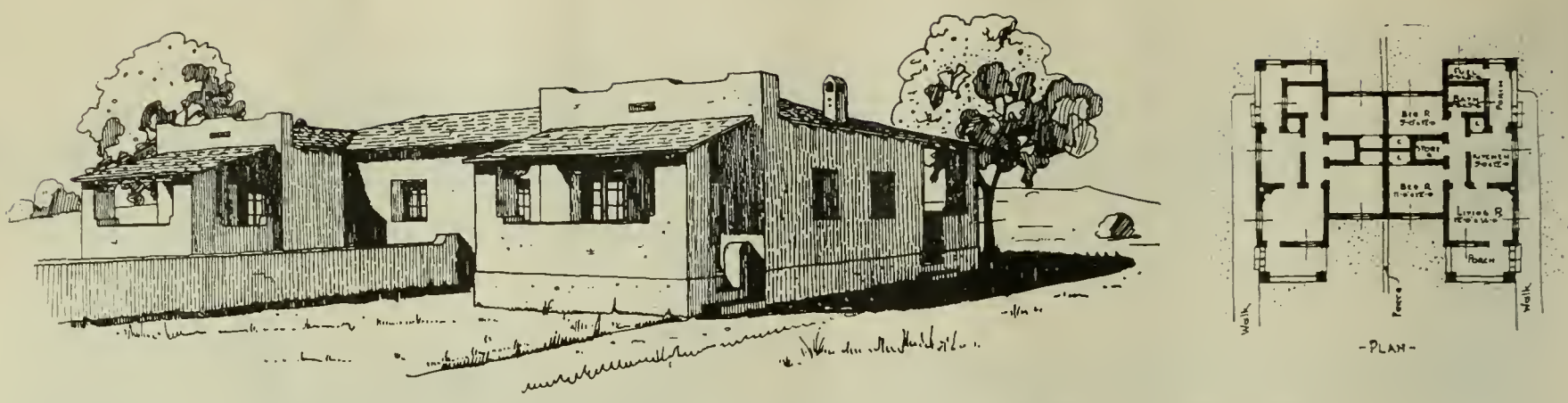
These toilets are grouped so as to be convenient to several houses, as is shown. They are walled around in such a manner as to insure privacy and are provided with regular flushing conveniences such as will assure that Rosita will always be a sanitary camp.





MECHANICS' DOUBLE HOUSE

The arrangement of these houses in pairs instead of fours, the exterior design and the addition of a fourth room in each unit differentiates them from those for miners and laborers.



DOUBLE HOUSE FOR CLERKS OR FOREMEN

An adobe wall separates the yards of the two houses from each other. Note the three closets and two porches which furnish open air to the occupants without exposing them to the rays of the hot sun. These houses, it will be noted, are each furnished with a bathroom.

room with open fireplace will be at the disposal of these men. Two washrooms, one at each end of the structure, also will be provided.

Single native clerks will reside in the Mexican staff house, where as many as twelve may be accommodated. This will be operated on the usual mess system, as is practiced in all mining camps. The staff of single Americans will be lodged in the so-called hotel, located among the other staff quarters on the hill overlooking the town site. This structure has been provided with a large entertainment hall, a reading room, and a large dining room, also sleeping quarters together with three or four rooms which will be set aside for transient guests.

A word about the Rosita mine. It is planned to produce three or four thousand tons a day. All the coal will be coked and the byproducts saved. The equipment will be in every way up to date, the coal being dumped underground and being hoisted in skips. This part of the equipment was described most interestingly by Allen & Garcia in their article on skip hoisting presented at the recent session of the American Institute of Mining and Metallurgical Engineers which appeared in *Coal Age* March 17, pp. 485-489, and on March 24, pp. 529-533.

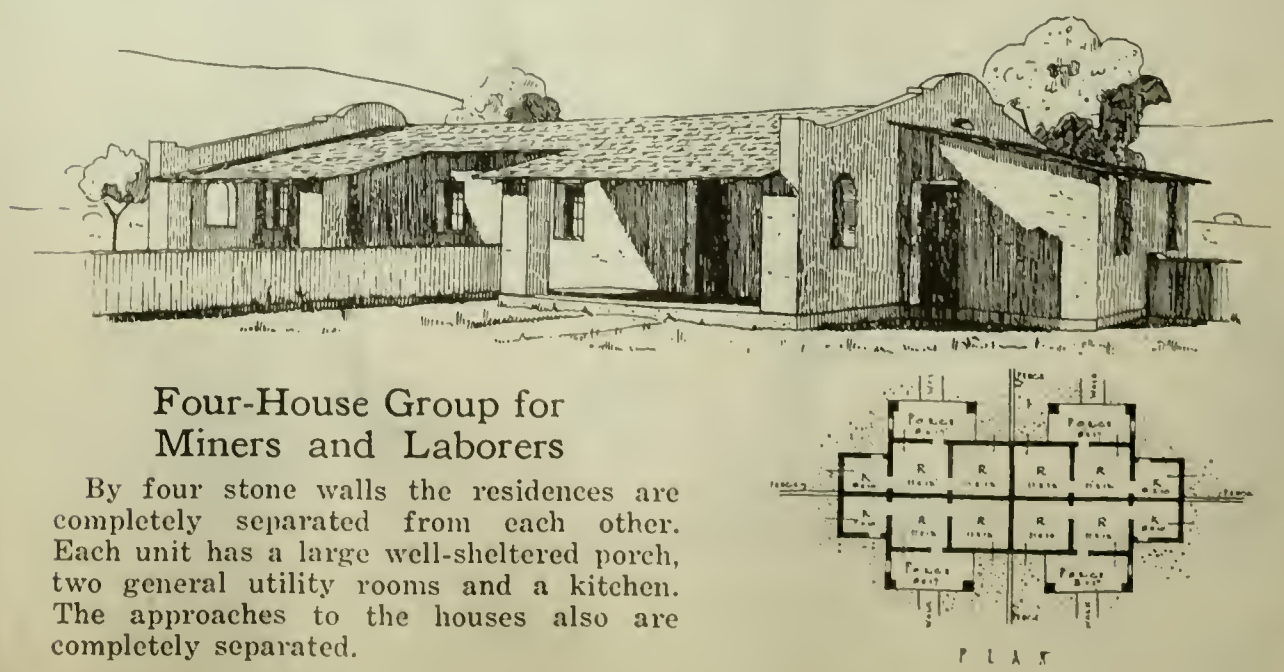
A bathhouse with every convenience will be erected. The men will be checked in and out of the mine, so that in case of an accident it will be known what men are in the colliery workings. There will be no subcontracting at these mines. It has been the general practice in Mexico to use that method of operation, but it has its drawbacks, and will not be introduced at the Rosita plant, which also will be run for only one shift in every twenty-four hours.

A large community farm will be provided in which every man who so desires will have a plot. This will be outside the village. The men will keep their pigs and goats in these allotments. These animals will not be allowed to enter the town.

Ran Hoisting Engine by Water-Wheel

ADDRESSING the Leeds University Mining Society R. Nelson, former British electrical inspector of Mines, said: "For fifty years after its introduction the steam engine was used solely to unwater mines. In the year 1776 the first engine, a pump, to be placed below the ground was set to work at Whitehaven Colliery, and at about the same time the idea of a mechanical coal cutter seems to have occurred to someone, for it is recorded in a book published anonymously in the year 1835 that sixty years before that date—that is, the year 1775—Willy Brown's Iron Man was set to work at the coal face in Wellington Colliery, in Northumberland.

"In the year 1777 a Newcomen engine with a cylinder of 26 in. diameter and a stroke of 5 ft. 9 in., making 14 strokes a minute, was set to work at Long Benton Colliery in Northumberland to raise water to a height of 34 ft. at the rate of 146 cu.ft. per minute, the head of water being used subsequently to drive a water wheel which drew up a basket or corf of coal weighing 6.5 long hundredweight (728 lb.) in two minutes. This was one of the first applications of steam power to coal hoisting, if not the very first, though the application was not, of course, direct."



Four-House Group for Miners and Laborers

By four stone walls the residences are completely separated from each other. Each unit has a large well-sheltered porch, two general utility rooms and a kitchen. The approaches to the houses also are completely separated.

FORMAL INVITATION has been extended to the Mining Section of the National Safety Council, of which B. F. Tillson is chairman, to participate with the institute in a meeting on Safety in Mining at the annual meeting in February, 1922. The acceptance of this invitation has been authorized by the executive committee of the National Safety Council, of which S. J. Williams is secretary and chief engineer. The purpose is to ally safety and economic engineering.

Problems of Operating Men

Edited by James T. Beard

Certification Under the Pennsylvania Revised Mine Law

Numerous Letters Protest Against the Continuance of the Revised Certification Law in Pennsylvania, Claiming It To Be a Step Backward That Has Lowered the Standard and Increased the Danger in Mining

AFTER carefully reviewing the various references made in *Coal Age*, relating to that portion of the Pennsylvania mining law that was revised some time since to permit the employment of mine foremen who were uncertified, I am inclined to believe that the status of the law is conflicting.

While the law provides for the appointment of a competent examining board and specifies the qualifications of candidates that may be certified as being competent to fill the positions of mine forman, assistant foreman and fireboss, this provision is apparently made valueless by those revised sections of the law that make it possible to fill these positions with men who are not certified.

May I ask what is the use of going to the expense of employing men to examine candidates as to their fitness to act as foremen, assistant foremen and firebosses in mines when the law provides that *any* man thought by his employer to be competent can be selected for these positions, and a certificate is not required of him.

Strange Feature of Law Is Failure To Protect Its Citizens

The strange aspect of the law, however, lies in the fact that the employer is made the sole judge of a candidate's fitness, thus taking the place of the regularly appointed examining board. It is no wonder that men ask, "Why go to the expense of maintaining an examining board when mine operators are authorized to examine for themselves the men they employ."

While I believe that the law makes suitable provision for the punishment of violators of its requirements, whether the offender holds a certificate or is uncertified, I fail to understand why any person who operates a coal mine is authorized to choose whom he will to fill these responsible positions where men's lives are in danger. Is it not the province of the state to afford these men, citizens, protection under its laws?

It has occurred to me that if there is any reason for doing away with the services of our examining boards it will be better to authorize the Department of Mines to examine and certify certain individuals who might be given some such title as Mine Manager.

Such a certified mine manager would then supervise as many mines as he could visit at least three times a week, or every other day. He should be required to obtain, say 90 per cent in examination. If necessary, he could be given an assistant who would be likewise certified by the Department of Mines if he obtained 80 per cent in examination.

How a Certified General Manager Could Serve the State

My opinion is that such a certified manager could be given authority to pass on the fitness of all candidates for the positions of foreman, assistant foreman and fireboss, in the mines of which he has charge. In other words, he would authorize the appointment of such officials by granting them what might be called a "vest-pocket license" to be carried at all times by the person so appointed.

Under such a system I believe the standard would not be lowered and the men appointed to fill these responsible positions would be competent to perform their duties, while the lives of mine workers would be fully protected under the law.

It is my belief that the time is coming when competent and skillful men will be required as mine officials more than ever before. If this is true, the present conflicting system should be set aside and a practical and reliable method adopted to insure safety in coal mining.

R. W. Lightburn.

Gans, Pa.

ANOTHER LETTER

TO MY mind, the object of having mine officials pass an examination before a competent examining board is not only to prove their ability and fitness to fill the positions they desire, but at the same time to raise the standard of these positions and make the men who fill them more responsible.

Under the old law, which was in force up to June 1, 1915, this two-fold object was unquestionably accomplished. The same plan has proved effective in every class of work, in other industries, where trained men are needed and an examination has been required to determine their fitness.

Just where the Pennsylvania law makers got their inspiration, when they amended the law and reduced certified mine officials to the level of men who had not the courage or ability to undergo the test of an examination, is a question that does not seem clear, although this has been explained as having been brought about by the passing of the Workmen's Compensation Law in Pennsylvania.

Standard of Safety Lowered by the Amended Law

However this may be, the fact remains that the certification law was amended in a manner that has dropped the standard of qualification of mine officials to the level of the competent miner, who may have no knowledge of the theory and principles of mining.

All intelligent men regard this as "a backward step," and it may be worth while to analyze the situation, in order to get a little clearer idea of what the certificate means to its proud possessor. In this analysis, we will assume that the man has obtained his papers by fair means.

In every class of education and improvement we find there is awarded some form of merit. The progress of students, in schools and colleges, is determined by examination, and the successful student is finally awarded a certificate. This plan has proved satisfactory and, in most cases, absolutely necessary to develop the best that is in students in their preparation for life. What would the school system of education and the work of colleges and universities gain by abolishing the certificate as evidence of what was accomplished?

Certificate Valued in Other Industries; Why Not in Mining?

It is frankly admitted that a certificate does not necessarily guarantee the qualifications of a worker; but if it has been obtained by fair means it shows that the man has an ambition to succeed, which is an essential quality in any mine official. If it can be truly stated that the certification law, as it applies to mine foremen and other officials in Pennsylvania, is not effective, the fault must lie with the management of coal mines.

It is well known that, in other industries, the system of selection by such means has proved valuable and secures workers of the highest order. There is

no industry that stands, today, more in need of high-class supervision than a coal operation, and every effort should be brought to bear on this situation and encourage capable men to strive for official positions.

To this end, the examination should be designed to test not only the candidate's mining knowledge but also his business ability, a quality that is often lacking in mine formen today. The successful mine foreman must plan and supervise the work of many men in a way to prevent lost motion and the waste of supplies and material and that requires shrewd and tactful business ability. GEORGE EDWARDS.

Pikeville, Ky.

THIRD LETTER

ALTHOUGH much has been said on this subject of the employment of uncertified men as mine officials, I may be permitted to add a few comments feeling as I do that great injustice has been done to men who, by hard study, have qualified themselves to fill the responsible position of mine foremen.

Admitting that there are good practical men holding positions as foremen, assistant foremen and firebosses in mines, the fact remains that they are not fitted to solve many problems that arise requiring a knowledge of the principles of mining. The Pennsylvania law makes the operator the judge of a man's qualifications; but, let me ask, How can an operator judge of a man's technical knowledge and ability to handle these problems when he, himself, has never been put to the test before an examining board?

Even with my 27 years of mining experience, I would not undertake the responsibility of managing a mine as foreman, without having previously fitted myself for those duties by studying the principles of mining and proving my knowledge and fitness before an examining board.

Some years ago I made that mistake and it taught me a lesson. Until then I had not realized that a man must study at home and gain a knowledge of the principles of mining, before he is fit to manage a mine. To my mind, it is absurd for an operator to assume that a practical man is capable to discharge the duties of mine foreman when he has not the theoretical knowledge that will enable him to play safe under all conditions.

EXPERIENCE OF FOREMAN UNDER AN UNPRACTICAL SUPERINTENDENT

Since gaining my certificate of competency enabling me to act as foreman, like many others I have suffered the experience of working under a superintendent who had no knowledge of the theory of mining and, as a result, our ideas and methods frequently clashed.

It was often a wonder to me that a man so lacking in knowledge and displaying bad judgment could hold his job, particularly as he was not blessed with an amiable disposition. Many a time I asked myself how can such a man be thought by his employer to be equally competent with other men who have proved their competency before an examining board and been certified.

With a desire to encourage the habit of study among miners, I have taught mining classes. In a few instances, mine officials who were supposed to be competent have attended these classes only long enough for me to find out that they did not have the capacity for the work, which they frankly admitted when talking with them. To me, it is a mystery how some of these men hold their jobs.

ESSENTIAL QUALITIES IN FOREMEN

None will deny that the essential factors, in mine foremanship, are the safe and economical operation of a mine, involving the preservation of life and property and the successful extraction of the coal at the lowest possible cost of production. It cannot be claimed that the present status of the Pennsylvania law insures these conditions. On the contrary, by permitting the employment of unqualified persons in responsible positions, the law discourages ambitious miners, while men of less ability are chosen to fill their places.

In closing, let me urge that all mine officials, including our mine superintendents, should hold first-grade certificates, the same as mine foremen in charge of gaseous mines, while assistant foremen and formen in non-gaseous mines should be required to hold second-grade certificates. By this means justice will be done to all, qualified men will be recognized on merit alone and politics and favoritism will be eliminated. R. B. WARDLAW.

Rockwood, Pa.

FOURTH LETTER

CONSIDERING the facts brought forward in the many letters regarding the certification law in Pennsylvania as it has been revised, one is bound to conclude that this law has lost its value, by permitting the employment of unqualified men to act as mine foremen, assistant foremen and firebosses.

That this provision of the law has destroyed the incentive of hundreds of young mining men to study and fit themselves in other ways for the positions open to them cannot be denied. Many have given up their studies, believing that they can get the position they desire, without going to that trouble and then having to pass an examination before an examining board.

As to the question of the punishment of uncertified men for a violation of the law, I agree with what has already been said by Alexander Waugh, *Coal Age*, April 28, p. 756; namely, that this is covered in Art. 26, Sec. 2, of the bituminous law, which makes any neglect or refusal to perform the duties required by law a misdemeanor, punishable by a fine or imprisonment or both, at the discretion of the court.

What I want to say is, that our lawmakers should re-enact the old law that required all mine formen, assistant formen and firebosses to hold a certificate of competency granted by a duly appointed examining board. The life of but one miner is too precious to be entrusted to an uncertified official.

My idea is that every mine official should take the examination, at least every four years, which would weed out the men who do not care to keep themselves up-to-date, and would make for efficiency. I believe our examining boards are well constituted and do not favor any change in their personnel, which represents the miners, operators and the Mine Inspection Department of the state. SAK.

————, Pa.

FIFTH LETTER

I HAVE read with great interest all the letters pertaining to the employment of uncertified officials in mines and want to say that, to my mind, these uncertified men are practically leeches, who cling to the industry merely for what they can get out of it for their own benefit and care little for the future of the mine.

On the other hand, a certified official has the ambition to keep a mine, in his charge, in such a way as to provide for its future development. His method is an open challenge to any one who may succeed him in his official capacity.

When a man begins to study he starts to build a reputation for himself. When he has secured his certificate every job he undertakes is a step to greater efficiency. Such a man is going to be very careful to avoid doing anything that might discredit his reputation, which he is anxious to safeguard.

UNCERTIFIED MEN TAKE CHANCES

The uncertified man, on the other hand, has no reputation as a student of mining. He may have practical experience; but, in the majority of cases, he is given to taking chances that a certified official would not consider safe.

What is true of a foreman should apply with equal force to the mine superintendent. The Pennsylvania mining law omits to specify the qualifications of that official, however, and merely outlines his several duties. It often happens that the superintendent of a mine has had no practical training in its operation, but is chosen for that position because of his clerical ability or, perhaps, by reason of personal friendship.

In any case, the superintendent is expected to supervise the work of the foreman, which he often does to the great disadvantage of the company and the chagrin of the foreman, who must follow the instructions given him by his superior officer, even though he knows this will result in loss to the company.

It is clear that a foreman working under these conditions is not given a square deal. He is held responsible for every item that appears on the cost-sheet and for keeping up the daily out-

put of coal. To say that he is handicapped is to express the situation mildly. Owing to his superintendent's lack of practical experience, the foreman is unable to talk over matters with him as he would if the superintendent had a better understanding of practical conditions in the mine.

In nine cases out of ten, a foreman thus handicapped will not make a bold breast of the matter, by taking his troubles directly to the operator or manager; but he will quietly look for another job. His loss to the company will be more keenly felt after he is gone.

Now, to place an uncertified foreman under such a superintendent, one can readily imagine what the condition of the mine would be in a short time. The superintendent naturally will demand a high tonnage and a low cost-sheet. As a result, the uncertified foreman will generally be found to neglect everything but getting out the coal.

No Regard for Future of Mine

For lack of timbering, air-courses are blocked by falls of roof; on the road, cars are derailed and wrecks are caused by the failure to employ competent trackmen whose duty it is to look after those matters. In short, everything throughout the mine is soon in bad condition.

In order to meet the demand for coal, men have been put to work, in this mine, wherever cheap coal could be gotten, without regard to the future of the mine. All development work has been abandoned for the time, and it is not long before the uncertified foreman reports the winding up of the mine, by reason of a general squeeze closing many places and cutting off practically all available coal.

Speaking of certified men, Robert A. Marshall makes the statement, *Coal Age*, Apr. 7, p. 629, "The fact that a man is certified by a state board and has his papers does not prove that he is competent or efficient."

While that is true in some instances, the Pennsylvania law requires that a certified man shall have had five years practical experience in the mine and pass a satisfactory examination before the board, in order to get his certificate. He must also give evidence of good character. If the board does its duty well these requirements should produce capable certified men.

Mr. Marshall says again, "There are miners who have no learning and perhaps can neither read nor write, but who have made successful and efficient officials in charge of mines." I am unable to see how a man that could neither read nor write can be intelligently informed in regard to the requirements of the mining law, and make an efficient mine official.

How can such a man read what instructions may be given him, or countersign reports of the fireboss and do other work required of a foreman? Such a man might be able to squeeze through, if properly nursed by his superintendent; but I am inclined to think his success is dependent largely on his certified assistants who are qualified for their work.

In closing, let me say the revised law has decreased the value of the certificate and lowered the standard of safety in our mines. As a result many of our young men have ceased their study of mining and sought other work. The industry needs them and every effort should be made to hold them.

W. J. Walker,
Aultman, Pa. Mine Foreman.

Inquiries Of General Interest

Ventilating a Four-Entry System

A Four-Entry System, in a Mine, Provides a Separate Main Intake and Return Airway for Each Side of the Mine and Affords a Most Efficient Means of Haulage and Ventilating

IN SOME of our more recent developments, we have found it of advantage to adopt the four-entry system, which provides ample haulage roads and air-courses that we believe will greatly expedite the operation of the mine and result in increased efficiency.

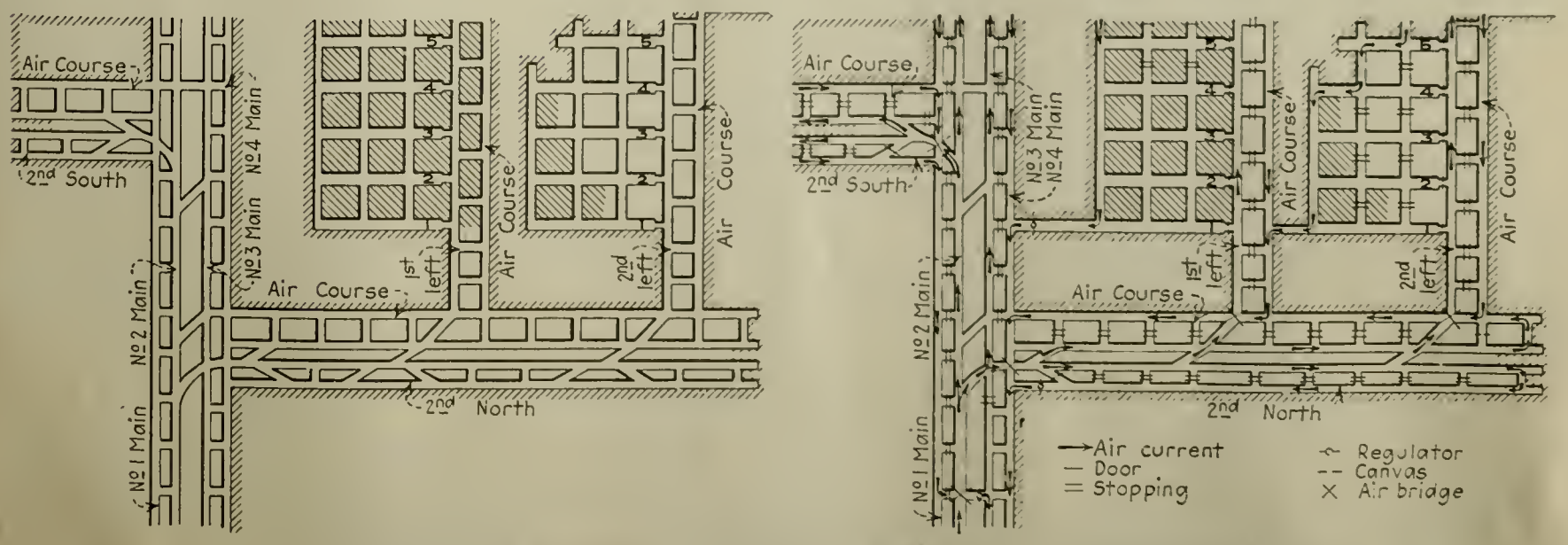
After a careful study of the plan, we are not at all certain as to the best method of ventilating such a system and desire to ask for information along this line. For that purpose, I am submitting a general plan of the proposed development. Will *Coal Age* indicate on this plan how the air current should be conducted and distributed in the mine?

It had been our intention to make the third and fourth main headings the return air-courses, as the fan is located convenient to those headings. However, this may not be the best arrangement and we are anxious to adopt the most efficient plan both in respect to haulage and ventilation. The suggestions of *Coal Age* and its readers will be greatly appreciated.

———, W. Va. Superintendent.

There is no doubt but that the four-entry system is an advantageous one to employ in the development of a large mine. As this correspondent has stated, it provides ample haulage roads and air-courses and affords the means of increasing the efficiency of operation.

On the left of the accompanying figure, we have reproduced the plan submitted, while on the right is the same plan properly ventilated. The



PLAN OF A SECTION OF A MINE, SHOWING ALSO MOST EFFICIENT VENTILATION

direction of the air currents is shown by the arrows; and all doors, stoppings, regulators, and air bridges are marked in the usual manner.

The four-entry system provides separate intake and return air-courses for each side of the mine. Assuming that the fan is located, say at the mouth of the fourth main heading, if the blowing system is adopted it will be necessary to construct air bridges to conduct the air across the second and third main headings in order to reach the first main on the opposite side of the mine.

If the mine is generating gas, however, it is better to ventilate it on the exhaust system. In that case the two central headings, the second and third main, will each become an intake and haulage road for its respective side of the mine, while the first and fourth main headings will be the corresponding return air-courses.

As each pair of cross-headings becomes sufficiently developed, an air bridge is constructed at its mouth to conduct the return current over the haulage road. This plan reduces the required number of doors to a minimum. Regulators will be required at different points on the return of the several splits, in order to secure any desired distribution of air in the mine.

Examination Questions Answered

Miscellaneous Questions Asked at Different Examinations

(Answered by Request)

QUESTION—*Give the size of a centrifugal pump required to raise 400 gal. per min., against a 500-ft. head. Give the essential details, such as revolutions per minute, diameter of suction pipe and number of stages of the pump. What is the most suitable power to run this type of pump underground, having due regard to efficiency and safety?*

ANSWER — Centrifugal pumps are rated by number, which is the diameter of the discharge portal, in inches. Thus, a No. 3 pump has a discharge portal 3 in. in diameter; a No. 4 pump, 4 in. in diameter; etc.

In estimating the size of pump required for a given delivery, it is customary to limit the head per stage to 100 ft. Thus, a 500-ft. head, would require a five-stage pump.

For example, the number of a 5-stage pump or diameter of the discharge portal required to deliver 400 gal. per min., against a head of 500 ft. may be estimated by the following formula:

$$d = \sqrt{\frac{G}{\sqrt{10\,h}}} = \sqrt{\frac{400}{\sqrt{10 \times 100}}}$$

$$= 3.56, \textit{ say } 4 \textit{ in.}$$

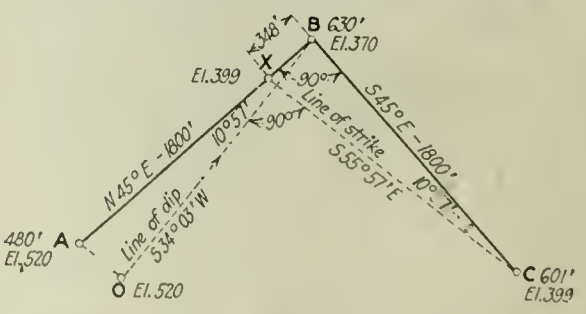
In this case, therefore, should be used a five-stage No. 4 pump operated by a 60-cycle motor, having a speed of, say 1,750 r.p.m. Assuming an overall efficiency of, say 60 per cent, the power required to deliver 400 gal. of water per minute, under a head of 500 ft. is:

$$H = \frac{8\text{-}1/3 \times 400 \times 500}{0.60 \times 33{,}000} = 84 + hp.$$

The diameter of the suction pipe, in this case, should not be less than 5 in.

QUESTION — *Three boreholes A, B, C are, respectively, 480 ft., 630 ft. and 601 ft. deep to the coal seam. The surface is level. The distances and bearings of the lines joining these boreholes are as follows: A B, N 45 deg. E, 600 yd.; B C, S 45 deg. E, 600 yd. Find the bearing of the dip and strike lines in this seam and the amount of dip.*

ANSWER — The surface being level, assume its elevation as 1,000 and subtract from this the depths of the several holes, which gives the respective elevations of the seam at each hole. Referring to the accompanying figure, it will be observed that the elevation



of the coal at C (399 ft.) lies between the elevation of the seam at A (520 ft.) and that at B (370 ft.). The first step, therefore, is to find the location of a point on the line A B having the same elevation as C. Calling this point X, the line CX will be a level line or line of strike. From A the seam falls 520 − 370 = 150 ft. to B. The rate of fall is 150 ft. in 1,800 ft., or 1 in 12. But, the fall from X to B is 399 — 370 = 29 ft. The distance XB is, therefore, 29 × 12 = 348 ft. The angle A B C being 90 deg., the triangle X B C is a right triangle and 348/1,800 = 0.1933, which is the tangent of the angle at C, this angle is 10° 57′. Adding this to the bearing of B C, gives for the bearing of the strike line XC S 55° 57′ E, or N 55° 57′ W.

The dip of a seam is always at right angles to its strike. The bearing of the dip, in this case, is found by subtracting the strike bearing from 90 deg., which gives for the bearing of the dip N 34° 03′ E.

Now, drawing the line A O parallel to the line of strike X C gives the right triangle A O B and the elevation at O is the same as at A (520 ft.). The distance O B is 1,800 × cos 10° 57′ = 1,800 × 0.9818 = 1,767.18. In this distance the seam dips 150 ft. from O to B. The amount of dip is therefore 1,767.18 ÷ 150 = 11.78; or 1 ft. in 11.78 ft.

QUESTION—*An endless-rope haulage system is designed to deliver 800 tons of coal in eight hours. The road is 5,000 ft. long and averages 4 per cent grade against the loads. The cars weigh 600 lb., and have a capacity of one ton each. If the speed of the rope is 2½ miles per hour, what horsepower is necessary to operate the system?*

ANSWER — An output of 800 tons of coal in eight hours, or 100 tons an hour, hauled in cars having a capacity of one ton will require 100 cars to reach the tipple each hour. The rope speed being 2½ miles per hour is (2½ × 5,280) ÷ 60 = 220 ft. per min. At this speed of hauling, the time required for a car to pass over the road 5,000 ft. long is 5,000 ÷ 220 = say 22¾ minutes. At the rate of 100 cars per hour, or 100/60 per minute, the number of cars on the rope at one time would then be 22¾(100/60) = say 38 cars, carrying 38 tons of coal.

Now, since the cars and rope are balanced, in an endless-rope system, the net load is the weight of the coal or 38 tons, which is effective to produce grade resistance. Estimating the grade resistance as 20 lb. per ton for each per cent of grade, gives a total of 38(4 × 20) = 3,040 lb.

The frictional resistance, commonly called "track resistance," however, must be estimated for the total moving load, including the weight of the loaded and empty cars and the rope. The weight of a loaded car is 600 + 2,000 = 2,600 lb. There being 38 loaded cars and the same number of empties, gives a total for the cars 38(2,600 + 600) ÷ 2,000 = 60.8 tons. Assuming a 1-in., cast-steel haulage rope, weighing 1.58 lb. per ft. gives for the weight of the rope (2 × 5,000 × 1.58) ÷ 2,000 = 7.9 tons. The total moving load is, therefore, 60.8 + 7.9 = 68.7 tons.

Now, taking the track resistance as, say 25 lb. per ton of moving load, gives 25 × 68.7 = 1,717 lb. The load on the engine is the sum of the grade and track resistances, or 3,040 + 1,717 = 4,757 lb., say 4,800 lb. Finally, taking the efficiency of the engine as 80 per cent, the horsepower required for the operation of this system is

$$H = \frac{4{,}800 \times 220}{0.80 \times 33{,}000} = 40\ hp.$$

QUESTION — *How can the number of doors be reduced in a coal mine?*

ANSWER—By splitting the air current and building air bridges at the mouth of each split.

Co-operative Buying and Reserve Storage as Shields Against High Coal Prices and Freight Congestion

By David L. Wing*

IN THE days before the war the average consumer of bituminous coal paid little attention to the procuring of his supply. Coal usually was plentiful and so cheap as to figure modestly in his total cost of operation. Transportation conditions were such that he could count with certainty on loaded cars making their appearance on his switch at fairly regular and frequent intervals. Little reserve storage was necessary—merely enough to equalize any slight check in the continuous movement of the coal travelling to him from the mines. As soon as broken down from its place in the seam in the mine, the coal was loaded into mine cars and dumped over the tipple into railroad cars, in which it at once continued its journey to the consumer's coal pile. Such was the regularity of this movement that the consumer had come almost to the point of considering coal as in the same class as water or electricity, where he had but to turn on a switch to get what he was after.

The war, however, put an abrupt end to these conditions. The chief reason for the change was the inadequacy of the transportation facilities to carry the abnormally heavy burden. It was physically impossible to transport all the coal needed and also at the same time all the other necessary materials. Coal became scarce at points of consumption. It became high-priced partly because of increased costs of production and partly because of the struggle between buyers over a supply of coal insufficient to meet all demands. And in this buyers' struggle it often happened that the use to which the man who paid the highest price put the coal was not the use most in the interest of the community. The plight of the municipal and state institutions, limited by law in their expenditures and with few emergency funds available, and of the local utilities operating on narrow margins between receipts and expenditures, is fresh in the memory. So also are the fuelless days of the winter of 1917-1918.

Pre-War Conditions Slow in Returning

When the armistice came, however, pre-war conditions in respect to coal did not at once return. And today there does not seem to be any prospect of the return for years to come of the pre-war costs, prices and regularity of transport. It is, therefore, imperative that the consumer recognize this situation and take proper measures to meet it.

There is plenty of coal available for mining, there are mines enough already opened to furnish a supply adequate for any probable demand, domestic or and export, but the cost of getting this coal to the mouth of the mine has more than doubled. And the cost of getting it from the mine to the consumer's coal pile has in some cases trebled, while the pre-war regularity of transport has vanished.

To meet present-day conditions many large consumers of coal are protecting themselves against inordinately high prices through more extensive use of contracts made with responsible operators or wholesalers. Such contracts call for large quantities of coal of a guaranteed standard of quality, delivered at suitable intervals. Furthermore, to protect themselves against the delays or breakdown of transportation facilities, these large consumers are establishing adequate reserve storage near their point of consumption. A notable example of this kind is furnished by the Standard Oil Co. of Indiana at its Whiting refinery. As a reserve to insure the regular daily supply of from sixty to eighty cars (3,000 to 4,000 tons), which is the daily consumption of this plant, the Standard Oil Co. is reported to be storing some 170,000 tons (3,400 cars). Of this amount 100,000 tons is stored under water in a specially-constructed pit, and is thus fully safeguarded against fire and also against undue deterioration. The balance of the coal stored is on the ground along the sides of the pit.

The coal is handled with several large cranes which unload the coal cars, and later reclaim the stored coal. The cost of unloading the coal has been found to be 7.5c. per ton, while reclaiming the coal costs 7.3c. per ton. Most of the coal, which is Illinois screenings, is put in storage during the period of low summer prices. By autumn the storage facilities are loaded to their fullest capacity.

The Wisdom of Safeguarding the Community

Without doubt it is good business policy for the Standard Oil Co. to incur the expense of so extensive an investment in order to protect itself against loss due to uncertainties in coal deliveries. Even its enormous reserve storage of 170,000 tons will keep the plant running only about forty days, were the usual daily supply to be cut off completely. And, if such safeguards are adopted on the grounds of good business policy, merely to insure against the contingency of having to shut down from lack of fuel, how much more urgent are the reasons for similar precautions being taken by communities which must have a coal reserve to protect their municipal institutions, such as schools and hospitals, their local public utilities, and their medium-sized and small industrial consumers, and their domestic consumers as well, from the hardships of a coal famine, which would menace not only their pocketbooks but affect vitally the health, protection and welfare of the whole community! To secure the necessary protection against such a contingency, there must be co-operative action on the part of the principal coal consumers in the locality.

It is not reasonable to expect the coal operator and distributor in this era of high interest charges, high costs and high freight rates, to assume any increased financial burden or speculative risk merely to protect consumers who can adequately insure themselves. The most practicable way of securing this protection for the community at a minimum cost at the present time is through the use of the combined purchasing power joined with the maintenance of a joint reserve storage. While such activities may be limited to merely industrial

*Economist, Washington, D. C.

concerns it probably will be found most advantageous to include the municipal and local public utilities among the co-operators. It will profit a manufacturer little to have a sufficient supply of coal if the local municipal institutions and public utilities must shut down or seriously curtail their activities for want of fuel.

The essence of the following co-operative plan for purchase of coal and for maintaining a joint reserve storage lies in making the transactions carried on large enough to make it worth some person's while to see that they are carried on properly. The most efficient carrying out of this idea probably would in many, if not most, cases be achieved by making use of already existing facilities, as far as possible, and of supplementing them by new facilities only in case of last resort. Every effort should be made to get the benefit of the experience of men who have spent years in the business of distributing coal. It is clear that the success of any co-operative action on the part of consumers will be largely dependent on their working out in harmony with coal distributers the practical details based on the idea that the interests of both consumer and coal distributer will be properly safeguarded.

Co-operative Body Should Be Supervisory

How far it might be found desirable for the co-operative organization to engage directly in the coal distribution business or how far all this could be better accomplished through making contracts with responsible parties, and checking up regularly and promptly all performance under such contracts, is a matter that cannot be decided without suitable investigation of the special conditions encountered in each community. It would always be wise at least to find out first what can be done through contracts, and take over the actual conduct of the business only in cases where it clearly develops that the contract way is unworkable. In other words, it would be best for the co-operative organization to act as far as possible, at least at first, as merely a *supervising* body, to insure the enforcement of contracts, rather than to set up an extensive organization to run the machinery of distribution and storage. So long as the commissions or charges for services performed under contracts are *reasonable*, it would be best to continue that way. It should always be borne in mind that to set up anew the machinery of distribution would require a heavy investment, and that it should be done only after its need has been clearly demonstrated. Certain details of the plan will now be considered.

Organization.—The co-operators would do well to form a company, preferably a non-profit stock company, which should act through an Executive Committee of its Board of Directors. This Executive Committee would have charge of the buying of the coal, distributing it to the members and maintaining the joint storage reserve. It should have authority to employ the necessary manager, or executive secretary, to provide the clerical force, and to employ such coal inspectors and fuel consumption engineers as may be found desirable for time to time. Probably the cost of all this service would best be borne by the members through assessments, which might be levied either on the tonnage handled for each member, or its value—whichever is found to be most equitable. It will be possible, if preferred, to add a service charge to the price at which the coal is invoiced to members. All coal bought by the organization should be invoiced to it, and then rebilled to the members, who will make their payments to the organization. This is so that the organization will have the legal title to the coal, which is desirable for settlement of difficulties with the producers and transporters in matters of grade, condition of coal, prompt shipments, etc.

Requirements for Consumption.—Information must first be gathered from the members showing the kind of coal at present used, whether for steam or gas, and, as far as known, its source, the tonnage required of each kind (if of more than one kind), the monthly or seasonal rate of consumption, the present storage facilities at plant, the location of plant with reference to rail or water delivery, and how much of the coal has to be handled through streets to destination. Also inquiry as to how far it would be practicable, by adjusting the present fire-room equipment, to use cheaper fuel in the shape of lower-grade bituminous coal, or slack sizes, or powdered fuel, or anthracite steam sizes; how far it would be desirable to use mechanical stokers and what bearing the local smoke ordinances might have. In view of the probable continuance of coal prices at a level far above the pre-war prices, such inquiry is especially desirable.

Requirements for Joint Reserve Storage.—Information must be gathered on the kinds of coal and the minimum tonnage needed for reserve storage. The location of the storage depot must be on as cheap land as possible with reference to access to supply by rail and water, and preferably must be so situated as to facilitate the delivery of coal to point of consumption by rail and also by large motor trucks over a good road (in the event of an emergency when the railroad is tied up by a freight blockade or strike). The storage plant should have adequate modern equipment for handling the coal as economically as possible, and must have adequate fire protection and also protection against theft. In some parts of the country the character of the coal may make it desirable to store the coal under water. In some localities this form of storage will not be so necessary, or will be found impracticable or undesirable because of local conditions.

Make Long-Term Contracts with Producers

Purchase of Coal.—The minimum requirements should be contracted for. These might possibly amount to 80 per cent of the average normal requirements. Contracts made for long terms and large quantities should preferably be made direct with the producers, and probably would be made most advantageously on some form of cost-plus basis, properly safeguarded, however, to insure the costs being under efficient operation. Desirable long-term contracts also can be obtained on a basis of fixed-price-plus-labor clause. Obviously when the operator must carry the risk of advancing costs he must have a higher price. The remainder of the requirements—up to the average normal requirements—should be bought on short-term fixed-price contracts, or in the open market, as may seem from time to time most advantageous.

On signs of approaching exceptional demand or transportation difficulty, recourse should early be had to short-term contracts and market purchases to build up the reserve. Care, however, must be taken not to overload the reserve storage; that should be kept down as low as consistent with safety. All contracts should contain a guarantee that the coal will be up to certain

grades and standards of preparation, and adequate provision should be made for enforcing penalties in case of proven violations of this guarantee. There should be inspections made at such times as found desirable, not only at the mines but also at the docks and, when necessary, at destination, to check up such matters. If the personnel of the coal inspectors could be mutually agreed upon in advance with the sellers of the coal, the settlement of disputes would be facilitated.

Water-Borne Coal.—If it were found necessary for the organization to act directly in the matter of chartering boats, it is probable that, at least at first, it would be found desirable to contract with some regular chartering agency to provide the colliers or barges necessary for water-borne coal. Unless this work is skilfully handled there is always danger of heavy demurrage charges at loading or discharging ports. Whenever possible it would be desirable to make arrangements to handle incoming water-borne coal through existing dock facilities on some suitable commission basis, safeguarded by stipulations that will insure the proper and prompt handling of the coal.

It is desirable that the coal docks be equipped with modern facilities for loading railroad cars as well as for discharging cargoes. In view of the excessive congestion which occurred in 1920 at the tidewater docks, due to the fact that the facilities for receiving coal from the mines at the docks and discharging it into vessels were not equal to the combined demands made on them for simultaneous shipment of water-borne coal to New England and by an exceptionally heavy export trade, it is possible that New England consumers would find it desirable to lease enough existing dockage facilities to insure prompt shipments or to assist in financing the construction of additional docks.

As has already been stated, the essence of the co-operative plan is to make the transactions carried on large enough so that it will be worth some person's while to see that they are carried on properly. The following advantages may be expected:

(1) Getting coal for less than the spot market price or that for short-term contracts, or contracts made for small amounts by making use of long-term contracts for large amounts. Under conditions ensuring a producer of a constant market for a large part of his output he can afford to and does make a relatively low price.

(2) A more careful observance by the producer of the terms of his contract, both in regard to prompt and regular shipments, and also in regard to quality and preparation.

(3) Prompt and regular distribution of coal, and the protection afforded by a joint reserve storage maintained normally at the minimum safety mark to protect all co-operators, and increased at times when conditions indicate that such a precaution is necessary.

Such advantages could not be obtained without undue expense by any but the largest consumers if they acted singly, and would be wholly out of reach of small and medium-sized consumers, because of the magnitude of the transactions involved. They are, however, possible through intelligent co-operative action.

Bradley Stoughton Resigns as Secretary of American Institute of Mining Engineers

AFTER eight years of service as secretary of the American Institute of Mining Engineers, now known as the American Institute of Mining and Metallurgical Engineers, Bradley Stoughton, who took the office at a financial loss, has decided to resign and undertake other duties. The board of directors has with regret at length accepted his resignation, which was first tendered Feb. 17, 1920. In a notice to members it expresses its "appreciation of his long and efficient service."

He came with the institute in 1913. In that year there were 3,500 members; now there are more than 9,000. Then there were four local sections and today there are twenty-six and the number is rapidly increasing. At that time only one technical committee, the Iron and Steel Committee, existed. The number of such committees has increased to eighteen. Up to 1913 the number of volumes of transactions published per year averaged one. From 1914 to 1921 inclusive the average has been three.

The monthly magazine has quadrupled during the same period. The attendance at meetings was 220 in 1912; now it is over 1,100. A budget of $55,000 a year represented its activities in 1912. Now the receipts are figured at $208,000 and its expenses at $198,000. The employment department did not exist in 1912, but today it is large and important.

The institute concerned itself solely with production problems prior to 1913, now it is not only represented on the Engineering Council, to which it affords financial support, but it has committees on mine taxation and coal stabilization. It has others which collaborate with the Naval Consulting Board, the National Research Council and the American Engineering Standards Committee.

There were twenty-two affiliated student societies in 1912, but their connection with the institute was so slight as to be of minimum value to both. Now there are thirty-seven affiliated student societies in active co-operation with the institute through correspondence, publication of meetings in the monthly magazine, visits and addresses of the president and secretary and in other ways.

With this remarkable record of progress naturally the board of directors regrets this resignation, which will take place as soon as a suitable successor has been found.

BRADLEY STOUGHTON

Resigning secretary, A. I. M. E. Born in New York City Dec. 6, 1873; received his Ph.B. degree from Sheffield Scientific School in 1893 and B.S. from Massachusetts Institute of Technology in 1896; became teacher at latter college 1896; assistant to Prof. H. M. Howe at Columbia University 1897; metallurgist, Illinois Steel Co., 1898-99; chief of cost-statistics division, American Steel & Wire Co., 1900; manager, bessemer steel department, Benjamin Atka & Co., Newark, N. J., 1901; consulting engineer 1902-1917; author of "The Metallurgy of Iron and Steel," 1908.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THE GEOLOGICAL SURVEY'S stock-taking showed that on April 1 the public utilities probably were in the strongest position of all classes of coal consumers. At the end of the first quarter electric utilities and coal-gas plants, as a class, carried larger stocks than on Jan. 1. A group of 268 electric plants carried on April 1 nearly twice as much coal as in June, 1920, and even a little more than in early 1919. A group of 102 representative coal-gas plants had on April 1 of this year more than three times as much as in June, 1920.

At the present rate of consumption the electric utilities canvassed had on hand as of April 1 a supply sufficient for six weeks and six days' operation, and for the coal-gas plants the supply was enough for nine weeks and three days. This was in sharp contrast to what was happening at industrial establishments, including byproduct coke ovens and steel works. Among these consumers there was an almost universal draft on stocks during the first quarter of the year.

As to what the public utilities have been doing since April 1 we have no knowledge, according to Director Smith of the Geological Survey in a letter to J. W. Lieb, vice president of the New York Edison Co. Dr. Smith also added: "It is clear, however, that consumers as a whole have depleted further their reserves.

"There is a sort of critical level of stocks—a critical anchorice temperature, to borrow a phrase from hydro-electric operation. Exactly what the critical level is we cannot say until we have been keeping records longer. But we can say, I think, that the critical level lies somewhere between 30,000,000 and 40,000,000 tons.

"Now what is the present level of stocks? The Geological Survey's inventory showed that on Jan. 1, 1921, it was not more than 48,000,000 and not less than 42,000,000—say about 45,000,000 tons. By April 1 stocks had dropped to somewhere near 37,000,000 tons, and since then they have doubtless decreased further. In other words, while we can tell from the tone of the market that the critical level has not been touched, it is plain that stocks are fast approaching it, and that it would be unwise from the consumer's point of view to let them sink much lower.

"There are three important elements in the cost of coal laid down at the consumer's door, which may conceivably change before long—the wage scale, the freight rate, and the operator's margin.

"With adequate stocks, however, the public utility is and will be in a strong position to buy, whatever the level of costs and whatever the market position of other consumers. The public utility cannot shut down, and the public must pay for the coal the public utility buys, hence from the public standpoint the double function of large stocks: to keep up service and to keep down prices."

Cotton Mills Work Steadily

The Brookside Cotton Mills, Knoxville, Tenn., resumed work May 31 on an open shop basis. The mills will operate fifty-five hours a week. They had been closed since April 11, when 1,500 workers struck because of a reduction in wages. Kinston, N. C., cotton mills are working five days a week, an increase from the three-day schedules effective earlier in the year. Manufacturers regard prospects as "gradually improving."

Carpet Company Works Full Time

The Firth Carpet Co. at Firth Cliffe, N. Y., which had been running four days a week for some time, started last week on full time. Wages have been cut 20 per cent.

Car Loadings Increase

A further increase of 18,172 in the number of cars loaded with revenue freight during the week ended May 21, compared with the preceding week, is shown by reports received by the Car Service Division of the American Railway Association. Total loadings for the week were 768,330 cars. This, however, was a decrease of 93,700 cars compared with the corresponding week of last year and approximately 9,000 cars under that for the corresponding week of 1919.

To Start Mobile Coal Terminal

Work on the substructure of the large Government coal terminal on Blakely Island, near Mobile, Ala., will be started at once. It must be completed within 150 days from the time the successful bidder, Hampton Reynolds of New Orleans, receives official notice that his bid of $100,000 has been accepted. Major Earl North, United States engineer in Mobile, has announced that he is expecting authority from Washington soon to let the contract for the machinery, which will be one of the largest items of expense.

Cleveland to Make Artificial Silk

Cleveland reports state that it is understood that financial interests in New York plan to issue $500,000 in notes for the new Industrial Fiber Corporation, which is to build a plant in that city for the manufacture of artificial silk.

Beaver Mills Speeding Up

The Beaver Mills Corporation of Northside, Cohoes, N. Y., reopened its plant in part Monday, June 6, and the entire plant is expected to be in operation before June 20. Between seventy and eighty employees reported for work and more than 400 will be employed before the end of the month.

Fall River Mills Hum Again

The Flint mills of Fall River resumed operations May 31 after having been wholly shut down since April 14. The Shove mills at Fall River, shut down two weeks ago, operated in full last week.

Southern Cotton Mill Strike On

Approximately 10,000 cotton mill employees in Charlotte, Concord and Kannapolis, N. C., went out on strike June 1 in protest against recent reductions in wages, which are said to aggregate a cut of 36 per cent. The strike movement does not extend to mills of Gaston County, where operatives are not unionized, nor to Monroe, Lincolnton and Cleveland, where the United Textile Workers organization is said to be at minimum strength.

Bituminous Demand Unlikely to Boost Prices Sharply Or Tax Railroad Facilities Before July, 1922*

By George H. Cushing†

HAVING taken into most careful account present financial and industrial conditions at home, certain well-defined tendencies in business, political and economic conditions abroad and the coal statistics as reflecting business generally for a period of fifty years, I have arrived at the following conclusions and convictions touching the near future of the coal industry:

(1) A general and pronounced revival of business at home is out of the question until after the middle of July, 1922; it will be unprecedented if it comes prior to July, 1923.

(2) No dependable revival of the export business is possible until political conditions in Russia have been stabilized.

(3) Without a marked revival of domestic or foreign business or both, the existing capacity of the railroads cannot be so seriously taxed as to create another coal shortage.

(4) Except between Jan. 15 and March 15, 1922—when industrial consumers will be buying coal for storage in anticipation of a strike of the bituminous miners on April 1, 1922—the bituminous mines will not, during this coal year, produce in excess of 50 per cent of their rated capacity or in excess of 15 per cent of their normal production.

(5) By the end of 1923 the home market will express a demand for bituminous coal considerably in excess of 600,000,000 tons per annum; the foreign market should want 40,000,000 tons; and it will be with difficulty that we meet home demands. Then will follow a protracted period—hardly less than five years—during which bituminous coal prices, uniformly, will be high.

The only subject concerning which there is room for a reasonable doubt is the time when business generally will revive. He is an optimist who believes it will come by the middle of July, 1922.

Before arriving at the opinions which suggest these sweeping statements, the following facts—part of the common knowledge of the hour—were verified and weighed:

Prosperity Dependent on Public's Buying Power

(1) It is axiomatic that business prosperity depends wholly upon the liquid and unencumbered buying power of the people. Unless the people can buy, the producer is helpless. The buying power of America has been seriously impaired by two things:

(a) Thirty million American people depend wholly upon the farms. The farmers lost money on part of their 1919 crop, on all of their 1920 crop and on all cattle bought, for feeding, in the spring of 1920. As a result, all of the money they will earn this year will have been spent before they get it. They will have no money for anything beyond bare necessities and hence they cannot patronize industry.

(b) Some 2,500,000 industrial workers are now out of employment; their number is increasing each week. This deprives at least 10,000,000 persons in cities of any visible means of support. They can buy nothing but actual necessities.

This means that 40,000,000 of American people are without any buying power for another year. Business generally cannot revive and boom while that buying power is inactive.

(2) Without an active home demand, a business revival must rest in part upon large exports. Industrial revival in Europe—upon which must depend our growth of exports—is impossible until there is available to the European manufacturer a supply of raw material, which he can use with profit, and cheap food to the European worker. This raw material cannot be carried in from overseas at existing high freight rates and still be used profitably. Therefore the necessary raw material must be obtained from sources close to the Continent and from sellers whose economic and financial conditions match those of the buyer. Russia is the only large and handy storehouse of this needed material. Its abundant supplies cannot be made available until its government has been stabilized. It would be foolish to try to say when this will occur.

(3) On the average, 23 per cent of the cars owned by class 1 railroads have been idle since April 1. On the average, 13.5 per cent of their cars are now in bad order. In other words, 36.5 per cent of their cars are now out of service, and still the country's business is done. There can be no danger of a shortage of coal or of any other commodity—and upon a shortage alone depends soaring prices—until we have employed the idle cars, have exhausted all possibilities of a faster movement of cars and have done the utmost to repair the cars which are in bad order. We have such an asset in idle and slightly-damaged cars and so much leeway for increasing the movement of cars per day that it is pure romance to predict now any such shortage of coal as will advance prices sharply.

If another famine is declared unthinkable, it is pertinent to inquire what, in a bituminous coal sense, we have immediately ahead.

It has been said often—more on logic than on facts, incidentally—that in no period of boom has our production ever risen as much as 10 per cent above "normal." It has also been said that in no period of depression has our production dropped as much as 15 per cent below "normal."

Tonnage the Index of the People's Activity

It is the tonnage which measures the activity of the people. It is the price which indicates their moods. Since I am dealing with men's activities, rather than with their moods, all my statements are upon the tonnage basis alone. If these economic beliefs hold true, it follows that the greatest spread we ever need expect is 25 per cent in tonnage. We need expect that much of a spread only when a period of greatest boom is followed instantly by a period of greatest depression.

Last year we had the highest coal prices in history. For the last two months we have had amazingly small coal production. Last year railroads worked their equipment to its maximum efficiency. Today 23 per cent of that equipment is lying idle.

These two facts seem, at first, to indicate that we have encountered, end to end, a period of greatest boom and of greatest depression. Therefore these two facts seem to suggest that the demand for coal in 1921 will be 25 per cent less than it was in 1920. However, before I accept a statement that production in one year was a given percentage above and in another year was another percentage below normal, I want to know what is "normal." In search of that elusive quantity, we may have to tramp over much ground. To save time, I ask you to take into account—without my repeating either here—two things which have been said to you previously:

(1) The growth of demand for bituminous coal bears no measurable relation to the growth of population. The growth of population has been slow and small. The growth of demand for bituminous coal has been large and fast. Therefore, the absence of growth of population in the last five years—due to the absence of immigrants—has no possible coal significance. However, the growth of coal demand has always borne a close relationship to our increased use of power. At no time in history have we resorted more to the use of power and less to the use of men than during the last five years. Therefore, using the latter as our measuring stick, the use of coal in the last five years should have grown faster than at any other time in our history.

(2) The keynote of my memorial to Secretary Hoover

*Abstract of address at annual convention of the American Wholesale Coal Association, Washington, June 7-8, 1921.

†Managing director, American Wholesale Coal Association.

was that since bituminous coal is used mainly to support industry, the fluctuations in coal production follow exactly the fluctuations in all business. As a matter of fact, coal production is but a mirror in which is reflected the industrial activities of the country.

In search of a normal rate of growth of bituminous coal production—and hence of industrial expansion in America—I have gone back over the coal reports for the last fifty years. I have divided that larger period into ten five-year periods. I have computed in the customary way the average production of each five-year period.

I was amazed to learn that—judged by every prophecy of history—coal production during the last five years was below rather than above "normal." With its price history in mind, I was amazed to learn that the coal production for 1920 even was below "normal."

This leaves us face to face with the amazing fact that 1920 rather than being a period of business boom was actually a period of subnormal business.

At any rate, when an attempt is made to estimate the demand for this year, we do not have to shrink the tonnage of 1920 enough to offset the effects of boom in that year. We start at normal—or below it—and from that point begin to shrink the tonnage enough to match an existing period of depression. This means that we have to shrink the tonnage a maximum of 15 per cent instead of a maximum of 25 per cent. That naturally makes a major difference.

In estimating the demand, we must take into account the fact that the wage contract of the miners' union will expire on March 31, next. A new contract will have to be made. Regardless of the possibilities or probabilities, business men everywhere will be prone to believe that the miners will strike on April 1 rather than accept the inevitable wage reduction. The business people, therefore, will buy for storage enough coal to last them another month.

Industrials Expected to Store 35,000,000 Tons

Therefore, in the early months of 1922, industrials will buy for storage at least another 35,000,000 tons. This will bring the total demand up to about 500,000,000 tons of bituminous coal for the coal year which started with April 1, last.

Thus, we have two demands to satisfy. One is the demand for 465,000,000 tons of bituminous coal for current consumption. The other is a demand for 35,000,000 tons for storage against the possibility of a strike April 1, next. The demand for immediate consumption may be expected to express itself progressively throughout the year—slowly at the start and much more rapidly as winter approaches. The demand for storage coal will force itself upon the market so soon as the possibilities of labor trouble are reasonable measured.

Therefore, it is inevitable that we shall have a dead market until autumn, a fairly lively market during the autumn and early winter, and a flurry in the market—not serious, however—after the middle of January.

Since the demand for the 35,000,000 tons of storage coal is contingent solely upon the possibility of a strike and since that cannot now be forecast with any accuracy, we need concern ourselves between this date and Jan. 1 with only two things:

(1) The minimum demand, now, for 465,000,000 tons of bituminous coal for this year's use.

(2) The demand for any additional amount of bituminous coal which may be created by any revival of business.

I personally believe we are going further into depression before there is any recovery. This belief rests on the weekly report of insolvency proceedings. Therefore, I do not believe it possible that we will face any increased demand from business until after December. If that proves correct, we will have to content ourselves until after December with supplying merely the monthly and weekly quota of the 465,000,000 tons of coal. On this basis, I believe that we will have a minimum average weekly demand for this year of 8,950,000 tons of bituminous coal. The maximum average weekly demand probably will not exceed 10,000,000 tons.

After Jan. 1, 1922, we will still have to supply the minimum of 8,950,000 tons per week, and, in addition, 3,500,000 tons per week to take care of the storage demand incident to preparations for a strike. Thus in January, February and March next year we may face a weekly demand for as much as 12,500,000 tons. That would be rather difficult to supply if business, generally, were booming at that time. Since business, generally, hardly will be booming—certainly it will not be if present indications carry—the railroads will experience no great difficulty in moving that much coal.

However, the American people have the will to increase their business; they have the facilities—including the man power and the machinery—to expand their trade.

Forehanded Buying and Equalized Distribution of Coal Advocated by C. L. Couch

REVIEWING the activities of the American Wholesale Coal Association during the last year, C. L. Couch, president, addressing the annual convention of the association at Washington, June 7, 1921, said in part:

"We have done as far as the brief space of a year will allow in cementing the ties of friendship between the various business organizations. Under specific instructions from the Executive Committee or under instruction from the president your managing director has cultivated friendly relations with other business organizations in all ways which are proper.

"At the meeting in Washington on July 20, 1920, the Executive Committee empowered the president to appoint a committee to co-operate with the other branches of the coal industry. It has for a long time seemed to us that there was too much of a disposition among the various branches of the coal industry to consider themselves separate and distinct from each other. When the industry was confronted by a common enemy, this became a cause of grave peril to all branches.

"The recent administrations of the various coal associations were in full accord on this subject. There was not, unfortunately, occasion for carrying this unity of purpose into any real action. The opposition by which we were confronted acted so precipitately that each matter of defense was an emergency which had to be met as the emergency demanded. There has been no time for deliberation on how to meet a situation. Even now we are practically denied time for any deliberate or carefully-considered action and study, even though the questions raised are of utmost importance to us and to the whole people. Thus in itself this desire to rush coal into a commitment is one of the grave matters before us.

"At the meeting of your Executive Committee on July 20, 1920, your committee was called upon to decide a matter of policy in connection with our relations with the public. The immediate cause for this action was a statement which had but recently been made by your managing director with respect to the future of the coal market. The statement in question had declared that there was no danger of a coal famine; that there was a reason, but no excuse, for the high prices which were then being charged.

"The Executive Committee believed—and in this respect it was in thorough accord with your managing director—that any prophecy at any time is an extremely venturesome undertaking. It is something upon which any association must hesitate to enter. Indeed, it is something which can be resorted to only when a matter of grave public policy is involved. However, when such a matter of policy is involved, its importance must outweigh our timidity. So we approved the statement in question, doing so for the purpose of inaugurating the public policy of this association which, as we drew it, may be briefly stated as follows:

"We believe it is prudent at all times for consumers of coal to be forehanded in their buying. Certainly we believe it to be wise for consumers to take advantage of favorable conditions in summer to supply themselves with their winter coal. We believe, furthermore, that it is economically sound to strive for a more equal distribution of the annual production of coal among the months.

"These considerations would, under ordinary circumstances, induce us to lend our support to any practical movement which tends to increase the shipment of coal in

the spring and summer months to the end that the burden upon the railroads might be lessened in the autumn and winter months.

"However, we were not willing last summer to encourage summer storage at the cost of creating a panic among buyers such as would cause a runaway market. We could not emphasize a danger which is only imaginary when still in future and which cannot be said to be a real danger until prophecy has become something of an exact science."

National Coal Committee Discusses Assigned Cars and Changes in Transportation Act

THE Railroad Relations Committee of the National Coal Association was in session in Washington June 6, 7 and 8. Ways and means were considered for discharging the responsibility, placed on the committee by the New York convention, for presenting the position of the National Coal Association to the Interstate Commerce Commission with respect to assigned cars. Plans were laid covering the nature of the data which are to be presented and the methods to be used in its procurement, as well as the form in which it will be presented.

This was the first meeting of the committee under the leadership of E. C. Mahan, its new chairman. As a result, the whole transportation situation was reviewed. The principal discussion revolved around the assigned-car matter, but important consideration was given mine-rating and car-distribution rules. Proposed changes in the Transportation Act were discussed, as was the matter of co-operating with other traffic organizations in that connection.

New York Wholesalers Express Opposition to Frelinghuysen Stabilization Bill

THE New York Wholesale Coal Trade Association on June 3 adopted the following resolutions on the Frelinghuysen coal-stabilization bill:

That the Frelinghuysen bill discriminates against the coal trade inasmuch as it invests the President with inquisitorial and regulatory authority in respect of that trade and not other lines of business.

We are opposed generally to governmental interference in business and especially with the coal business, as the history of such interference has always been disastrous not only to the industry, but to consumers of coal, as well as laying a tremendous burden upon taxpayers.

That there should be urged upon the representatives of the present administration the desirability of carrying out pre-election promises to have "less government in business and more business in government."

Allport Goes Back to Washington State

DIRECTOR EDWARD CLIFFORD, of the State Department of Labor of the State of Washington, on the morning of May 23 received formal notice to the effect that the conference of mine workers and operators agreed on May 21 to accept his plan for the mediation of their dispute. The notice also declared that the two parties ratified the personnel of the commission suggested by him. The commission will consist of J. H. Allport, who has left Pennsylvania for Washington; Robert Harlin and Ernest Newsham, who will represent the mine workers, and N. D. Moore and D. F. Buckingham, who will be the operators' representatives.

Five National Coal Association Delegates to International Chamber of Commerce

IN addition to J. D. A. Morrow, who will sail June 11 for Europe to attend the meeting of the International Chamber of Commerce, the National Coal Association will also be represented by the following delegates: C. B. Ebbert, sales manager, White Oak Coal Co.; W. T. Coe, London representative of the Consolidated Coal Co.; W. K. Field, president Pittsburgh Coal Co.; and John A. Donaldson, vice-president Pittsburgh Coal Co. These latter members of the association will be in Europe on other business at the time of the convention and have consented to arrange their affairs so as to be in Paris at the time of the meeting.

Traffic Executives to Confer on Request of Shippers to Reduce Freight Rates

THE long-deferred conference of traffic executives of the Eastern, Western and Southern territories was held in Washington June 2. The Eastern traffic territory was represented by George Ingalls, the Western territory by L. J. Spence and the Southern territory by Lincoln Green. They listened to the request of shippers of road and building materials for a general horizontal reduction in freight rates covering those commodities. The traffic executives made no declaration as to their conclusions, but promised to give the matter immediate and exhaustive consideration. It was the contention of the shippers that the present freight rates have reduced the volume of business to the point where the returns to the railroads are much less than would be the case if lower rates were allowed and a larger volume of business handled.

House of Representatives Grants Hoover $250,000 to Promote Foreign Trade

WHILE it took a special rule to do it, the House of Representatives has approved the supplemental estimates for the Department of Commerce, recommended by the Committee on Appropriations, for extending the export trade, for investigating structural material, for assisting in the establishment of industries developed by the war and for standardizing electrical and mechanical devices used in industries.

Opposition to the items was entirely on political grounds on the plea that the real object of these appropriations was to create positions for the faithful. This attack did not have the backing of the Democratic leaders, however, as Representative Byrnes, the ranking Democrat of the Appropriations Committee, declared that "This is not a question upon which we should play politics. The business of the country and the interests of the country demand the promotion and extension of our commerce, domestic and foreign. I believe we should give every possible aid to the administration in developing our commerce in the interests of the whole country. I believe the present Secretary of Commerce, if given the opportunity, will promote and extend greatly our commerce and will render a great service."

The fight on the $250,000 for the Bureau of Standards was even more intense than was that on the $250,000 for promoting export trade. A filibuster attempted against the items was overridden by the bringing in of a special rule making the items in order.

To Hold Jersey Coal Trust Hearing Today

ACCORDING to an announcement made Friday, June 3, in Trenton, N. J., the first hearing of the legislative committee authorized to make an investigation as to whether a coal combination exists in New Jersey and the reason for the high prices of coal will be held at the State House in Trenton today.

AS THERE SEEMS to be some confusion in the minds of the public as well as the coal trade by reason of the recent publication of the petition in bankruptcy of the *old* Tidewater Coal Exchange, the Tidewater Coal Exchange, Inc., calls the attention of the coal trade to the fact that the publication of bankruptcy proceedings against the Tidewater Coal Exchange refers to the *old* Tidewater Coal Exchange, which went out of existence, so far as active operation is concerned, on April 30, 1920, since which date it has been in the process of liquidation. These proceedings have no bearing whatever on the operations of the Tidewater Coal Exchange, *Inc.*, which was incorporated under the laws of the State of Delaware and commenced to function on May 1, 1920, to carry on the plan of pooling bituminous coal. In the organization of the Tidewater Coal Exchange, *Inc.*, provision was made for all such exigencies and no such condition of affairs as seen to exist in the liquidation of the *old* Tidewater Coal Exchange could possibly arise, under its by-laws, rules and regulations.

Coal Men Denounce Singling Out Coal for Regulation; Voluntary Returns Favored

PREPARATORY to entering the conference with Senator Frelinghuysen and Secretaries Fall and Hoover representatives of the National Coal Association, the American Wholesale Coal Association, the National Retail Coal Merchants Association and the anthracite operators met in Washington June 6 to discuss the Frelinghuysen bill. No conclusions were announced, but it is understood that any attempt on the part of the Federal Government to single out the coal business for regulation was denounced in each group. It also was the consensus of opinion in each group that better results could be obtained by having statistical returns made on a voluntary basis, rather than by attempting their collection by compulsion. The anthracite group, taking the Frelinghuysen fact-finding bill as a basis, is understood to have drafted an omnibus measure which will make the provisions of the bill apply to all industries.

It also was revealed that general apprehension is felt as to the possibilities of a liberal interpretation on the part of the President of the term "emergency." It is understood that Secretary Fall will suggest that the bill be changed to authorize the Department of the Interior to perform whatever functions the bill may finally provide for, instead of the Department of Commerce, as provided for by Senator Frelinghuysen, and it is not expected that there will be any opposition to this amendment.

Mine Owners Continue to Make Settlement Offers to British Coal Strikers

ON JUNE 5 the deadlock continued in the British coal strike, although a further development in the dispute, and one which was considered likely to open the way to a settlement, took place on that day, when Evan Williams, president of the Mining Association, sent a letter to Frank Hodges, secretary of the Miners' Federation, urging the importance to the miners of not losing the government's offer of £10,000,000, and suggesting that the miners' executive and the owners meet and talk matters over. Mr. Williams called a meeting of the Mining Association for June 6, at which he invited the miners' executives to be present.

The miners' executives promptly accepted the owners' invitation to meet them, and at the end of the afternoon sitting a statement was issued to the press saying that the discussions were being held in a friendly spirit and the conference would be resumed June 7.

It is understood that the conference was chiefly occupied with examining and defining the outstanding matters at issue, and that very little argument arose about the respective points of view. It is considered possible that the miners may call a national delegate conference and, if necessary, arrange for a national ballot on the owners' latest offer.

These are foreshadowings of peace, but it would be premature to jump to the conclusion that a settlement is in sight. Both sides, however, are anxious to secure a settlement, if possible, within the time limit of the fortnight during which the government's offer of £10,000,000 is available.

A significant admission was made by Thomas Spencer, trustee of the Derbyshire miners. He said it was time the miners boldly faced the fact that they were dead beaten on the demand for a national pool. The country and government would not have a pool at any price, he said, and it was folly to think they could be driven into it.

Meanwhile, in various mining districts there has been a resumption of work. The Swanwick collieries in Derbyshire were working again June 6, but the miners' union was making efforts to prevent the men from going down.

The miners' executive notified Premier Lloyd George June 3 that the various mining districts had rejected the government proposals for a settlement. On the same day the mine owners declared themselves "unalterably opposed" to a national pool and a national settlement of wages, suggesting conciliation boards for the various districts, but made some new offers, the most important being to take the average costs other than wages for the first three months of the year instead of for March alone. This averaging of costs it was thought might so reduce the cost per ton and increase the wage fund that the miners would gain approximately a shilling per shift over the whole country, while in South Wales the gain would be two shillings per shift. The owners also agreed to provide a subsistence wage for the low-paid workers in each district.

This was an advance on previous offers, going a long way toward meeting the complaint of the miners that on the original proposals some of their members would receive less than a subsistence wage. It was thought that the owners' offer indicated points on which an agreement between the parties could be built if a joint meeting of the owners and miners was held.

The lifting last week of the embargo placed by dock workers on coal imports several weeks previous also helped to relieve the tenseness of the situation.

Indiana Bituminous Mine Workers Will Meet

PLANS are being made by the officials of District No. 11 of the United Mine Workers of America for the regular biennial convention of delegates from all the local unions and also from the operators' association of this district. This is the twenty-eighth consecutive and fifth biennial convention of the mine workers in the Indiana field. It is believed that the convention this year will be the largest ever held. Credentials and circular calls for the convention are being mailed out by William Mitch, secretary-treasurer of the organization, and other plans are being made by the official board. The convention is called for 10 a.m., Tuesday, July 12. It probably will remain in session the whole week. The meetings will be held at the Knights of Columbus hall at Terre Haute. Constitutional questions will be discussed and work preliminary to the international convention also will be considered. The powder question already has been settled and it is not probable that the conference will deal further with it.

J. W. Howe Resigns as Commissioner of Tidewater Coal Exchange, Inc.

J. W. HOWE has sent his resignation as commissioner of the Tidewater Coal Exchange, Inc., to the Executive Committee of that organization. Mr. Howe has been commissioner of the Exchange since its formation, and previously occupied a similar office in the exchange when it was a Federal institution.

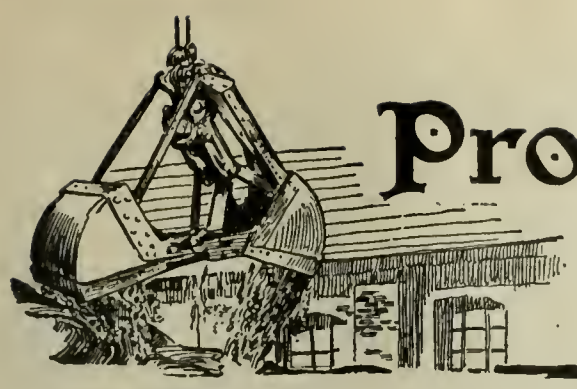
Mr. Howe's successor has not yet been named by the committee. It is said there are several condidates for the position, among them R. A. C. Magruder, the present deputy commissioner; L. A. Snead, commissioner of the Sewalls Point Exchange, and Dr. H. M. Payne.

Supreme Court Adjourns; No Decision in Coronado Coal Co. Case

THE U. S. Supreme Court adjourned on Monday until October 3 without handing down a decision in the Coronada Coal Co. case, appealed from the Arkansas courts. The coal company obtained treble damages from labor unions for destruction of its property in a strike, whereupon the labor unions appealed the case, and while it was argued in the Supreme Court early in the term the court adjourned without announcing a decision.

THE INTERSTATE COMMERCE COMMISSION has suspended until Sept. 29 various tariffs on anthracite which seek to make increases and reductions ranging from 14c. to 28c. per ton from Pennsylvania to points in New York State.

CREATION OF A new Federal Department of Mines was proposed in a bill introduced Monday, June 6, by Senator Nicholson, Republican, of Colorado.



Production and the Market

Weekly Review

BITUMINOUS markets suffered a further slump the first week of June. The tendency for weeks past has been to restrict purchases to the barest needs, which have been reduced to a minimum by the industrial depression. The impending reduction of railroad men's wages on July 1 is having a growing effect on the coal market. Expectations of lowered rail rates, to follow closely on the heels of this wage cut, the hope that coal prices will come down even further, and continued talk of possible legislation pertaining to the regulation or supervision of the industry all tend to hold back an already sluggish coal season.

Coal Age index of spot prices declined to 96 as of June 7, a drop of four points from the figure of 100 of the week preceding. There were ten declines and only three advances in the quotations making this index figure. This is the lowest figure of the year and is occasioned by the greatly weakened steam market, which is unwillingly absorbing the heavier production of fine coal being forced upon it.

Production is practically stationary—for three successive weeks the output has been maintained around the 8,000,000-ton mark, which is considerably more than can be easily absorbed under the present industrial conditions.

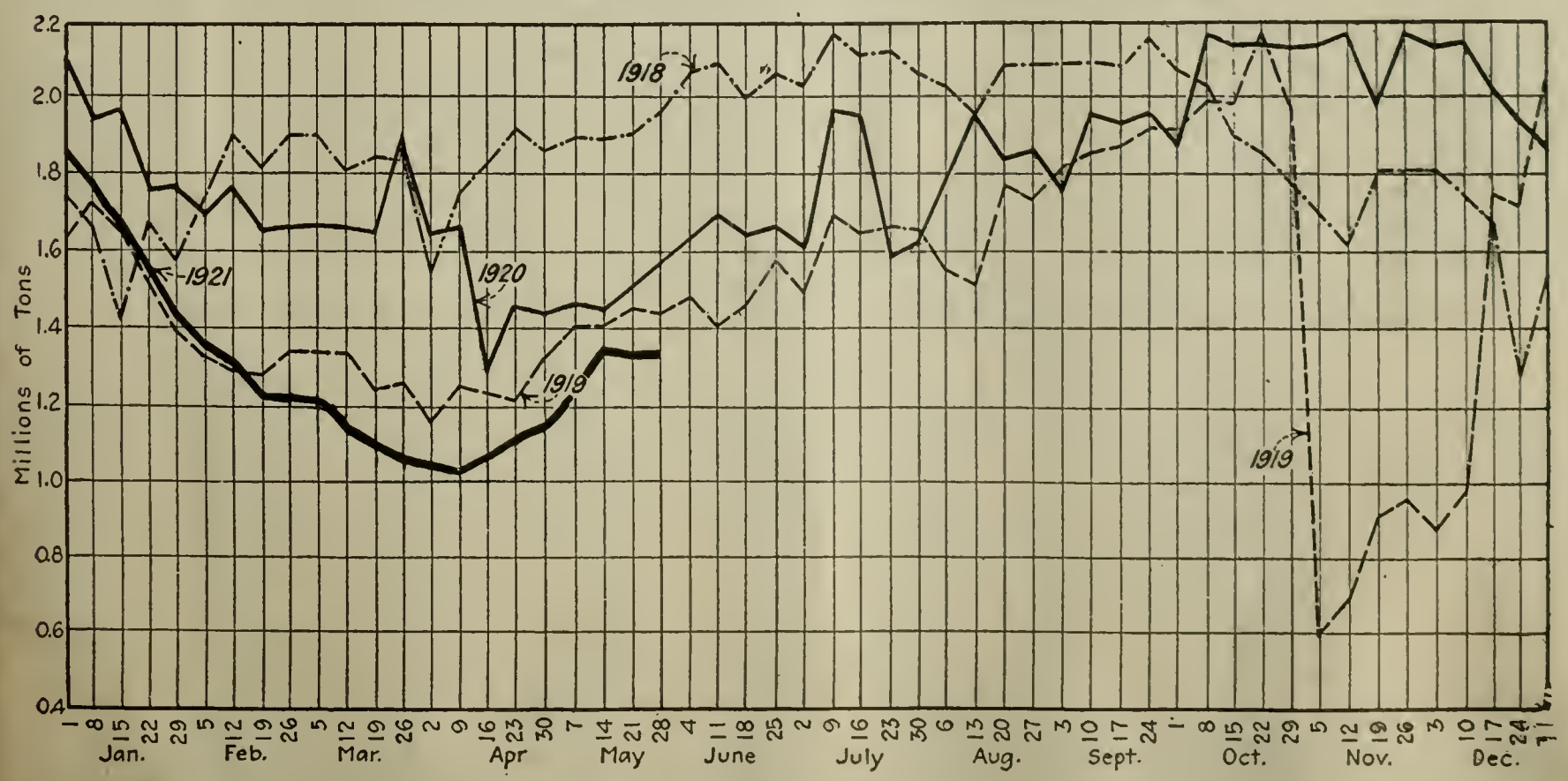
An end is now in sight to the heavy movement in Lake coal, which has been going forward in record quantities since the opening of navigation. Stocks are accumulating rapidly on the Head-of-the-Lake docks and shipments to the interior are extremely light. Not only are requirements of the Northwest low, as in other sections of the country, but the adjustment of rail rates on shipments off the docks, scheduled to become effective July 6, is delaying what meager purchases might otherwise be made.

Congestion of loaded cars at the Lower Lake docks is growing, as vessels are not offering because of the inactive ore market, which is unable to furnish down cargoes. This congestion has made necessary a revival of the permit system under the jurisdiction of the Ore & Coal Exchange. Permits to ship to the Lake are issued only where a clear route is indicated.

Export, Coastwise and Bunkerage Call Sluggish

That British users have overestimated their needs of American coal due to the strike is being shown by the weaker demand at Tidewater. Pocahontas producers are being hard put to maintain their comparatively high rate of production and prices for this coal on the Inland market have taken an abrupt drop this week. New England coastwise business is extremely sluggish and the bunkerage call also has slumped considerably.

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

At least one union field is this month to consider the question of lower wages. Miners in the central Pennsylvania district have called a meeting June 12 to discuss the situation as outlined by the central Pennsylvania association. This is the second time that these operators have called the miners' attention to the desirability of a readjustment, their first effort being refused by the men on April 30.

The rising curves of railroad earnings and traffic, and the declining operating expenses which will be further lowered by the 12 per cent wage cut, should put the roads in better shape to come into the coal market.

Demand for anthracite domestic sizes continues active, although orders are mainly for immediate shipment. Retail stocks are growing and unless the householder takes up the storage idea at an early date a midsummer slump is inevitable. The usual 10c. monthly advance was made on June 1 by the "companies," and the "independents" followed suit with larger increases.

BITUMINOUS

Production for the week ended May 28 was 8,053,000 net tons, or slightly in excess of the output for the week preceding. This is the third successive week in which production has been around 8,000,000 tons. The first week in June was marked by a slump in production due to the observance of Memorial Day. However, recovery was rapid, and on Tuesday, May 31, loadings totaled 26,452 cars, or practically the same as for the Tuesday of the week preceding.

The Northern and Middle Appalachian output for the third week in May increased slightly. Some 5,125,000 tons were produced, as against 5,096,000 tons the week before.

Shipments of bituminous coal via the Hudson gateways destined for New England were 2,898 cars during the last week of May. This is a decline of 190 cars compared with the preceding week and much less than the shipments for the corresponding week in 1920, when 4,433 cars were forwarded.

Hampton Roads dumpings for foreign account during the week ended May 28 were 356,514 net tons—267,225 tons of cargo coal and 89,289 tons for bunkers. This was a decrease from the figure of the preceding week of 45,520 tons; however, dumpings were well above the weekly average during September, 1920, when the export market was active.

Lake dumpings for the week ended June 4 were 960,524 net tons cargo and 24,967 tons fuel, making a total of 985,481 tons. The dumpings for the season are 5,801,967 tons, an enormous increase when compared with the same period in 1920, when 2,040,053 tons were dumped.

The bulk of this coal is being sent for storage by mines

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

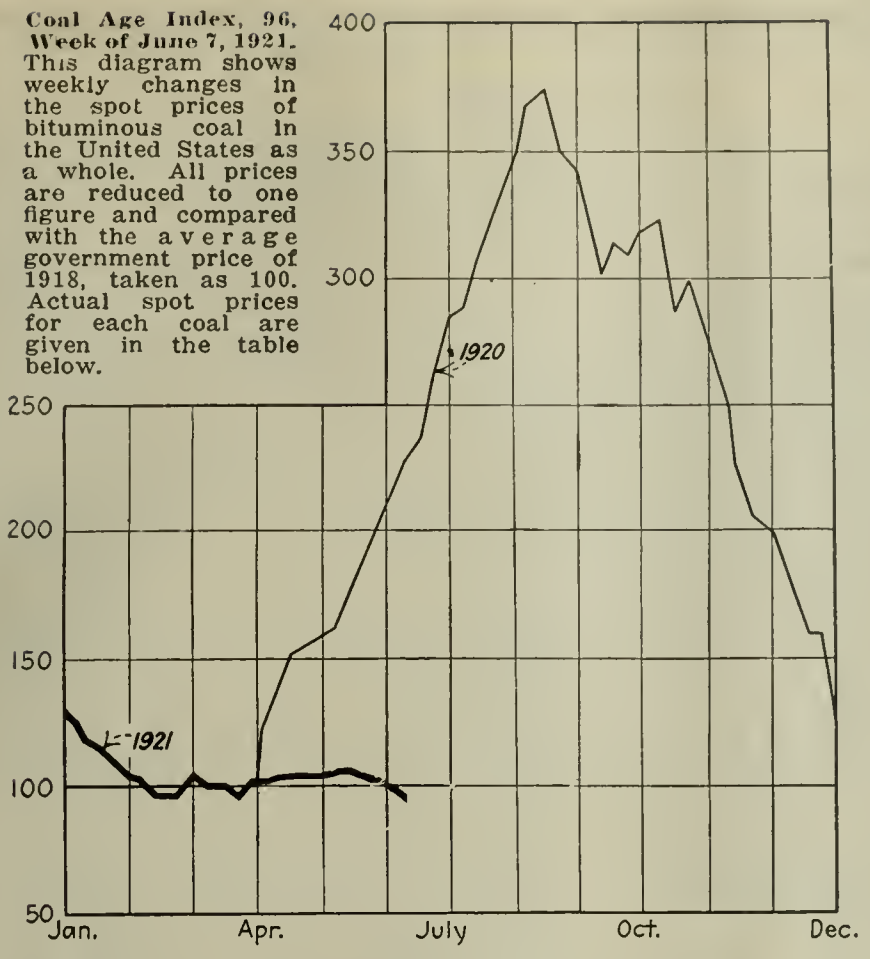
	Market Quoted	May 3 1921	May 24 1921	May 31 1921	June 7 1921†
Low-Volatile, Eastern					
Pocahontas lump	Columbus	$5.40	$5.50	$5.75	$5.50@$6.00
Pocahontas mine run	Columbus	3.35	3.50	3.50	*3.00@ 3.60*
Pocahontas screenings	Columbus	....	....	2.70	*2.50@ 2.75*
Pocahontas lump	Chicago	5.00	5.25	5.25	5.00@ 5.50
Pocahontas mine run	Chicago	4.00	3.75	3.75	*2.50@ 3.75*
*Smokeless mine run	Boston	6.00	6.40	6.50	*6.25@ 6.60*
Clearfield mine run	Boston	2.35	2.40	2.35	1.85@ 2.80
Somerset mine run	Boston	2.95	2.90	2.95	2.60@ 3.25
Pool 1 (Navy Standard)	New York	3.65	3.55	3.45	**3.25@ 3.75**
Pool 1 (Navy Standard)	Philadelphia	3.40	3.25	3.35	3.00@ 3.65
Pool 1 (Navy Standard)	Baltimore	3.20	3.35	3.30	3.30
Pool 9 (Super.Low Vol.)	New York	2.65	2.85	2.75	**2.65@ 3.00**
Pool 9 (Super.Low Vol.)	Philadelphia	2.85	3.00	2.95	2.75@ 3.10
Paol 9 (Super.Low Vol.)	Baltimore	2.95	3.05	3.00	*2.90@ 3.00*
Pool 10 (H.Gr. Low Vol.)	New York	2.55	2.60	2.60	*2.30@ 2.70*
Pool 10 (H.Gr. Low Vol.)	Philadelphia	2.65	2.70	2.60	2.45@ 2.75
Pool 10 (H.Gr. Low Vol.)	Baltimore	2.45	2.50	2.45	*2.15@ 2.50*
Pool 11 (Low Volatile)	New York	2.10	2.25	2.15	2.00@ 2.25
Pool 11 (Low Volatile)	Philadelphia	2.30	2.45	2.35	2.25@ 2.40
Pool 11 (Low Volatile)	Baltimore	2.30	2.25	2.25	*1.90@ 2.25*
High-Volatile, Eastern					
Pool 34 (54-64) (H.Vol. Gas and Steam)	New York	2.15	2.05	2.00	*1.75@ 2.15*
Pool 34 (54-64) (H.Vol. Gas and Steam)	Philadelphia	1.95	2.10	2.10	*1.90@ 2.20*
Pool 34 (54-64) (H.Vol. Gas and Steam)	Baltimore	2.05	1.90	1.90	*1.75@ 1.95*
Pittsburgh sc'd. gas	Pittsburgh	2.85	2.80	2.65	*2.40@ 2.65*
Pittsburgh mine run	Pittsburgh	2.25	2.10	1.95	1.85@ 2.00
Pittsburgh screenings	Pittsburgh	....	....	....	1.75
Kanawha lump	Columbus	3.25	3.40	3.50	3.25@ 3.75
Kanawha mine run	Columbus	2 00	2.65	2.25	2.25
Kanawha screenings	Columbus	....	....	1.45	*1.25@ 1.40*
Hocking lump	Columbus	3.05	3.25	3.40	3.25@ 3.50
Hocking mine run	Columbus	2.00	2.40	2.25	*2.00@ 2.25*
Hocking screenings	Columbus	....	....	1.30	*1.15@ 1.25*
Pitts. No. 8 lump	Cleveland	$3.25	$3.25	$3.25	$3.00@$3.50
Pitts. No. 8 mine run	Cleveland	2.20	2.25	2.25	**2.20@ 2.40**
Pitts. No. 8 screenings	Cleveland	....	1.70	1.65	1.50@ 1.75
Midwest					
Franklin, Ill. lump	Chicago	3.75	3.70	3.65	3.25@ 4.05
Franklin, Ill. mine run	Chicago	3.40	3.15	3.00	2.60@ 3.50
Franklin, Ill. screenings	Chicago	2 85	2.50	2.30	*1.50@ 2.50*
Central Ill., lump	Chicago	3.25	3.25	3.00	**2.75@ 3.50**
Central Ill., mine run	Chicago	2.95	2.60	2.40	**2.25@ 2 75**
Central Ill., screenings	Chicago	2.25	2.05	1.70	*1.25@ 2.00*
Ind. 4th Vein lump	Chicago	3.50	3.50	3.15	2.75@ 3.50
Ind. 4th Vein mine run	Chicago	3.25	3.10	2.90	*2.25@ 3.00*
Ind. 4th Vein screenings	Chicago	2.45	2.15	1.85	*1.25@ 2.25*
Ind. 5th Vein lump	Chicago	3.25	3.25	2.75	**2.50@ 3.50**
Ind. 5th Vein mine run	Chicago	2.95	2.50	2.50	2.25@ 2.75
Ind. 5th Vein screenings	Chicago	2.40	2.25	1.85	1.25@ 2.50
Standard lump	St. Louis	2.40	2.40	2.40	*2.00@ 2.25*
Standard mine run	St. Louis	1.80	1.75	1.75	1.65@ 1.90
Standard screenings	St. Louis	....	1.40	1.40	*1.00@ 1.25*
West Ky. lump	Louisville	2.60	2.65	2.55	2.30@ 2.75
West Ky. mine run	Louisville	2.10	2.20	2 10	1.75@ 2.45
West. Ky. screenings	Louisville	1 80	1.50	1.65	*1.50*
South and Southwest					
Big Seam lump	Birmingham	3.70	3.70	3.65	3.55@ 3.75
Big Seam mine run	Birmingham	2 95	2 95	2.95	*2.85@ 2.85*
S. E. Ky. lump	Louisville	3.75	3.90	3 80	*3.50@ 3.85*
S. E. Ky. mine run	Louisville	2 60	2 60	2 40	*2.00@ 2.65*
S. E. Ky. screenings	Louisville	1 95	1.80	1.75	*1.00@ 1.65*
Kansas lump	Kansas City	5 00	5.00	5.00	**5 25**
Kansas mine run	Kansas City	4.40	4.15	4 25	**4.25@ 4.50**
Kansas screenings	Kansas City	3.75	3.75	3 75	*3 25*

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

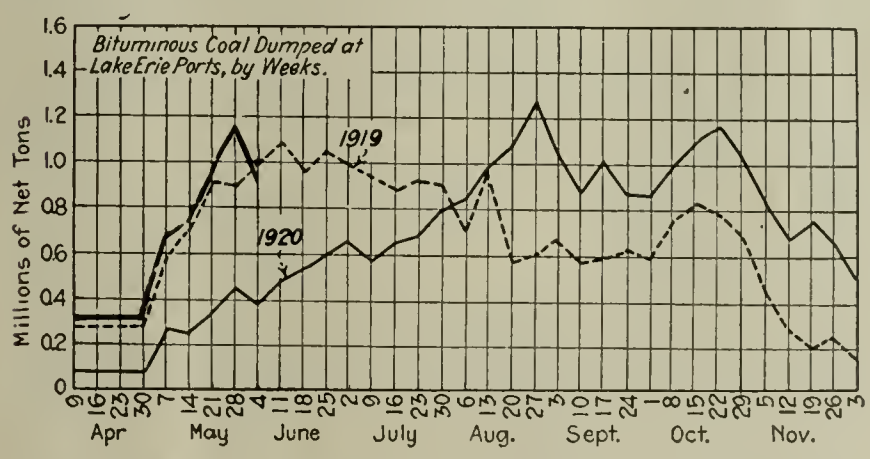
	Market Quoted	Freight Rates	May 24, 1921 Independent	May 24, 1921 Company	May 31, 1921 Independent	May 31, 1921 Company	June 7, 1921† Independent	June 7, 1921† Company
Broken	New York	$2.61	$7.45@$7.75	$7.20@$7.75	$7.45@$7.75	$7.20@$7.75	**$7.85@$8 15**	**$7 30@$7 75**
Broken	Philadelphia	2.66	7.60@ 8.35	7.35@ 7.75	7.90@ 8.20	7.35@ 7.75	7.90@ 8.20	**7 45@ 7 85**
*Broken	Chicago	5.62	12.65	12.40	12.65	12.40	12.65	12 40
Egg	New York	2.61	7.45@ 8.35	7.20@ 7.75	7.45@ 8.35	7.20@ 7.75	**7 85@ 8 50**	**7 30@ 7 75**
Egg	Philadelphia	2.66	7.60@ 8.35	7.35@ 7.75	7.90@ 8.20	7.35@ 7.75	7.90@ 8.20	**7 45@ 7 85**
*Egg	Chicago	5.62	12.50	12.35	12.50	12.35	12.50	12.35
Stove	New York	2.61	7.70@ 8.35	7.50@ 8.10	7.70@ 8.35	7.50@ 8.10	**8 15@ 8.60**	**7 60@ 8 10**
Stove	Philadelphia	2.66	7.85@ 8.35	7.70@ 8.10	8.15@ 8.60	7.70@ 8.10	8.15@ 8.60	**7.80@ 8.20**
*Stove	Chicago	5.62	13.00	12.70	13.10	12.70	13.10	12.70
Chestnut	New York	2.61	7.85@ 8.35	7.50@ 8.10	7.85@ 8.35	7.50@ 8.10	**8 15@ 8 50**	**7 60@ 8 10**
Chestnut	Philadelphia	2.66	7.85@ 8.35	7.65@ 8.10	8.15@ 8.50	7.65@ 8.10	8.15@ 8.50	**7 75@ 8 20**
*Chestnut	Chicago	5.62	12.85	12.60	12.85	12.60	12.85	12.60
Pea	New York	2.47	5.00@ 5.85	5.75@ 6.10	5.00@ 6.00	5.75@ 6.10	**6 00@ 6 20**	**5.85@ 6 20**
Pea	Philadelphia	2.36	5.75@ 6.00	6.00	5.75@ 6.25	6.00	5 75@ 6.25	**6 10**
*Pea	Chicago	5.62	10.80	10.70	10.80	10.70	10 80	10.70
Buckwheat No. 1	New York	2.47	3.00@ 3.75	3.50	3.00@ 3.50	3.50	*3.00@ 3.25*	3.50
Buckwheat No. 1	Philadelphia	2.36	3.25@ 3.50	3.50	3.00@ 3.50	3.50	*3.00@ 3.35*	3.50
Rice	New York	2.47	2.25@ 2.50	2.50	2.25@ 2.50	2.50	*2.00@ 2.25*	2.50
Rice	Philadelphia	2.36	2.50	2.50	2.50	2.50	*2 0@ 2.50*	2.50
Barley	New York	2.47	1.15@ 1.50	1.50	1.15@ 1.35	1.50	*1.00@ 1.40*	1.50
Barley	Philadelphia	2.36	1.50	1.50	1.50	1.50	*1.25@ 1.50*	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.50	.....	2 50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago. † Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index, 96, Week of June 7, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table below.

having dock affiliations, and in this way the movement is centered on certain Head-of-the-Lake docks, which are rapidly being filled. Actual purchasing of Lake cargo coal is as slow as on other markets and unless a buying movement off the docks is started before long cargo shipments must be curtailed.



According to the Geological Survey, stocks of bituminous coal held on April 1, 1921, by 1,137 dealers were sufficient for three weeks and five days' supply at the average rate of delivery to consumers during the first three months of the year. The report covers only a selected list of dealers handling less than 35 per cent of the coal distributed in this manner. On Jan. 1, 1921, these stocks were sufficient for four weeks and two days' supply. In comparison with 1919 or 1920, however, the stocks on April 1 of the present year appeared large. The 1,137 dealers had more than twice as much coal as on June 1, 1920, and about 12 per cent more than on April 1, 1919. Comparison with 1919 is particularly instructive because stocks were then admittedly large on account of the carry-over from the war period. The increase over 1919 was greatest in New England, the Middle Atlantic States, the Appalachian region and the South Atlantic Coastal Plain.

ANTHRACITE

Hard-coal production increased during the week ended May 28. According to the Geological Survey, the output was 1,988,000 net tons, which is 194,000 tons more than for the week preceding or an increase of 10.8 per cent.

Trading continues brisk in the domestic sizes at increased schedules announced June 1 by the companies and with additional premiums being charged by independent operators. Retail buying is confined to orders for current shipment only and yard stocks are becoming heavy. Middle West retailers are now curtailing mine shipments, as trade in their territory is decreasing. Baltimore buying is being delayed by the Linthicum investigation, although retail prices for June have so far failed to reflect the advances at the mines. Steam sizes are everywhere becoming a drug on the market and much of this coal is going to storage by the companies. Independent producers are actively soliciting steam business at prices under the company schedules in order to maintain their good rate of domestic production.

COKE

Beehive coke production during the week ended May 28 was the smallest in any week for many years. According to the Geological Survey, the total output was 67,000 net tons, a decrease of 4,000 tons when compared with the week ended May 21. The decline centered in the Connellsville region, the cause being the closing down of all ovens of the largest producer in that section. The coke market is as quiet as ever—Connellsville furnace remains quotable $3.25@$3.50 and foundry has softened, $4.75@$5.25.

Receipts of Coal in New England by Coal Years, in Net Tons

(Compiled by the Massachusetts Fuel Administration)

Year ended April 1	Tide and Rail	Tide	Rail	Percentage by Tide	Percentage by Rail
		ANTHRACITE AND BITUMINOUS			
1916–17	33,763,000	18,670,000	15,093,000	55	45
1917–18	35,405,000	16,404,000	19,001,000	46	54
1918–19	38,285,000	19,066,000	19,219,000	50	50
1919–20	29,898,000	12,591,000	17,307,000	42	58
1920–21	34,391,000	13,417,000	20,974,000	39	61
		ANTHRACITE			
1916–17	10,450,000	4,963,000	5,487,000	47	53
1917–18	12,029,000	4,151,000	7,878,000	35	65
1918–19	12,992,000	3,981,000	9,011,000	31	69
1919–20	10,809,000	3,499,000	7,310,000	32	68
1920–21	12,249,000	3,744,000	8,505,000	31	69
		BITUMINOUS			
1916–17	23,313,000	13,707,000	9,606,000	59	41
1917–18	23,376,000	12,253,000	11,123,000	52	48
1918–19	25,293,000	15,085,000	10,208,000	60	40
1919–20	19,089,000	9,092,000	9,997,000	48	52
1920–21	22,142,000	9,673,000	12,469,000	44	56

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
May 14 (b)	8,009,000	144,470,000	8,764,000	188,935,000
Daily average	1,335,000	1,270,000	1,461,000	1,653,000
May 21 (b)	7,990,000	152,460,000	9,246,000	198,181,000
Daily average	1,332,000	1,273,000	1,541,000	1,647,000
May 28 (c)	8 053,000	160,513,000	9,568,000	207,749,000
Daily average	1,342,000	1,276,000	1,595,000	1,645,000

(a) Less 2 days' production during first week in January to equalize number of days covered for the last two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
May 14	1,938,000	33,791,000	1,774,000	31,879,000
May 21	1,794,000	35,585,000	1,847,000	33,726,000
May 28 (b)	1,988,000	37,573,000	1,885,000	35,611,000

(a) Less 2 days' production during first week in January to equalize number of days covered for the last two years. (b) Subject to revision.

BEEHIVE COKE

Week Ended May 28 1921 (a)	Week Ended May 21 1921 (b)	Week Ended May 29 1920	1921 to Date	1920 (c) to Date
67,000	71,000	439,000	3,127,000	8,942,000

(a) Subject to revision. (b) Revised from last report. (c) Less 2 days' production during New Year's week to equalize number of days covered for the last two years.

Foreign Market And Export News

Hampton Roads Clearances and C. I. F. Prices

The following vessels cleared from this port with coal cargoes from May 28 to June 3, inclusive:

Vittorie Veneto, Ital., for Dakar, 6,679 tons; Oneka, Br., for Falmouth, 7,000; St. Andrews, Br., for Santos, 4,935 tons; Derwent River, Br., for Montevideo, 6,021 tons; Euterpe, Br., for Las Palmas, 4,422 tons; Belvernon, Nor., for Antilla, 868 tons; Monginevrom, Ital, for Port Said, 6,914 tons; Ellewoutsldjk, Du., for Montevideo, 4,671 tons; Hagno, Du., for Argentina, 4,593 tons; Taransay, Br., for Gibraltar, 6,628 tons, King Edward, Br., for Buenos Aires, 5,779 tons; Volumnia, Br., for Civita Vecchia, 7,691 tons; Ioannis, Grk., for Italy, 4,567 tons; Bussum, Du., for St. Vincent, 4,106 tons; King Alfred, Br., for Queenstown, 6,801 tons; Sittang, Br., for Buenos Aires, 5,649 tons; William Taylor, Am. Schr., for Honolulu, 1,915 tons; Quillwark, Am., for United Kingdom, 7,500 tons; Ethan Allen, Am., for United Kingdom, 10,132 tons; Natia, Br., for Rio De Janeiro, 5,083 tons; Dunstan, Br., for Para, 1,766 tons; Somerset, Br., for Auckland, 2,673 tons; Vancouver Maru, Jap., for Falmouth, 7,313 tons; Gurth, Nor., for Callao, 1,970 tons; Afghanistan, Br., for Queenstown, 7,689 tons; Almelo, Du., for Rotterdam, 9,026 tons; Nilemede, Br., for Falmouth, 6,281 tons.

C. I. F. prices reported this week are: United Kingdom, including all British ports for orders, $12.40@$13; Italy, $12.90; Brazil, $12.40; River Platte, $11.90; Rotterdam and Antwerp, $12.15; French Atlantic ports, $5.75; Scandinavian ports, $13.40; Havana, $9.40, and Gibraltar, $11.90.

THE ITALIAN STATE RAILWAYS ADMINISTRATION has reduced the prices for industrial coal as follows: German bunker, gas and furnace coal from Westphalian pits, from 285 to 275 lire; the same kinds of Silesian coal from 270 to 260 lire. Westphalian coke from 490 to 450 lire per ton and Silesian coke from 450 to 410 lire. At the same time Belgian bunker coal and briquets have decreased in price from 270 to 260 lire.

SWEDISH COAL FIRMS state that the demand for coal has not increased in spite of the British strike, as Sweden possesses considerable stocks of coal

MANY BRITISH CONCERNS did not reopen after the Whitsuntide holidays, even though coal supplies were not fully exhausted. American coal which has just arrived in Ireland is not appreciated, it is reported, because the quality is unsatisfactory and few buying orders have been received. It is stated that American supplies are being sent speculatively, and uncertainty of continuous supplies is also detrimental to that trade.

FOR MORE THAN A MONTH no coal has been shipped from Norfolk to the Panama Canal, occasioned, it is said, by the increasing use of fuel oil on ships and by the fact that fewer vessels than usual have passed through the canal during recent months.

BRITISH EXPORT COAL PRICES for April, excluding bunkers, averaged £2 3s. 2d., according to the *Iron & Coal Trades Review*, as compared with the April, 1920, average of £3 18s. 6d.

Destination of British Coal Exports, April, 1913, 1920 and 1921

Country	Quantity (Tons) April 1913 Tons	1920 Tons	1921 Tons
Russia	347,247	2,379	.....
Sweden	435,533	76,034	19,223
Norway	186,251	54,711	16,471
Denmark	270,312	79,818	48,000
Germany	804,747	.....	8,700
Netherlands	156,411	.....	39,096
Belgium	177,612	89,810	5,823
France	1,124,623	953,809	119,285
Portugal	102,930	13,200	12,539
Azores and Madeira	14,168	27,649	.....
Spain	189,688	8,088	31,268
Canary Islands	105,379	43,194	36
Italy	793,528	232,073	98,165
Austria-Hungary	65,413	1,639	.....
Greece	67,490	.....	9,200
Algeria	107,471	63,502	15,602
French West Africa	15,671	27,087	.....
Port. W. Africa	33,719	31,173	8,747
Chile	68,615	.....	353
Brazil	234,089	31,499	9,818
Uruguay	71,901	5,536	11,766
Argentine	338,859	8,314	31,375
Channel Islands	16,066	3,298	1,748
Gibraltar	35,021	123,558	7,918
Malta	66,064	14,780	11,582
Egypt	352,066	63,374	40,452
Anglo-Egypt. Sudan	.....	.....	.....
Aden and Depend	9,461	5,761	.....
British India	12,146	.....	10,545
Ceylon	11,259	.....	3,883
Other countries	137,129	35,609	44,953

Coal and Coke Exports from the United States During April

Exports of coal and coke from the United States by countries during April, 1921, as reported by the Bureau of Foreign and Domestic Commerce, were as follows, in gross tons:

Countries	Coal: Anthracite Tons	Coal: Bituminous Tons	Coke Tons
Austria	.....	11,400	.....
Azores and Madeira Is.	.....	8,234	.....
Bulgaria	.....	20,042	.....
Denmark	.....	5,571	.....
Finland	.....	821	.....
France	.....	30,513	.....
Gibraltar	.....	12,500	.....
Greece	87	.....	.....
Italy	.....	170,364	.....
Portugal	.....	11,683	.....
Russia in Europe	.....	10,120	.....
Spain	.....	8,405	.....
Sweden	.....	3,470	.....
England	.....	6,052	3
Ireland	.....	5,507	.....
Bermuda	.....	5,191	.....
British Honduras	.....	30	.....
Canada	352,069	704,587	14,857
Costa Rica	.....	.....	2
Guatemala	50	93	.....
Honduras	.....	1,279	9
Nicaragua	.....	290	.....
Panama	.....	19,829	.....
Mexico	6,065	8,289	3,741
Newfoundland and Labrador	2,862	807	.....
Jamaica	.....	10,411	.....
Other British West Indies	174	20	.....
Cuba	6,810	28,346	238
Virgin Islands of U. S.	.....	7,836	.....
Dutch West Indies	.....	310	.....
French West Indies	.....	7,667	.....
Haiti	.....	2	.....
Dominican Republic	387	559	3
Argentina	.....	61,175	.....
Brazil	.....	90,999	.....
Chile	.....	5,413	.....
Colombia	.....	2,624	88
Dutch Guiana	30	658	.....
Peru	.....	106	.....
Venezuela	.....	3	2
New Zealand	.....	2,008	.....
Philippine Islands	.....	8,535	.....
Canary Islands	.....	58,508	.....
French Africa	.....	37,212	.....
Portuguese Africa	.....	27,824	.....
Egypt	.....	57,734	.....
Totals	368,534	1,453,027	18,863

EXPORTS BY CUSTOMS DISTRICTS

	Coal: Anthracite Tons	Coal: Bituminous Tons	Coke Tons
Maine & N. H.	.....	37	.....
Vermont	1,761	467	.....
Massachusetts	100	3,090	.....
St. Lawrence	106,749	106,619	1,604
Rochester	30,751	38,210	157
Buffalo	194,494	213,907	6,502
New York	9,975	5,258	117
Philadelphia	7,066	50,341	935
Maryland	149	58,895	.....
Virginia	.....	580,967	238
South Carolina	.....	12,173	.....
Florida	.....	8,631	1,097
Mobile	.....	45	.....
New Orleans	.....	2,013	24
Sabine	22	.....	25
Galveston	.....	10	10
San Antonio	5,907	86	1,365
El Paso	40	3,371	185
San Diego	.....	26	.....
Arizona	44	4,382	.....
San Francisco	2	.....	10
Washington	.....	280	.....
Dakota	.....	7,127	107
Duluth and Superior	.....	3,802	66
Michigan	5	108,840	6,293
Ohio	11,469	244,450	128
Totals	368,534	1,453,027	18,863

BUNKER COAL SUPPLIED TO STEAMERS IN FOREIGN TRADE

Customs districts:	Tons
New York	290,904
Philadelphia	33,840
Maryland	44,852
Virginia	259,856

RUMANIAN REPORTS INDICATE that in spite of special efforts to increase the coal production of the Transylvanian mines, only about 250,000 carloads, of 10,000 kilos each, are being mined per day, which barely suffices for the Rumanian State railroads.

Amount and Value of British Coal Exports, April and First Four Months of 1913, 1920 and 1921

	Quantity (Tons) April 1913	1920	1921	Value April 1913	1920	1921
Anthracite	235,650	114,202	28,005	£184,054	£346,066	£61,791
Steam	4,708,475	1,652,165	443,749	3,391,380	6,620,736	967,278
Gas	983,697	120,325	91,037	600,507	509,390	201,313
Household	146,273	1,403	5,397	96,401	2,175	7,460
Other sorts	276,774	107,800	40,360	170,204	359,715	71,975
Total	6,350,869	1,995,895	606,548	£4,442,546	£7,838,082	£1,309,817

	Four Months Ended April 1913	1920	1921	Four Months Ended April 1913	1920	1921
Anthracite	937,166	591,369	337,009	£746,307	£1,737,971	£1,043,188
Steam	17,317,543	8,559,480	4,454,270	12,143,900	32,272,534	11,313,026
Gas	3,593,943	755,593	941,805	2,133,761	2,818,074	2,43 $[illegible]
Household	581,727	26,320	31,470	373,894	62,537	7 $[illegible]
Other sorts	1,159,499	428,902	239,326	714,634	1,433,037	51 $[illegible]
Total	23,589,878	10,361,664	6,003,880	£16,112,496	£38,324,153	£15,388,022

Reports From the Market Centers

New England

BOSTON

Market Very Dull—Off-Short Trade the Mainstay of Certain Operations—Signs of Slack Trade in Anthracite.

Bituminous—Demand is extremely light and the dull market of a week ago continues unabated. Buyers who were on the point of considering purchases at current prices with a view to increasing their present stocks have postponed action in the belief they will buy quite as favorably a month or two later. General business is still dragging heavily and only in a very few special lines is there any real confidence in conditions in the next few months. We are entering upon the vacation season, and it can hardly be expected there will be any special reaction until fall or the foreign situation is more nearly in the way of being cleared up.

A few shippers have made strenuous efforts to place coal in the spot market, but the great majority have demonstrated to their satisfaction that in a broad way price is no inducement. Output from most operations is therefore being held at about the figures established in April when it was found steam-users had so much fuel in reserve that they would not be interested in contract quotations.

A few operations in central Pennsylvania are working practically five and six days per week, but it is noticed that almost every one of these is directly or indirectly the beneficiary of coal sold off-shore several months ago while there was still an active market in that direction. Bunker trade also is doing its share to keep certain wheels turning, for those mines which are dependent either upon all-rail territory or coastwise shipments find they are but slender reeds this season.

There are no reports of contracts being closed in this territory. It is realized by the trade there is no common meeting point as to prices for deferred delivery, and both buyer and seller are disposed to await the further trend of spot figures.

For Pocahontas and New River the market is again rather quiet. An increased tonnage has been moving both to Europe and South America, but the demand is one of the seeking kind on the part of well-organized sellers, rather than the result of any broad inquiry. Coastwise loadings have been quite scattering, a number of sailing schooners have been chartered to move staple tonnage while steamers were rendered undependable partly because of striking marine workers and partly because of greater expense of operation.

Anthracite—While deliveries of domestic sizes are being made in fair volume there are several signs of somewhat less demand for prompt coal. Dealers are in general distributing less than they anticipated and are not making room to the extent that was forecast. Then, too, buyers are particular about the assortment of sizes.

The army of small householders, or the largest percentage of them, feel that anthracite must share the downward trend of other commodities, and for several weeks there is certain to be only a light demand upon the average distributor.

Tidewater—East

NEW YORK

Producers Advance Anthracite Prices—Steam Sizes Drug the Market—Bituminous Buying Slow—Poorer Grades Scarce—Contract Coals Move Quickly.

Anthracite—In addition to the expected increase of 10c. per ton to the May price for domestic coals, made by the larger producers, the independents have made advances ranging as much as 50c. Retail dealers in Manhattan have increased their prices about 10c. to cover the higher figures of the large producers.

The market is in a somewhat chaotic condition. All producers are short of sufficient egg and stove to fill orders. Chestnut, the next size in demand, is becoming easier. Producers have had no trouble to dispose of their supply of this size so far but conditions do not look rosy for the balance of the summer. Demand in this immediate market is easier but the line trade continues to take large tonnages.

Pea is not being moved easily. Most shippers are loaded with this size and because of the urgency used in April and May to dispose of it are finding it hard at this time to keep their surplus stock down.

No official announcement has come from the anthracite operators as to whether they intend to absorb the Pennsylvania State Tax on coal which becomes effective July 1 but it is supposed that this tax will be passed on to the consumer.

According to a statement printed in a daily newspaper, the vice president of one of the big mining companies has stated that this would be passed on to the consumer and that it would amount to 35 or 40c. per ton.

Nothing but a revival in business can save the situation regarding the steam coals. These sizes have for several weeks been causing trouble. All producers are stocking wherever available spots can be found while the coal that is finding its way to this Tidewater is being offered at considerable concessions.

Loaded boats of the smaller coals are causing some worry, and it necessitates heavy concessions in many instances to move them. Some shippers are unable to get more than $3 f.o.b. mine for their buckwheat but the general range goes to about $3.25.

Bituminous—Activity is limited to good movement of the better grades under contract. The spot market is quiet and no considerable improvement is expected until early fall. Not much more than about 50 per cent of the industrial plants of the country are believed to be in the market. A report heard last week was to the effect that as a result of a survey of about 3,000 plants only 38 per cent had signed contracts, 51 per cent were buying spot coal and the balance were not buying because of a heavy supply on hand.

The accumulation of coal at times has caused a temporary slump in prices but a quick recovery usually followed with the result that the general average for the week shows little change from the previous week.

Many inquiries regarding contracts are being received and some prospective buyers have asked for sample shipments. Operators are not inclined to shade their offers to any large extent, present quotations ranging from $2.90 for Pool 11 to $3.75 for Pool 9. In this harbor quotations ranged about as follows: Pool 9, $5.90@$6.10; Pool 10, $5.65@$5.80. Coal loaded in boats was plentiful. During the week these quotations alongside, gross tons, ranged about as follows: Pool 9, $6.25@$6.50 and Pool 10 $5.90@$6. Spot mine quotations are shown in the Weekly Review.

PHILADELPHIA

Company Anthracite Prices Advanced—Retailers Consider Increase—Consumer Demand Slackens—Steam Sizes Unimproved—Bituminous Is Quiet—Prices Firm.

Anthracite—The companies as usual were slow to announce June increases of 10c. a ton on all sizes, including pea. This with the heavy increases made by the independents, as announced last week, has made dealers seriously consider increasing their prices. While those dealers receiving a large proportion of independent coal actually did add considerable to their quotations, the advance has not been general.

At this time the old retail schedule of $13.75 for egg, $14 for stove and nut, and $11 for pea, prevails. However, it seems likely that there soon will be a general retail advance. The new mine prices have had the effect of causing the chronic price cutters to increase their figures 25c.@50c. and their delivered prices now run $13.25@$13.50 for egg, $13.50@$13.75 for stove and nut, and $10.25@$10.50 for pea.

Consumer demand is still easing off and the indications are that this condi-

tion will grow. Dealers are receiving very few new orders. There is a persistent belief among a certain class of consumers that coal will be reduced $2 or $3 and when they learn that an increase is certain the dealers find themselves subjected to much criticism.

Stove size remains scarce and some dealers, in order to meet obligations on it, are taking pea from the independents in order to get stove. Pea is fast growing draggy and all yards are beginning to show heavy stocks. In the face of the promise of an early freight reduction some dealers are dubious about laying in capacity stocks, but so far they are taking all sizes that come.

Steam sizes are in little demand and the independents are making the strongest kind of efforts to move production. Anyone after a block of this coal can easily get a figure below company price.

Bituminous—The trade displays little if any activity. Buying continues very light, although the aggregate purchases are probably a trifle heavier. The consumer shows much interest in current prices, although just as some improvement was beginning to be shown in buying the President's active interest in the freight rate situation momentarily checked it, as the belief in a quick reduction in rates undoubtedly caused buyers to withhold orders.

It is not thought there will be much contract activity until freight rates are adjusted. In this connection it should be recalled that the really big consumers have closed for a portion of their requirements, but this is much less than usual, and a large share of their purchases are at spot prices.

The spot market is unchanged, although one hears of fluctuations from quotations that have been almost uniform for the past two months. We even hear of some buyers who have made offers to the producers at prices below current quotations, which have been accepted.

BALTIMORE

Poor Demand for All Classes of Coal—Prices Spotty and Weak—Constant Legislation and Investigation an Element Preventing Better Conditions—Anthracite Retail Rates Hold for June.

Bituminous—The market is the weakest and most spotty in character for weeks past. All classes of steam coals are offering at low prices. The best grades of steam can be had in the spot market at $2.90@$3 per net ton. Contract prices even over the year are only 15 to 25c. above the spot market. Low grades of steam coal can be had for as little as $1.75@$1.90, although fair grades are calling for $2.15@$2.50.

Constant legislative moves and investigations are undoubtedly leading the consumer to believe that still lower prices will exist later and this will have a continued effect of holding down a purchasing line already heavily hit by generally poor business conditions. Gas coals are also in the line of depression. The very best grades of Pennsylvania lump are at this time offering as low as $2.85.

The export movement remains the only strong feature of the trade, the final reports of export loading at Baltimore for May showing a total of 214,462 tons cargo and 30,349 tons bunker. While official figures are not available as yet, the month of June has started off in healthy fashion.

Anthracite—Contrary to general expectation, hard coal merchants have decided not to raise retail prices during June. The wholesale increases announced for June of about 10c. on company coal to 20 and 30c. increases on independent coal were sufficient to have warranted a retail increase here, if the gross margin of profit as allowed by the Government during the war is to be maintained. The fact, however, that there is little buying in June and that the wholesale rate after July 1, is still very much in doubt, largely because of the new Pennsylvania state tax of 15c. a ton to go on hard coal after July 1, led to the decision not to make any advance at this time.

There is also in progress in Baltimore, on complaint of Congressman Linthicum of Maryland to the State's Attorney, that an unlawful combination exists for price regulation at retail, an inquiry which may or may not lead to action of some sort before July 1.

The retailers are understood to believe that after July 1, they will be in a better position to take up a just retail rate based on the then existing wholesale price, freight rate, etc. Meanwhile little buying of hard coal is going on in Baltimore either at retail or wholesale.

BUFFALO

Still Lower Bituminous Prices—Demand Fails to Improve—Anthracite Lake Loading Is Brisk.

Bituminous—Shippers are finding a new reason for consumers holding off. Rail wages are to go down, so freights must follow and then lower cost of mining coal. Of course the consumers, as is always the case when they control the situation, will claim all the advantage afforded by the other reductions and they will get most of it. As to the reduction of rail freights the roads will not only do all they can to hold freights up, but there are many complications to be adjusted prior to any change in rates.

Meanwhile orders do not increase. The average shipper is taking to golf more than ever, if only by way of finding something to do. The best that can be said of the situation is that if one holds his own in the trade he is doing well. Consumers drop off for a few cents a ton, choosing the lowest price regardless of previous relations.

Prices are hardly as high as they were, being $3.25 for Youghiogheny gas lump, $2.85 for Pittsburgh and No. 8 lump, $2.40 for Allegheny Valley mine run and $2 for slack, adding $2.36 to Allegheny Valley and $2.51 to other coals to cover freight.

Anthracite—May sales are generally reported good. At the same time the independent mines that are idle will remain so for the present, unless they can get a premium over the regular prices. This state of things ought to be a pretty fair answer to the charge that this coal is selling at an enormous profit.

Buffalo has bought more anthracite so far than it used to. Nobody really expects any difficulty now, but to make sure it seems best to lay in coal, no matter if lower prices in the fall are being agitated. Loadings into Lake steamers for the season to June 1 were 835,685 net tons, as against 461,121 tons to the same date last season. Last week 54,100 tons cleared for Duluth and Superior, 19,500 tons for Milwaukee, 14,400 tons for Chicago, 7,500 tons for Escanaba, 5,300 tons for Manitowoc, 5,000 tons for Two Rivers, 2,800 tons for Green Bay. Freight rates are 65@70c. to Chicago, 60c. to Milwaukee, Manitowoc, Green Bay and Escanaba and 50c. to Duluth.

Coke—The trade drags with most furnaces idle and consequently only a small part of the coke ovens running. The market is $4.75 for 72-hour foundry, $3.75 for furnace, $3.25 for stock and $5 for domestic sizes, mostly chestnut, to which add $3.64 freight.

HAMPTON ROADS

Export Demand Declines Rapidly—Prices Weaken—Pier Accumulations Heavier.

The trade has suffered a slump since the beginning of the last week in May, after establishing a new high record for dumpings for the year. A total of 1,830,000 tons passed over the piers during last month, with the price holding steady at $6.50@$6.75 for Pools 1 and 2 and $5.50@$6 for other pools until the last week in the month, when prices also slumped.

Price of Pools 1 and 2 now quoted is $6.25, while Pools 5, 6 and 7 have dropped to $5.35@$5.50. Extreme dullness has settled over the coal trade here. Approximately 60,000 tons were dumped the first day of June, which is far below the average for the preceding month.

Dealers believe that British coal users over-estimated their needs when the British strike came, and that they bought more coal than was required during the first rush of buying. As a consequence, the demand from that quarter has dropped off.

A comparison of the situation at the coal piers is as follows:

	Week ended May 26	Week ended June 2
Virginia Ry. piers, Sewalls Point—		
Cars on hand	1,527	1,417
Tons on hand	76,350	62,850
Tonnage waiting		27,100
C. & O. piers, Newport News—		
Cars on hand	1,854	2,200
Tons on hand	92,360	109,660
Tonnage waiting	23,200	35,250
N. & W. piers, Lamberts Point—		
Cars on hand	1,555	2,053
Tons on hand	74,436	97,217
Tonnage waiting	23,985	17,550

Northwest

MILWAUKEE

Heavy Receipts — Outward Movement Is Slow—Anthracite Advances.

Aside from the fact that anthracite was put up the customary 10c. per ton on June 1 there is little to chronicle in connection with the coal trade here. Demand continues slow. Now that anthracite has been lifted a notch, it may dawn on many that it is idle to think of a decline in the price of coal.

Receipts by Lake continue heavy, and there is a fair inward movement of Western coal by rail. Anthracite runs largely to stove size, and many dealers are unable to fill orders for chestnut. This condition will soon be remedied, however. There is a liberal supply of Pocahontas and other domestic grades of soft coal and also of coke. Prices hold steady.

Since the first steamer of the season arrived, thirty cargoes of anthracite and seventy-three of soft coal have been unloaded, the total receipts up to June 1 being as follows:

Month	Hard	Soft
April	43,100	154,583
May	204,246	486,967
Total	247,346	641,550
Same period, 1920	127,100	162,462

DULUTH

Heavy Bituminous Receipts Continue—Interior Market Quiet—Anthracite Tonnage Small—Freight Rate Situation Is Puzzling.

High water mark for the season in the receipts of coal was recorded last week when fifty-five ships discharged cargoes here. Only five of the cargoes received, however, were anthracite and there are only six on the way, although thirty-one cargoes in all are enroute.

The market situation is getting worse and demand is lighter than at any time since the season opened. The iron range is not buying as many of the mines are closed. The iron ore situation is showing signs of improvement, which, if they materialize, will help the docks. Coal is piling high on all docks and unless an increase in outward movement is realized they soon will be filled to capacity. Anthracite business is in desperate straits. No buying is recorded and buyers seem to be waiting for further lowering in prices. The only hope for lower levels is in a reduction of freight rates, following the general reduction of railroad wages just announced. This is highly problematical and acting contrary to it is the threatened increase in freight rates from Duluth to points in the Northwest.

The State is investigating this increase and the Attorney-General has been asked by the state railroad and warehouse commission to give a ruling on the order. The new rates will mean an increase of from a few cents to $1 a ton. The commission seeks to prevent the application of the new rate from Duluth to Minneapolis and St. Paul through Wisconsin.

An advance of 10c. a ton in anthracite took effect June 1. Run of pile is $6.50 for gas and $6.25 for steam. Pocahontas lump is $11 and mine run $7.25.

MINNEAPOLIS

Demand Unimproved — Little Storage Buying—Lake Movement Active—Dock Congestion Seen—Freight Adjustments Confusing.

The first of June at hand and still no life or snap to the coal business of the Northwest. Predictions on every hand that there must be early delivery to this section or there will be a serious situation, and apparently not a consumer taking the prediction at anywhere near par. Hard coal advancing monthly and not enough selling to justify running expenses of retail offices. What is the answer? Are buyers of coal playing the game with enough discretion to win against the disturbing prophecy put up to them?

Buyers are taking a chance if they will not cooperate in the matter of getting a better distribution of coal through the season. The long credits and easy terms of twenty years ago have gone and are unlikely ever to return. Similarly, the assumption of the entire risk of providing fuel for the winter will no longer be taken alone by the different members of the coal trade.

On the other hand, there is no doubt that the trade has not made sufficient inducement to the coal buyers, to encourage early storing. Railroads are among those who are urging buyers to stock early and guard against trouble, but they do not seem to find their recommendations worthy of their own use. If they cannot see it to their own advantage to store coal against the winter needs after having tried it out before, it is not surprising that other users are similarly dubious of the value of this move. The big trouble with those urging it is that they refuse to take the other fellow's point of view. Unfortunately, the buyer feels that since he received no protection upon an advancing market, he should not extend protection to producers when the market is not advancing.

A turn has developed which seems likely to help the general situation even though it has not been through any cooperation of the buyers. There has been quite a rush forward of dock coal. The movement has been not far from 1,500,000 tons, up to June 1. Some of it is going forward to guard against a tie-up of vessels and possibly of railroads on July 1, when the expected reduced wage scales on the railroads may cause labor trouble. Some even predict that enough coal will be sent forward shortly to crowd the docks to a point where no more can be handled unless there is a good tonnage moved to the interior.

One thing which will handicap this is the adjustment of coal freight rates, effective July 6. Some of the expected reductions will be disappointments and there will be some increases not anticipated, but business is being delayed waiting for the expected lower freights. An announcement on the subject without delay from those in authority ought to be forthcoming to clear the situation.

Inland West

ST. LOUIS

Unusually Quiet Market — Domestic Storage Coal Easing — Steam Business in Bad Shape—Prices Going Down.

The situation in St. Louis is a most peculiar one. The householder has practically stopped buying storage coal. This was caused by the Boehmer Coal Co. sending out letters to their trade making a price of $6.50 on Carterville when the Coal Service Bureau were advertising for people to buy and the circular was $7.50. This has caused two or three other dealers to cut prices, with the result that Carterville went down to $6.25.

The public has stopped buying. They believe that coal is going lower. When Carterville went off, so did Mt. Olive and Standard, and there is nothing moving today. Standard lump is $4.50 for apartments, etc. The lowest mine price on this grade is $2.10 with a rate of $1.35, which makes it $3.45. The cost of delivering is $1. There is no allowance made for overhead or anything else.

Steam is in bad shape, especially on screenings and nut. There is no place to put it and such as is moving can be bought at the purchaser's own figure.

CHICAGO

Market Conditions Are Distressing—Steam Trading Is Dead and Domestic Lagging—Price Cutting Grows.

Market conditions are no better off today than they were a week ago. However, during the past week the Chicago market has been visited by a large number of purchasing agents who are trying to get their bearings on the present situation. Some of the large companies with retail coal yards scattered all through the Middle West, and a number of the smaller railroads whose headquarters are outside of Chicago, had their purchasing agents circulate around among the trade in an endeavor to find out what was in the air. A spirit of pessimism is very manifest, but there are those who think conditions are going to improve slowly but surely from now on, and base their opinion upon the fact that large users of coal are now sitting up and taking more interest.

Market conditions are very aggravated. There is no market on steam, as it is a matter of searching out a man who buys for a plant which is in a position to burn coal, and then making a price to him that will move the tonnage. Retail dealers are swamped with coal, and it is not an exaggeration to

say that 75 per cent of the retail trade in Chicago have their bins so full that it would be impossible for them to absorb more.

It seems that most of the dealers stocked anthracite early and in turn supplied some of their regular customers, afterwards refilling their empty bins by ordering more coal from the mines. It now appears that everyone who was going to stock up has already done so, and, consequently, the demand on hard coal has dropped off. Sales agents for West Virginia smokeless indulged in a battle royal here during the past week, and when the smoke cleared away, it was found that the price of pocahontas and smokeless coals had dropped from $3.50 to $2.50 and $2.75.

Some of the more adventurous spirits among our manufacturers are talking about resuming activities at their factories, but for the sake of facts, it must be admitted that the industrial situation today is just as unsatisfactory as it has been.

DETROIT

Distribution of Bituminous Is Still Dragging — Demand Eases with a Shortening of Industrial Activity.

Bituminous—With the coal year entering on its second quarter, sales are showing no improvement. The volume of business is even somewhat less than a few weeks ago. Various manufacturing establishments and industrial plants are not maintaining the degree of activity that was expected. With sales diminishing, automobile companies are cutting down production schedules somewhat, reducing their purchases of coal, steel and other commodities.

This means a further delay in distribution of next winter's fuel supply here. Jobbers believe a situation is being created that will make a troublesome shortage unavoidable later in the year.

Smokeless lump and egg is quoted at $5.50, mine run, $3.50, slack $2@$2.25. Ohio lump is $3@$3.25, mine run $2@$2.15 and slack $1.80@$1.90. West Virginia lump is $3.35@$3.50, mine run $2.40@$2.50, and slack $2.

Anthracite—Buyers of domestic coals are not showing an active interest in stocking up for next winter's needs. Most of the retail yards are fairly well supplied. Retail prices are $14.50@$14.75 for egg, and $14.25@$14.50 for stove and chestnut.

CINCINNATI

Screenings Decline Further — Steam Market Weak All Around — Distress Coal Appears — Anthracite Retail Cut.

There seems to be no bottom to the prices on screenings, while prepared sizes are holding firm. The effort of the smokeless people to advance the prepared sizes to meet the reduction on screenings has not been as successful as had been hoped. Pocahontas lump, which was forced up to $6 last week, was high this week at $5.75. Bituminous lump is selling $3.50@$3.75 without a break.

This week both Kentucky and West Virginia mines have been offering nut and slack as low as $1.10@$1.20, not alone for immediate shipment but for future orders. This is on a level with the wholesalers who have had coal in distress to call upon. The price concession, however, does not seem to move much more coal. It may be different when the $1 a ton buyers enter the market.

Mine run has been hit by the drop in screenings. Some coal in distress could be bought at $1.50 though most of the mines dropped to $1.75@$2. Some West Virginia producers were still asking over the $2-quotation but it took salesmanship to get rid of it.

Few changes were made in retail quotations for June: Bituminous lump, $7@$7.50, mine run $6.50@$7; smokeless mine run $8.50@$9, lump and egg, $9.50@$10. There was a drop of $1 on anthracite egg, it now being quoted at $15.

CLEVELAND

Retail Prices Increased—Movement to Lake Slows Down — Market Very Sluggish.

Bituminous—The secondary wave of industrial curtailment which has struck plants in this district has been reflected in a smaller demand for coal. Another principal consumer of coal in this district is the iron and steel industry. Operations here are at the lowest ebb, compared with capacity, perhaps ever witnessed. This means that little coal is being consumed at steel mill or blast furnaces. The feeling strongly prevails that the bottom is being scraped in the iron and steel industry and that while this may continue for much of the summer a gradual improvement may be expected to set in at the latest by early fall. This forecast if true indicates a continued dull summer in the coal trade in this district.

Some stimulation to the depressed market, however, is hoped for by operators from more lively buying by railroads. The rising curves of railroad earnings and traffic, and the declining operating expenses, which will be further greatly lowered by the wage cut, should put the roads in better financial position.

Anthracite and Pocahontas—In accordance with predictions, dealers have increased the prices of hard coal and pocahontas lump an average of 25c. Dealers say that higher mine prices for these grades necessitate the advance. The demand remains dull and dealers hope that the increase will cause consumers to revise ideas about lower prices to come and will stimulate buying.

Receipts of bituminous coal during the week ended May 28 were 1,043 cars; divided, industrial 711, retail 332; as compared with receipts of 1,153 cars the preceding week.

Lake—Because of the enormous congestion of coal at the Lower Lake docks due to the inability to get ships, the movement has been checked temporarily. Shippers are sending coal to the Northwest on their own account in anticipation of later demand. Unless the fuel is shipped into the interior more rapidly than has been the case, the movement to the Lake may slacken materially.

Prices at retail are: Anthracite, egg and grate, $14; chestnut, $14.15, stove, $14.20; Pocahontas, shoveled lump, $11.25, mine run, $9.50; domestic bituminous—West Virginia splint, $10; No. 8 Pittsburgh, $8.15; cannel lump, $12.15; steam coal—No. 6 and No. 8 slack, $5.75; No. 6 and No. 8 mine run, $6; No. 8 ¾-in., lump $6.

COLUMBUS

Steam Sizes Are Showing Marked Weakness — Lake Trade Is Active — Domestic Market Slightly Better.

Quite a few of the larger operations are being worked full time on Lake tonnage and the result is a better output in practically all fields. Steam grades are still slow and there is little liklihood for an improvement within a short time.

Domestic trade is showing a little life although householders are not laying in their winter stocks very rapidly. Some who are far-sighted are placing orders for high-grade coals such as Pocahontas and other smokeless varieties. Retail stocks are fairly good and dealers are not inclined to increase them under present conditions.

Retail prices are fairly steady. Hocking re-screened grades are selling $6.50@$6.75, while ordinary lump is $6.25@$6.50. West Virginia splints are quoted $7.50@$7.75, and Pocahontas is selling at $9.50. Both egg and chestnut anthracite sells around $14.50.

Outside of the demand from public utilities there is little steam coal moving. Railroads are not taking any large amounts. Resumption of manufacturing is still slow and there are still rather heavy reserves at many places. Lower prices in mine run and screenings have developed. Screenings are especially weak, due to the larger production of lump for Lake shipment.

Some congestion at the lower Lake ports is reported, owing to the scarcity of vessels. The H. V. Ry. has about 5,000 loaded cars on its tracks waiting dumping.

South

BIRMINGHAM

Slack Demand Causes Steam Prices to Soften — Domestic Scarce and Quotations Stable—Some Wage Reductions.

Surplus of steam grades thrown on the market in the past week, which could not be readily absorbed, caused a shading of prices of 25 or 50c. This surplus was not due to increased production but to a weaker spot demand,

which was caused in part by an invasion of Alabama territory by coal from the Kentucky and Illinois fields.

To meet this competition and in an effort to create a greater market for coal from this district some of the producing interests are reported to have made a wage adjustment through a mutual understanding with their employees. However, there has been no general wage reduction and most of the principal operators are maintaining the war-time schedules and selling prices based thereon.

The domestic market is quiet and demand easy, though sufficient to about take care of what coal is being produced. Dealers report the retail trade very dull and comparatively little coal is being taken on by householders. Prices for lump and nut sizes are unchanged.

Mines are operating on about the same schedules they have been for several weeks—from one to four days—averaging about two days at commercial operations.

LOUISVILLE

Prices Weaker as Retail Demand Is Slowing — Over-production of Screenings Resulting in Poor Steam Market.

As a result of hot weather and small stocking of prepared sizes demand is slumping in this section, although there is a good deal of prepared coal moving to the Lake and to the North and Northwest.

Production of prepared coal has resulted in an oversupply of screenings, in view of poor industrial consumption, this causing a draggy market on all steam grades.

Movement of lump to the Lake is forcing Hazard operators to sell screenings at very low prices for quick movement, and with the steam market as weak as it is there is a possibility of higher prices for prepared sizes.

Some of the low offers made by mines during the past few days were: West Virginia and Hazard No. 6 and 7 seam screenings, $1; Harlan screenings, $1.50; No. 4 Hazard screenings, $1.25; Hazard mine run, $2@$2.40; Harlan mine run, $2.40@$2.65; West Virginia lump, $3.50 for best grades; mine run, $2.

West

DENVER

Production Low—Outlook Unfavorable —Storage Demand Lags Further.

Despite a very unfavorable outlook, operators are maintaining part-time production, waiting for the restoration of the regular mine price of $6.50 for bituminous lump, Sept. 1. There is a possibility that the regular price will be asked by some companies Aug. 1, which marks the closing days of the summer storage season.

The declaration by railroad officials that freight rates would not be lowered late in the summer has had the tendency of bringing on a little spurt in business, but it has been so slight that the general situation is little improved over a month ago.

Southwest

KANSAS CITY

Domestic Demand Picks Up — Steam Sizes Weaker—Prices Being Adjusted.

Dealers are liberally ordering domestic grades. Prices for Kansas lump and nut advanced 25c. last week and no doubt further increases will be made later on as the operators will be compelled to secure a better price for domestic on account of having to sacrifice the fine coal.

The situation in Arkansas is about the same as in Kansas. Lump advanced 25c. and screenings declined 25c. Mines in operation are only running two to three days per week in Kansas and Arkansas.

In Missouri the running time is better. There have been no changes in prices but no doubt an advance will be made on domestic grades within a short time. Prices at present are as follows: Arkansas lump $6.50, mine run $4.50, slack $2.50; Kansas lump and nut $5.25, mine run $4.25@$4.50, mill $3.50, slack $3.25; Missouri lump $4.50, mine run $3.85, washed slack $3.85, raw slack $3.15.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Better Operations Follow Good Demand —Independent Prices Stronger.

Practically everything is working full time. Some of the washeries which have been shut down have resumed operations. The price is becoming a little firmer, permitting the independents to get a better operation.

One of the collieries of the Pennsylvania Coal Co. which has been closed for the past week due to a strike, will be shut down indefinitely to permit repairs to the machinery. This is the only large colliery in the field that is not operating.

CONNELLSVILLE

Conditions Unchanged — Further Decrease in Furnace Oven Output.

There is nothing new in the coke situation in general. Furnaces are not blowing in or out, nearly all being out already, so that there is no change in the consumption of merchant coke. Steel works are making a trifle less pig iron, but this does not materially affect their operations in the Connellsville region as there had already been a remarkably heavy decrease. It should be noted that the steel interests who have beehive ovens in the Connellsville region and byproduct ovens at their furnace plants have been giving the preference to the latter right along. Their shipments of coal from the Connellsville region have thus kept up much better than their production of coke in the region.

Merchant operators have not changed their policies. Those with idle plants have no disposition to resume unless they can get a price above the current market, while those who are working are making every effort to stay in operation. Spot furnace coke remains $3.25@$3.50, with $3.25 about as high as furnaces will pay. Some furnaces believe that on an order for a month's run of a furnace $3 could be done. The Robesonia Iron Co. purchase of low phosphorus coke for four months' delivery noted last week as having been made at a reported price of $3.75, was made at a trifle under this figure. Foundry coke is about 25c. lower, being quotable $4.75@$5.25.

The *Courier* reports production in the week ended May 28 at 14,500 tons for the furnace ovens and 23,480 tons by the merchant ovens, making a total of 37,980 tons, a decrease of 4,700 tons.

EASTERN OHIO

Production Continues Good — Lake Accumulation—Industrial Market Quiet— R.R. Buying Lags.

Production for the week ended May 28 approximated the maximum in weekly output for the current year established during the preceding week. Tonnage produced for year to date is estimated at 6,597,593 tons or about 50 per cent of capacity. Association mines averaged about 64 per cent of possible worktime and produced above 70 per cent rated capacity as a whole.

Railroads are taking less than 30 per cent of present output and their fuel requirements continue at a minimum. The Wheeling & Lake Erie had a car shortage of about 10 per cent during the week by reason of heavy Lake shipments under load.

Operators are marking time, awaiting anticipated favorable developments in the trade. One of these is increased demand from the railroads in this section and in the Northwest. It is felt that after adjustment of wage difficulties confronting the roads there will be more contract inquiries and negotiations.

Unless there is quicker dispatch in the clearance of Lake cargo coal from the lower docks, it is expected that shipments will have to be slowed up. The accumulation is growing daily and some

of the roads have record quantities of coal on track awaiting boats. However, with shippers holding off during last four days of May, at the request of the Ore & Coal Exchange, a temporary improvement is expected.

Aside from the large volume of shipments to Lake, the trade is quiet and industrial consumers continue to supply their needs in the spot market.

PITTSBURGH

Congestion at Lake Front Requires Permit System—Shipments Greatly Decreased—Gas Coal Easier.

On account of further increase in the congestion of loaded cars at the Lake it has become necessary to limit shipments, and a permit system has been established, under the jurisdiction of the Ore & Coal Exchange. Permits are issued only as a clear route for the coal can be shown, and naturally the volume of permits is small.

Mine operations have decreased by fully as much as the decrease entailed in Lake shipments, as the line demand has grown worse rather than better. Production which rose to about 60 per cent for a short time, is now back to 40 per cent or less. The river mines have had practically no operation since the end of April.

Coal consumption in the industries is extremely light, on account of the general depression, which has become more severe in the past week or two. Railroad consumption continues at the reduced rate of the past two or three months. Buying by public utilities is slightly decreased but is very well maintained compared with the experience in other lines.

The market for spot coal is not quotably changed, except that under pressure of increased competition gas coal is off about 10c. Prices are shown in the Weekly Review.

UNIONTOWN

Further Curtailment of Operations—Futile Inducements Made to Stimulate Buying.

While it has been felt for some weeks that the productive output of the coal and coke region could not reach a lower point, the week just ended has seen a further curtailment in operations of the few independent plants still running. As reported last week, the Frick company has put out all its 19,000 beehive ovens but the present week saw an increase to some extent in the output of byproduct coal, the region production of the Frick company being placed at 40 per cent capacity whereas last week it was 25 per cent.

Added to the continued efforts of producers to induce buying is the plan of one large operator to provide additional credit for coal bought until July 1. The extent of the additional credit was not made known. In various other ways many operators have been seeking to break the "buyers' strike" but in practically all cases have met with flat refusal.

Sales of either coal or coke are not only very few but are mostly in small tonnages. Steam coal has a nominal quotation of $1.75 with byproduct ranging $2@$2.25. Furnace coke is quotable $3.25@$3.75 with foundry $4.75@$5.25.

CENTRAL PENNSYLVANIA

Miners Discuss Wage Questions June 12—May Tonnage Heavier Than for April.

A meeting of much importance has been called by the executive board of District No. 2, United Mine Workers, to meet in Clearfield on June 12. District President John Brophy announces that one of the things to be considered will be the request of J. S. Sommerville, president of the operators' association, that the wage agreement be reopened.

In answer to a request for a meeting on April 30, Mr. Brophy replied that such a meeting would be useless. However, since that time, a clean cut issue has developed. If the conference is refused, it puts the operators in the position of being refused the right to discuss the great problems confronting the industry. The action of the miners will be watched with much interest by the operators.

Increase in tonnage mined in the district in May over April will amount to approximately 10,000 cars. This increase is largly represented by the gains made by non-union operators who have reduced wages to the 1917 basis.

UPPER POTOMAC

Dullness More Pronounced—Best Coal Selling at Bargain Figures.

Dullness was very pronounced during the last few days of May and not more than one-third of the mines were in operation. A few of the larger producers were on a four-day basis but such cases were exceptional. Nearly all the mines between Cumberland and Thomas were closed down along the line of the Western Maryland. There was so little demand that the best coal was being sold around $2.50.

FAIRMONT AND PANHANDLE

Fairmont Production Increases—Spot Market Unimproved—R.R. Fuel Loading Is Heavier.

Fairmont

Although there was not any material increase in demand during the week ended May 28 yet production increased, especially during the early part of that period. It was railroad fuel business alone in some sections which kept mines in operation. Spot quotations ranged $2 @ $2.50. Lake shipments, after the first few days, exceeded the tonnage consigned to Tidewater.

Northern Panhandle

A comparatively small volume of coal was being consigned to Lake during the closing days of May. Slack continued difficult to move. Only a limited tonnage of railroad fuel was being mined and as far as general market conditions were concerned little change was noted.

Middle Western

MIDWEST REVIEW

Buying Ceases in Expectation of Lower Freight Rates—Active Campaign Fails to Stimulate Buying—Production Again Dropping.

Very recently a statement of President Harding's to the effect that railroad rates would have to be reduced and reduced quickly was given very wide publicity in the Middle West territory. The effect was felt instantaneously, and the public stopped buying in the expectation that rates would be down very much sooner than has been anticipated. It is predicted that during the next few weeks there will be no increase in the tonnage produced in the mining regions of the West.

The retail dealers and their associations are doing all they can to stimulate buying. A great many of the associations particularly, have gone to very considerable expense in preparing special advertising matter to be distributed by their members, giving "coal facts" to the public that would stimulate any reasonable person to purchase coal while he is able to get it. The Car Service Division of the American Railway Association believes we are headed right for a car shortage. The situation is serious; there is no question about it. The problem is how to present the case to the public in such a way that they will realize the precariousness of their position.

On June 1, there were but few changes in circular prices. Franklin County operators increased their prices on the larger sizes of domestic from $3.85 to $4.05 a ton. When this increase became known during the last week in May, it stimulated sales for the time being, but so far in June, the demand for domestic coals is extremely sluggish. Anthracite took its customary advance of 10c. a ton. All other grades remained stationary or weakened to some trifling extent. The smaller operators in Indiana and Illinois have set prices perhaps a little above their May circular, but those in the market are having no difficulty whatsoever in purchasing what coal they want at May prices or even less.

Smokeless coal, during the past few days, has shown decided signs of weakness, perhaps because so little smokeless is being loaded on the seaboard at this time. It is easy to purchase high grade smokeless mine run on the basis of $2.50 at the mines. This price is very near a new low level.

During the past week, the railroad wage board notified the public that a reduction would take place on July 1 and that it would amount to perhaps 12 per cent straight through. Labor has shown but few signs of restlessness in the face of this proposed reduction, and those who are in a position to know what they are talking about so far as

railroad labor conditions are concerned in the Middle West, claim that there will be no strike and that the men themselves realize that they are taking their part in the general reduction that everybody else has had to assume.

SOUTHERN ILLINOIS

Steam Sizes Impossible to Move — Domestic Demand Falling — Much Dissatisfaction Over Working Conditions— Prices Slump.

It is estimated there must be at least 300,000 or 400,000 tons of steam coal piled up at various mines in southern Illinois by operators who have to ship domestic and have no place to put steam sizes. At two or three points in the Franklin County field these piles have been causing some trouble on account of spontaneous combustion. The demand for domestic sizes continues to ease up, especially on nut and egg.

Considerable dissatisfaction exists among the miners on account of working time. Several mines have not resumed operations. Some are working one day a week and some are getting as many as four days. Railroad tonnage is not moving out in the volume that it should.

In the Duquoin district somewhat similar conditions exist as in the Carterville field. Working time averages two days a week. Several mines are still shut down and steam sizes are hardest to move, with a slowing up in the demand for domestic.

The Mt. Olive district is running one and two days a week at such mines as are working. Steam sizes are the cause of most of the trouble. Such steam as is being sold on the open market is going north to Chicago and in the territory south on contracts to St. Louis. Domestic coal going to the country is moving fairly good. St. Louis shipments are off.

The Standard district shows one of the most demoralized conditions that have existed in years. Some mines work one day in a week and others manage to get in three or four days, those working on railroad tonnage. There is no demand for steam at all and lump and egg are hard to move.

Nothing indicates that the situation will improve at any time between now and July 1. Much dissatisfaction is noted among miners who are about ready to give up. Their money has been spent, their credit exhausted and they have no work.

INDIANA

Production at Low Ebb—No Spot Demand—Reserves Being Consumed.

Production continues at a very low ebb, with a noticeable disposition on the part of buyers to hold aloof in the matter of renewing contracts. The difference between contract and spot prices is regarded as too expensive a form of insurance for the consumer to buy for his protection of this year's supply of coal.

Coal stocks, however, are very low at the various industrial plants and most of them are drawing further on their reserves before making purchases. Some industrials are being compelled to go into the market, but on the whole there has been little change in demand. Dealers say consumers are buying even lighter than is usual for this season of the year. Prices both at the mine and at retail are about the same as last week.

WESTERN KENTUCKY

All Demands Are Quiet—General Movement Light—Operators Protest Freight Rate Increase.

During the past week prices have been fairly well maintained but business as a whole is quiet, and prospects are not especially encouraging for any early resumption in demand, or for any good prices for steam sizes in view of the fact that general industrial demand is slow, and is being well supplied with low offers of screenings.

The western Kentucky operators on June 1 filed protest with the Interstate Commerce Commission against proposed increase in freight rates on June 16 of 15c. a ton to Louisville and 21c. to Cincinnati, which would raise the rate to Louisville from $1.25 to $1.40 and to Cincinnati from $1.94 to $2.15. It is held that such increases in steam sizes would work a disadvantage to the operators, especially in connection with river fuel from West Virginia.

Middle Appalachian

HIGH-VOLATILE FIELDS

Demand Is Weaker — Production for Lake Causes Oversupply of Screenings —Prices Go Even Lower.

KANAWHA

With a turn for the worse during the week ended May 28, production was at a very low ebb. The slight betterment in demand proved to be only temporary and by the end of the month conditions were worse than ever. Little coal was moving to Tidewater and even a smaller volume to the Lake. As a result of such a poor market, prices were averaging less than earlier in the month.

LOGAN AND THACKER

Heavy Logan shipments were being made in spite of the fact that there was comparatively little market. Much tonnage was being moved to the Lake but the majority of this was going for storage purposes.

"No market" losses were being reduced in the Williamson field, the weekly output hovering around 90,000 tons. Labor conditions were comparatively quiet and it was possible for mines to be operated on a fairly satisfactory basis.

NORTHEASTERN KENTUCKY

The Lake outlet made it possible for more mines to operate during the week but this resulted in a continued oversupply of screenings which were almost impossible to market. Very little coal was being sold to industrial concerns, either on a spot or contract basis.

VIRGINIA

Spot demand was in a state of almost complete stagnation and not enough new contracts were being received to stimulate production, which amounted to only 50 per cent of capacity. Production in the Clinch District was not more than 20,000 tons; in the entire southwestern territory it did not exceed 85,000 tons.

LOW-VOLATILE FIELDS

Slightly Heavier Demand — Slack Weaker with Oversupply — Contract Shipments Are Gaining.

NEW RIVER AND THE GULF

If anything, a slight increase in production was noted in the New River field toward the close of the week ended May 28. There was no perceptible improvement in Tidewater demand although there was a better call for prepared sizes in the Northwestern markets. As a result, slack was being overproduced and sold at softening prices.

Winding Gulf production improved with a better demand both at Tidewater and Inland, although prices were unchanged. Production as a whole was approximately 60 per cent of potential capacity.

POCAHONTAS AND TUG RIVER

Demand for Pocahontas was fairly well sustained, production continuing above the 300,000-ton mark. The bulk of the output was going to Tidewater for bunkerage although there was a growing demand in Western markets. Contract shipments were growing in volume. With a heavier production of Lake coal, resultant slack was becoming hard to move.

Tug River production was gaining with the output in excess of 100,000 tons, better than at any time since January. Contract shipments were heavy and spot demand was somewhat improved.

West

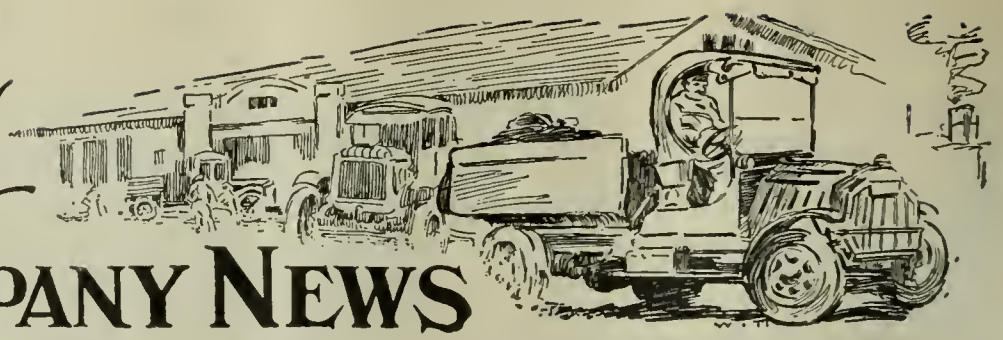
UTAH

Public Refuses to Store Coal at Present Prices—Market Is Extremely Dull.

The coal business here is as quiet as ever. Producers and dealers are determined to maintain the present scale until the cost of production and transportation changes. There does not seem to be any hope of business picking up before the early part of September, when consumers will realize they must buy their winter's coal in order to protect themselves.

Consumers are criticising the coal men for keeping their commodity at war prices, and efforts to stimulate business are taken in some cases as an effort to maintain these prices at all cost.

MINE And COMPANY NEWS



ALABAMA

The contract for the construction of the sub-structure and buildings for the housing of machinery and equipment at the new **Federal coal terminals at Mobile** has been awarded to Hampton Reynolds, New Orleans contractor, on his bid of $100,000. This work is to be completed within 150 days from the receipt of formal notice to the successful bidder. Maj. Earl North, U. S. Engineer, in charge of the construction of the coal terminals, which will cost $400,000, expects to advertise for bids on the coal-handling machinery and equipment in the course of a few days.

A first Aid Field Meet will be held Aug. 6 under the auspices and direction of the **Alabama Safety Association.** The Board of Managers to arrange for the meet is composed of G. W. Postell, chairman, J. M. McHugh, H. J. Thomas, F. G. Morris, F. R. Bell, A. R. Long, A. S. Tubb, M. H. Fies and James Nicol.

ILLINOIS

The By-Products Coke Corporation has sold to a Chicago banking syndicate $4,000,000 fifteen-year first and refunding 8 per cent bonds, due May 1, 1936. The bonds will be offered at 99.

The Taylor Coal Co., of Herrin, has contracted for the complete installation of a new steel tipple and loading booms at Mine No. 5. The tipple will load on five tracks and will be equipped with balanced Marcus screen and loading booms on four tracks.

The Ridge Coal Mining Co., Marion, has contracted with Roberts and Schaefer Co., for the construction of a new tipple. The construction work will proceed without material interruption to the existing tipple.

INDIANA

Papers have been filed by the **N. S. Tighe Coal Co.**, Fort Wayne, with the secretary of state, showing a capitalization of $25,000, for the purpose of buying and selling coal. Directors of the company are Norman S. Tighe, Charles M. Niezer and John W. Eggeman.

The Ehrmann Coal Co., Terre Haute, has filed papers with the secretary of state, showing its dissolution.

A sister mine to two of the world's famous coal mines, known as the American Mines Nos. 1 and 2, located in the Bicknell, Ind., field, will be sunk soon. The new mine will be known as the **American Mine No. 3.** The new mine is located in the heart of the richest coal fields of the country. The mines located in that district have not reached their sixth vein.

The Crescent Coal Co., the Sunnyside Coal & Coke Co., and the **Bosse Coal Co.**, of Evansville have announced a cut in the price of coal for June delivery. All these companies are quoting lump and nut coal at 20 cents a bushel in 100 pounds delivery and 19c. for mine run. The cut was made to encourage June buying.

KENTUCKY

The Ford Coal Corporation, Louisville, capital $150,000, has been incorporated by George H. Wrocklage, W. H. Fisher and J. Paul Swain, each holding three shares.

Falling slate in the **Kermit Coal Co.'s** mines at Kenmont, near Whitesburg, resulted in the death of South Blankenship, who had been with the company three days.

One of the most voluminous petitions ever presented in the Jefferson Circuit Court has been filed by various stockholders of the **Wallins Creek Coal Co.**, against Fred D. Wood, trustee for the stockholders. Plaintiffs named in the petition are: Tipton L. Young, A. B. Winkler, R. W. Johnson, administrator of the estate of C. J. Johnson, and L. A. Bowling. The prayer asks that a receiver he appointed to assume charge of the trust fund; that the defendant make an accounting as trustee; that defendant be removed as trustee; for a settlement of all outstanding liabilities of the trust estate.

A number of new companies are launching developments in the Elkhorn and Hazard coal fields. One is the **Miller-Haskins Coal Co.**, in the Carr's Fork field, and in the same territory are the **Suddy Coal Co.**, the **Yellow Creek Coal Co.**, the **Scuddy Coal Co.**, and others. Many new miners' homes will soon be under construction. In the vicinity of Blackey, rapid development work is being done by the **Elk Creek Coal Co.**

Fire breaking out in the forward part of a coal unloading or digger boat of the **E. T. Slider Co.**, at Louisville, destroyed the boat, the loss being about $15,000.

The Amburgy Coal Co., Louisville, one of the K. U. Meguire interests, is erecting a new tipple and screens at Dalna, office building, miners' homes, etc., and will soon be handling coal through this tipple from both the Amburgy and Hazard No. 4 seams, located on two sides of the valley.

The George Miller, Jr., Coal Co., retailers, is enlarging its Louisville elevator, adding new pockets, which will materially increase its handling capacity. **The James Coal Co.**, is completing additions to an elevator.

MINNESOTA

The Inland Coal & Dock Co. is constructing an extension of 500 ft. on its property. When the extension is completed storage capacity will be for 500,000 tons of bituminous coal and there will be some 1,500 ft. of property left to make further extensions if necessary in the future. The work is expected to be finished by July 25.

Articles of incorporation have been filed of the **Laird Coal Co.**, of Minneapolis, the incorporators being Ormond E. Laird Ruth Landers Laird and H. Lloyd Laird, Jr. It is capitalized at $50,000.

The Northwestern Fuel Co., has added a new clam to its No. 4 Dock at Duluth. It will reduce cargo unloading time by its application in the clean-up.

MISSOURI

Coal-mining companies of Marceline, Lexington, Novinger, Richmond and other cities of the state will send teams to Bevin June 25 to compete in contests in first-aid work to miners.

NEW YORK

The J. B. B. Coal Co. announces a change of name to the **Dexear Pocahontas Coal Co.**, under which name the coal mined from its properties in West Virginia will be sold in the future.

OHIO

Papers have been filed with the secretary of state increasing the authorized capital of the **Bowling Coal Co.**, of Dennison, from $30,000 to $50,000.

Cincinnati Coal offices were apprised of the fact that the Norfolk and Southern let their fuel contract recently with a price of $2.40 for 4-in. mine run and $2.70 for straight mine run. The contract has twelve months to run and three companies were awarded the business.

Important changes have been announced by the **Hocking Valley Products Co.**, which operates large coal mines as well as a face brick plant in the Hocking Valley. A. R. DeVinnish, who has been sales manager of the coal department has been put in charge, looking after the operation and sales departments. The coal properties consist of about 1,300 acres of excellent coal lands much of which is developed.

Quite a few coal mining companies have been incorporated in Ohio recently. Among the number are the **Lomi Coal Co.**, of Cadiz, capital, $500,000, John A. Matters, A. H. Finnical, John Williams, Charles W. Wenner and T. J. Reese. **The Sheridan Mining Co.**, Ironton, $25,000 by S. M. Porter, R. G. Elurle and others. **The Harriott Coal Co.**, of East Palistine, capital, $10,000 C. C. Harriott, L. M. Kyes and others.

OKLAHOMA

The Crowe Coal Co., of Henryetta is preparing to resume early operation of its mines. Extensive improvements are being made and new units installed at a cost of more than $100,000. Motor generating sets are being put in place for producing electricity, and attendant equipment to cost more than $60,000 is being installed. The mines have been closed for some time while these improvements were being made, the owners taking advantage of the dull season for the shutdown.

PENNSYLVANIA

The Westmoreland Coal Co. of Irwin has contracted with Roberts and Schaefer Co. for the installation of a second Marcus screen at their tipple at Harrison City.

With a contribution of $2,250 from the **Kingston Coal Co.**, in lieu of subscriptions by the men, one of $2,250 from Mrs. George S. Bennett, and one of $10,000 from the **Lehigh & Wilkes-Barre Coal Co.**, the total of the Wilkes-Barre City Hospital drive has reached $229,929.

For the third successive year officials of the **Lehigh & Wilkes-Barre Coal Co.** have announced the beginning of a garden competition among families of miners living in houses owned by the company. The competition will include the arrangement of lawns, flower beds and vegetable gardens. Cash prizes will be awarded to the owners of the best kept properties next September.

TENNESSEE

Several thousand acres of coal and timber land will be developed by the **Tennessee Coal & Timber Co.**, a newly formed corporation in Knoxville. The company has been incorporated for $1,000,000. Samuel J. Singer will be general manager.

John E. Patton, James M. Adams and H. H. Gray have chartered the **Sewanee Coal Co.** to mine coal in the Swance section. They have placed the capital stock at $1,000,000.

UTAH

The Martin Coal Co., one of the largest retail companies in Salt Lake City, has received permission from the State Utilities Commission to sell 10,000 shares of its 7 per cent cumulative preferred stock at $10 a share.

The United States Fuel Co. is encouraging its miners at Hiawatha to raise gardens. The company furnishes teams and men to plough the gardens.

VIRGINIA

The Norfolk branch of the **Old Dominion Coal Co.** has been discontinued, and the personnel of the local office have been transferred to the Richmond branch.

WASHINGTON

Pulverized Washington coal is to receive its first tryout as fuel for a steam vessel by the Cary-Davis Tug & Barge Co. of Seattle which has placed an order for the necessary installation in the tug Chehalis. Preliminary tests indicate that as compared with fuel oil, the pulverized product will cut the vessel's fuel bill in two.

WEST VIRGINIA

The Amherst Fuel Co., one of the George M. Jones companies in the Logan field has extended its operations and has opened up its new mine on Toney's Fork. The first shipments from this mine were made about the middle of May.

J. Lee Hornor and associates have organized a coal concern known as **J. Lee Hornor, Inc.**, this company being capitalized at $50,000. It will operate in Harrison County, the headquarters of the concern being Clarksburg. The following Clarksburg coal men are identified with the new concern: J. Lee Hornor, Howard L. Robinson, R. L. Hornor, L. C. Hornor and A. M. Hornor.

Organization of the **R. M. Davis Coal Co.**, with a capitalization of $100,000 presages further development of coal lands in Monongalia County where this company will operate the general offices of the company being at Morgantown. Active in effecting the organization were E. H. Gilbert, R. M. Davis, D. E. Castor, R. E. Guy and W. F. Mathews, all of Morgantown.

It has been found possible to operate on a 100 per cent basis at the Minden mines of the **New River & Pocahontas Consolidated Coal Co.**, but plans are under way through which the coal may be dumped and loaded more economically. The company is considering utilizing only two tipples for the four mines at Minden. If that is done, the tipples and the openings at Mines Nos. 2 and 5 will no longer be used and all coal will be brought out through the openings at Mines Nos. 3 and 4 and dumped over the tipples now in use at those mines. It is thought probable that it will be necessary to enlarge both tipples.

The Clearwater Coal Co., is making rapid progress on the opening of its coal mine at Clearwater, according to C. W. Downs, general manager, who returned recently from an inspection of the operation. The location of the siding has been approved by the Western Maryland Ry. and work on it will be started at once. Connellsville men are chief stockholders in the company.

The Consolidation Coal Co. has purchased 200 acres of Pittsburgh coal in Harrison County from the Monongahela River R. R., Co., and from the Monongah Co., at a consideration said to be approximately $128,000. The coal so purchased is on Lamberts Run near Hepzibah in Eagle District. Little time elapsed between the sale of about 256 acres of Pittsburgh coal land to W. Corrado of Connellsville and the purchase above described, consideration for such a sale made by the Consolidation being in the neighborhood of $250,000. The sale made by the Consolidation was on May 18.

The Eastern Coal Mining Co., has completed negotiations for the purchase of the holdings and equipment of the **Cheat Mountain Coal Co.**, on the line of the West Virginia Northern Ry., in Preston County. Howard and Edward Cross of Cumberland and F. E. Strickler of Kingwood were largely interested in the Cheat Mountain Co. Heading the purchasing company is A. A. Sommerville of Cumberland. In all about 75 acres were acquired in the deal.

Within recent weeks the **E. E. White Coal Co.** has installed new picking tables and other modern coal loading machinery at its plant at Glen White.

At least six coal associations in West Virginia and neighboring states have endorsed the **Coal and Industrial Exhibition** which will be held in Huntington, from Sept. 19 to 24, under the auspices of the Huntington Chamber of Commerce and are showing much activity in helping to make the coal exposition a success. Associations which are lending their hearty cooperation include the following: Logan Coal Operators' Association; Northeast Kentucky Coal Operators' Association; Virginia Coal Operators' Association; Tug River Coal Association; Kanawha Operators' Association; West Virginia-Kentucky Association of Mining, Mechanical & Electrical Engineers.

Negotiations have been consummated for the sale of 3,300 acres on the west bank of Simpson Creek, Pleasant District, Barbour County, by the **Bear Mountain Coal Co.**, this acreage having been sold to two different purchasers, all with a view to early development. All but 1,000 acres were sold to the **Cambria Coal Co.**, of Cleveland. **B. P. Porter and associates** of Cleveland purchased the other thousand acres. So far there has been no mining in either of the tracts sold but the Cambria Company is making preparations to drive openings and develop a part at least of its 2,300 acres with a view to beginning the shipment of coal during the fall months. In order to develop the coal acquired both interests are having two miles of railroad constructed to connect with what is known as the Astor branch of the B. & O.

The Chesapeake Coal Co., which is building a modern mining plant at Barrackville in Marion County, now has under construction a large tipple and belt conveyor, the latter to be 200 feet in length and to be used in bringing the coal from a hill-top to the tipple. Another company engaged in getting ready to operate at Barrackville is the **LeMar Coal Co.**, which is sinking two shafts.

An unusually large scraper conveyor is being installed by the **Delmar Fuel Co.**, at its Ruth Mine, located at Hildebrand in the Monongalia field. It will require some time to complete this work but it is hoped to have the appliance ready for operation by July 1. This conveyor is capable of handling about 300 tons of coal an hour.

Huntington and Danville, Va., capital will be invested in the development of a thousand acres of coal land near Huntington. **The Morrill Coal Co.** is being formed with $1,000,000 capital. L. B. Conway of Danville will be president of the new mining company, and Charles W. Jones of Huntington will be vice president.

The H. T. Williamson Coal Co. has begun to mine and ship coal from its new plant in the Logan region. This company plans to increase its production.

Hereafter, the **Har-Mar Coal Co.** will be known as the **Warner Collieries Co.**, this concern being owned by Warner & Co. of Cleveland who purchased the assets of the company some time ago The Har-Mar Co. formerly operated what is known as the Nina mine at Maidsville.

The Mountview Coal Co., newly organized, will operate in Kingwood district of Preston County, the company to have mines in the vicinity of Tunnelton. This concern is capitalized at $50,000. Among those principally interested in the new concern are: F. W. Borgman, L. H. Borgman, James W. Borgman, Leo L. Borgman, of Tunnelton, W. Va., and J. Ben Brady of Kingwood, W. Va.

The Dolls Run Coal Co. is a new company in which Monongalia County and Pennsylvania capitalists are extensively interested, being capitalized at $50,000. Coal lands in the Clay District of Monongalia County are to be developed, general offices of the company being at Morgantown, W. Va. Having an active part in forming this company were: R. D. Barrickman and David S. Brewer of Morgantown; C. M. Barrickman, of Cassville; Dominick Tropa of Star City, Pa.; B. H. Brewer, of Monaca, Pa.

With the election of George E. Myers as president of the **Cameron Mining & Development Co.**, the preliminary organization of which was perfected a short time ago, this company has proceeded with development work and is now engaged in sinking a shaft near Cameron where the company will have its general headquarters.

An improvement made at the large by-product plant of the **Domestic Coke Corporation** at Fairmont has been the installation of a gas producer plant secured for the purpose of heating the ovens. There has been no resumption of operations at the plant so far because of dullness in the market, it is stated by C. V. Critchfield, vice-president of this concern.

WISCONSIN

The Northwestern Coal & Dock Co., is equipping its Connors Point, Superior, receiving dock with a screening plant.

The United Coal & Dock Co. is erecting a $75,000 coal handling bridge at their South Water St. dock, near the entrance of Milwaukee harbor.

Traffic News

In a complaint to the I. C. C. the **Republic Iron & Steel Co.**, of Youngstown, Ohio, attacks as unreasonable the rate of $1.50 per ton on bituminous coal from Russellton, Pa., to Youngstown.

The Missouri & Illinois R.R., which is the new name given the old Illinois Southern road and which has recently changed hands and undergone other changes in equipment, etc., is now in regular operation. The roads run from Chester on the Mississippi River up through the coal fields of Randolph, Washington and Marion counties and terminates in Salem. The road carries coal from mines along its route to the main lines of the Illinois Central, the Chicago, Burlington & Quincy and other large carriers, to be shipped on to northern points.

The commission has dismissed by request of the company the complaint of the **Sargeant Coal Co.**, which related to rates on coal from mines in the Booneville district of Indiana to points in Illinois, Wisconsin, Iowa and Minnesota.

The Tampa Gas Co., and the **Key West Gas Co.**, both of Florida, have complained to the I. C. C. against unreasonable rates on foundry coke from Osaka, Va., to Tampa and Key West from Feb. 28 to Aug. 29, 1919.

Hearing scheduled by the I. C. C. at Birmingham for May 19 in the complaint of the **Corona Coal Co.** has been postponed to a date to be announced later.

In the case of the **United Light & Railways Co.**, an I. C. C. examiner recommends that the rates on bituminous coal from Jenkins, Ky., to Davenport, Muscatine, Ottumwa, Iowa City and Fort Dodge, Iowa, and from McRoberts, Ky., to Iowa City, be declared reasonable.

The Canadian Railway Commission has granted a 10 per cent reduction in the freight rates on coal from Alberta mines to the provinces of Manitoba, Saskatchewan and Alberta, effective June 1 and expiring on Aug. 21. Operators and dealers had asked for a cut of 20 per cent, but are satisfied with the concession. It is expected that the prices of soft coal in Winnipeg will be decreased between 40 and 50c. per ton as a result.

Further study of the order of the commission revising rates on coal shipped in interstate traffic to points in Minnesota, North and South Dakota, makes the situation denser and denser. The order may raise the rate from the docks to the Twin Cities still further, by perhaps 18c. Other revisions which are not in the line of reductions seem possible under the order.

Personals

C. A. Garner, formerly division engineer of the Lehigh Valley Coal Co. in the Hazelton Division, has resigned to take the position of mining engineer of the Markle Coal Co. at Jeddo.

W. A. Reutelhuber, formerly division engineer of the Centralia Division of the Lehigh Valley Coal Co. at Centralia has resigned to take the position of Superintendent of the colliery of the Darkwater Coal Co.

J. O. Gorman, formerly connected with the sales forces of the Kentenia Coal Sales Co., recently was appointed the Indiana representative of the Boone Coal Sales Co., the headquarters of which is in Cincinnati.

Bruce S. Davies of the mining engineers staff at the Wilkes-Barre office of the Lehigh Valley Coal Co. has been transferred to take the position of Division Engineer of the Hazleton Division.

R. Harlor of the mechanical engineers staff at the Wilkes-Barre office of the Lehigh Valley Coal Co. has been made division engineer of the Centralia Division.

M. L. Fetterman, formerly mining engineer of the Buck Ridge Coal Co. of Shamokin, has resigned and accepted a position on the mining engineers staff of the Lehigh Valley Coal Co. at Wilkes-Barre, Pa.

Hayden Owens, formerly on the staff of the division engineer of the Susquehanna Division of the Lehigh Valley Coal Co. has been transfered to the mining engineers staff at the Wilkes-Barre office.

Robert Hager, president of the Hager Coal Co., has returned to Cincinnati after a two weeks tour of Michigan. While in Lansing, he met with Governor Groesbeck, who is a member of the state commission that has charge of a central agency for the purchase of coal for state institutions.

L. R. Reese and **F. W. McCullough**, president and vice-president of the Buffalo-Thacker Coal Co., of Huntington, W. Va., have been visiting the offices of their New York selling subsidiary company, the Buffalo Coal & Export Corporation.

T. L. Irvine spoke on the destination weighing of coal at a conference at the Bureau of Standards with superintendents of weights and measures.

John H. Beasley, an attorney of Terre Haute, Ind., has been named state agent of the Harlen Coal Co., a Kentucky corporation, which recently qualified to do business in Indiana.

Captain. W. H. Morris, one of the pioneer coal operators of the Brazil Block coal field of Indiana, but now of Colorado Springs, recenty visited in Brazil.

The Governor of Pennsylvania has announced appointment of the following as the first members of the anthracite mine inspector's candidate examining board: **George M. Keiser**, Pottsville; **Thomas Thomas**, Dorranceton; **George Morrell**, Coaldale; **John Griffiths**, Scranton, and **M. H. Quinnan**, Pittston. The board was named under recently approved legislation.

Operators are taking advantage of the slack working period at the present time to make tours of inspection at the various mines throughout Illinois. Recently a party of officials composed of **Harry J. Meehan**, vice president of Cosgrove & Co., and president of the Ernest Coal Co., **Enoch Carver** and **F. T. Fritzharris**, general sales manager and chief engineer respectively of Cosgrove & Co., visited the mines owned by the company in Williamson County and also some in Marion County. **T. H. Cochran**, president of the Harrisburg Coal Mining Co., with headquarters in Chicago, with a party of coal men recently visited mines owned by that company in Saline County.

Harry A. Lawrence, formerly general sales manager of the Union Colliery Co., of St. Louis, has accepted a similar position with Newsam Brothers Coal Co., Old Colony Bldg., Chicago.

J. B. Burkhardt, general superintendent of the Security Coal & Mining Co., DuQuoin, Ill., is spending a few weeks vacation at Hot Springs, Ark.

Joseph Petri of Belleville, Ill., has been appointed as county mine inspector of St. Clair County for the coming term, succeeding Thos. Simpson.

T. S. Cousins, general superintendent of the two mines of the Equitable Coal & Coke Co., of Chicago, located at Johnston City and Clinch, Ill., has returned to his duties after a two weeks vacation at Oakville, Ill.

M. L. Hudson, of Chicago, representing the Edward Hines interests of that city was a recent visitor in the Fairmont region making the trip to Marion county. W. Va., for the purpose of inspecting the firm's mining property.

A recent visitor in Charleston was **Colonel T. E. Houston** who has extensive holdings on the Norfolk & Western in Southern West Virginia.

J. M. Wright of Cincinnati, president of the Raleigh Coal & Coke Co., in company with **A. A. Liggett** secretary of the company were in Raleigh County. W. Va., recently, inspecting the properties of the company at Raleigh. This company is extending its operations in the Raleigh County field.

A. R. Armstrong has resigned as resident manager of the Holdred Collieries Co., at Blair, W. Va., and has returned to his former home in Canada. Mr. Armstrong was manager at Blair for a period of about six years.

A visitor in the Fairmont region during the latter part of May was **T. H. Johnson**, of Bellaire, Ohio, president of the Chesapeake Coal Co., which has an operation in the Marion field.

A visitor in the New York market during the latter part of May was **Charles F. Sutherland** of the Sutherland Coal Co. Mr. Sutherland is also the Mayor of Morgantown, W. Va.

The Morgantown Coal Co., was represented in the Buffalo and Cleveland markets late in May by **M. L. Taylor**, vice-president of the company.

A. A. Sommerville of Cumberland, Md., has been elected president of the Eastern Coal Mining Co., of Cumberland, which recently acquired extensive holdings in Preston County, W. Va.

Industrial News

Minneapolis, Minn.—The Philadelphia & Reading Coal Co., which for years has maintained a retail office on the main floor of the Lumber Exchange, has moved it to the floor above, where the wholesale office has been located.

New York, N. Y.—The local office of the Jeffrey Manufacturing Co. is now located at 30 Church St., Hudson Terminal Bldg., in charge of Harold B. Wood.

Philadelphia, Pa.—The Combustion Engineering Corp. has increased its office space and is now located on the tenth floor, Finance Bldg., under the management of W. C. Stripe.

Pittsburgh, Pa.—The Iron Trade Products Co. has opened a new branch office in the Pennsyvania Bldg., Telephone 5611; in charge of A. Girard Foote, resident manager.

Washington, D. C.—Arthur Hale, formerly with the American Railway Association, has opened a local office and will act as agent and attorney for railroads.

Obituary

William A. Todd, chief shipper of the H. C. Frick Coke Co., and one of Scottdale's best-known citizens died recently. Mr. Todd came to Scottdale as timekeeper for Collins Brothers, contractors, in 1872 when the Southwest branch of the Pennsylvania was being constructed.

Nelson A. Rist, 70 years old, widely known in the coal and coke industries in Western Pennsylvania and West Virginia, and a former resident of Dawson, died suddenly at his home at Tucson, Ariz. Mr. Rist was largely interested in the West Virginia coal fields and was a director of the Fink Coal & Coke Co., and Little Kanawha Coal & Coke Co., holders of large acreages in Gilmore and adjoining counties.

Colonel Thomas Curtis Clarke, a noted engineer in the coal and coke industry, and commander of the 110th Engineers, Thirty-fifth Division, during the late war, died suddenly from pneumonia at New York, in his forty-eighth year.

Association Activities

Buffalo Bituminous Coal Association

The annual meeting of the association was held on May 13, at which J. Bert Ross was elected president, J. T. Roberts, vice-president and John Adema, R. H. Davison and T. M. Byrne, with the officers, directors. W. E. McCollum was appointed secretary-treasurer by the Board. President Ross was selected to represent the Association at the annual meeting of the National Association and former president W. D. Ward, to look after the association's interests on the ways and means committee of the Buffalo Chamber of Commerce, of which committee he is a member.

Cincinnati Coal Exchange

The exchange has had under consideration for several months past a series of meetings of the members in the way of a monthly get-together meeting. Recently, without very much preparation, the first of these was held. The speakers were supplied by the local chapter of the National Association of Credit Men and included Charles W. Dupuis, president of the Citizen's National Bank, R. M. Atkins, vice president and in charge of credits for the Proctor and Gamble Co., and G. L. Gruen of the Gruen Watch Co. All three related what was being done regarding the interchange of credit information between various trades and the coal men were asked to cooperate. Other meetings of this character will be held throughout the summer.

Colorado Retail Coal Dealers' Association

Delegates to the convention of the association, held in Fort Collins were urged by W. W. Curtis, an operator of Colorado Springs, to buy coal to the extent of their financial ability, without delay, as a matter of public duty. He predicted that coal will be scarce next winter and prices high.

F. B. Choate, assistant general freight agent of the Union Pacific R.R., who also addressed the delegates, said there is virtually no storage coal in the West at present, due to a falling market, the money stringency and agitation for lower freight rates. He said there are 450,000 freight cars idle at present.

President Charles A. Lory of the Colorado Agricultural College made a plea for the American spirit in business and for freedom from too much government restraint and regulation.

W. L. Anderson of Pueblo was elected as president to succeed Charles McMillan of Fort Collins. Others elected for the ensuing year: Thomas Owens, Denver, first vice-president; W. Hagan, Colorado Springs, second vice-president; E. H. Peterson, Denver, treasurer; J. H. Hamilton, Alamosa, secretary. The directors are John Harvey, Leadville; G. H. Clendenen, Denver; R. J. Belcher, Pueblo; Ross M. Lambdin, Gunnison; A. P. Smith, Denver; W. Carey Cook, Fort Collins, and H. C. Harmon, Colorado Springs.

Smokeless Coal Operators' Association of West Virginia

The association held a largely attended meeting during the recent annual convention of the national association in New York, the principal matter discussed at the meeting being the application of the Ohio railroads to the Interstate Commerce Commission for a flexible differential against West Virginia. The present differential, based on the 1917 decision, is 40c., but the Ohio roads claim that as the present rates have at least doubled since 1917, that the differential should be 80c. In other words, they contend that as rates go up the differential should be widened. The smokeless people instructed their secretary, E. J. McVann, to protect their interests.

The following companies were admitted to membership in the association: Litz-Smith Coal Co.; Rhodell Coal Co.; Wood-Peck Fuel Co.; Wilton Smokeless Coal Co.; Monticello Smokelss Coal Co.; Imperial Colliery Co.

West Virginia Coal Association

J. G. Bradley, of Dundon, president of the Elk River Coal & Lumber Co., who was elected president of the National Coal Association was also re-elected as president of the West Virginia Coal Association, it being his fourth term in such a capacity. The annual meeting of the association was held during the three-day annual meeting of the National Coal Association. Other officers elected were Everett Drennen of Elkins, president of the West Virginia Coal & Coke Co., as vice-president; W. H. Cunningham of Huntington, as secretary; A. H. Land, of Charleston as treasurer.

At the meeting at which officers were elected, the freight rate problem which is of a good deal of interest was discussed from all angles by the assembled membership.

Coming Meetings

American Institute of Mining and Metallurgical Engineers will meet at Wilkes-Barre, Pa., Sept. 12 to 17. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

Michigan-Ohio-Indiana Coal Association will hold its annual meeting June 15, 16 and 17 at Cedar Point, Ohio. Secretary, B. F. Nigh, Brunson Bldg., Columbus.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York City.

Rocky Mountain Coal Mining Institute will hold its summer meeting beginning June 28 at Salt Lake City, Utah. Secretary, F. W. Whiteside, Denver, Col.

Mine Inspectors' Institute of America will hold its twelfth annual meeting at Charleston, W. Va., July 12 to 15. Secretary J. W. Paul, Bureau of Mines, Pittsburgh, Pa.

Illinois and Wisconsin Coal Dealers' Association will meet at Chicago, Ill., July 13 and 14.

American Society for Testing Materials will hold its annual meeting at the New Monterey Hotel, Asbury Park, N. J., June 20 to 24. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

American Institute of Chemical Engineers will hold its spring meeting, June 20 to 24 at Detroit, Mich. Secretary, Dr. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Is Compulsion Without Regulation Possible?

WHEN Senator Frelinghuysen had his "Coal Industry Stabilization Act" reported out on May 16 he let it be known that his haste was due to a desire to obtain a favorable place on the calender of the Senate for the bill. He was understood to have been of open mind with respect to changes in the bill and to have agreed to participate in a conference with the representatives of the coal industry and the secretaries of Commerce and the Interior with the idea of perfecting the measure.

The proposed conference has been held. It is but a recitation of history to state that it was not until the end of the second day's conference and not until every attempt to provide a substitute measure had failed that the coal men came forward with any suggestion for consideration of the details of the bill. The first statement of the coal men at the conference was to register opposition to the bill as the beginning of regulation of the industry. The Senator maintained that the bill is in the interest of the coal industry and appeared surprised that such definite opposition should develop at this late date, indicating that he had supposed that the coal men in part at least would not oppose the principle of the legislation although they might question its details.

It will be recalled that on May 4, and therefore before the verbiage of the present bill was known, Mr. Morrow, vice-president of the National Coal Association, appeared before the sub-committee of the Committee on Interstate Commerce of the Senate and said, with reference to the proposed measure, "It is the belief of the men who make up the executive committee of the National Coal Association that current collection and publication of business-like information as to some features of the coal industry by a practical branch of the government can be very helpful to the coal industry itself as well as to the public. With the competitive conditions that exist in the soft-coal business—I speak only for bituminous coal—we have always felt that with such information and with the regulation of transportation under the emergency powers vested in the Interstate Commerce Commission, no regulation of the coal industry would be needed. We are opposed to regulation of the industry by the government. This bill contemplates the collection of certain information. . . . If the coal industry could be satisfied that this is an honest and sincere effort to get uncolored facts, without a desire to use facts to bolster up some theory of regulation or control that someone may want to advance, I think the industry would welcome the collection and publication of practical business information." In view of this statement the position of the representatives of the bituminous coal operators at the conference in complete opposition to the bill would indicate their belief that Senator Frelinghuysen's measure is in fact regulatory.

The coal wholesalers have been uncompromising in their opposition to this or any other bill with respect to coal. Any legislation that contains the word coal has drawn the fire of George Cushing. The Senator need have no surprise that the jobbers offer no support to his program. The retail dealers and the anthracite operators, so far as we are aware, had not, prior to the conference in Washington, given public expression to their position on this particular bill, although both were definitely on record as opposed to any form of regulation of the industry.

As the situation now stands we have on the one hand Senator Frelinghuysen, who contends that his proposal is not regulation—that it is in the interest of the industry—and that some legislation is absolutely essential now to forestall regulatory measures later when and if coal prices again go up. On the other extreme are those, as the wholesalers, who favor nothing except letting things be as they are, figuring that if and when the demand for regulation again arises, as it did last winter, they can again beat it. In between we find Secretary Hoover, who has merely asked for certain data to be furnished to the government, without being particular as to how or through whom it is supplied, and who does not favor any form of regulatory legislation, and the conservatives in the industry—the operators, bituminous and anthracite—who see the value to them and to the consumer of current publication of much more data on coal than are now available and who are willing to go to considerable length to provide that data, but who are not willing to submit to compulsory fact-finding, which they consider a form of regulation.

The peculiar thing about the situation is that save Senator Calder, none taking part in the conference wants to regulate coal—the Senator from New Jersey is vehement in his denunciation of that process—and yet they failed to get together. The issue appears to be whether there shall be a coal bill. A coal bill can be drawn that will provide for the submission of reports on a voluntary basis and likewise provide for the special investigations such as that pertaining to zoning, standards of coal, central purchasing by the government and the other pet ideas of Senator Frelinghuysen—a bill that the conservative, constructive element in the coal industry can accept without fear. Statutory zoning, definite standards of quality for all coal sold and central purchasing by the government are not practicable, and we are satisfied that special investigations by any agent of the government will so demonstrate. It is not these fanciful schemes that make the Frelinghuysen bill objectionable. It is not even that the bill provides for compulsory reports that causes many to oppose it, although we consider that the worst feature. Compulsory fact-finding is unnecessary and is regulatory.

It should be eliminated from any measure considered by the coal trade.

The big question is, Where does this kind of legislation lead? The extremists in the coal industry say that *any* coal legislation now will lead inevitably to regulation. Senator Frelinghuysen, also an extremist, says that *no* coal legislation now will lead inevitably to regulation. Since if either is right, then both are right, the coal trade has a ticklish decision to reach, and that, seemingly, at once. Whatever hope we had that the conservatives in the coal industry would be able to effect such changes in the pending bill as would make it non-regulatory and simply the fact-finding measure to which they are committed, was dispelled when the conference in Washington was turned into the "town hall" meeting that it was announced in advance was to be avoided.

The essence of the present situation is that the Senator from New Jersey is determined to have a coal bill bearing his name and that there is no administration policy on coal legislation that will support him in getting through Congress any bill to which he cannot get some measure of support from the business men in the industry.

The easiest position to assume and to maintain is that of the "bitter ender." It is not difficult to oppose everything, concede nothing and, if eventually beaten, to say "I told you so," but to be constructive, to work out a satisfactory "association of nations" without joining a "league of nations" is a task of no mean dimensions. There is a large element in the coal industry, having large investments, that believes the public relations of the coal industry are not all that could be desired and that the way to improve them is by giving the consumer more information. In the contest on the pending legislation that is next to come on the floor of the Senate it remains for these men to show that Senator Frelinghuysen is at once promising the voter regulation of the prices he pays for coal and the coal man no regulation of the prices he may charge.

We entertain the hope that somewhere along the line a way will be found to centralize and increase the information of the government and the consumer about coal and that the principle on which it will be done will be education and not compulsion or regulation.

Laudable Propaganda

WE RECOMMEND every seiler of coal to turn back to our issue of June 2 and Mr. Sampson's analysis of the coal-purchasing agents' state of mind—not that we subscribe to all that he has to say about the coal trade but because he said a lot of things every shipper should ponder on. There also would seem to be some things on which the professional coal buyer should ponder before he accepts as final the conclusions of Mr. Sampson.

We believe that all the coal trade has a right to expect—and it at least has the right to expect that much—from the consumer of coal in the present depressed condition of business is that stock piles be not allowed to shrink below the normal expressed in terms of days' and weeks' supply. That is, a plant that normally requires one thousand tons per day and would ordinarily carry thirty days' supply, or 30,000 tons, on hand, but is now using but five hundred tons per day should not allow its reserve to drop below 15,000 tons.

If the coal trade has been urging the buying of coal—propaganda, if you will—because of possible shortage next winter, the persuasion is really in the best interest of the consumer. The coal industry when afflicted by a car shortage next winter or next year, or whenever it comes, will be as powerless as the consumer to increase output. There is just one party in the game that can prevent acute shortages and that party is the consumer, for whom the purchasing agent is the contact with the coal industry. Coal is but one of the subjects on which the professional buyer must be expertly informed, as Mr. Sampson points out, but bituminous coal is one of the commodities with respect to which the economic law of supply and demand sometimes fails—when the link of transportation breaks.

Must I Do It Myself?

A GENERAL manager in a state with small mines bitterly lamented the fact that the tonnage at none of them could be brought beyond a certain low figure. His interpretation of the phenomenon was that the psychology of the average employee was against a large output—he thought in hundreds not in thousands. The men protested they were doing well when the output was still low.

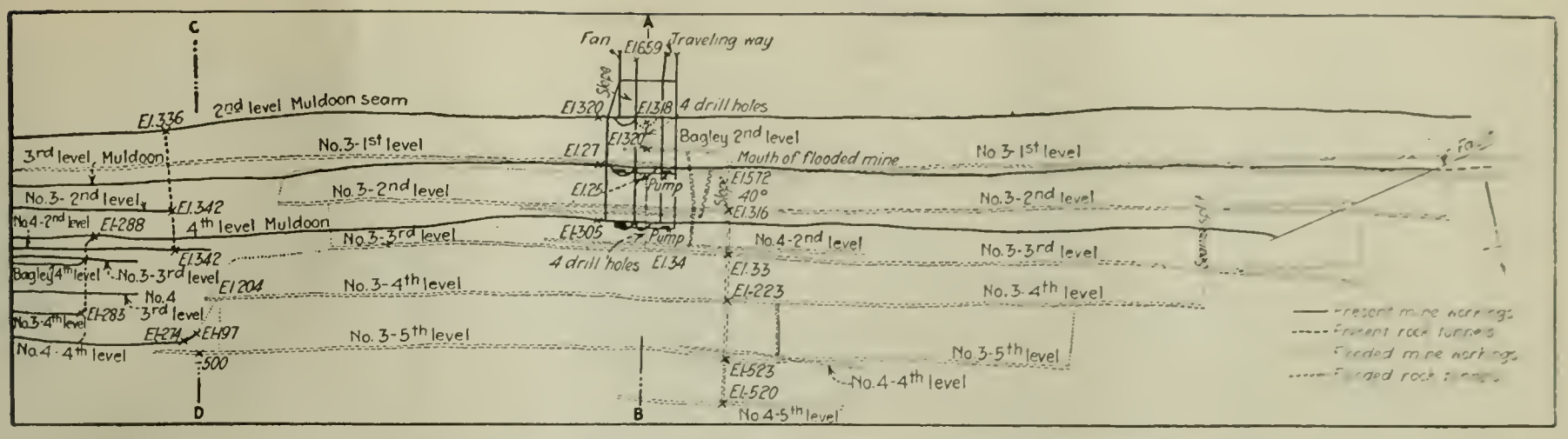
Perhaps a truer story was that no mining background existed. Every man on whom the management had to rely was a novice. The superintendent and the foreman, if they would have anything done must do it themselves or stand by and see it done. Perhaps the foreman and superintendent did not have that class of ability, so there was no one to do the work, and it was left undone or half done.

But in a mine where the superintendent is expert in the line of his duties, the foreman in his, the pumpman in his and all down the list there are men able to do what is to be accomplished matters move along easily. The management does not question: "Must I do it myself?" Each man has the knack that goes with his line of work, and the business moves forward efficiently.

There must be a background of training and experience for success. Every plant must be able to draw to itself talent of that kind. Wages being more or less standard the choice of employment will be based on kindly treatment, comforts and advantages, and the mine which has these to offer will get the pick.

The Wisconsin Steel Co., as is shown in the accompanying article by N. O. Irwin, attracts the best and by training makes it still better. Education is absolutely needed for success in operation. Though it may be difficult to teach all the men in all the trades around a mine with the limited knowledge superintendent, foremen, engineer and village schoolmaster possess, yet the instruction provokes thought, and thought mixed with experience creates knowledge, and the school does its work in the end.

Until the mine is full of experts who all in some particular lines have the better of the superintendent and who are self starters we cannot have successful plants with large output. By schools and by patient instruction we must get the mines beyond the stage where "If I want it done right I must do it myself"; instead we must have as an ideal "If I want it done right I must leave it to the man whose business it is to do it." To that end we must attract the right men and give them—if they do not have it—the needed background of training and experience.



NEW AND OLD NEWCASTLE MINE IN KING COUNTY, WASHINGTON

Old mine is in the upper measures—No. 4, No. 3 and Bagley. New mine is mostly in the Muldoon but is driven in these three measures also.

Old Newcastle Mine, Flooded and Filled with Washery Waste, Is Drained by Diamond Drillholes

Fire in Old Workings Made Flooding Necessary—New Mine Opened in Seams Extending Below Old Mine and Extensions Proposed in Seams Formerly Worked Compelled Company to Drain Water

By H. S. Ash*
Newcastle, Wash.

ON THE eastern shore of Lake Washington, in King County, Wash., twenty-two miles by rail from Seattle, from which it may be easily reached by automobile, lies the old Newcastle mine. This operation was shut down on Dec. 17, 1894, on account of a fire in the pumproom on the first slope level, or what is now known as the second level. This fire got beyond control; the mine was promptly flooded and has never been reopened.

When in 1906 it was discovered that a bed of coal called the Muldoon was workable the present Newcastle mine was started in this measure, and it is still in operation. For years the fine coal and reject material from the preparation plant was dumped into the slope of the old mine, and this has proven one of the great difficulties to be overcome in dewatering the old workings. It was feared at first that when the water was removed from the old mine, fire would again start from spontaneous combustion. Thus far this has not occurred, and it has been found that the old mine is filling with blackdamp, so that, unless a circulation of air is set up, no fire is likely to be kindled in the old operation.

At present the Newcastle mine produces about 900 tons of coal per 8-hr. shift, 300 men being employed. The coal mined is sub-bituminous and finds its principal market in the Puget Sound cities and contiguous territory. The fine material is now utilized in the manufacture of briquets and for making powdered fuel instead of being rejected. The property is owned and operated by the Pacific Coast Coal Co., of Seattle, Wash.

Drive to Boundary and Work on Retreat

The old mine, which stratigraphically is about 400 ft. above the Muldoon bed, was dewatered in order to remove the hazard its presence involved in the working of the coal beds of the new mine and to make possible the reopening of the beds of the old mine, which are among the best in the field. Four workable beds are present. They dip on an average 40 deg. and are separated by the usual shales and sandstones. The distance between the beds is shown in Figs. 1 and 2. The combined thickness of coal in the measures is about 27 ft. Before the overlying beds can be worked from the present slope, it is necessary to go safely under the old mine beyond its extreme limits. As may be seen in the map, only a comparatively small area of the No. 3 and No. 4 seams can be worked without dewatering the old operation.

The old mine was driven to the fifth level, or one level deeper than the present operation has reached. This level of the old mine, therefore, will have to be dewatered when the present slope workings have been driven to a corresponding depth. The method followed in working the beds in this operation is to develop one level while the one above it is producing coal. The developing level is driven to the boundary and the mine operated on the retreat. It takes, at the present rate of development, about five years to reach a level and drive to the property limits. The level workings are approximately 13,000 ft. long.

Old Mine Had Developed Three Coal Beds

Although dewatering was contemplated for several years, it was never actually attempted until the early part of 1920. The delay was the outcome of several reasons, among them the cost of the power used in dewatering and the liability that fires in the upper bed would result. In the autumn of 1919 the Newcastle mine was electrified, and all the energy necessary could then be obtained from a hydro-electric plant. Because the second and third levels of the old mine were worked out, sealed off and caved, it was necessary in these

*Superintendent, Pacific Coast Coal Co., Newcastle, Wash.

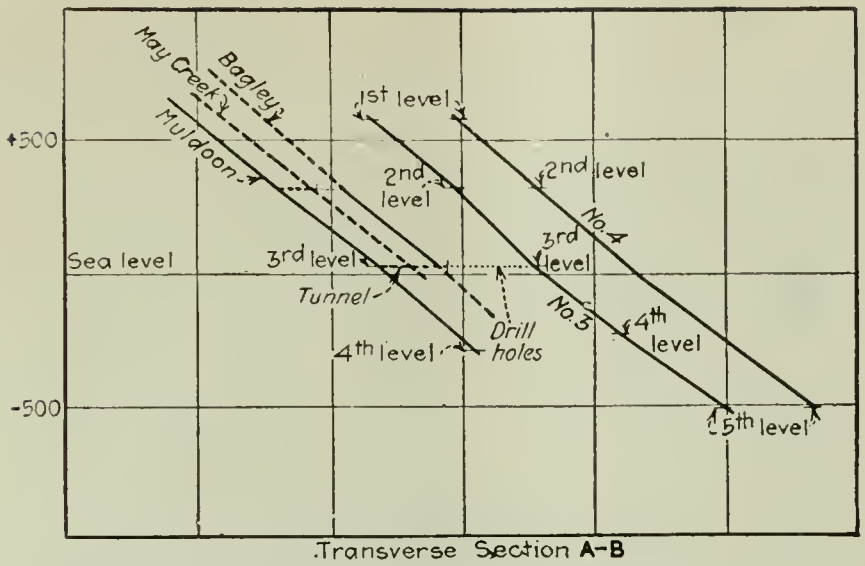


FIG. 1. TRANSVERSE SECTION OF STRATA ON LINE AB
The levels to which any one given number is assigned in the different beds are opened up at approximately the same elevation and not at equal vertical distances from the mine opening. Thus a bed may have a second level and no first. In fact only No. 3 in the old mine has a first level. This section shows two of the three series of diamond drillings—those near the main slope.

instances to drill the drainage holes to the old mine from a point near the slope landings on the Muldoon seam.

In the order of their occurrence, the beds found are the No. 4, the No. 3, the Bagley, the May Creek and the Muldoon, the last of which is the underlying bed and the one on which the haulage slope and main airways are driven, and on which the output of the new mine almost wholly depends. The measures worked and flooded in the old mine were the No. 3, the No. 4 and the Bagley, the principal one being the No. 3. Of the Bagley bed only a small portion was worked on the second level, and only the slope and airways in the Muldoon bed are driven under these old workings. The May Creek bed has not been worked in any of the slope operations in this coal field.

For the purpose of drilling the holes a prospecting diamond drill, type B, manufactured by the Sullivan Machinery Co., is employed. It is driven by air supplied from the mine compressors located on the surface. The hydraulic cylinder of the drill is connected at each level directly to the column-line pressure of the present mine.

The Bagley bed was worked only at the second level and was not opened out to any large extent. The operations in this bed being so restricted it was possible to reach it only by drillholes driven from a point near the slope of the new mine, which, as will be noted in the frontispiece, is not far from the slope of the old mine. The workings in this bed were the first tapped. This measure overlies the Muldoon seam and by a rock tunnel is connected on the second level of the old mine to the second level of No. 3 bed. Thus the water in this level, if not in some way blocked as suggested later, is connected with that in the rest of the old mine workings.

Larger and Steeper Hole Makes Job Easier

The May Creek bed lies about midway between the Muldoon and the Bagley measures. It is a dirty coal averaging about 4 ft. in thickness. In order to avoid bringing the water into the coal bed, as well as to obviate casing the holes through it, it was decided to drive a rock tunnel through and beyond this seam and to within 50 ft. stratigraphically of the Bagley workings in the old mine.

Accordingly this tunnel was driven 7 x 7 ft. in dimensions to the point above indicated, and boreholes were drilled from that point to the Bagley seam. The first hole was driven level with a bit which makes a 2-in. hole. It tapped the water successfully, the pressure being 97 lb. per sq.in. While going through the footwall of the Bagley workings the hole frequently caved, and the bed of clay which underlies the Bagley seam also gave trouble. In going through the broken ground in the footwall of the old mine a steel bit was employed.

It was decided to drill the succeeding holes larger, and accordingly the machine was equipped with the N size of rod and a single-tube core barrel, the holes being drilled 3 in. in diameter. This increased the pressure on the bit, and difficulty was encountered in getting the rods out of the hole, for the water forced the cuttings and loose rock between the rod and the sides of the opening. The second hole was driven at a pitch of 3½ deg. upward, which facilitated operations, the hole keeping itself clean much more easily.

It then was decided to drill the next hole with B rods, which are about 2 in. in diameter, but still to employ the N size of single-tube core barrel, which is approximately 10 ft. long, thus making a 3-in. hole with a small rod. This arrangement worked well, and the rest of the holes on this level and in fact all those on other levels were drilled in this same manner.

Water Pressure Controlled by Chuck Alone

In all, four holes were driven in the Bagley bed, the shortest being 90 ft. long, and the longest, where the mine was found caved, 120 ft. It was found that by drilling with the small rods and large core barrel on a pitch of 3 to 7 deg., the holes cleaned themselves without difficulty and that the pressure was relieved to such an extent that in many instances when taking out the rods it could be controlled by the chuck of the drill alone, even when tapping the water at a pressure of 217 lb. per sq.in. No gland was necessary to keep the water back, nor should one be used, as this device rather maintains the pressure than relieves it. Four holes totaling 440 ft. were drilled on the second level, tapping the water at a pressure of 97 lb. per sq.in.

The second point chosen as the location for another series of drillholes was on the third Muldoon level at a point near the main slope of the new mine. Here a 7 x 7-ft. rock tunnel 200 ft. long was driven slightly upgrade. It reached and passed the Bagley bed at a point beyond that part of the bed in which coal had been mined. The Bagley seam was worked in the old mine only on the second level, as it was dirty and was with difficulty kept open. Consequently it did not tap any water. The tunnel ended at a point 319 ft. on a horizontal line from the old mine.

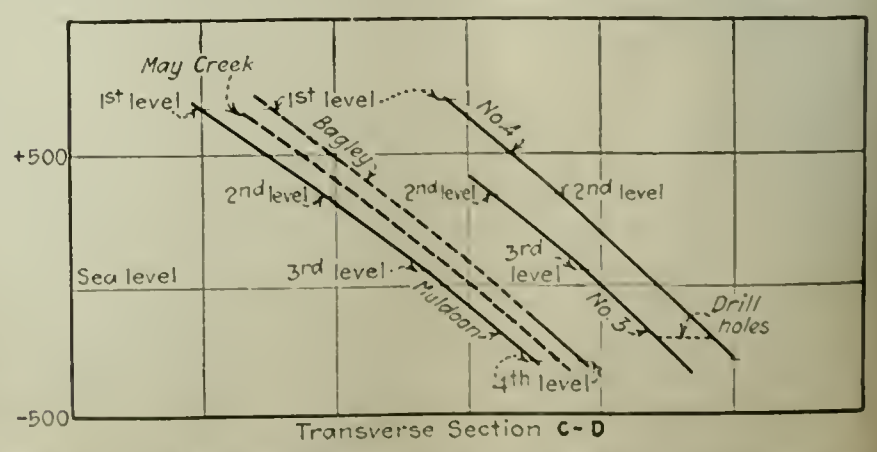


FIG. 2. TRANSVERSE SECTION OF STRATA ON LINE CD
This section shows the drilled connection between No. 4 in the new mine and No. 3 in the old mine. These drillholes were driven into the No. 3 bed through the roof, or "hanging wall," which, being unfractured and free from clay, can be penetrated with little trouble. Taking the water from the roof and remote from the filled slope will prevent the drawing of silt from the mine.

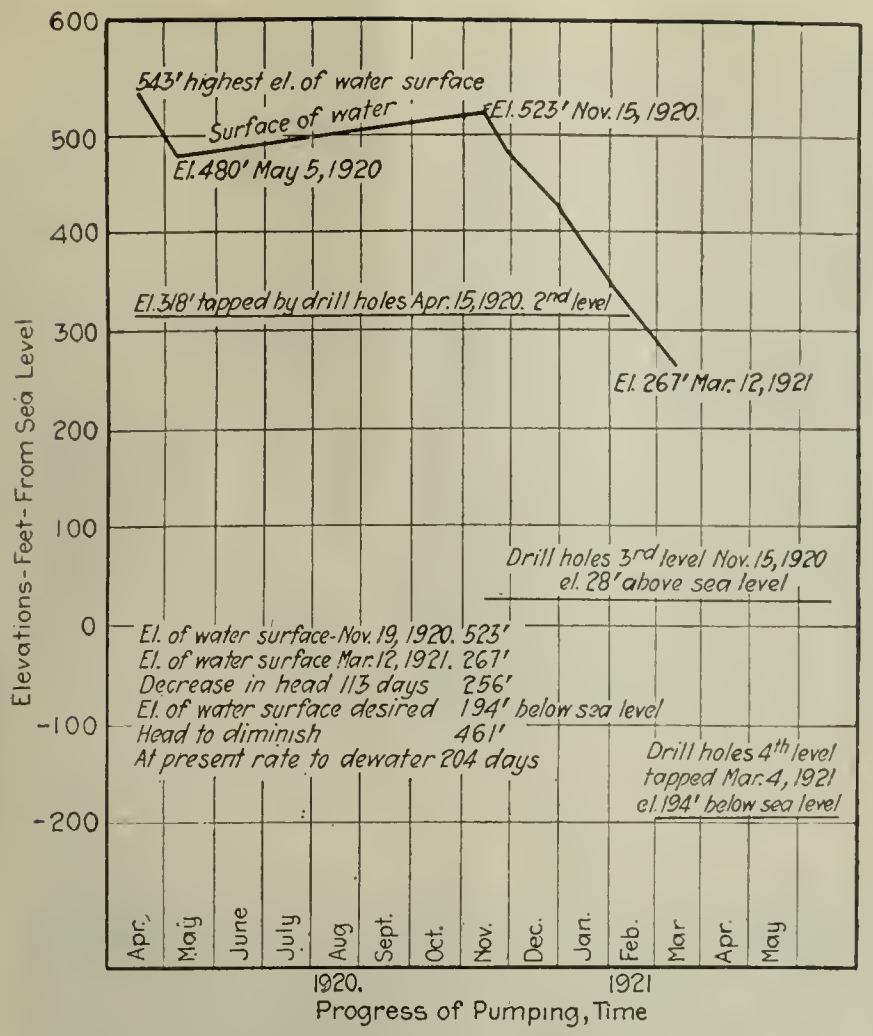


FIG. 3. GRAPH SHOWING PROGRESS OF PUMPING

The water which before pumping stood at 543 ft. above sea level, only 29 ft. short of the level of the mouth of the mine, had already dropped to 267 ft. (or a drop of 276 ft.) on March 12, 1921. It fell 256 ft. in 113 days. The intention is to lower it to a point 194 ft. below sea level, or 461 ft. more, which, at the present rate, would take 204 days.

Here the rock was found to be solid and four 3-in. holes were driven with the N core barrel and bit, using the B rods. Caved ground was encountered in the footwall of the old mine at the third level. The holes were driven with a rise of 3½ deg., so as to reach the old workings about 10 ft. above the old gangway. They all holed through at about 319 ft. and the pressure was found to be 217 lb. per sq.in.

The last 20 ft. of these holes was put in with a steel bit 3 in. in diameter. The ground underlying the footwall of the No. 3 bed in the old mine is chiefly coarse-grained sandstone, which was thoroughly saturated with water. These holes consequently made much water when they arrived within 30 ft. of their collars. The total length of the four holes driven by the diamond drills from the end of this rock tunnel was 1,276 ft.

Last Drillings Were from No. 4 to No. 3 Bed

When this work was completed the drill was moved to the fourth level of the No. 4 seam, which had been reached by a rock tunnel driven beyond and eastward of the old workings. The location of this work can be seen by looking on the left side of the frontispiece near the lower end of section line CD. Here five holes of an aggregate length of 1,300 ft. have been drilled, all being 3 in. in diameter. The holes that have been completed were driven in like manner to those on the third level. They average 260 ft. long. The first hole tapped the water at a pressure of 210 lb. per sq.in.

In order to obtain a solid face, the rock tunnel was driven 21 ft. into the footwall of the No. 4 bed. It was decided to make the boreholes strike about 100 ft. from the face of the fourth level of No. 3 bed in the old mine. To do this by a tunnel and drillholes driven at right angles to the direction of the level would have involved the extension of the fourth level of bed No. 4 in the new mine. This, however, would have delayed operations. Consequently it was decided to drive the rock tunnel and boreholes on a line which struck the level at an angle somewhat less than a right angle. This meant a somewhat greater length of borehole but considerably decreased the time required to complete the work.

These Fourth-Level Holes Will Not Block

As has been stated previously, the old mine was allowed to become full of water, after which culm was dumped into the slope for years. Difficulties having been experienced from the coal blocking the holes on the second level, it is assuring to the management to know that those now drilled on the fourth level of No. 4 bed are placed at a point farthest from the slope of the old mine and so pass into that mine through the hanging wall and not the footwall. The difficulty experienced from loose material will thus be averted. The first 60 ft. of the second hole passed through sandstone saturated with water, rendering the workings wet. The water soon drained off, however, and the remaining 180 ft. of the ground between the No. 4 and No. 3 beds was found to be a fine-grained sandy shale through which water would not pass, with the result that the hole was dry.

Although the existing maps were known to be in error, it was decided to accept the elevations as correct. The first drillhole proved that the horizontal projection had been erroneously located about 50 ft. This hole was driven so as to enter the old mine about 20 ft. above the probable floor of the gangway. At a point 2 ft. from the old mine, notwithstanding the pressure of 210 lb. per square inch on the rock, the hole was dry.

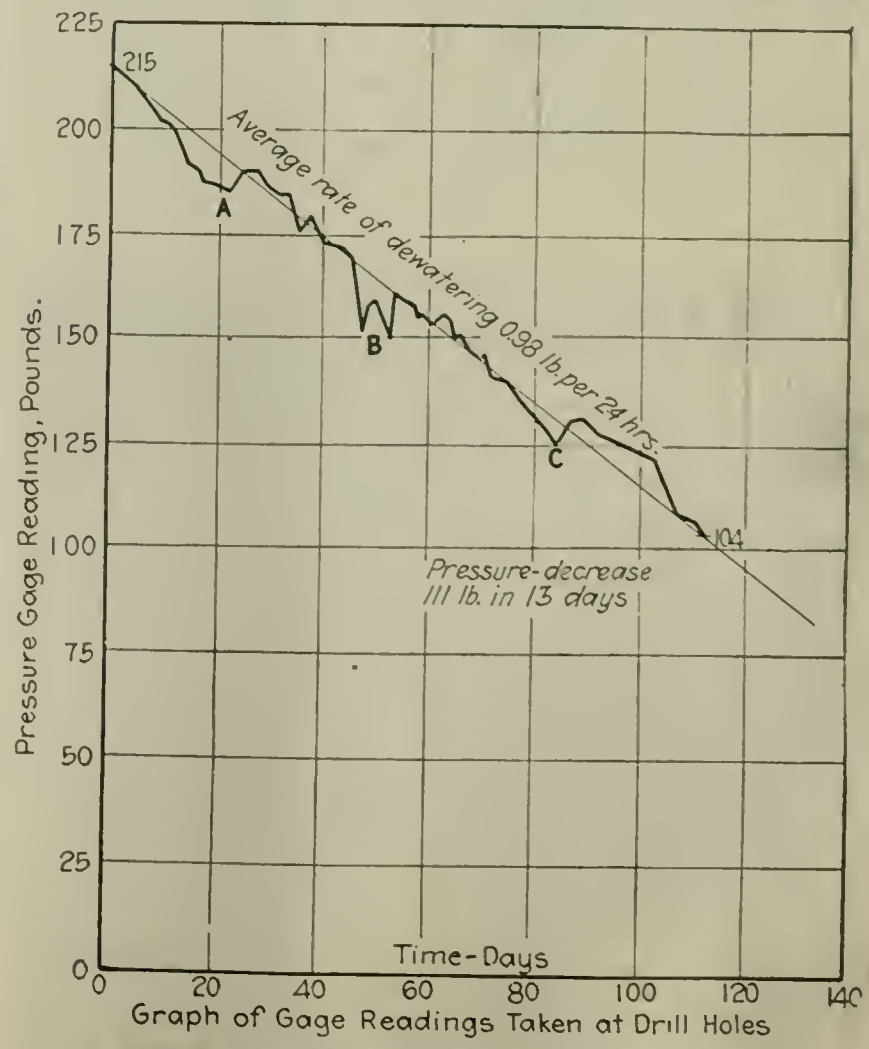


FIG. 4. GAGE READINGS AT DRILLHOLES

At A, B and C the fall in pounds was unusually rapid but did not continue. In fact the pressure rapidly rose. This is explained by the breaking of natural silt dams within the mine which on rupture caused the inundation of the lower-pressure area with water from points where the pressure was greater. After every such readjustment the water was unusually full of silt.

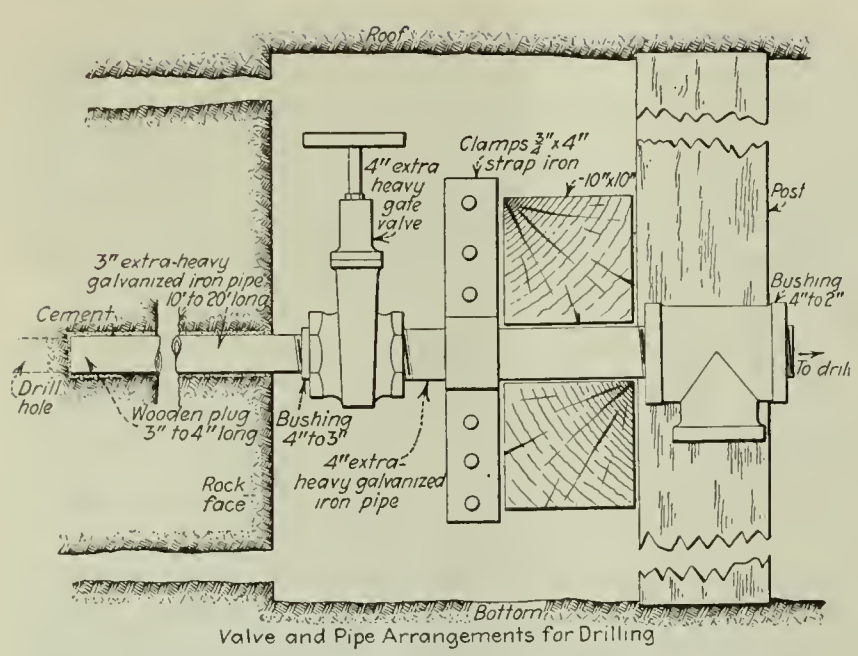


FIG. 5. VALVE AND ARRANGEMENTS FOR DRILLING

The large gate valve is provided so that the core barrel of the drill may be withdrawn from the 3-in. hole without injuring the valve seat. The casing is sunk into the rock 10 ft., except in the fourth level, where the pressure is greater, the sandstone is softer and the coal seam nearer, necessitating protection against leakage around the pipe. Here the casing is 20 ft. deep.

No water became noticeable until within 1 ft. of the old workings, where the drill was stopped for half an hour. Even then the water was not troublesome. but when it was shut off from the rod, a small amount continued to flow. The drill broke through after being driven 1 ft. further. The rods had been pulled when within 4 ft. of the old mine, and the core barrel cleaned. so that there would be no probability of the hole becoming blocked. This hole was drilled from start to finish with a diamond bit of N size.

Experience here gained has clearly shown the benefit of drilling into the hanging wall instead of into the footwall, as there is then no broken ground or dirt to pass through. Although fine coal came through the hole the drill was driven a short distance into the measure after the boring proper was completed. This hole has clearly manifested that when driving toward an old mine, danger can be avoided only by keeping drillholes ahead.

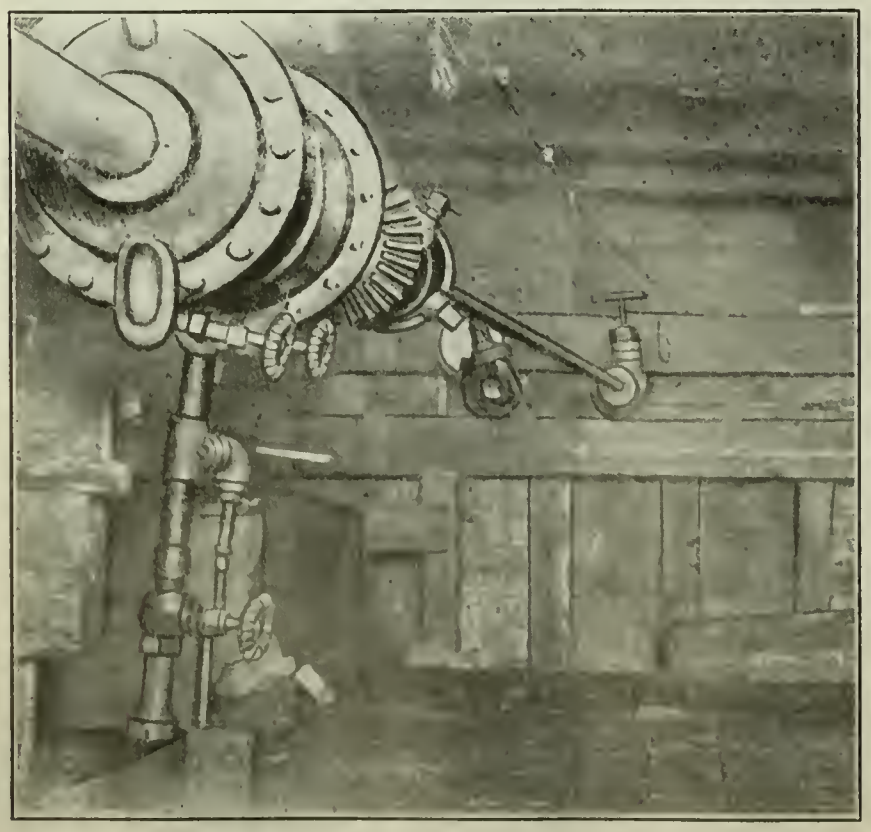


FIG. 6. DIAMOND DRILL AT WORK

The drill is boring in the second hole of the fourth-level series. Note that the drilling is done through the valve, which has to be made of ample size for that purpose. Owing to the perspective the slight upward inclination of the drill stem is not noticeable in the illustration.

In putting the rods into the hole under pressure, or in moving them there, the drill drum with rope and brake is employed. The cable is run from the drum to the face or rear of the machine around a sheave and is then attached to the rods by clamps. The rods are taken out or put in place in 10 or 20 ft. lengths, depending upon conditions.

Preparing the face for drilling is described in the following paragraphs and is shown in Fig. 5, which depicts the pipe arrangement. A casing must be put in the hole for a short distance, to which the control valve is attached. For this purpose the hole is driven with a 3-in. bit for 10 to 20 ft. At this mine the casing holes in the upper levels were driven 10 ft. and in the fourth level 20 ft., the additional length in the latter case being allowed because of the softness of the sandstone and the proximity of the coal seam. The casing hole is next reamed out with a diamond bit throughout its entire depth, so as to allow a 3-in. pipe to be concreted into place.

In this mine galvanized pipe was employed for this purpose, the expectation being that the galvanizing

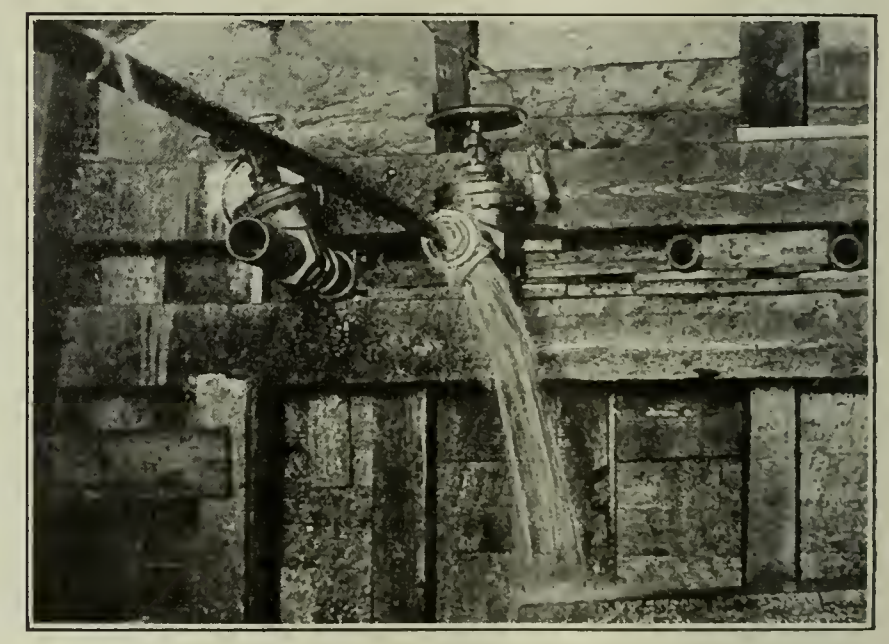


FIG. 7. DIAMOND DRILLHOLES AT THE FOURTH LEVEL

One hole is drilled and fitted with gage—that on the left. One hole is being drilled, and in the two others the casing has just been fitted. In this instance the spalling off of the rock made it advisable to concrete the face behind the bracing timbers.

would protect the pipe from the acid mine water. For all pressures greater than that found on the second level extra-heavy pipe and valves were employed. When the hole is reamed out a wooden block 3 or 4 in. long is inserted in the end of the pipe, to be drilled out when the hole is driven past the casing, and the hole is then filled with cement mixed with enough water to render handling easy.

As much of this grout as possible is forced into the hole. In this instance it required about one sack of cement to a 20-ft. casing hole. Next by means of the hydraulic cylinder, the 3-in. pipe with the above-mentioned wooden plug in its end is forced into the hole, driving the cement backward around the outside of the pipe. When the pipe has been driven to place, a valve is put upon its outer end and the whole allowed to stand until the cement has set. This requires from four days to one week.

Usually pipes are put in place simultaneously for each of two drillholes before the first is driven through, after which the remainder of the holes are put in. This procedure was followed in order to forestall the possibility that the fractures in the rock might cause such

a leakage of water from complete to incomplete holes as would prevent the placing of the remainder of the casing pipes. A clamp is placed on the pipe. A 4-in. valve is used in order to allow the core barrel to be withdrawn from the 3-in. hole without injuring the valve seat. A bushing to fit the rod and steady it is employed in the outer-run opening of the 4-in. T placed outside the valve. After the rods are removed the valve is closed until it is time to let the water run. The T also is taken off and moved to the point where the next hole is to be drilled. The valve is fastened directly to the casing pipe, so as to have as few connections as possible. On the fourth level the soft rock in the face kept spalling off, and after the first hole was drilled it was considered advisable to concrete the face behind the bracing timbers. Accordingly this was done, the valve being placed outside the timbers as shown in Fig. 5.

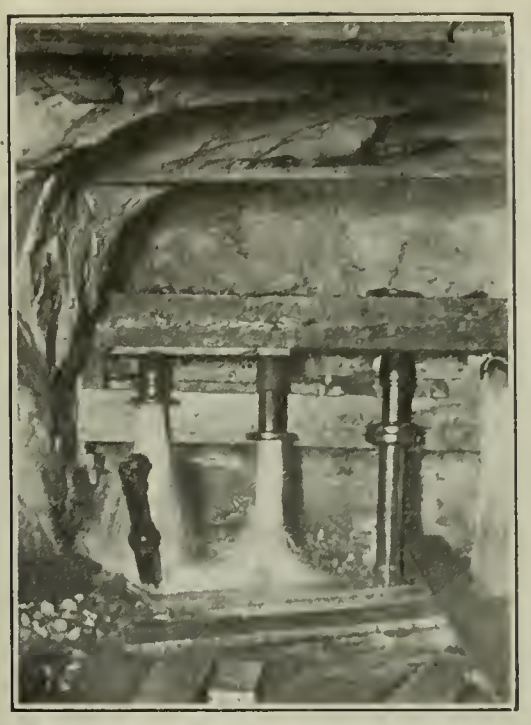


FIG. 8. DRILLHOLES DISCHARGING IN OPEN

The wheels of the controlling valves can be seen over the top of the balk of timber. As a rule the water is not allowed to run into mine but the pipes are connected up with the centrifugal pump so that the pressure may assist in its operation.

The ground drilled in the operation above described was mostly soft sandstone and sandy shale. The average rate of drilling was 48 ft. per day of eight hours. Drilling operations were conducted by one drillman and two or three assistants. The cost of drilling, not including diamonds, was 53.3c. per foot. In this instance only one set of diamonds, eight stones in all, was used. The cost per foot for diamonds has been 13.2c. Drilling was done by C. D. Sellers, and the success attending the operation has been largely due to his efforts.

When the old mine was in operation approximately 300 gallons per minute entered the workings. According to weir measurements for 113 days, 700 gallons have been handled each minute during the twenty-four hours of each day. Thus, at a conservative estimate, 113,000,000 gallons of water have been voided. The old mine above the fourth level is, therefore, nearly one-third empty.

In the present operation the water varies from 1,200 gallons per minute in the wet season to 500 gallons per minute during the summer months. All pumping is done from the third level, with the exception of the water voided from the fourth, which at present amounts to 500 gallons per minute for eight hours out of each twenty-four. The pumps are designed to accommodate varying heads, and later the water voided below the third level will all be pumped from the fifth level to the third level pumps.

From experience in the inclined beds of western Washington it has been found that in nearly all instances when a level is worked out, even though chain pillars over 100 ft. thick are left in place, the rock between the seams breaks and the water sooner or later finds its way to the next level. It is not within the means of most companies to leave a sufficiently large chain pillar to retain this water, the coal left in such a barrier being lost.

To handle the water that the mine is now making and will make, three centrifugal pumps manufactured by the Allis-Chalmers Co. are installed on the third level and one on the fourth. Another machine is employed for dewatering alone and will form part of the pumping equipment at a lower level. These pumps are of 500 gallons per minute capacity against a 700-ft. head. They are driven by 150-hp. motors using alternating current at 2,250 volts.

Pumping was begun on the second level on April 15, 1920, at a pressure of 97 lb. per sq.in. On this and other levels so long as the water entered the pump under pressure the suction end of the pump was connected directly to the holes, a strainer in the suction pipe keeping out solid material. The holes are then allowed to run into the open, and the water is drained to the regular mine pump. As the drilling advances, the pump is moved to a lower level.

On May 5, 1920, the water was all out of the second level in the Bagley bed. The pump connected directly to the holes sucked a vacuum, showing that the Bagley was sealed off from the No. 3 bed. The seal doubtless was formed by the saturated refuse and slack that had run into the old mine. Culm and water had been pumped for a day or two prior to this occurrence.

On Nov. 19, 1920, arrangements were completed for pumping in the third level, the progress made being shown in Fig. 4. It is expected that in course of time the holes on the third level will be plugged by the slack as the water lowers, and for this reason holes are placed at the east end of the old mine on the fourth level, as shown on the map. They cannot be plugged at this point.

Referring to Fig. 4 at points A, B and C, it will be noted that the pressure changed violently. This occurred at regular intervals, and at such times the pressure would fall rapidly, then rise almost instantly. The water coming through the pump would be extremely dirty and contain culm for several days, after which it would run clear again. This seems to indicate that the culm left in the slope blocks on one side of the mine, and after the water is lowered on the pump side for a certain distance this dam gives way and equalizes the pressure, simultaneously causing the water to be dirty. At the present rate of dewatering it will take 204 days to lower the water to the fourth level. This pumping problem is shown in Fig. 5.

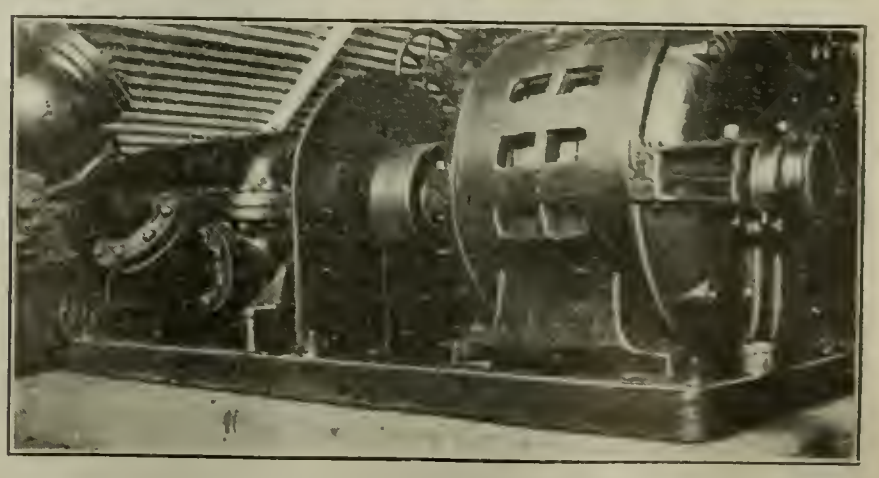


FIG. 9. CENTRIFUGAL PUMPS FOR DEWATERING

Three of these 6-stage pumps are installed on the third level and one on the fourth. This is one of those on the third level. The pumps lift 500 gallons per minute against a 700-ft. head, being driven by 150-hp. motors and using alternating current at 2,250 volts. Another pump of the same size takes care of the dewatering of the old mine.

Rotary Car Dump That Operates Solely by Gravity

Gravity, Springs and Flywheels Discharge Cars by Revolving Them Through Approximately 135 Deg.—Cars Can Be Dumped in Full Trips, Hence Swivel Couplings Are Not Needed

VARIOUS types of rotary car dumps are used for discharging the contents of mine cars. The power employed usually is compressed air, steam or electricity. Rotary car tipples have a great advantage over those of the end-dump type as they permit the use of cars having neither drop bottoms nor end gates. This detail of car construction reduces the quantity of material which is scattered along the haulageways by cars of other types. It also eliminates the trouble arising from an accidental opening of the doors when cars are traveling at high speed. Solid-body cars are lighter, cost less for repairs, are more rigid, have longer life and lower initial cost than those of other types. An entirely new design of rotating tipple has been placed on the market by the Wellman-Seaver-Morgan Co. This machine does not require any power for its operation other than that furnished by gravity. This device is known as the "rollsright" car tipple and its construction and method of operation afford simplicity of construction, with resulting lower first cost; ease of operation, permitting the employment of unskilled labor; lower maintenance charges, and increased production.

This dump will discharge one or more cars at a time and will make a complete dumping cycle in five to seven seconds. It is controlled entirely by one latch lever, which holds the tipple in an upright position. The center of gravity of the loaded car or cars is eccentric to the tipple by a sufficient amount so that when released by the latch lever the tipple rotates through an arc of about 135 deg. This sets in motion a set of flywheels located on the roller shafts.

Flywheel and Springs Carry Dump to Place

At the end of the 135-deg. arc the tipple ring engages with a specially-designed spring and wedge, which stops its forward motion. The center of gravity of the car or cars is now on the opposite side of the center line of the tipple. This in conjunction with the recoil of the

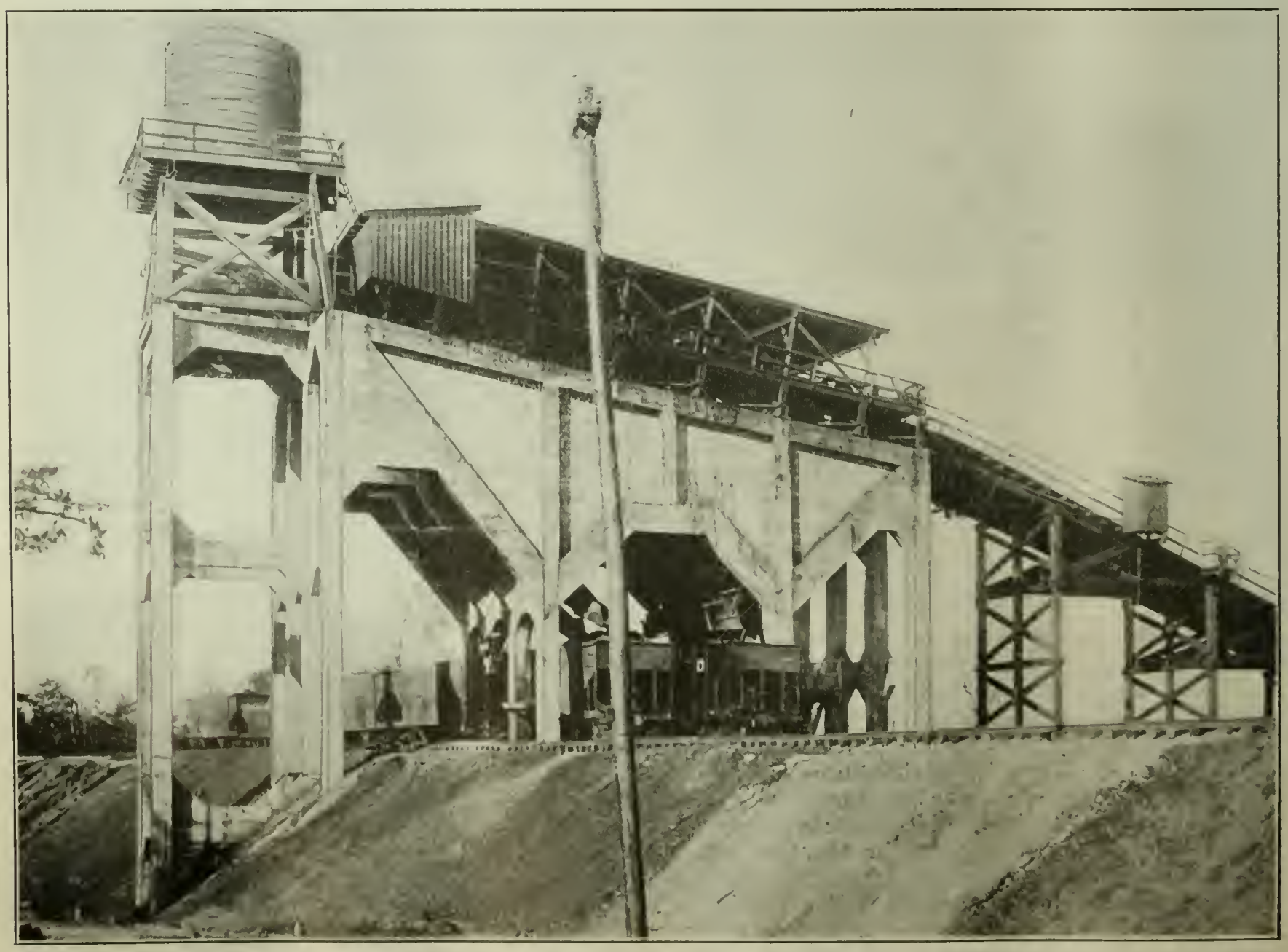


FIG. 1. TIPPLE AT DOLMITE NO. 3 OF WOODWARD IRON CO., ALABAMA
Five-car revolving dump at head of 1,400-ft. 30-deg. grade. The dump is set on a 15-deg. slope and discharges into a double V-shaped bin of a capacity of 400 tons. The cars are dumped without being detached from the rope. A 700-hp. double-drum electric hoist pulls the cars up the slope at a speed of 2,000 ft. per minute.

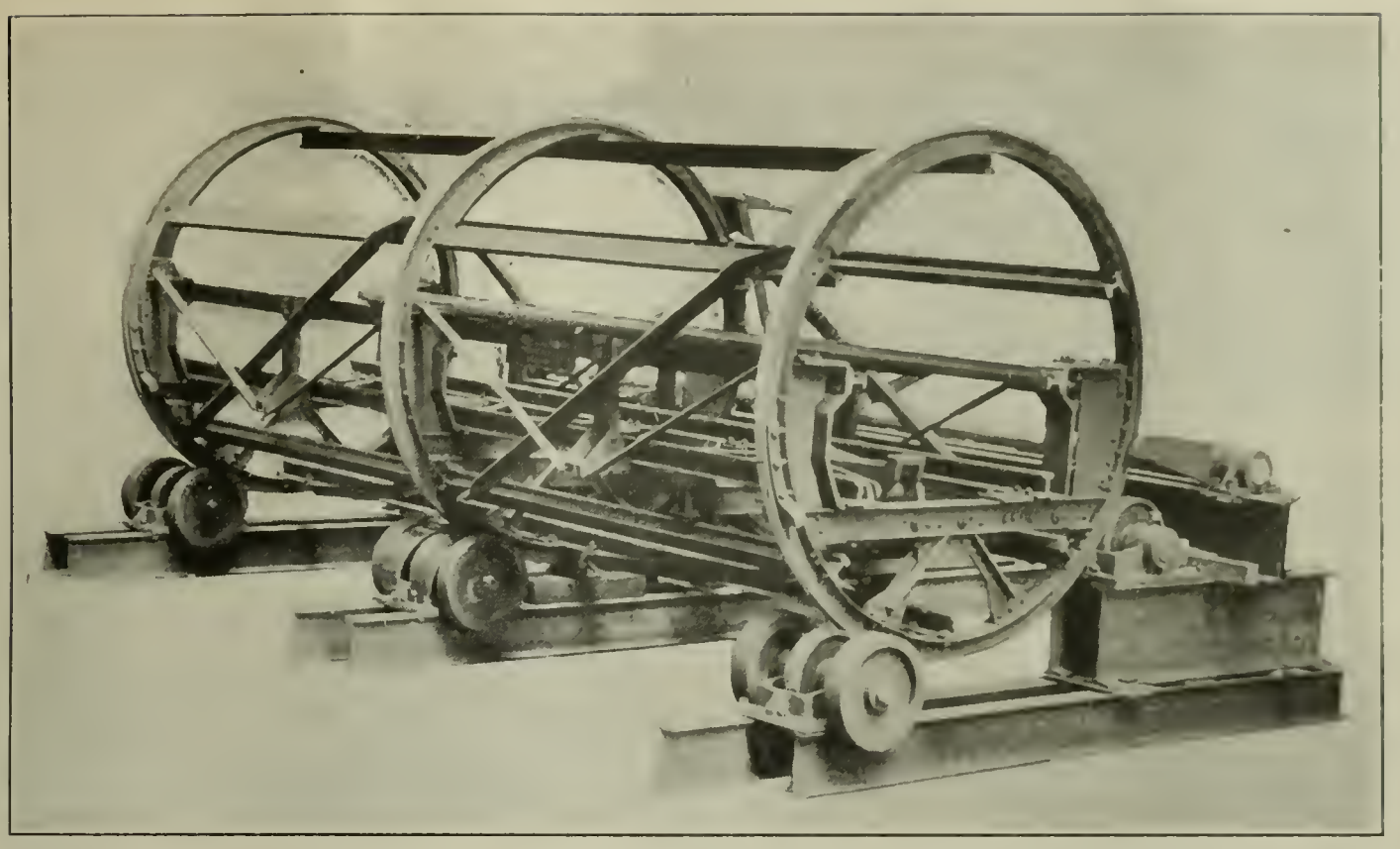


FIG. 2

Two-Car Dump

Quartering view of dump at Gulf State Steel Co's. mine at Birmingham, Ala. This is an underground dump, set level. Cars are fed to it by gravity, a spring car stop spotting the cars in proper position for dumping. This illustration gives a good idea of the six lower flywheels, two of which are on each of the three short shafts.

springs starts the tipple in the opposite direction and brings the flywheels up to speed, their momentum carrying the dump around to its original position, where it automatically latches. All the rollers supporting the tipple are carried on shafts mounted in Hyatt roller bearings. This reduces friction to a minimum.

Several of these dumps are now in operation. The first was installed at the coal-mine slope known as Dolmite No. 1 of the Woodward Iron Co., of Birmingham, Ala. The coal cars, after being brought to the foot of the slope by an endless rope are attached in trips of four to a tail-rope haulage and hoisted at a speed of 1,500 ft. per minute up a double-track slope 1,900 ft. long having a maximum grade of 26½ deg. At the top of the slope the cars enter either of two car tipples which are located over a 300-ton pyramid bin, from which the coal is loaded directly into railroad cars. These dumps are shown in Fig. 4. The average capacity of this mine is 1,500 tons in eight hours.

At the Dolmite No. 3 are located two 5-car dumps of the same kind. The cars at this mine are brought to the foot of the slope by an electric locomotive and are there made up into trips of five, which are hauled by a 700-hp. double-drum electric hoist up a 30-deg. grade 1,400 ft. long at a speed of 2,000 ft. per minute.

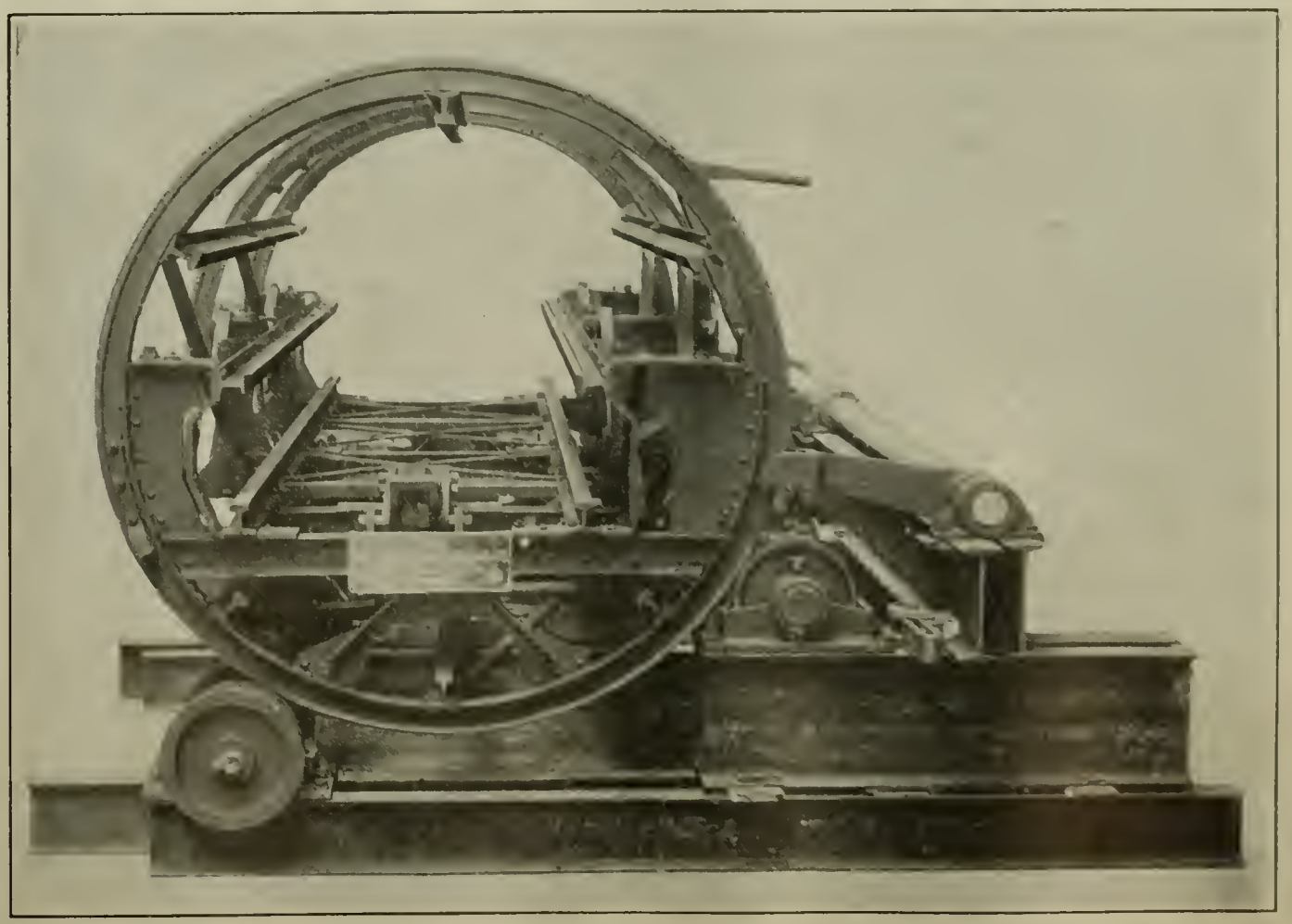
The rotary dumps are set at an angle of 15 deg. over a 400-ton double bin with V-shaped bottom, as shown ir Fig. 1. The cars at both the No. 1 and No. 3 Dolmite mines are discharged without detaching them from the hoist rope.

The tipple at the No. 1 mine has been in operation two years and that at No. 3 for eighteen months. Thus far neither has failed to perform its duty properly, nor has either caused any delay or expense in its operation.

FIG. 3

Car Dump

Track is set to left of center so that when the cars are in place the dump is out of balance. As soon as released by the latch lever it turns 135 deg., whereas a spring and wedge prevent further rotation. Recoil of springs and an attempt to restore its balance brings it back, setting two flywheels in under part of ring revolving. These carry it back to its original position, where it is again latched.



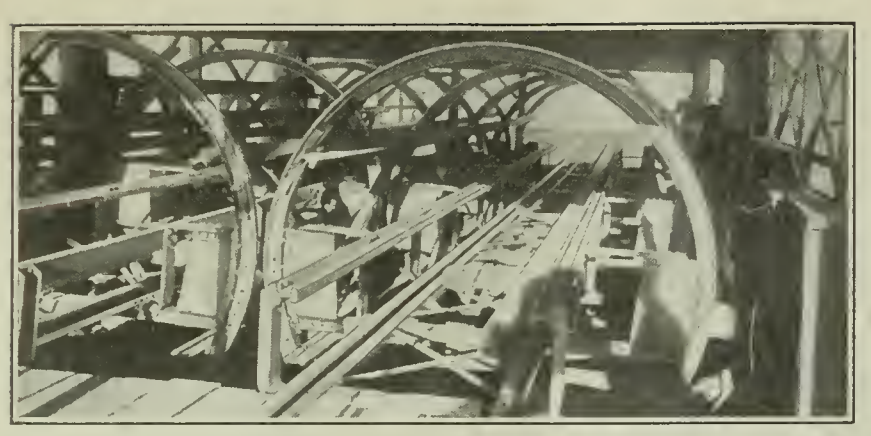


FIG. 4. TWO REVOLVING DUMPS, A RIGHT AND A LEFT
Each dump will discharge four cars at one time. This dump, which is placed over a 300-ton pyramid bin, is located at Dolmite No. 1 of the Woodward Iron Co. of Birmingham, Ala.

Both of the above-described tipples are used for handling coal, the weight of each loaded car being about 4,600 pounds.

The Woodward Iron Co. also has another five-car dump of the same type handling ore cars. This is located 400 ft. below the surface and is set at an angle of 17½ deg. A trip of five cars, the gross weight of each being three tons, is brought into the dump and discharged into a 300-ton bin. Thence the ore is dropped by a roller feed gate into a measuring pocket, whence it passes to an 8-ton skip which is hoisted in a vertical shaft to the surface. The contents of the skip is then dumped into a bin and from that point discharged as needed into railroad cars. The capacity at this mine is 1,200 tons in ten hours.

At the installations described above swivel car couplings are not used, as the entire train is dumped at one operation. Tipples of this kind can be applied also to conditions where it is desired to dump a small number of cars or less than a full trip without detaching them from the rest of the train.

The tipple shown in Fig. 2, which is now being installed at the Gulf State Steel Co.'s mine at Birmingham, Ala., is arranged to discharge two cars without uncoupling from the trip. This dump is located underground and is set level, the cars being fed to it by gravity. A spring car stop is provided for spotting the cars in proper position on the tipple, as conditions are such as to render a device of this kind necessary.

Signal to Warn Men at Work at Dump Pit That Mine Cars Are Approaching*

By Peter Broadt†
Hazleton, Pa.

An AUTOMATIC track signal which is giving satisfactory service has been installed for some time in the Oneida coal shed at Spring Mountain colliery. The signal, which is an electric horn, is located at the dumping pit, and gives an alarm as soon as a car passes over the track circuit located at the entrance to the shed at a distance of 300 ft. from the pit. The accompanying illustration shows the general arrangement of the insulated track, relays and electric circuits.

At the entrance to the shed are four gravity cells (*A*), the current from which energizes the relay magnets (*B*), which keep the contacts of the signal circuit open at relay magnets (*E*). When the car or cars reach or pass over the thirty feet of insulated track circuit (*C*), the current from the four gravity cells (*A*) is short-circuited, de-energizing and allowing the relays (*B*) to drop out, thus closing the circuit at (*E*) through the signal horn (*D*), which begins to blow and keeps blowing as long as the cars are on the insulated track circuit, and stops when the track circuit is clear. The current for the operation of the horn signal is supplied from a 110-volt alternating-current system which is reduced to 20 volts, the current required for the operation of the signal.

The object of the signal is to convey a warning to the men at the dumping pit when cars approach the track circuit or to prevent a possible accident should a car get beyond the control of the car runner, due to defective brakes or other causes. Hearing the horn the men will be enabled to reach a place of safety. The horn also acts as a safeguard when, as in the winter months, the shed is filled with the steam used in thawing out the frozen coal.

*Article orginally entitled "Automatic Track Signal," reprinted from Lehigh Valley Coal Co.'s. *Employees Magazine.*

†Electrician for Lehigh and Hazleton divisions of Lehigh Valley Coal Co.

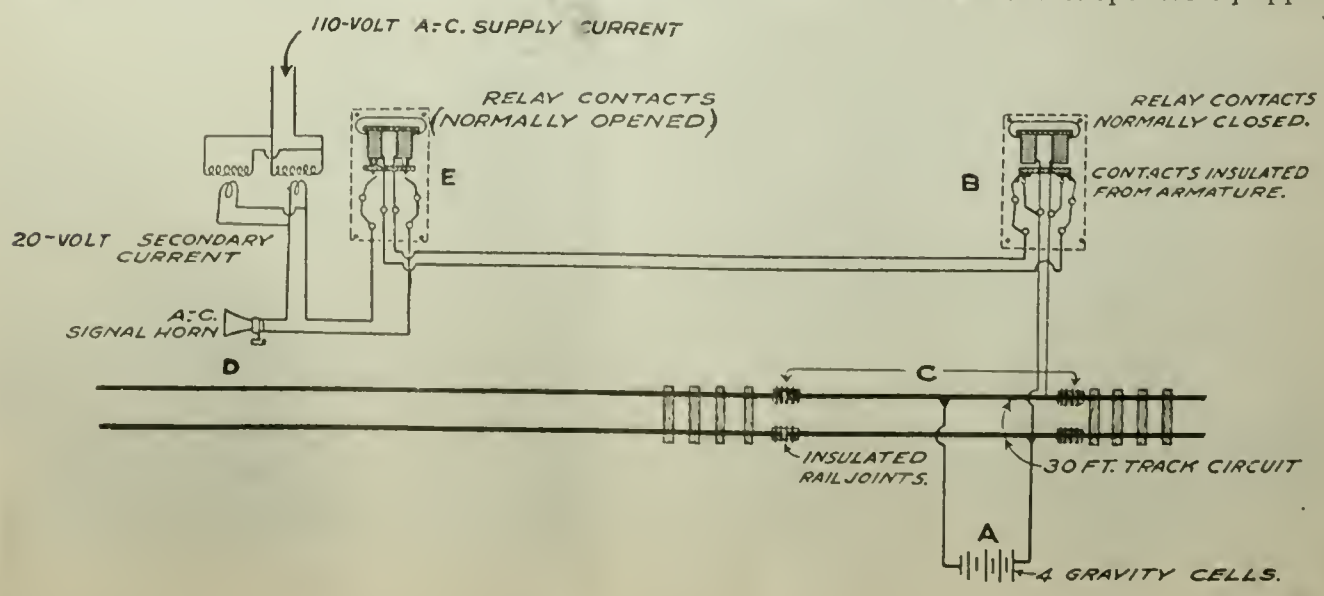


Diagram of Connections

Cars passing over a 30-ft. insulated section of track sound an electric horn at the dumping point 300 ft. away. Men at the dump are thus warned of approaching cars even though they may be invisible through the steam of the thawing shed.

The traffic committee of the American Wholesale Coal Association has had compiled by responsible specialists a textbook giving a complete history of the reconsignment privilege since the Interstate Commerce Commission took over detailed control of the railroads fifteen years ago. The compilation shows that there has been a progressive limitation of the reconsigning privilege.

Thirteen per cent of the open-top equipment of the railroads is in bad order. Because of their financial condition, most carriers are in no position to undertake the repair of this equipment at present. Should the demand for this equipment increase rapidly next autumn, this fact will have an important bearing on the car supply, as the rapid repair of steel cars is impossible. Only a very small percentage of railroad shops are equipped to repair steel cars.

How Modern Employment Practices Assure Contented And Efficient Personnel

When Industry Was Young and Producing Units Small, Close Comradeship Existed Between Employer and Employee—Now That Units Are Large the Personnel Department Seeks to Restore This Friendly Relationship

By N. O. Irwin*
Benham, Ky.

IMMENSE sums have been spent in the development of new mining territories and in the perfection of equipment and processes, but how much intelligent thought has been given to the human element in the industry? Electrical, mechanical and civil engineers have long been considered as integral parts of the operation, but what of the personnel engineer?

Such an official is practically unknown in coal mining. The worker, without whom there would be no industry, too often has been left to his own devices. There is no department or agency charged with the specific duty of seeing that this vital part of the business functions properly. Is there any wonder then that in many cases it does not function and that as a natural result of this neglect strikes and labor troubles are of frequent occurrence? The personnel of an operation will break down as surely as its machinery if care be not bestowed upon it.

Employment, industrial relations, personnel departments, or whatever we choose to call them, have been widely established in nearly every branch of industry except coal mining. Why? Are the directors of this important and indeed basic industry ignorant of, or indifferent to, the benefits such departments render? There seems to be no other plausible explanation. However, the time is at hand, whether we wish to acknowledge it or not, when industrial relations must be considered as an element vitally affecting economic and social life. The sooner this is conceded the better it will be for both employer and employed.

Dependent on Good Will of Employees

Of course with truly conservative business men the natural questions are, Will an employment department pay? Is it worth the expense that its maintenance will entail? Is it not a fad or a philanthropic experiment of ultra-progressive companies? The best answer to these questions is what has been accomplished by those who are taking the lead in this field.

An order issued by the management will not establish an employment department. All the functions that ordinarily go to make up such a department may be delegated to it, but it will never succeed until it has gained the active—not the passive—support of a great majority of the employees and more especially the foremen. In other words, it is necessary to begin at the bottom and win the confidence of everybody from the trapper boy to the superintendent.

It is highly essential that the right type of direction be obtained. In no field of endeavor does personality count for so much as in personnel work; in that field it is everything. The successful establishment of an employment department demands the highest type of salesmanship, but this does not mean that a first-class salesman would necessarily make a first-class employment manager. The head of this department succeeds

*Employment manager, Wisconsin Steel Co.

A Few of the Houses

Benham has many desirable residences. The employment bureau tries to rent each man the house he desires. If he cannot be placed satisfactorily at first, his application for a change is filed, and if he makes good at his work he will receive a more desirable house as soon as it is available.

Benham at Play

The village has a good level diamond, but the hills in the rear rise quite steeply. The houses, it will be noted, are of various types and not of a single monotonous design, which in some mining towns makes it hard to tell one's own home from the home of a neighbor.

in proportion as he can gain co-operation, and this can be obtained only by proof that the department has come to serve all and not to encroach upon the prerogatives of any. Such a department must aid every other department and dictate to none of them.

While this department should have a certain definite authority, the effective employment manager gets things done not merely by using the power that he holds but by bringing the men to like him and to believe in him so thoroughly that they are glad to help carry out his program. This confidence usually is gained with difficulty and will not be gained at all unless he meet his men in the spirit of co-operation and helpfulness.

Before the introduction of highly developed machinery all plants were necessarily small and the tie between the employer and employee was strong; each knew the other intimately and there was a real community of interest. But with the development of our present industrial system this comradeship has been lost. The worker usually feels that he is considered only as a part of a great machine. It is the true and highest function of the employment department to provide an effective substitute for this former relationship between employer and employee.

Employee an Associate in the Enterprise

It might be interesting to discuss briefly the functions of the Wisconsin Steel Co.'s coal-mining department, in which I am employed, not because we are doing many things that are done at no other mining operation but because we believe we are doing them more purposefully and systematically. To be sure, men are hired and discharged and houses are rented, etc., at nearly every plant, but too often without enough consideration of the human side of the transaction.

We, of course, do all these things, but it is part of our job to do them in such a way that the man will feel the personal contact which we are trying to establish; that he will believe himself to be not only an employee but also an associate in an essential enterprise.

The employment department can really be divided into several bureaus according to the functions performed. It concerns itself first with the development of the available sources of labor supply. Perhaps the best source is found in the friends of present employees. It is part of our job to represent the company and its policies to the men and to impress them so favorably that they will be glad to tell their friends about us. This good will on the part of the employees is our most valuable aid in obtaining new workers. We feel that this spirit can be more fully developed by an agency whose business it is to see that the men are treated squarely, to which they may come at any time, tell their troubles and find fairness and sympathy.

Procuring Needed Labor Force

We rarely find it necessary to use the service of the private employment agency. Though we are located in a field where transporting of men is common we do not often resort to it to keep our ranks full. It is a part of the duty of the employment department, however, to keep in touch with this source of supply, so that when a requisition for men comes from a foreman it can be promptly filled.

We personally interview each man before he is given a job. We have before us the needs of all the departments and are thus able to place the man to better advantage than if he went direct to the foreman to obtain employment, because that particular foreman might not have available the work most fitted to the applicant, whereas we know the needs of all departments.

Again, a man might go to one or two foremen and not obtain work, become discouraged, and leave, when a job for which he is admirably fitted might be open in another department to which he did not apply. Even granted that the man finally does get placed, he may not be in a happy frame of mind after he has walked all over the works hunting a job. All these handicaps can be overcome by centralized hiring.

Foreman Has Work Enough Getting Out Coal

One of the obstacles that must be surmounted is the protest from some foremen that they are being deprived of the privilege of hiring and firing their own men. Many such men must be "shown" that their department is going to benefit by the change. The foreman in

modern industry has come to be primarily a production man, and cannot do his work in keeping with the standards of the times if he must also be an employment clerk, a house custodian, a welfare worker, and an absentee investigator. Once he did all those things, but in these days of the division and specialization of labor he cannot do them and at the same time "get the coal."

In addition to the personal interview we give a short lecture to all employees in which we inform them of our industrial council plan, our extra compensation and stock ownership provisions, and the company's policies in general. We tell them the things they should know about their new work and about our town. They are given to understand that the employment department is theirs and that we are their personal representatives; that they may come to us at any time and always get a hearing and that we will always get them what they want or explain to them in a man-to-man way just why their wishes cannot be granted. Many times a man will go away well satisfied even though he did not get what he came after, because a personal interest has been shown in him. We give the new man his car checks, identification check, and see that he is equipped for work the next morning.

Man Transferred to Work He Likes to Do

All transfers are made by this bureau. Not every man is fitted for every job. If we make an error in placing a man he can be sent back to us and we probably can put him somewhere else until we help him "find" himself. Often, by reason of our being able to transfer him elsewhere, a man is retained who has become discouraged and is leaving. Without the centralized method this man would in all probability leave and never know of the other job, because he was not in the frame of mind to look for it.

This bureau also keeps a record of each absentee and the reason for his absence, as well as the earnings of each employee and the rating his foreman has given him. These statistics enable us to make intelligent promotions, show us the progress each man is making and whether he should be given a house, etc. If he leaves and comes back we have his former record and can thus hire or reject him with the least possible chance of making a mistake.

Just as the man is hired by this bureau so also he is released by it. The foreman gives him a termination-of-service slip from his own department, and we release him from the plant. Everyone is interviewed and the true reason for his departure is found. As stated previously, in many instances the man does not leave after we talk it over. But if the man does go and he has "made good" we try to make him feel that he is leaving friends behind, and in consequence it is likely that he will return later. In case of the discharge of an employee, this bureau investigates the cause and in many instances misunderstandings are thus cleared away.

Cost of Hiring Many New Men Saved

The personnel staff prepares reports and statistics for each department, which contain a record of causes for labor turnover and transfers and a daily summary. In many instances these reports and the investigation necessary in compiling them show leaks in the business that are just as positive as if so much coal were being dumped into the ocean. The cost of hiring, firing and replacing a man varies greatly in different industries, but in any business it is a large factor, demanding the closest attention and requiring reduction by every feasible means.

In a town containing a large number of company-owned houses there is an abundant opportunity to reach and influence the personal life of the employee. When it is handled in the proper manner, the housing problem can be solved to the mutual advantage of both the company and the men. We try to rent to the applicant, if possible, the house he wants. If we cannot place him satisfactorily at first, we take his application for a change, but he is made to understand that he will be favored according to his success in his work; that if he makes a good record we will place him in a more desirable house as soon as possible.

Most men are particular about their living conditions when they are given the chance to be so. We make them realize that accurate and just records are kept on

Instruction Ciass

Every man entering the employ of the company is given instructions as to the rules and policies in force at the Wisconsin Steel Co's. mines, so that he starts out able to take full advantage of his opportunities and knowing exactly the conditions under which he is employed.

them and that they will be rewarded in proportion to their services. In that way we make our better houses a real incentive to greater effort. This is possible only when handled by a competent and fair custodian who has a degree of diplomacy in his make-up.

The housing bureau is responsible also for the placing of all single men in boarding houses; we do not let the new man go out and search the town for a place to stay. If he desires private board we try to see that he is satisfied. This interest frequently retains the man, whereas he might quit if thrown on his own resources. We have several boarding houses which are under the supervision of the housing bureau. If, for any reason, one of these does not give satisfaction, an investigation is made and the difficulty corrected. This bureau, in connection with the medical department, is charged also with the supervision of the sanitary condition of the town. Regular inspections are made by the house custodian and result in the preservation of hygienic conditions. It is believed that this has a marked effect in the prevention of disease. This one bureau pays for itself many times over in the satisfaction that it creates among the employees and its salutary effect upon the sanitation of the community. Both these results are direct aids to production.

Compensation Treated as Personal Problem

Workmen's compensation also is adjusted by the personnel department. This is another phase of industry that should be handled as a personnel problem and not, as is frequently the case, as a cold-blooded business matter involving only the payment of so many dollars and cents. The spirit of the company is shown by the way it treats its employees when they are unfortunate.

If this obligation be discharged merely as a necessary nuisance, the employees will get the impression that all of the high-sounding talk about the brotherhood of man and the application of the Golden Rule in industry is "bunk." Of course the law requires that the injured man be paid a certain sum based on the injury or the time lost, but with every occasion of this sort opportunity is presented of "selling" the company by meeting the workman more than half way while he is injured and cannot pay his own way.

Legal aid offers a real chance for service which will be greatly appreciated by the employees. Such matters as the acknowledging of deeds and the giving of legal advice tend to stabilize the working force. All of these things are done by our company. The returns in good will amply repay the effort and time expended.

One branch of the personnel department has charge of the issuing of the plant magazine, which we believe is immensely worth while because of the facility it affords to disseminate information and to create a pride in the town and in its citizenry. This magazine is adding to the morale of the workers, which, although an intangible asset, represents something the value of which can be most appreciated when it once has been gained and then lost. It also is an aid in procuring new workers. Every month many copies are sent by employees to friends elsewhere. Naturally this advertises the plant. Experience teaches that money thus expended is well invested.

The company gives its support to public education through this bureau. Although the educational system is supervised by public authorities, the company is a real factor in its direction. There is no doubt that this control is affording much better schools than could be obtained without the company's backing. We have a nine months' term, and this year an accredited high school has been established. A new building containing all the features and departments that constitute a modern and model school will be ready for occupancy before another term. Under the direction of this bureau night schools for foreigners have been conducted. This has afforded an opportunity of establishing a friendly relation with this class of employees that could not have been gained in any other way.

It must be remembered that an employment department is justified only in so far as it improves and increases production. This will be accomplished, provided the right management is obtained, because a better morale will be created among the employees. Another advantage of an employment department is that foremen and other executives will be released from arduous duties which in modern industry are beyond their sphere.

In this way man power will be conserved by proper and scientific placement and handling of the workers, which, according to the principle of specialization and division of labor, can be most efficiently done by a department or bureau specifically charged with that duty. Finally, accurate and reliable data on the human element, as well as on the machines and processes employed, can thus be obtained.

As the employment department continues to develop it will assume new duties which will add still more to the efficiency of the plant by bringing about a higher degree of co-operation.

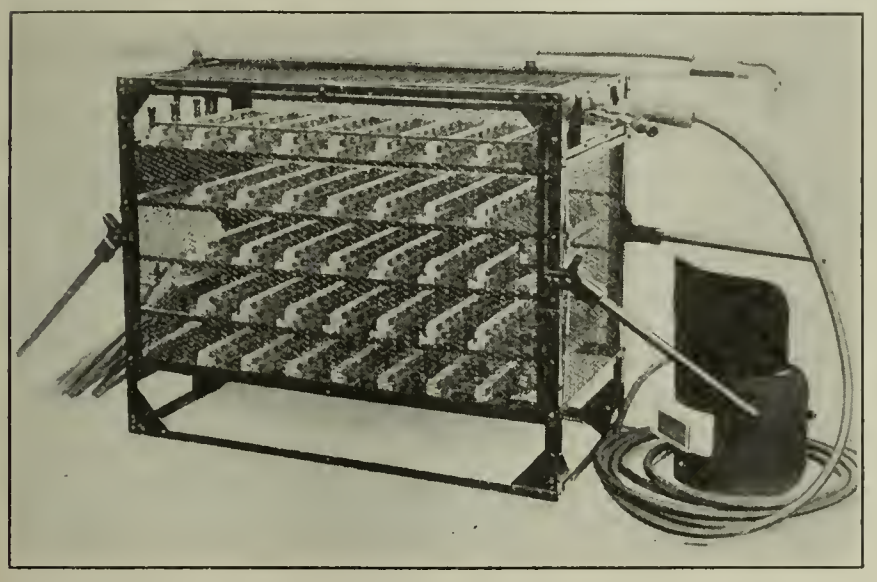
In a speech opposing an increase of funds for fuel for the navy, Senator Kenyon, of Iowa, who figured in coal investigations last session, gave an echo of those proceedings. He charged that the failure of Congress to legislate for control of the coal industry had caused an increase of $7,500,000 in the navy's coal bill, which the people would have to pay. He also asserted that the public was being frightened to buy coal so as to put up the prices, referring to appeals which had been issued to buy coal now, among them one by Senator Elkins, of West Virginia. "We tried to get legislation last session and reported a bill, but it slept the sleep that that kind of a bill—a bill for some control of the the coal situation—generally does in the Senate," he said. "The bill was laughed at as freakish and socialistic, but the country will be facing the same condition again in the fall, and the same tactics are being pursued to bring it about." He said the country was reaping the result of failure to act at the last session. He said if there was some kind of control of natural resources the people would obtain coal in winter at a lower price than they will have to pay for it. He referred to the negligence of Congress in being afraid to attack the proposition, as it was terrified "by the great industries that control at least the anthracite coal, and is afraid to pass any legislation on the subject." He said the coal question would have to be faced in legislation before many days.

In the railroad investigation before the Senate Interstate Commerce Committee President Smith of the New York Central R.R. said the road was making contracts for this year later in the season than was the usual practice as contracts previously made had overlapped because of decreased consumption due to business decline. The roads have so much coal on hand now that they do not have to make contracts. They are buying some coal on the open market in the belief that coal prices will further decline. He estimated his road would save five or six million dollars on coal this year. As to oil he said that product could not compete with coal for use on his railroad because of distance from producing points.

Track Welder Has Resistance Giving Thirty-Six Current Values for Varied Uses

A NEW electric-arc welder, called the "Ajax," is being placed on the market by the Railway Track-Work Co., Philadelphia, Pa. It consists of special wire resistance coils supported on insulator bars which are mounted on a frame of steel angles. A switchboard for controlling the current is mounted at one end of the frame. The type of machine recommended for mine work weighs approximately 100 lb. and is 18 in. x 36 in. x 36 in. in size.

The designers of this machine have given special consideration to high current capacity, accessibility of parts, ventilation and portability. The wire used in the resistance coils is a special grade of very high resistivity adopted after several years of tests and experiments.



ELECTRIC ARC WELDER FOR TRACK PURPOSES
Welder has high capacity, is readily accessible throughout its parts, is more than usually well ventilated and is portable.

A control mechanism, consisting of a line switch by means of which current can be cut off from all the coils, is mounted on one end of the framework. At the opposite end the switchboard for regulating the current is mounted. A shunt switching device provides for short-circuiting a portion of the coils where large currents are required. By this arrangement control over several groups of coils is made independently of the other groups. The switchboard provides for thirty-six values of current.

Several plugs are provided for attaching the lead wires to the machine. These plugs have wooden handles to protect the operator from shocks and also to prevent short-circuits.

Sand and Cement for Cement-Gun Work Underground Are Mixed at Surface

By G. B. Southward*

AT SOME of the mines of the West Virginia Coal & Coke Co. a cement gun is used for coating the tops of the entries in order to prevent rock falls, which we believe are caused by the disintegrating action of the moisture in the air. We formerly mixed the sand and cement inside the mine immediately before the mixture was placed into the machine. This required two or three men and also necessitated transporting a mixing board through the mine with the machine.

It was apparent that the operation would be greatly facilitated and reduced in cost if the sand and cement were mixed outside the mine during the afternoon, then taken into the mine in bags ready for use. The main objection to this method is the possibility that the moisture in the sand will cause an initial set in the cement. We felt, however, that this objection could be removed if the sand was dried to a moisture content of not more than 1 per cent by weight.

For about a year we have been following this method, first drying the sand and then mixing it with the cement in the proper proportions. This dry mixture is then put into ordinary cement bags and taken to the point where the cement gun is operated. The mixing generally is done in the afternoon, so that three or four hours elapse between the time of mixing and using. The water, of course, is added at the gun, as needed.

We have had no opportunity to make any accurate tests to determine whether or not this pre-mixing has any effect on the finished product; but so far as we can tell by observation the results are just as satisfactory as when the mixing was done at the machine directly before using. Our method is, in fact, analogous to that used by concerns handling prepared cement stuccos, where the material is prepared, sacked and stored in the same manner as cement alone would be stored.

Mixing our material on the outside has effected a considerable saving in cost, as the labor is performed under better and easier conditions than in the mine, and further time and labor are saved by eliminating the transportation and handling of the mixing board.

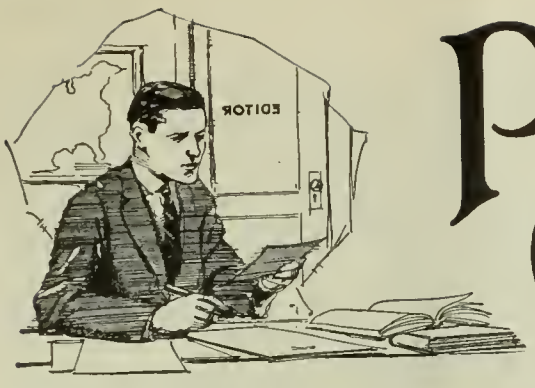
*Chief Engineer West Virginia Coal & Coke Co.

Milestones in British Mine Development

IN 1833, according to W. Fordyce, Benjamin Thompson made a "valuable discovery for the conveyance of coal underground, when tubs upon fixed carriages were introduced and steam engines fixed either above or below ground." This seems to point to the modern mine car and to rope haulage, but the general adoption of the plan did not follow till at least twenty years later. Mr. Fordyce also records the successful use of compressed air for the transmission of power below ground at the Govan Colliery, in Scotland, in the year 1853. It was not, however, till seventeen years later that compressed air for transmission of power underground received the attention it deserved.

Though in 1882 Henry Davy contributed a paper to the Institution of Mechanical Engineers on the possibilities of the use of electricity underground it was not until January, 1883, that the first electric motor was installed in the mine workings. This was at the Trafalgar Colliery, Drybrook, Gloucestershire, according to R. Nelson, formerly electrical inspector of Great Britain.

In a report to Congress recommending an appropriation of $47,000 for investigations of heavy clay products, cement, feldspar, slate and other non-metallics, the Bureau of Mines says enormous quantities of coal are used in burning brick and tile and with high fuel costs, notwithstanding recent reductions, the fuel cost is a dominating influence on prices. It is declared that the present types of kilns waste fuel. When fuel was cheap this did not greatly affect costs, but at the present time with coal at the mine three times what it was five years ago and with freight twice as much, the Bureau says the importance of fuel economy is vital. The Bureau proposes a survey of kiln plants, including actual burning tests, to secure data which will tend to greatly reduce fuel costs.



Problems of Operating Men

Edited by James T. Beard

Two Adjoining Mines Compared

Characteristic Feature of a Successful Mine Operation Is Action—Harmony and Co-operation Are Evident on Every Hand, While Disorder and Discontent Prevail Elsewhere

READING the excellent letter on the "Observed Difference in the Handling of Men," which appeared in *Coal Age*, Apr. 14, p. 674, brings vividly to mind a visit I made awhile ago to two adjoining plants that were operating under natural conditions that were identical, but the results obtained presented a marked contrast.

My occupation brings me into frequent contact with coal-mine officials and affords me ample opportunity to observe those qualities in management that make for success or failure. It is not my province or intention to find fault, for the inspector's job is first of all to serve the operator and bring order out of confusion and chaos whenever that is possible.

Out of the Game, No Worry

In conversation with mining men, my comments are often met with the rejoinder, "You do not appreciate the worry that present-day conditions mean to mine officials. For the past four years you have not had to contend with the troubles that come to the man who has charge of a mine."

That such is true I will not deny, but the change has given me a different viewpoint and made more clearly apparent those elements on which success or failure depends. In a few words, I might say a mine is successful in direct proportion to the personal efficiency of the men in charge. In other words, the mine is as we find the boss. The boss invariably stamps his character on the men in his charge, who take him as their guide and pattern while in the mine.

The "Big Producer" Is a Mine Where Action Prevails

The noticeable feature of an orderly mine can be expressed in one word, ACTION. Approaching the tipple of a mine that is a big producer, we find everyone busy and contented. If cars are not coming out of the mine, the topmen are cleaning up the track and putting the tramway in order. In like manner, the bottom-men are doing the same and making ready for a good run when coal starts again.

But, to return to my story, the two adjoining plants I have mentioned were operated under conditions that should have made them equally successful. Many of the stockholders were interested in both mines. The equipment was identical in each, and the two mines were planned to be large producers. Therefore, the fact that one produced 2,000 tons of coal a day against an output of 500 tons at the other mine, naturally gave rise to much dissatisfaction.

Visit to a Busy Mine

Visiting the Left-Fork Mine, one Monday morning, I found everyone at work. Stopping at the store a moment to inquire of the manager where I should look for the superintendent, I was given a cordial greeting and told where he could be found.

At the mine, the superintendent was talking with the foreman but at once, proceeded to accompany me, as his usual custom was to take a run through the mine each day. It was no surprise to me to observe that he was thoroughly familiar with every detail underground. There was not the usual, "Why are you doing this?" or "Why was that done?" and "What entry are we in now?"

Occasionally a workman was found following a dangerous practice and was corrected in a few quiet words. Every one seemed pleased to see the "Super" around; and I felt that our visit to each working place meant much in respect to the safety and contentment of the men. The foreman examined the roof, shotholes, explosives and tools of the workmen, besides stealing a glance at the loaded car to detect any dirty coal.

My impression on coming out of the mine was that, with such a superintendent and watchful foreman, if a miner was not working safe when visited, he would be before the boss left him. Throughout the mine, things were in order and there was action everywhere. Empty and loaded trips were moving regularly and the supply of coal kept both top and bottom-men busy.

Another Mine Not Busy

The following day I was due to visit the Right-Fork mine, where it was easy to see that things were not going well. Everyone appeared to be "run down at the heels," so to speak, and had a worried, worn-out appearance. The clerk in the office, with an abstracted look, announced that he could not tell where I would find the superintendent.

Proceeding toward the mine, I met an overworked, tired looking man who appeared ready to drop. I assumed he had been working all night, and he certainly had missed the barber for several days. Disclaiming the title of superintendent, he ventured the information that I would find the foreman at the tipple where they had had much trouble in starting that morning.

Foreman Works Hard While His Men Stand Around

On the tramway, I found three or four men watching the foreman who was vainly endeavoring to replace some wrecked cars on the track. In response to my inquiry, he said he would go with me into the mine as soon as he had gotten the tipple going; but, after waiting a while I proceeded alone, having learned that he had been several months on the job and had never yet succeeded in getting the tipple going to his satisfaction.

Seeing me start for the mine, the foreman called after me that I would find the assistants, each in his own section. Instead of that, however, all three of those men were found standing on the main sidetrack, in the mine, disputing some important matter of state when I entered. They proved to be a very congenial bunch and were quite willing to go through the mine with me, though I could not but feel that each was loath to leave the sidetrack, which was more attractive to them than anything within.

Disorder Reigns Supreme

By way of introduction and getting acquainted, I asked where the mainline motor was. In reply, one of the men said with a grin, "It is probably on the ground somewhere, as it is there as often as on the rails." I asked why they had not called the outside and gotten help, but was promptly informed that the 'phone had not been in working order for some time.

It will cause no surprise to any one to learn that, in this mine, I found the miners an indifferent lot, spending much of their time visiting their fellow workers. My survey of the entire situation brought to mind the old saying that is very true, "Birds of a feather flock together."

No words are needed to compare this operation with that visited the preceding day. There was no action, no working spirit, no order anywhere. Instead, delays were frequent and prolonged, while coal and the tipple were strangers much of the time.

Pikeville, Ky. GEORGE EDWARDS.

Rib-Side the Working Face

Objections offered to making the rib-side of a room the working face, in machine mining. Longwall, panel system provides a larger development at less cost and greater safety.

KINDLY permit me to offer a few comments regarding the article of Carl Scholz, *Coal Age*, April 14, p. 661. In that method, the seam is divided into panels 1,200 ft. in length and 500 ft. deep.

In the development, the rooms are said to be driven in pairs across the panel, each room being 12 ft. wide and 500 ft. long. The rooms forming a pair are separated by a thin pillar that can be taken out with two cuts of the machine; but the pillars separating the several pairs of rooms are made much wider, in order to enable a large extraction for the same development.

Slab-Cutting the Pillars

After reading this article with deep interest again and again, it appears to me that under ordinary roof conditions it would not be possible to slab-cut these pillars to a width greater than 30 ft., as it would not be desirable to run the risk of having a valuable machine covered by a heavy fall of roof. Moreover, it seems to me that there would be no greater extraction of coal by this method than by any other panel method of mining.

While I may not have grasped the detail method of carrying out this plan, my fear is that it would be hard to keep men at running the machines in these deep rooms, as the width increases. The plan will require a large amount of trackwork and presents a greater hazard in drawing timbers, which is necessary to be done for the sake of economy and to permit the caving of the roof behind the workmen.

These are a few of the objections that have occured to me in my study of the plan. In some respects, it is not unlike a plan that I described in *Coal Age*, some two years ago (Vol. 16, p. 542), which I may be permitted to explain again briefly, in respect to its bearing on the method suggested by Mr. Scholz.

The plan I have in mind is illustrated in the accompanying figure, showing the main-east haulage road and air-course and two pairs of north entries turned off these so as to form a panel 2,070 ft. in length.

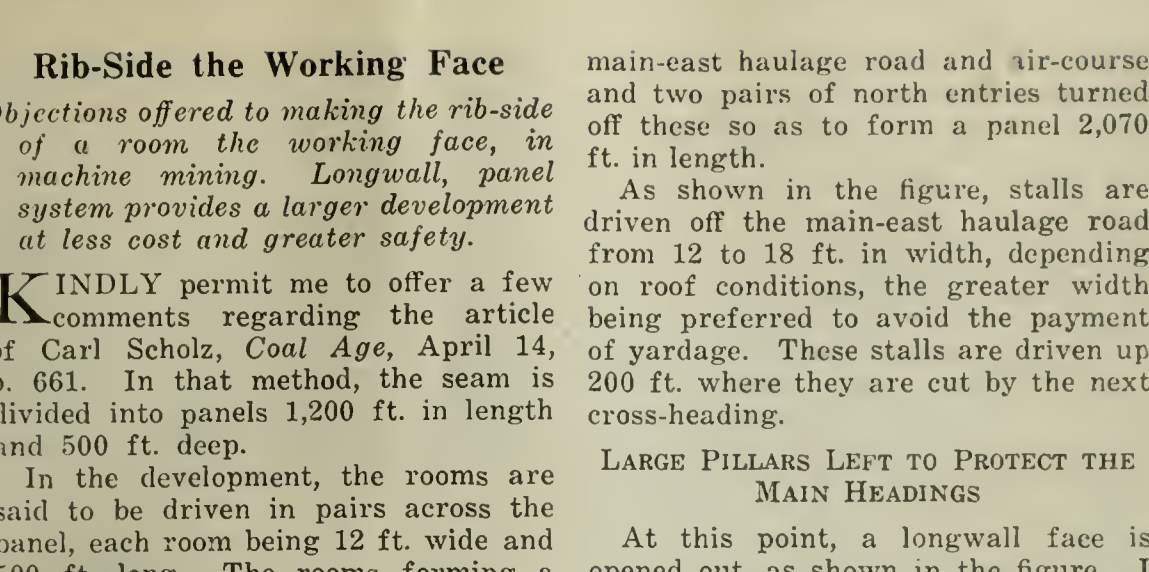
As shown in the figure, stalls are driven off the main-east haulage road from 12 to 18 ft. in width, depending on roof conditions, the greater width being preferred to avoid the payment of yardage. These stalls are driven up 200 ft. where they are cut by the next cross-heading.

Large Pillars Left to Protect the Main Headings

At this point, a longwall face is opened out, as shown in the figure. I have left solid pillars of coal, 200 ft. square, for the support of the north entries, which makes the longwall face crossing the fourteen 100-ft. pillars, 1,400 ft. of coal, there being fifteen stalls each 18 ft. wide. It may seem that the pillars left for the protection of the entires are unnecessarily large, but this will provide a good extraction of coal in retreating, after the boundary is reached by the advancing longwall face.

My claim is that the properties presented in this plan are such as should be enforced in the working of seams exceeding 200 ft. in depth, and can well be applied to any seam regardless of depth. I believe the showing in cost of production will be in its favor as compared with most methods of mining.

It should be stated here that the roof at the longwall face is supported by hard-wood chocks the nogs being 6 x 6 in. and 2 ft. long. These chocks are built up on 9-ft. centers and in a straight line parallel to the longwall face, as indicated in the figure.



LONGWALL PANEL FACE CROSSING FOURTEEN PILLARS

In this method, the distance that men would have to run to safety would never exceed 50 ft., or half the width of the small pillars. There should be a double row of chocks, those in the rear row being taken out and set forward close to the face, as quickly as the machine has finished the cut. My preference is, for a cut of 8 ft. in depth, which greatly reduces the expense of tracklaying and drawing and resetting the chocks.

The coal-cutting machines advance along the face, cutting each pillar in turn. The coal-loading machines follow some distance behind. Assuming the coal has been loaded out from the face between No. 1 and No. 2 roads over the road first named, No. 2 road is then used to haul the coal loaded from the face between roads 2 and 3.

While this is being done, the track in the first section is shifted forward close to the face and the rear row of chocks taken out and reset at the side of the track, ready for the next cut. The cutting machine is kept at a sufficient distance ahead of the loading machine to allow the coal to be shot down ready for loading.

Linton, Ind. W. H. Luxton.

Responsibility of Mine Officials

Illinois mining law does not require certified assistants to the mine manager (foreman). The responsibility rests with the mine manager to select competent men as his assistants.

WITH much interest I have read the many letters relating to mine officials who are charged with the safety of underground operations. The letter signed "Ben" and entitled "Honesty, Safety, Efficiency," *Coal Age*, Apr. 14, p. 675, was of particular interest drawing attention as it does to the responsibility of mine officials.

One must admit that the mine manager, as the foreman is called in Illinois, is burdened with many duties, requiring both technical and practical knowledge and experience in operating a mine. The company expects him, while complying strictly with the requirements of the mining law, to produce results that will be satisfactory.

Assistant Mine Managers in Illinois Need No Certificate

In this state, the law does not require the employment of certificated men as assistants to the mine manager. For that reason, it is all the more important that competent men should be selected to assit him in running the mine. In my opinion, the mine manager is the man who should be held entirely responsible for any errors or mistakes made by his assistants.

There are many men in the state who have had a number of years experience in mines and have, besides, studied hard to get the theoretical knowledge that would enable them to obtain certificates of competency. A large majority of these men would probably be willing to accept a position as assistant manager, under a manager who would treat them fairly and give them every opportunity to make good.

In order to secure the greatest measure of safety and, at the same time produce the best results in tonnage, at a low cost of operation, there must be real co-operation between the mine manager and his assistants. In other words, they must work hand-in-hand for the protection of the men and security of the mine.

There are some managers who, I regret to say, always try to throw the

blame on their assistants when the fault is their own. More than once I have heard assistants make the remark that they would not hold their jobs longer, except for the hope that the mine manager would quit or be discharged and they would have a new boss who would treat them fairly and give them a chance.

While I cannot agree with the statement made by one writer, that an uncertificated man should not accept a position as assistant, I feel that the blame for such a one's mistake should rest wholly on the manager who selected him and should have looked after him and trained him.

In order to lift some of the responsibility that rests on the manager, it is my belief that there should be a law requiring the certification of assistant managers. From what I have seen take place in mines where the company appeared to give the preference to assistants who had certificates, the practice is costing the company dearly without their knowing it.

Another thing that will lift much of the responsibility now resting on the shoulders of the mine manager, is the confidence that the company displays in his judgment and ability. While there are mines in this state that do not require the same theoretical and practical knowledge on the part of a manager, there are others where the conditions are bad and such knowledge is necessary for the success of the operation. In the latter case, the responsibility resting on the manager is not light. DAVID YOUNG.

Edwardsville, Ill.

Inquiries Of General Interest

Ascertaining Mine Pressures With an Aneroid

In the Use of an Aneroid Barometer Underground for Ascertaining Mine Pressures Allowance Must Be Made for the Depth Below Surface at Which Readings Are Taken

KINDLY advise me if there has been any formula brought out that would enable reasonably accurate pressure readings to be taken in a mine with an aneroid barometer. Such attempts as we have made to take pressure readings with an aneroid have been misleading and the results proved of no particular value. It is possible that some one has conducted extensive experiments and been able to deduce a formula by which it is possible to determine the hydrostatic pressure in any part of a mine when the pressure of the fan is known. If such information is available, its publication in *Coal Age* will be greatly appreciated. MINING ENGINEER.

McAlester, Okla.

We assume that the purpose of this inquiry is to ascertain whether the aneroid barometer can be used to determine the loss in pressure on the air in passing from one point to another throughout the mine.

Disregarding, for a moment, the pressure due to the ventilating fan, or assuming that the fan is not in operation, there is observed an increase of atmospheric pressure when consecutive readings of the aneroid are taken at the surface and at the bottom of the shaft. Likewise, the reading of an aneroid will be increased or decreased, according to the elevation of the several points in the mine where such readings are taken.

Now, assuming the fan is blowing air into the mine, the mine pressure at the bottom of the downcast shaft will be further increased by the pressure due to the action of the fan. On the other hand, if the fan is exhausting, the pressure at the foot of the upcast or fan shaft will be decreased by the depression due to the fan.

In either case, to ascertain the pressure due to the fan, allowance must be made for the increase of atmospheric pressure caused by the difference in elevation between the point on the surface and that in the mine at which the reading is taken. Making this allowance, the difference in reading between the surface and the shaft bottom is a measure of the pressure due to the action of the fan less the resistance of the shaft.

Again, going further back into the mine on the intake airway when the fan is blowing and making the required allowance for the difference in elevation between the surface reading and that in the mine, the difference of the two readings is a measure of the pressure due to the fan less the frictional resistance of the shaft and airway up to that point.

In the same manner, as one proceeds from the intake to the return or discharge opening, the fan blowing, and making due allowance for difference in elevation where readings are taken, these readings will show a continual decrease of pressure on the air caused by the increasing frictional resistance of the airway throughout the mine.

Following the same order when the fan is exhausting and proceeding from the intake to the return, the consecutive aneroid readings, after making due allowance for differences in elevation, will show the same decrease of pressure on the air due to the increasing frictional resistance of the airway, till the bottom of the upcast shaft is reached.

It may be observed that all reliable aneroids are compensated for temperature changes such as met with ordinarily in mining practice, and it is unnecessary to make correction for temperature. Allowance must always be made, however, for altitude or elevation when comparing mine pressures with the atmospheric pressure at the surface.

Terms Used in Pumping

Explaining the meaning of terms commonly used in all pump calculations for the estimation of pressure.

ALLOW me to ask for a clear explanation of what is meant by the following terms, which are so frequently used in problems on pumping: Friction head, static head, and velocity head. ASSISTANT FOREMAN.

———, Ill.

The term "head" is used to indicate the vertical height of any fluid medium above a certain point where the pressure due to the weight of a column of that medium is exerted. The pressure is expressed in pounds per square inch, or per square foot, according as the sectional area of the column is estimated in either denomination.

For example, the pressure per square foot, due to a head of water of 100 ft. is equal to the weight of a column of water 100 ft. high and having a uniform sectional area of 1 sq.ft. Or, since the weight of a cubic foot of water is 62.5 lb., the pressure per square foot due to a 100-ft. head of water, is $100 \times 62.5 = 6{,}250$ lb.

Again, since a column of water 1 ft. high and 1 sq.in. in section weighs 0.434 lb., the pressure per square inch, due to a 100-ft. head of water is $100 \times 0.434 = 43.4$ lb.

The expression "static head" is the actual height or head when the pump is not in operation. It is the vertical height of the point of discharge above the surface of the water in the sump.

When a pump is in operation the flow of water through the discharge or column pipe meets with a certain frictional resistance, which increases the pressure against the pump. This increase of pressure is expressed as so many feet of head of water. For example, an increase of $4\frac{1}{3}$ lb. per sq.in. of pressure, due to friction, would mean a friction head of $4\frac{1}{3} \div 0.434 =$ say 10 ft.

A certain pressure is always required to set water in motion and varies as the square of the velocity. This is called the "velocity head" when expressed in feet of water column. Both the velocity head and the friction head must be added to the static head to find the head under which a pump operates. Under ordinary conditions, the velocity head being small can be ignored without appreciable error.

Examination Questions Answered

Examination, Mine Foremen and Firebosses, Bituminous (Pa.), April 5-8, 1921

(First-Grade Questions)

QUESTION—*Name and describe the non-explosive gases found in bituminous coal mines, giving their specific gravity, effect on health, where usually found and how you would remove them.*

ANSWER — The non-explosive gases found in these mines are carbon dioxide (CO_2), specific gravity 1.529, and the nitrogen of the air (N), specific gravity 0.9713. Although carbon dioxide is not poisonous, it produces a toxic effect on the system when breathed. It contains no available oxygen and will not support life when unmixed with air. Small percentages of carbon dioxide in the air cause headache, nausea, pains in the back and limbs and final prostration, suffocation and death, as the percentage of the gas in the air is increased. Breathing is first affected at 3 per cent and panting follows at 5 or 6 per cent, while 18 per cent of this gas is generally fatal if breathed for any length of time.

Carbon dioxide accumulates in poorly ventilated and abandoned places, owing to the slow oxidation of carbonaceous matter. Because of its high specific gravity, it also accumulates in dip workings, swamps and other low places in the mine. It is removed by increasing the circulation of air in such places.

Under normal conditions nitrogen forms four-fifths, by volume, of the air we breathe. At times, it happens that the oxygen in the mine air has been depleted so that the proportion of nitrogen is increased. The effect of this loss of oxygen is quickly felt when such air is breathed. The normal percentage of oxygen in air is 20.9 per cent. If the oxygen content falls to 14 per cent, breathing is affected, but at 10 per cent the air is no longer respirable, containing then 90 per cent of nitrogen. These conditions occur to a greater or less extent in poorly ventilated places in the mine; or where tons of freshly mined coal lie over night in a close place and the oxygen of the air has been absorbed by the coal.

QUESTION—*What dangers are likely to be encountered in approaching old abandoned workings, and what precautions should be taken to avoid them?*

ANSWER—The old workings may contain accumulations of dangerous gas or water. The escape of the gas into the live workings may prove fatal either by reason of their poisonous effect when breathed, or by the gas becoming ignited on the lamps of the miners and causing an explosion.

In order to avoid this danger, one or more drillholes should be kept in the face of the heading, extending at least eight or ten yards in advance of the coal face. The heading should not exceed 8 or 10 ft. in width and flank holes should be drilled at an angle in the rib. Only safety lamps should be used and a close watch must be kept to detect the first appearance of water or gas seeping through the coal. Plugs of soft wood should be kept in readiness to drive into a hole when water is tapped. Every means should be taken to ascertain, if possible, the condition of the old workings. No reliance should be placed on the supposed accuracy of mine maps and surveys.

QUESTION—*What are the principal causes of mine fires, and what precautions should be taken to guard against them? Explain the method of approaching and fighting such fires.*

ANSWER—Mine fires are chiefly caused by the careless use of open lights, ignition of a gas feeder in blasting coal and permitting it to burn long enough to ignite the coal or timbers. Or, fire may result from a local explosion of gas or dust caused by a blownout or windy shot. Other causes of mine fires are the spontaneous combustion of fine coal and slack thrown into the waste and the sparking of electric wires and motors.

To avoid the occurrence of fire in a mine, strict regulations must be enforced regarding the use of open lights, the installation of all electrical equipment, the handling of combustible material such as hay or oily waste, the handling and use of explosives in blasting coal, and the frequent inspection of all parts of the mine and equipment, including the examination of holes drilled for blasting and the manner of charging, tamping and firing such holes.

When fighting a mine fire, always approach it from the intake side, to avoid being overcome with the gas produced by the fire. A gob fire should be loaded out, as far as this can be done, in steel cars. Fire in the coal or timbers must be extinguished by water and if this fails the place must be sealed off with airtight stoppings. If means are at hand to produce an extinctive gas, the gas should be forced into the fire area.

QUESTION—*What quantity of air is passing down a shaft 12 x 20 ft., at a velocity of 300 ft. per min.?*

ANSWER—The sectional area of this shaft is 12 x 20 = 240 sq.ft. Assuming the average velocity of the air current is 300 ft. per min., the quantity of air passing down the shaft is 300 x 240 = 72,000 cu.ft. per min.

QUESTION—*A pump discharges 340 gal. of water per minute and has a capacity of 3.4 gal. per stroke; how many revolutions would a single-acting pump have to make in these conditions?*

ANSWER—The capacity of the pump being 3.4 gal. per stroke, the number of strokes required tc discharge 340 gal. per min. would be 340 ÷ 3.4 = 100 strokes in that time. A single-acting pump discharges only on each alternate stroke and, since the pump makes two strokes per revolution, this pump will have to run at a speed of 100 r.p.m. to discharge this amount of water per minute.

QUESTION—*What precautions are necessary in charging, tamping and firing shots, to avoid danger? In case of a misfire, what would be your action according to law?*

ANSWER—To avoid danger in blasting coal care must be taken to locate the charge where its energy will be consumed in breaking down the coal and not expended on the air. The direction and depth to which the hole is drilled is of the first importance, to insure that the line of least resistance will not coincide with the axis of the hole but extend from the charge to the free surface where it is desired to break the coal. Study closely the character of the seam and hardness of the coal, in order to avoid the shot seaming out in a soft stratum or layer in the coal. The charge must not be located too close to the roof, which would be shattered or weakened by the force of the explosion.

Having located the direction and depth of the hole, the amount of charge is next in importance. This can only be determined by experience in any particular seam. It must be just sufficient to break down the coal. An overcharge of powder will cause a windy or a blownout shot. The charge having been carefully prepared, the cartridge is pushed back to the end of the hole, using for that purpose a wooden or a copper-tipped tampingbar. It is well to insert a small wad of clay on top of the charge before proceeding to tamp the hole. The material used for tamping must be incombustible. Fine coal or slack must never be used for that purpose. The hole should be tamped to the mouth with fine dust taken from the road or other similar material. Care must be taken to avoid injuring the wire leads or fuse used to fire the charge. Electric firing by a hand battery is the safest method to employ.

In case of a misfire, no attempt must be made to drill out the tamping or otherwise recover the shot. The only safe method to employ is to drill another hole at least 12 in. away from the previous hole. This second hole is then charged and fired. Care must now be taken to ascertain if the first charge exploded when the second hole was fired by making a careful search for the unexploded cartridge.

President Believed to Favor Reduction of Freight Rates on Coal

IT IS understood on the highest authority that the President regards freight-rate reduction on coal in the interest of industrial improvement and for the benefit of the public as of first importance in rate readjustment. He is understood to feel that a reduction in the freight rate is of more importance and benefit to the public than a reduction in the price at the mine, realizing, it is said, that the mine price is reasonable. The President is concentratng his efforts on seeking rate reductions on coal and is confident that through this means the public will realize its hope of obtaining coal at more reasonable price. Early rate adjustment is understood also to be regarded as a step in the direction of the seasonal movement of coal, thereby preventing congestion in the autumn.

On the other hand, resistance to rate reductions on coal was manifested in the hearings on the railroad investigation before the Senate Interstate Commerce Committee. All of the railroad witnesses sought to show that it was not possible to reduce rates at this time.

Edward Chambers, vice-president of the A. T. & S. F., said that coal and coke furnished 40 per cent of the commercial tonnage moved by the railroads. He said there had been no direct statement that the movement of coal had been prevented by increased rates. In increasing the rates last year under the Interstate Commerce Commission order, he said, the roads had preserved the relationships which had existed as to the point of production, "which was about all the shippers asked for at that time." He said that manufacturing plants, which are the greatest consumers of fuel, are located close to sources of coal supply and pay the minimum fuel rate. He said the freight rates on coal and also coal prices were low in comparison with those on many other commodities.

New Zealand Mine Workers Want Day Work, Short Week and Short Day

NEW ZEALAND'S coal miners, who admittedly have good working conditions already, have presented new demands to the mine owners. They ask, says the *Christian Science Monitor*, for a six-hour day, a five-day week, the abolition of piece work, a minimum wage of £6 ($29.22 at normal exchange) a week, the abolition of the afternoon shift, a fortnight's holiday each year on full pay, and an effective voice in the control of the industry.

If these demands were granted, the actual time spent hewing coal by the miner would average from 20 to 25 hours per week. The men have not explained exactly what they mean by an effective voice in the control of the industry, but their idea appears to be the control of mines by committees representing the owners and the workers. The employers have not hesitated in rejecting these demands, and New Zealand appears to be committed to another period of turmoil in the mining industry.

The public men of the Dominion are finding the coal problem a hard nut to crack. The miners are the most militant branch of organized labor. The output of coal is declining year by year owing to stoppings, strikes, deliberately slow work and general disorganization. New Zealand, with rich and easily developed coal fields of its own, is importing coal from Wales, Japan, Australia and the United States.

These conditions have been prevailing for a long time, and one obvious deduction is that private ownership of the mines is a failure. But then the government has mines of its own and they cause industrial discontent just as freely as the private mines.

It appears probable that sooner or later the government will be persuaded to take over all the mines and place them in the hands of a board of management, which will contain representatives of the workers. But before that happens, the mine owners will make another attempt to attain industrial peace by the path of industrial war. They are going to fight the miners' organizations in the time-honored way. The community at large watches developments with an uneasy conviction that coal will be scarce and dear for a long time yet.

Living Cost Falls 17.5 Per Cent from Peak; Still 68.7 Per Cent Above 1914 Level

MOST recent comprehensive information on changes in the cost of living in the United States, reflecting conditions in representative communities all over the country, was made public May 21 by the National Industrial Conference Board.

The total increase in the cost of living from the beginning of the war to March, 1921, the investigation shows, was 68.7 per cent. The rise in the cost of the major items of the budget of wage earners between July, 1914, and March, 1921, is estimated to have been as follows: Food, 56 per cent; shelter, 71 per cent; clothing, 74 per cent; fuel and light, 87 per cent; sundries, 85 per cent.

The report shows that the peak of the cost of living was reached in the United States in July, 1920. Since then the total cost of living has decreased 17.5 per cent. Food has decreased 29 per cent, clothing 35 per cent, while shelter has increased 8 per cent, and fuel and light 13 per cent, no change having taken place in the cost of sundries.

Since the beginning of last November the total cost of living has decreased 12.6 per cent, food showing a 19 per cent decrease, clothing a 23 per cent decrease, fuel and light a 6.5 per cent decrease and sundries a 4 per cent decrease. The only item in the wage earner's budget which since last winter has shown a tendency to increase is average rents, which have gone up 3 per cent since November, 1920.

The investigation shows that the average cost of light and fuel combined fell 6.5 per cent between November, 1920, and March, 1921. This drop was caused by the decline in the price of coal; the average cost of light advanced within this period. Between July, 1920, and March, 1921, there was, however, a net rise of 13 per cent in the cost of fuel and light, since the increase between July, 1920, and November, 1920, had been very large. The cost of fuel and light generally in March, 1921, was 87 per cent higher than in July before the war.

Hoover to Use Trade Bodies for Contact Between Government and Industry

THE general functions and activities of trade associations were discussed at a conference in Washington, June 3, between Secretary of Commerce Hoover and a committee representing the American Trade Association Executives. The executives' association is made up of representatives of old and established organizations of manufacturers and distributors of single lines of goods or services.

Representatives of the trade associations assured Mr. Hoover of their hearty approval of his statement of June 2 in which he set forth the position of the administration respecting trade organizations. They were told by the Secretary that he was convinced that trade bodies have contributed largely to efficiency in industry and that collective effort, within the proper lines, has the approval of the Government. A smaller number of associations, Mr. Hoover said, have engaged in questionable practices.

The Commerce Department, Mr. Hoover said, intends using the trade associations as one of the points of contact between the Government and industry. The association executives expressed a willingness to co-operate fully and voiced the hope that such co-operation would bring a new era of understanding between the government and business.

Mr. Hoover expressed the belief that one result of co-operation by the department with the associations would be the furtherance of plans for giving wide distribution to helpful production and distribution statistics. He indicated that figures given by the industries to the department would be regarded as confidential and that use would be made of them in no manner that might be objected to by the industries.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

NO immediate return to prosperity is in sight, says Archer Wall Douglas, chairman of the Committee on Statistics of the Chamber of Commerce of the United States, in his semi-annual report on business and crop conditions, issued June 11. "There need be no delusions about a resumption of war-time volume of business," Mr. Douglas declares, adding that while things will be quiet during the summer the termination of harvest may bring somewhat better business and a slow and gradual improvement.

"There is a growing realization of the fact," says Mr. Douglas, "that returning prosperity in this country depends upon the recovery of Europe, since she is and will be for a long time to come the best market for our surplus—for that surplus which we have accumulated and still have on hand in every phase of industry. Meanwhile the slow progress of business finds its chief stimulus in the gradual depletion of stocks both of merchandise and commodities, and that demand for replacement and repair which in itself produces the principal volume of our domestic commerce. There is still money to be spent where bargain prices are in evidence, showing that purchasing power is still high, despite many untoward conditions.

"One of the serious conditions—serious because there are immense possibilities of its being much better—is the slow growth of building, due to the continued high costs of the whole of construction. Until these costs are reduced building will be only such as comes from the impulse of necessity. Lumber naturally sympathizes with the inactivity of building and despite its low prices suffers from lack of demand.

"There has been some increase in the output of automobiles, notably in certain localities. All the various phases of leather production and manufacture seem to have struck bottom, both in prices and in demand, and to have had some moderate healthy rebound. The steel industry is running on short time with limited output and reduction of orders in hand. Railroad shops are very quiet. Textiles, more particularly wool and linen, are doing somewhat better, as is likewise the shoe industry, especially in women's footwear.

"The railroads are using their utmost thought and endeavor to get their house in order by reduction in the cost of operation and by various economies. All of which inspires the hope on the part of the general public that these things when accomplished—and they now seem under way—will result in reduced cost of transportation. For such costs of transportation are a heavy handicap, too burdensome to be borne by many commodities, notably lumber and numerous farm products."

Steel Ingot Output Gained in May

The report of the American Iron and Steel Institute, gave the production of steel ingots during May by thirty companies—which represented 85½ per cent of the entire output last year—as 1,265,850 tons. It shows an increase of 51,892 tons compared with April when the output was 1,213,958 tons. There were only twenty-five working days in May, as against twenty-six in April, so that the figures represent a still higher rate of daily outturn than those of April.

American Woolen Co. Busy

The American Woolen Co. is said to be operating its plants at better than 90 per cent of capacity and expects to maintain this ratio well into midsummer, according to reports.

Less Idleness in Massachusetts

Employment conditions have improved during the past month in six Massachusetts manufacturing cities out of eight in which a survey was made, the State Department of Labor and Industries announced June 6. The survey covered the period from April 30 to May 27 and showed a gain in the eight cities as a whole of 2.6 per cent. The greatest gain was in Brockton, a shoemaking center, with 19.4 per cent. New Bedford, Fall River, Lowell and Lawrence, textile centers, improved between 8 and 2 per cent. and Springfield 1.1 per cent. Boston showed a loss of 3.2 per cent and Worcester of 1 per cent.

Cable Plant for St. Louis

The Standard Underground Cable Co., of Pittsburgh, has purchased 600,000 sq.ft. of ground in the northwestern industrial district of St. Louis, and will begin the erection of a manufacturing plant there before the end of this year, according to an announcement of the St. Louis Chamber of Commerce. It is stated that the expenditure for the new plant will be nearly $3,000,000.

Philadelphia Mills Expand

Textile mills in the Philadelphia district are reported as buying machinery in large quantities. Some are replacement orders, but a great many are said to be for additional machinery which is being installed to expand output. Silk mills in the Philadelphia district are reported to be increasing production and are nearing 75 per cent normal.

Alabama Mills Resume

The Tuscaloosa Mills, Cottondale, Ala., resumed operations last week on full time, after a suspension of three or four months.

Two Foundries Work Full Time

For the first time since last fall, the *Iron Age* reports, the New Castle, Pa., plant of the American Sheet & Tin Plate Co. is operating full.

The Connecticut Electric Steel Co., Hartford,Conn., is on a six day basis. Heretofore the plant operated on a four days a week schedule.

Foundries affiliated with the Belleville Manufacturers' Association, Belleville, Ill., were shut down recently because of the refusal of foundry laborers and shaker-outs to accept 44c. an hour for a 9-hr. day. The scale paid to union men formerly was 55c. per hr. for an 8-hr. day.

The Bettendorf Co., Bettendorf, Iowa, manufacturer of railroad cars and underframes, has shut down its plant indefinitely because of the scarcity of orders.

Coal Shipments on the Chesapeake & Ohio

SHIPMENTS of coal over the Chesapeake & Ohio R.R. are slowly increasing in volume. The total for April was 37,348 cars, practically the same as for January, but a recovery from the low mark of February of some eleven thousand cars. During 1920 shipments reached the highest mark in August, when the equivalent of 54,493 50-ton cars was handled. The Logan field is the largest served by the C. & O., and in September 20,103 cars of coal were loaded in that field. August was the banner month in the New River, Kanawha and Coal River districts.

COAL ORIGINATING ON THE C. & O. BY DISTRICTS AND BY MONTHS, IN EQUIVALENTS OF 50-TON CARLOADS

1920	New River	Kanawha	Coal River	Logan	Kentucky	Total
January	9,501	10,063	4,210	14,671	4,424	42,869
February	7,715	8,175	3,764	13,447	3,943	37,044
March	10,718	10,287	4,819	15,244	5,369	46,437
April	9,044	8,583	3,601	12,742	4,047	38,017
May	9,366	7,974	3,751	13,210	4,659	38,960
June	9,435	9,000	4,248	15,005	4,249	41,937
July	11,485	10,513	4,345	15,984	5,309	47,636
August	11,943	11,643	5,300	19,452	6,154	54,492
September	10,346	11,451	4,861	20,103	6,284	53,045
October	11,455	11,205	5,194	18,892	5,511	52,257
November	10,502	10,462	4,581	16,245	5,969	47,759
December	9,183	8,743	4,281	14,805	6,274	43,286
Total, 1920	120,693	118,099	52,955	198,800	62,192	543,739
1921						
January	11,093	7,980	3,300	13,234	3,084	38,691
February	6,243	5,852	2,194	9,599	1,891	25,779
March	8,066	6,496	2,145	12,282	1,498	30,487
April	11,201	5,922	2,876	15,458	1,890	37,347
Total, Jan.-April, 1921	36,603	26,250	10,515	50,573	8,363	132,304

SHIPMENTS ORIGINATING ON SHORT LINE CONNECTIONS, IN 50-TON CARLOADS

1920	S. V. & E.	Long Fork	A. C. & I.
January	2,011	830	218
February	2,181	838	188
March	2,469	1,106	*a*...
April	1,744	819	...
May	1,963	1,226	...
June	1,832	1,461	...
July	2,311	1,538	...
August	2,689	1,798	...
September	2,719	1,447	...
October	2,580	1,256	...
November	....	*b*....	...

(*a*) A. C. & I. records dropped from C. & O. March 1.
(*b*) S. V. & E. & Long Fork now handled by B. & O. Ry.

Canadian Committee Makes Recommendations to Avert Fuel Shortage

THE Special Parliamentary Committee appointed to investigate the fuel supply of Canada presented its report to the House of Commons at Ottawa on May 30, urging the appointment of a government office to keep in touch with the fuel situation, having sufficient power to cope with any emergency in order that the country may suffer no inconvenience from fuel shortage. Development of the water power, encouragement of transportation of coal by water, encouragement of the use by domestic consumers of Canadian coal, peat and briquets instead of imported anthracite; that consumers be urged to purchase their coal in the early summer and that transportation companies be asked to assist by granting a substantial reduction in freight rates in that season, and that a campaign of education be carried on to teach the people to use Canadian coal wherever possible and instruct them in the best methods of doing so, are the recommendations made.

Fatalities and Injuries at U. S. Coke Ovens Decreased During 1920

ACCIDENTS at all coke ovens operated throughout the United States in 1920, the U. S. Bureau of Mines announces, caused the death of 49 employees and the injury of 3,415 others, a reduction of 4 fatalities and 616 injuries as compared with 1919. The industry employed 28,139 persons during the year and each employee averaged 319 working days. The total working time for all employees was 8,976,214 shifts.

At byproduct ovens 17,184 men were employed, or 1,776 more than in 1919. Of these, 38 were killed and 2,380 were injured by accidents, showing a fatality rate of 1.92 and an injury rate of 120.04 per thousand persons employed, as compared with a rate of 2.55 killed and 158.33 injured in 1919 based upon a standard year of 300 working days. The number of shifts operated at byproduct ovens was 5,948,152, an increase of 894,661 shifts over the year before.

Coke ovens of the beehive type employed 10,955 men, which is 2,378 less than the number employed in 1919. Accidents resulted in the death of 11 men and the injury of 1,035, or 1.09 killed and 102.54 injured per thousand persons employed, as compared with accident rates of 0.92 killed and 125.96 injured in 1919. The total working time at beehive ovens was 3,028,062 days for all employees, or 276 working days per man.

Ludlow Tours Through the Northwest; Philadelphia Section Proposed

EDWIN LUDLOW, president, and Bradley Stoughton, secretary of the A. I. M. E., made a short trip to the Northwest in the interest of the institute, attending on April 5, at the Seattle Engineers' Club, a meeting of the Associated Engineers of Seattle, the Puget Sound Section being represented, and on April 7 to 9 the International Mining Convention at Portland, Ore., where 1,000 engineers and mining men were present. On April 7 an Oregon section was organized by the visitors.

On April 11 the two institute officers addressed a luncheon of the Associated Engineers of Spokane and in the evening a dinner and meeting of the A. I. M. E. members of the Columbia section. The next section visited was that of Montana, a meeting being held at Anaconda on April 12, and at the Silver Bow Club in Butte on the same evening. An informal meeting was held by the Minneapolis-St. Paul section at the University of Minnesota, April 14, and at the Union League Club by the Chicago section, April 15.

At a meeting in Philadelphia of the American Engineering Council, April 16, forty or more of the prominent members of the A. I. M. E. in and near Philadelphia entertained Mr. Ludlow, Herbert Hoover, the president of the Engineering Council, and Mr. Stoughton, addresses being made by Mr. Hoover, Mr. Ludlow and Henry S. Drinker. The toastmaster, S. D. Warriner, presented Mr. Ludlow with a petition signed by twenty-nine members for the formation of a Philadelphia section. A resolution was unanimously passed requesting the directors to appoint a committee to organize a section, the chairman of which should be Mr. Drinker; vice-chairman, Mr. Warriner; executive committee, H. M. Chance, A. A. Stevenson and five other members appointed by the chairman, the committee to call a meeting of all members within fifty miles of Philadelphia for the organization of a section.

Coal on Canadian Crown Lands To Be Mined For Domestic Use Only

REGULATIONS recently issued by the Canadian Department of the Interior permit the mining of coal for domestic purposes, but not for sale, on Crown lands in the Provinces of Alberta, Saskatchewan, Manitoba, Yukon and Northwest Territories and the railway belt in British Columbia.

Mining rights may be obtained for $5 a year, payable in advance, and in addition to an annual rental of $1 per acre a year.

The maximum area which may be mined on one permit has been placed at one acre, and only one permit will be issued at a time. A royalty of 25c. per ton of 2,000 pounds will be paid by the person mining.

THE UNITED STATES HOUSING CORPORATION has again called for bids on 9,000 tons of coal for use on the Norfolk-Portsmouth Ferries. Fifteen local bidders made offers for this contract, which has not been awarded. Prices ranged from $2.90 to $3.25 per net ton at the mines. The Housing Corporation asked for bids on this contract several months ago, the prices ranging from 3.50 to $4.25 per ton, but the bids were rejected.

Frelinghuysen and Coal Men Unable to Agree on Coal Legislation; Convincing Public with Compulsion

CONFERENCES between Senator Frelinghuysen and the representatives of the coal industry in Washington on June 7 and 8 were without result in getting support from the industry for the "Coal Industry Stabilization Act." Although reported out from the committee on Interstate Commerce three weeks previously, the conference between the government and the industry had been delayed until the various branches had opportunity to gather and discuss the position they would take toward the measure. At the first meeting this position was manifested in no unmistakable manner. From the outset the coal men voiced their opposition to this or any other legislation that singled out the coal industry for special treatment, no matter how innocuous the law might be.

Representatives of the bituminous operators, the anthracite producers, the retailers and the wholesalers met in executive session on Monday to prepare for the conference on Tuesday. As a result, J. G. Bradley, president of the National Coal Association, acting as spokesman, was able to advise Senator Frelinghuysen that the coal industry as a unit is opposed to his bill and to any form of legislative regulation of the industry. The Secretaries of Commerce and the Interior were present during the first hour of the conference on Tuesday.

In response to the suggestion of the coal men that they were quite willing to furnish on a voluntary basis any and all information desired and called for by the bill it is understood that Mr. Hoover indicated his willingness to go along with such a program but that he questioned whether the public would be satisfied with statistics and other information collected by the bureaus of the coal associations and passed along to the government. He pointed out that, the world over, there is a definite public opinion developing that would place coal next in line to the railroads with respect to government regulation and control. He suggested that the best counter measure appeared to be co-operation between the government and the industry looking to better knowledge on the part of the public of the problems of the industry.

Hoover Not Committed to Any Bill

It is understood that Mr. Hoover has is no way committed himself to this particular bill or any other form of legislation, his desire being that the information on which business can be better done should be available to the public through the government. The absence of the Secretary of Commerce from the conference on the second day was explained on the ground that the matter under discussion is one of legislation and therefore outside of his province. Secretary Fall of the Interior Department contributed nothing to the conference. So unproductive of results was the meeting on June 7 that it was agreed to adjourn until the next morning.

The second day's conference was opened with the suggestion on the part of Mr. Bradley that the organic act of the Department of Commerce be amended to include mines and quarries with manufactures, with respect to which the department now has under the law very wide powers to make investigations. It was pointed out that such a course would give the Secretary of Commerce authority to obtain all the reports from the coal trade that could be collected under the proposed bill of Senator Frelinghuysen and that such an amendment would be acceptable to the coal industry because it would put all mineral products in the same category and not subject coal to special treatment.

Senator Frelinghuysen flatly rejected the idea and said that there must be a coal bill and that if it was desirable to have other minerals similarly treated it should be by adding them to his coal bill. He argued at considerable length with respect to the public demand for special coal legislation, holding forth the opinion that only by the acceptance now of some mild measure such as he was proposing could more restrictive legislation be forestalled later in the event that prices of coal again went up. The Senator also opposed the idea of obtaining the coal legislation he desired by amendment of the Commerce Act because that method would also require changes in the organic act of the Geological Survey and possibly also of other bureaus. In short, he termed the proposal of the coal operators an attempt to drag a "red herring over the trail." He further stated that he would consider changes in his bill but that he would not abandon the central object of the proposal—to have a special coal act.

Anthracite Men Anxious to Effect Agreement

An open break at this time was forestalled by Mr. Connell, representing the anthracite producers, who assured the Senator that they were there to try to effect a meeting of minds on the subject and would like the opportunity to sit with him in a smaller meeting and try to agree on the terms of a bill that would be acceptable to all. To this the Senator replied that emphatically he was through with meetings and that he would wait no longer before pressing the bill for passage on the floor of the Senate. He finally agreed to wait for a reasonable time—three or four days at most—to give the coal men opportunity to present to him in writing any amendments supported by arguments, which he said he would consider, and, whether he agreed or not, would place before the full committee of the Senate that had reported the bill out.

The idea that had gained more or less credence in Washington in the past few weeks that the National Coal Association had given its support to the bill as a result of having previously suggested certain changes in the former bill, was dispelled when the Senator from New Jersey was discussing the measure with Mr. Stephens, of New York, representing the retail dealers. Mr. Stephens complained that the retailers had had no opportunity to file with him their objections and to have their attorneys go over the measure as had the coal association. To this the Senator replied that all the attorneys of the National Coal Association had done was to make some suggestions to him and that they had no more chance to revise the bill than had anyone else. In this discussion Mr. Stephens made it clear that the retailers are opposed to any bill that even tends to set the prices at which they shall sell coal. They would prefer that the possibilities of helping the coal busi-

ness through giving information to the government be tried out on a voluntary basis before they submitted to legislation to effect this result.

In an attempt to explain what would be accomplished by this bill the Senator said that there is now no one in the government to whom a coal consumer can take his questions with respect to coal. If he thinks that he is being charged too much for his coal he has no one in authority to ask for the facts. The Senator admitted that one expectation and purpose is to furnish a means for holding down the seller of coal, and it is believed that this result can be accomplished by publicity of facts regarding mine prices, freight rates, and local retail prices at different cities. It was evident that Mr. Frelinghuysen did not convince the coal men that he could control prices to the public by any such simple process, for they told him that if such a result were hoped for, it would be accomplished only by taking the next step, actual control, to which they are opposed.

As the conference of the second day was drawing to a close, and there appeared no weakening in the opposition of the coal men, Senator Frelinghuysen endeavored to obtain from the coal men an expression of opinion as to whether they were opposed to the principle of his bill or whether they were in sympathy with the principle but not with the form of the proposed act. In reply the anthracite and bituminous producers stated that they were agreed with the principle involved—namely, the furnishing of information to the public through the government—but that they are opposed to the terms of the present bill. The retailers would not endorse the program and Mr. Cushing asked, "Where does it lead?" The Senator turned to Mr. Cushing and replied with the question, "If prices again go up, where will that lead?" He reiterated his belief in the public demand for special coal legislation and said that there must be a proper degree of publicity with respect to the necessities of life. "You must give this to the public and you must trust your government," he said.

Voluntary Data Considered Unacceptable

In his report to the convention of the American Wholesale Coal Association, in session in Washington at the same time, Mr. Swayne later summarized the situation by stating that it had been fairly definitely asserted that the offer of the coal trade to give on a voluntary basis all the data on production, distribution, stocks and prices was not satisfactory to the government. The exact reason why this offer for such full details of the coal business is not satisfactory had not been accurately or forcefully presented by the government. "The impression I get," said Mr. Swayne, "is that the government feels that unless this information is the result of compulsion, it will not be accepted by the public as accurate." He felt that whenever they had tried to get a specific reason why voluntary reports were not satisfactory, they were turned off on other subjects. All were agreed, he reported, that it was essential to have the information and that the coal industry is unanimous in offering to give it on a voluntary basis and would not oppose giving it as a result of legislation if it could feel assured that such legislation would not lead further than simply the collection of statistics. The coal men seem to feel, however, that this legislation goes beyond that and is the precursor of regulation and some form of inquisitorial legislation.

It was generally felt that the best argument advanced against the proposed legislation was contained in a statement of Senator Calder, who was present at the first conference at the invitation of the Senator from New Jersey. Senator Calder said that he would support the bill because he considered it a step in the direction of the more definite and regulatory measures he favored and hoped ultimately to see enacted. The effect on the coal men of this statement of Senator Calder was in no wise softened by a subsequent assertion of Senator Frelinghuysen to the effect that he would strenuously fight any regulation that might be proposed by the "radicals" in the Senate, even though they be in the form of amendments proposed to his bill.

Senator Calder is reported to have said: "I still believe in my own bill. Nevertheless, I endorse the Frelinghuysen bill because *it is the necessary first step.* I see no need for further discussion. These men oppose legislation. I knew what their attitude was going to be before I came here. This is no longer a matter for conference; it is a matter for us to decide on the hill."

Senator Frelinghuysen, later, said: "I cannot change my bill to include all commodities because coal is too vital to the railroads and to the public utilities, which have both been brought under regulation."

Frelinghuysen Insists on Compulsory Reports of Coal Facts

Opposition Said to Come from Wholesalers and Retailers—Operators Likely To Be Enlisted Against Bill

By Paul Wooten

NOTHING less than compulsory fact-finding can meet the exigencies in the coal situation. This statement was made by Senator Frelinghuysen to the correspondent of *Coal Age*, to whom he stated most emphatically that he would insist upon this legislation being kept before the Senate until a final vote is had on the measure. He expressed the opinion that the principal opposition to the measure is coming from the wholesalers and the retailers. It is his conclusion that the majority of the operators would be willing to accept his bill.

The only official statement forthcoming from the operators was the following from J. G. Bradley, president of the National Coal Association:

"At the conference this morning between representatives of the coal industry and Senator Frelinghuysen and Secretary of the Interior Fall and Secretary of Commerce Hoover, the coal men expressed their readiness to furnish voluntarily and without any legislative requirement all the information desired by Secretary Fall and Secretary Hoover regarding production, distribution and prices in the industry.

"In view of this entire readiness of the coal industry to assist Secretaries Fall and Hoover to obtain and publish immediately and currently the facts in regard to production, distribution and prices which they desire for the information of the government, the public and the industry, there is no necessity for any legislation to require the furnishing of that information; and therefore we assume that the administration will follow its announced policy of desiring to avoid regulation of industry and the interference of government in business and will not countenance inquisitorial legislation with respect to the coal industry.

"We are entirely willing to collect this information through the statistical bureaus in the industry, or in any other way that may be thought desirable, so far as possible, and turn it over to the Secretary of the Interior and the Secretary of Commerce for publication currently for the information of government officials and the public. We are also entirely willing to permit the Secretary of the Interior

and the Secretary of Commerce, either in person or through any employees of their departments, to check the data of these statistical bureaus and satisfy themselves as to the reliability of the information thus obtained."

That this statement presents the matter in a way best calculated to allay friction and to prevent needless controversy is admitted generally, but there is a feeling among many operators that compulsory fact finding is likely to work out greatly to the advantage of the coal producers. More operators would be willing to accept the legislation, it is believed, if they could be assured that the bill will go on the statute books in its present form. It is feared, however, that once this bill is taken up on the floor of the Senate, a long-awaited opportunity will come to those who would regulate the coal industry. They then would be able to present amendments, which would be very objectionable to the coal producers, in such form as practically to insure their embodiment in the measure. By applying compulsory fact finding to wholesalers and retailers, as well as to operators, it is believed that an effective influence would be brought to bear in preventing a runaway market. Many operators would be glad to have the public advised currently as to the component parts into which the cost of coal to the ultimate consumer is divided, believing that this would work out advantageously for the producer when his statistics were compared with those of the wholesaler and the retailer.

Despite the feeling on the part of many operators that it would be better to accept this legislation, circumstances are combining to draw the operators into the fight against the bill, and it is freely predicted that they soon will be found opposing the measure just as vigorously as are the wholesalers and retailers. This measure is likely to precipitate a threshing out of the whole issue of regulation.

On the other hand, it is apparent that there is no particular enthusiasm in Congress at this time to enter upon the consideration of such a controverted question. Senator Frelinghuysen has given notice that he will call up his bills immediately following a vote on the packers' bill. There is considerable doubt as to whether the Senate leaders will consent to such a program. It is not improbable that they will allow the seasonal rate bill to come up, as it doubtless can be passed without protracted discussion.

If the Republican leaders should decline to give the fact-finding bill a place on the legislative slate, it would be difficult to press the bill to a final vote in the near future. The coal industry has many friends in Congress.

The producers, the wholesalers and the retailers still are hopeful that Congress can be convinced that compulsory statistics are not necessary. It may not be possible, it is admitted, to obtain 100 per cent returns on a voluntary basis, but they hope to be able to convince Congress that a sufficiently large percentage of returns will be forthcoming on that basis to make possible just as accurate conclusions as would be the case if every individual made returns. In that connection it may be stated that many are of the opinion that existing law authorizes the Department of Commerce and the Department of the Interior to demand returns.

An effort to begin consideration of the Frelinghuysen fact-finding and seasonal rate bills was to have been made in the Senate June 15.

Coal Wholesalers Study Traffic and Transportation Problems at Fifth Annual Convention

WASHINGTON proved to be a popular place for the fifth annual convention of the American Wholesale Coal Association, as was evidenced by the fact that the sights of the town attracted more attention from the visitors than did the proceedings on the floor. Notwithstanding the counter attractions of the capital city the sessions were well attended by delegates from all over the country and notwithstanding the interruptions to the program caused by the conference simultaneously staged by Senator Frelinghuysen at the Interior Building, at which the officers of the association were obliged to be present, a number of interesting talks were given and there was some discussion. The feature of the convention most enjoyed by the largest portion of those attending was the banquet on Tuesday evening at the Washington Hotel. Irvin S. Cobb and Ty Cobb were the speakers and the evening will long be remembered by those who were present.

The topic given greatest consideration on the floor of the convention was traffic and transportation. William A. Wimbish and G. N. Snider on Tuesday and Judge Arthur Hayes on Wednesday addressed their remarks to these subjects. The first named covered the subject generally and Mr. Snider spoke more particularly on the matter of reconsigning as a service performed by the railroads for which adequate compensation must be allowed. He also argued against the assumption by the wholesalers' association of a specialized traffic department. Judge Hayes spoke in favor of a traffic secretary for the organization and he carried his point, for the convention voted to authorize the formation of a traffic bureau to handle special problems.

Major W. R. Coyle, vice president of Weston Dodson & Co. and one of the most popular men in the trade, was elected president. The officers, executive committee and directors for the ensuing year are as follows:

W. R. Coyle, President,
Bethlehem, Pa.

C. L. Dering, Vice President,
Chicago, Ill.

G. H. Merryweather, Sec'ty-Treasurer,
Chicago, Ill.

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*L. S. Evans,
Eastern Coal & Export Corpn.,
Richmond, Va.

M. L. Taylor,
Morgantown Coal Co.,
Morgantown, W. Va.

C. G. McGill,
William McGill & Co.,
Toronto, Ont., Canada.

J. F. Hersey,
Cherokee Coal Co.,
Louisville, Ky.

H. M. Bowman,
New England Coal Agency,
New Haven, Conn.

*Executive Committee.

E. J. McVann, secretary of the Smokeless Coal Association, and Ellery Gordon, secretary-manager of the National Retail Coal Merchants Association, were speakers on the morning of the first day. Mr. McVann entertained the audience in his usual pleasing style, not confining his remarks entirely to the subject of "Exports and Ships," about which he said he knew very little, althought he proceeded to say much of interest. Mr. Gordon gave a serious talk on association work and urged greater financial support for the organizations.

The meetings of both days were halted to receive reports from the delegates attending the Frelinghuysen conference on pending legislation. Both Major Coyle and Mr. Swayne made brief reports on the progress or lack of progress at that conference. There was no discussion of the subject of

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MAJOR W. R. COYLE
President elect, American Wholesale Coal Association.

legislation by the delegates. The last feature of the convention was a visit to the White House, where with several other delegations, opportunity was offered to shake the hand of President Harding.

The resolution committee brought in the following resolutions which were unanimously adopted:

We the members of the American Wholesale Coal Association, in annual convention assembled, having a sincere faith in our rights as Americans, our privilege as patriots and our obligations as patriotic American merchants, do publish and declare the following articles as the expression of our mature opinion on matters which are perhaps peculiarly within the scope of our knowledge and opinion.

I. We endorse emphatically the action of this convention in 1920 condemning the efforts toward Federal control of coal; we record with no little pride our own part in the repeal of those war-time laws by which Congress divested itself of power in favor of various administrative officers; and under our own power do petition the government sincerely and in the name of five millions of Americans engaged in coal and allied industries request, nay, even of our right demand, that no more socialistic experiments be tried under the guise of friendly or adverse legislation on this industry, which is but just beginning to recover from the effects of too many doctors.

II. *Railroad Embargoes*—While conceding to the railway the right to declare embargoes on account of the congestion and for the duration of the congestion only, we insist that all embargo notices shall be so drawn as to restrict shipment to the congested district, and not to discriminate unfairly against any of the shipppers or consumers who habitually use that terminal or district.

III. *Unity in the Coal Trade*—We approve the general plan as outlined last year, record material progress made in this direction toward trade unity and recommend to the Board of Directors for the ensuing year further conferences of committees of the national associations of the various branches of the coal trade.

IV. *Railway Revenue*—We recognize that additional revenue to the railways cannot come from higher rates and smaller volume and commend to the serious consideration of the railways and the Interstate Commerce Commission the necessity for the application to the railways of some of the established principles of merchandising whereby reduced prices are often found to produce increased profits. Freight rates apparently cannot soon come down, but until they do the equivalent of the dollar on raw materials cannot be materially increased. The downward revision when it comes should be developed with as little disturbance to established commercial practices as is possible.

V. The wholesaler bore the brunt of complaint on the upward swing of prices; do not now withhold acknowledgment of the fact that in many cases he saved the day on the downward crash.

VI. *Merchandising Margin*—The risk in this business being now a recent experience of all of our members, we think that no one will gainsay that the wholesaler is worth any margin he can earn and 8 per cent never was an unreasonable minimum figure when based on the quoted price.

VII. *Confiscations*—The courts in several cases in the course of the past year have ruled in effect that our claims that seized property by carrier or by government was subject to the fundamental law of the land and when taken was with the merchant's rights attached; we recommend the selection of a claim agency to expedite the settlement of the many ramaining claims against the government and the railways.

VIII. *Claims*—This association approves the theory of a uniform set of rules regarding the presentation of claims and the settlement of claims between the shippers and the common carriers. In order to open an intelligent discussion on this subject it calls upon those officers of the Railroad Administration who are custodians of a certain set of rules covering the presentation of these claims, which rules were carefully drawn by a joint committee of shippers and railroad claim agents, to publish these rules or to send them with the endorsement of the committee to the Interstate Commerce Commission or the proper tribunal for approval and promulgation.

IX. *Traffic Matters*—We commend the effective administration of the traffic committee under Mr. Morton's guidance and recommend to your favorable consideration the detailed report they make.

X. *Financial Relief*—We ask for the speedy repeal of such restrictive laws regarding rail and ocean transportation and the operation of vessels and trains as now render us unable to compete in the markets of the world and confidently look for the early restoration of competition which will come with abllity to compete.

XI. We approve for our association and its members one program: Buy from producer, sell direct to retailer or wholesale consumer, respect your other affiliations, ship coal properly routed as fair prices and follow one motto—*Pro bono publico.*

Hopes Held of Speedy End to British Strike

WITH the promise of the officers of the Miners' Federation, made June 10, that they would submit to the rank and file of that organization the proposals of the mine owners the British coal strike situation is greatly improved. The vote was taken yesterday, Wednesday, June 15, but it is too early to record the result. However, there is a general feeling that the offer will be accepted and that the strike will come to an end next Monday, June 20.

The mine owners' offer guarantees to the miners, as a minimum for twelve months, a 20-per cent advance on prewar wages. It also arranges for the waiving of the owners' profits for a certain period. A national wage board is to be appointed under a chairman who has no connection with the coal industry. This board will determine standard wages and the ratio of wages to profits. The agreement proposed makes no mention of the famous national pool that was planned to divide all profits and to pay the mine workers a wage having no relation to the amount of coal their work produced.

The abandonment of this pool is a bitter condition of industrial peace for the mine worker to accept. The strike was really started to compel its adoption. A definite question as to the pool will be put on the ballot, but it is thought that mine workers will not be disposed to vote for it, as it will mean a continuance of the strike which now cannot be persisted in without starvation. The miners' suspension of work may now be regarded as a grim hunger strike.

The miners' unions have pledged all they have, even their headquarters. The Miners' Federation is said to have spent fifteen million dollars in maintaining the strike. The other unions can do little to help, for their own men are idle for the lack of fuel and these unions are themselves paying out large sums in unemployment subsidies.

The average pay under the agreement will range from 69 to 115d. per shift ($1.40 to $2.34 at normal exchange) according to districts, with special allowances at the end of twelve months to the lower paid day workers if the wages current do not afford a subsistence wage. If the agreement is accepted new district boards will redistribute the districts on an economic instead of on a geographical basis.

Hoover Believed Sure to Get $500,000 Asked to Aid Industry

WITH the passage of the second deficiency bill by the Senate, the Department of Commerce is certain to receive the $500,000 asked by Secretary Hoover for the specific purpose of aiding industry. Of the amount, $250,000 will be expended in an effort to encourage foreign trade. The remainder will be utilized in various types of investigation and research looking to simplification, standardization and improvement in industrial practices and devices. The detailed plans for expending this money in the most effective way possible now are being worked out. As this is written the bill still is in conference, but no great amount of difficulty is expected in harmonizing the differences between the bill as passed by the House and as it finally emerged from the Senate. That the President will sign the bill is a foregone conclusion.

Supreme Court Refuses Stay of Injunction To Hardwood Manufacturers

THE U. S. Supreme Court on June 1 denied the petition of the American Hardwood Manufacturers' Association for a writ of supersedeas to serve as a stay against the injunction obtained by the government to prevent the members from exchanging price information.

On the ground that the "open-competition" plan of the association was in violation of anti-trust laws, the government obtained a permanent injunction in March, 1920, from Federal Judge McCall, at Memphis, Tenn., prohibiting members of the association from exchanging reports on production, sales and prices.

Senate Bills Would Establish Department of Mines; Bain Cites Advantages

A DETERMINED movement has been launched looking to the establishment of a new federal department which will administer matters pertaining to mines and the mineral industries. Two bills having that objective in view have been introduced in the Senate, one by Senator Nicholson, of Colorado, and the other by Senator Shortridge, of California. The Nicholson bill provides that the proposed department be composed of the U. S. Geological Survey, the Bureau of Mines and the General Land Office and that it absorb the functions of the War Minerals Relief Commission. The Shortridge bill is more comprehensive, in that it would include in the department, in addition to the agencies mentioned by the Nicholson bill, the Federal Power Commission, the California Débris Commission, the Alaskan Engineering Commission and the Bureau of Explosives of the Interstate Commerce Commission. In addition, that portion of the work of the Bureau of Standards and of the Indian Office which deals with mineral raw materials or mineral lands would be transferred to the Department of Mines. The Shortbridge bill takes over only the mineral land work of the General Land Office.

H. Foster Bain, director of the U. S. Bureau of Mines, in commenting on the proposal to establish a Department of Mines, said:

"The movement for a Department of Mines comes naturally at this time, in view of the agitation for a reorganization of the government's administrative machinery. The proposal is not new. Mining men for many years have been convinced that such a department should be created. The reports of the congressional committees at the time the Bureau of Mines was formed show that it was the distinct purpose to create a Bureau of Mines as the first step toward enlarging and centralizing governmental activities having to do with mining. The end of the ten-year period during which the Bureau of Mines has functioned as a separate bureau doubtless is regarded as the natural time to take the next step in the movement.

"It is important in federal reorganization not to lose sight of the fact that mining, as well as agriculture, is a basic industry dealing with a raw material on which commerce, transportation and manufacturing all depend heavily. There are important advantages in having the government's activities on these basic materials centralized where it is possible to assemble groups of men having special knowledge of them."

J. W. Searles Made a Vice-President of Pennsylvania Coal & Coke Corporation

J. W. SEARLES, who was recently elected to the Board of Directors of the Pennsylvania Coal & Coke Corporation, has been made vice-president in charge of sales. On June 1 Mr. Searles completed twenty years of service with the Pennsylvania Coal & Coke Corporation and its predecessors, having joined the staff of the Webster Coal & Coke Co. in 1901.

Upon the organization of the Pennsylvania Coal & Coke Corporation in 1911, Mr. Searles was appointed general sales agent, his title being changed about a year ago to that of general sales manager. Mr. Searles also is vice-president and general manager of the North River Coal & Wharf Co., and is a member of the Board of Directors of that company.

J. W. SEARLES
Vice-President in Charge of Sales,
Pennsylvania Coal & Coke Corporation

Prior to his entry into the coal business, Mr. Searles had had a number of years' experience in the mercantile business and in the freight traffic departments of the Pennsylvania R.R. at Baltimore and Philadelphia. When the Tidewater Coal Exchange was formed in June, 1917, Mr. Searles was appointed deputy commissioner at New York and perfected an organization which was later utilized by the Fuel Administration in the distribution of bituminous coal reaching the New York reshipping piers. On May 1, 1919, he resumed his duties with the Pennsylvania Coal & Coke Corporation.

IN A NEWS ITEM in *Coal Age*, June 9, announcing the resignation of J. W. Howe as commissioner of the Tidewater Coal Exchange, Inc., it was stated through a typographical error that L. A. Snead was a candidate for the position. It should have been S. T. Snead.

Alabama Mines Reduce Wages of Employees

WAGE adjustments have been made at quite a few of the commercial mines in Alabama and also at the operations of some of the furnace companies, which, as a result, have blown in their idle stacks lately. The decrease in wages is understood to range from 18 to 20 per cent. The adjustments in wage schedules were amicably received by the operatives and in some instances they actually insisted that wages be reduced enough to insure such a lower production cost that the operators would be enabled successfully to compete with the coal from other fields. This outside coal was being sold in Alabama territory at figures which could not be met locally and idleness in the coal fields was becoming a serious problem. The large railroad coal contracts recently closed were based on wage reductions and had not material price concessions been made they would have gone to other fields to the disadvantage not only of the mine workers and operators but of every one else in Alabama.

Sutherland Bill Would Assure Proportionate Distribution of Coal Cars to Mines

SENATOR SUTHERLAND, of West Virginia, has introduced a bill providing that the Transportation Act of 1920 shall not be construed as authorizing the Interstate Commerce Commission at any time to suspend, modify, cancel, alter or amend the law which requires equal proportionate distribution of cars to coal mines.

Central Pennsylvania Operators Call On Miners to Accept Wage Reduction

OPERATORS of the Central Pennsylvania coal field are much incensed that the mine workers of that region refuse to meet them in conference. At a joint meeting of the Central Coal Association and the Central Pennsylvania Coal Producers' Association held in Altoona on the evening of June 10, at which J. S. Sommerville, of Robertsdale, presided, the communications of John Brophy and Mr. Sommerville relative to the request for a conference were read.

T. H. Watkins, of New York, who was the first speaker, declared in favor of collective bargaining and the right of labor to organize but contended that the union men have no limit to their ambitions and seek to get all they can regardless of the interests of the public. He declared that if something is not done soon this country will be where England is now. Mr. Watkins declared the men in control of the United Mine Workers have taken a stranglehold on the industries of the country, and the time has come when they must be curbed. A proper equity must be established. Mr. Watkins declared that as far as he is concerned he is through with John Brophy, knowing that no quarter can come from him. He advocated a direct appeal to the president of the United States.

H. J. Meehan, of Johnstown, and State Senator Irvin Stineman, of South Fork, opposed appealing to the government beyond explaining the situation to Secretary of Labor Davis. Many other members of the association outlined business conditions and condemned the United Mine Workers for their unfair practices and the railroad companies for confiscating their coal. Attorney A. M. Liveright, of Clearfield, discussed the legal questions arising out of the controversy. Much interest centers in the meeting which the executive committee of the local association will hold on June 17.

J. S. Sommerville, president of the Central Coal Association, in discussing the controversy with the United Mine Workers at the meeting of the association in Altoona on June 10, said: "The refusal of the United Mine Workers to meet the operators is regarded as a refutation of the principle of collective bargaining and a total collapse of the whole system of contract relationship heretofore in force between the operators and miners. Because of the numerous abrogations of their contracts since 1914 by the United Mine Workers, it is the consensus of opinion that future relations with the Mine Workers will have to be on an entirely different basis."

This situation has become so serious that it was held over for further consideration at the meeting to be held on June 17. The situation is further complicated by the advice of counsel to the effect that the operators are liable to indictment for collecting dues or revenues of the union from the pay envelopes of the employees and for turning the money over to the United Mine Workers. Action on this will be taken at the meeting on June 17.

Mine Cave Voluntary Agreement Terminated

ATTORNEY J. HAYDEN OLIVER, representative of the ten anthracite coal companies who were signatories to the mine-cave voluntary agreement. presented, on June 2, notice of the fact that the coal companies had abrogated that agreement. The $100,000 fund for emergency use held on deposit with the Lackawanna Trust Co. was withdrawn from that institution and turned over to W. G. Van De Water, secretary of the Glen Alden Coal Co., for equal distribution among the companies that signed the agreement.

The commission has been in existence for two years and five months and during that time approximately $1,000,000 has been expended in wholly or temporarily repairing 1,500 buildings damaged by subsidence. Repairs also have been made to streets and sewers. About six hundred buildings that have sustained damage have received no repairs but W. W. Inglis, general manager of the Glen Alden Coal Co., has advised the public of the intention of his company to continue indefinitely the repair of damaged property.

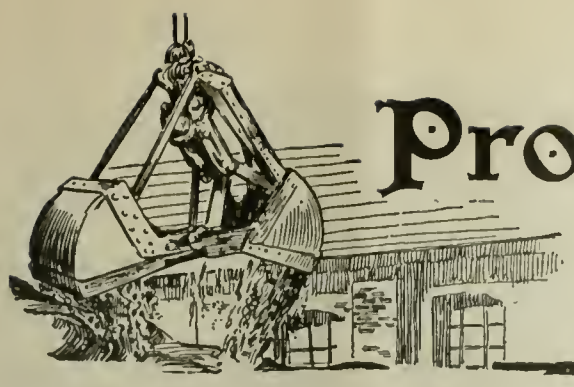
The signatories to the voluntary agreement now abrogated were the Delaware, Lackawanna & Western Railroad Co., Scranton Coal Co., Pennsylvania Coal Co., Bull's Head Coal Co., Quinn Coal Co., John Gibbons Coal Co., Spencer Coal Co., Carney & Brown Coal Co., Green Ridge Coal Co. and the Nay Aug Coal Co. The commissioners whose terms of office are ended are Arthur W. Long, Tudor R. Williams and William A. Phillips.

The mine caves still continue. A block in West Scranton on Hampton St. was damaged by subsidence on June 8, eight homes being affected. Several gas and water mains were badly damaged, the area having to be roped off by the police.

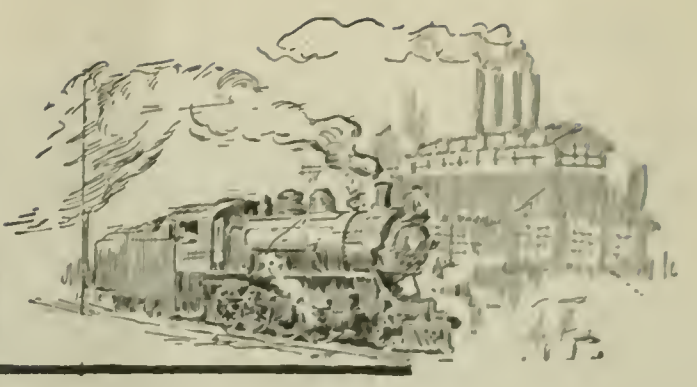
A MAP AND INDEX of all bituminous coal mines in Pennsylvania has been prepared and published by the Central Pennsylvania Coal Producers Association. The map, about 4 x 5 ft., shows exact location of every mine. Railroads are in colors. The index accompanying the map gives a complete numerical list of mines, the numbers corresponding with those on the map. This list is followed by one giving the companies in alphabetical order, and finally by a list giving the mines in alphabetical order. This publication, the most complete that has ever been prepared for any large coal field, is for sale and can be had upon application to Charles O'Neil, secretary and treasurer, Central Pennsylvania Coal Producers Association, Altoona, Pa.

IN VIEW OF SENATOR FREYLINGHUYSEN'S determination to push his bill providing for compulsory fact-finding, J. D. A. Morrow, vice-president of the National Coal Association, in charge of its Washington office, has given up his trip to Europe. Mr. Morrow purposed attending the meeting of the International Chamber of Commerce in London as a delegate of the National Coal Association and as a member of the International Chamber's committee on raw materials. As the Frelinghuysen bill, with the ever present possibility of its being made more drastic by amendment, will precipitate such a grave issue, Mr. Morrow felt that he should not be absent during its consideration.

THE FRELINGHUYSEN FACT-FINDING BILL was the subject of discussion June 15 at a meeting in Washington of the Board of Directors and the government relations committee of the National Coal Associ tion.



Production and the Market



Weekly Review

STILL further recessions in prices during the second week of June marked the progress of the bituminous coal trade from spring dullness to summer lethargy. *Coal Age* index declined one point, from 96 on June 7 to 95 on June 14. But one coal showed strength, Pittsburgh screened gas, and that resulted from the marking up of the price after a brief recession below schedule. In nearly every other field lack of demand for spot shipments brought small breaks in prices on current orders.

Along the Atlantic seaboard extreme dullness continues. The end of the British strike has been discounted well in advance and business strictly dependent on England's stoppage has largely ceased. Offshore exports in May were 1,559,000 net tons, largely (1,217,000 tons) through Hampton Roads, a record within 200,000 tons of the highest point reached (October) last year. Despite the large movement, prices of smokeless coal at Tidewater have dropped.

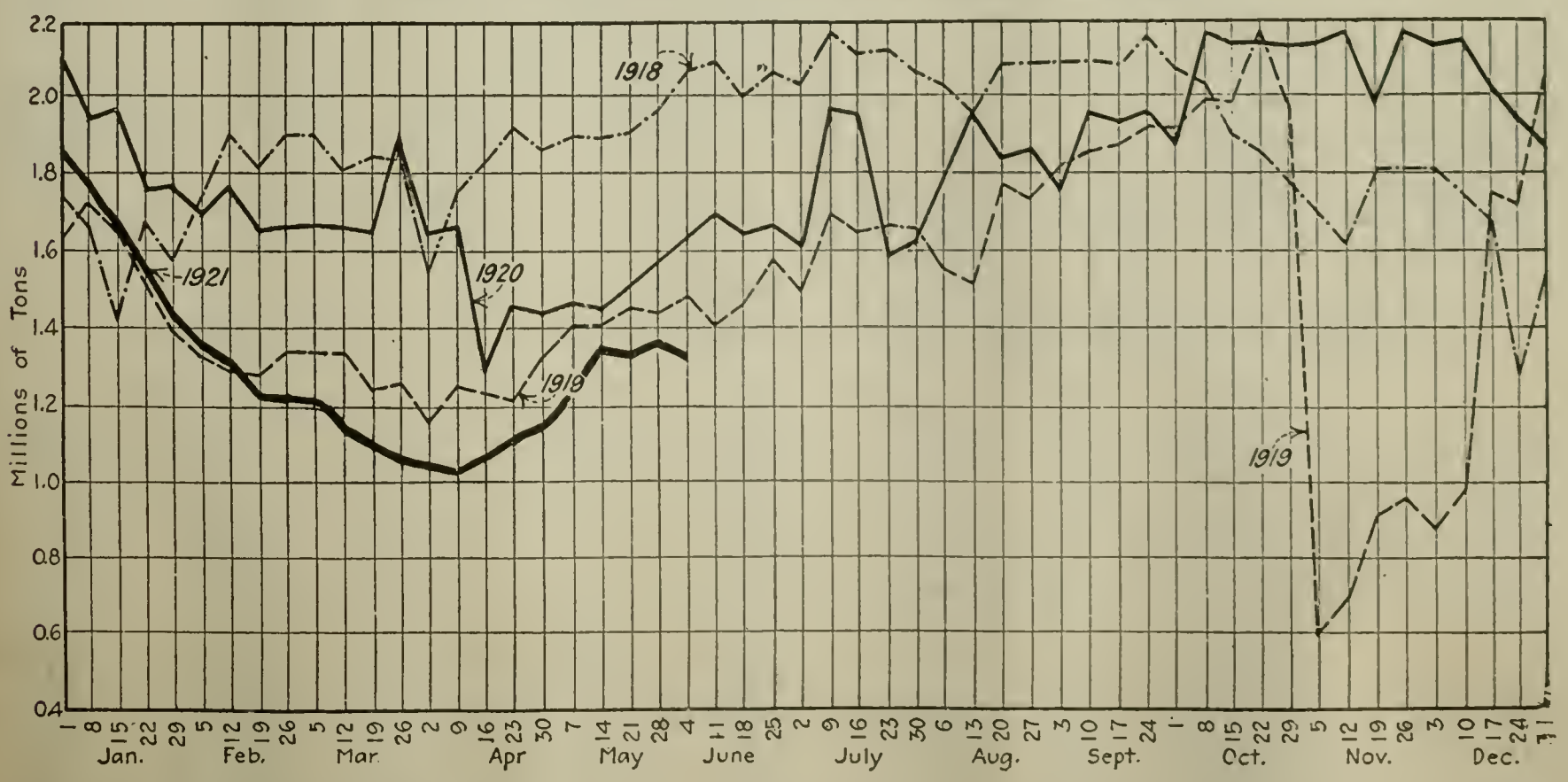
In the first few days of June English buyers were actively seeking coal for clearance by the end of the first week, but refused to consider tonnage after that date. This, it was later shown, was due to the anticipated settlement of the strike by June 20, and was the result of an effort to get coal to the United Kingdom prior to that date. It is reported that some British shippers are now quoting prices for July coal deliveries. It is interesting to note that exports from this country by water in April, May and prospectively in June, total about 1,200,000 tons above the rate of shipment during the first three months of the year. This is a measure in tons of what to date the strike in Great Britain has meant to our export trade.

Bituminous Output Equal to Consumption

Production of bituminous coal is holding steady at the rate of 8,000,000 tons a week. Actual output in the week of June 4 was but 6,835,000 tons, due to the holiday, May 30. In the past four weeks production has been approximately equal to consumption—that is, about 30,000,000 tons a month, after deducting total exports. A comfortable tonnage is moving on contract and new contracts are being closed. During the past week three large railroads in the South closed for 1,625,000 tons of Alabama coal at prices made possible only by the wage reductions of from 18 to 20 per cent arrived at simultaneously.

Every effort to open discussion with the United Mine Workers for wage reductions has failed. Central Pennsylvania producers have tried it and with results that will cause others to hesitate. We see no prospect of reductions in union wages this summer. No one can

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

see beyond this. Non-union coal at lower wages continues to push union coal in the Eastern market. This is particularly true of Central Pennsylvania, Somerset and Connellsville coal.

There will be no general reduction in freight rates on coal this year. Locally many changes may be effected but only, as in pre-war days, by rate hearings and much delay. The Secretary of Commerce, on June 13, expressed the opinion that nothing is going to come of the negotiations between the administration and the railroads looking to a reduction in the freight rate on coal.

BITUMINOUS

Observance of the Memorial Day holiday (Monday, May 30) was responsible for a slump in production during the week ended June 4. The total output, according to the Geological Survey, was 6,835,000 net tons, about 1,325,000 tons less than the output for the preceding week. The daily rate of production, however, underwent little change during the five-day week, the output averaging 1,330,000 tons daily, or about the same rate which has prevailed for the last four weeks. Loadings on Monday and Tuesday of the next week, June 6-11, presage no change in the daily production rate.

The Northern and Middle Appalachians produced 5,273,000 net tons during the last week in May, an increase when compared with the preceding week of 148,000 tons. The increase is attributed to the heavier Tidewater demand, although considerable tonnage was sent to the Lower Lake docks to be shipped to the Northwest. For the country as a whole the factor limiting mine operations was, as before, lack of demand. Such "no-market" losses amounted to 47.3 per cent of full time, production being estimated at 45.5 per cent of capacity.

Demand is everywhere dragging. *Coal Age* index of spot prices declined one point to 95 as of June 14. New England is taking little interest in the current market, despite the attractive offers made this week on all-rail coal, which is having a hard time to compete with low-volatiles because of the extremely attractive water rates now in effect. Pocahontas and New River for coastwise sold down to $5.75 per gross ton f.o.b. Hampton Roads. Spot coal is literally going begging in the Middle West, where choice lots of West Virginia splints sold "under the hammer" for $1.75 f.o.b. mines last week.

All-rail movement to New England during the week ended June 4 increased on bituminous tonnage but declined on anthracite shipments, as shown in the following table:

	1921		1920	
Week ended	Anthracite	Bituminous	Anthracite	Bituminous
May 14	3,298	2,700	3,468	3,251
May 21	3,461	3,088	3,050	4,385
May 28	3,338	2,898	2,730	4,433
June 4	3,067	3,052	3,607	3,562

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	May 10, 1921	May 31, 1921	June 7, 1921	June 14, 1921†
Pocahontas lump	Columbus	$5.40	$5.75	$5.75	$5.50@$6.00
Pocahontas mine run	Columbus	3.50	3.50	3.30	**3.35@ 3.50**
Pocahontas screenings	Columbus	.....	2.70	2.65	*2.25@ 2.50*
Pocahontas lump	Chicago	5.00	5.25	5.25	5.00@ 5.50
Pocahontas mine run	Chicago	4.00	3.75	3.15	2.75@ 3.50
*Smokeless mine run	Boston	6.15	6.50	6.45	*5.75@ 6.15*
Clearfield mine run	Boston	2.35	2.35	2.35	*1.85@ 2.60*
Somerset mine run	Boston	2.95	2.95	2.95	*2.40@ 3.10*
Pool 1 (Navy Standard)	New York	3.65	3.45	3.50	*3.25@ 3.65*
Pool 1 (Navy Standard)	Philadelphia	3.25	3.35	3.35	3.00@ 3.65
Pool 1 (Navy Standard)	Baltimore	3.25	3.30	3.30	*3.00@ 3.35*
Pool 9 (Super.Low Vol.)	New York	2.90	2.75	2.85	2.65@ 3.00
Pool 9 (Super.Low Vol.)	Philadelphia	2.90	2.95	2.95	2.75@ 3.10
Pool 9 (Super.Low Vol.)	Baltimore	3.10	3.00	2.95	*2.75@ 2.90*
Pool 10 (H.Gr. Low Vol.)	New York	2.45	2.60	2.50	*2.25@ 2.60*
Pool 10 (H.Gr. Low Vol.)	Philadelphia	2.70	2.60	2.60	*2.35@ 2.75*
Pool 10 (H.Gr. Low Vol.)	Baltimore	2.55	2.45	2.35	**2.35@ 2.40**
Pool 11 (Low Volatile)	New York	2.15	2.15	2.15	2.00@ 2.25
Pool 11 (Low Volatile)	Philadelphia	2.45	2.35	2.35	2.25@ 2.40
Pool 11 (Low Volatile)	Baltimore	2.30	2.25	2.10	2.00@ 2.20
High-Volatile, Eastern					
Pool 34 (54-64) (H.Vol. Gas and Steam)	New York	2.00	2.00	1.95	*1.75@ 2.00*
Pool 34 (54-64) (H.Vol. Gas and Steam)	Philadelphia	2.10	2.10	2.05	*1.85@ 2.10*
Pool 34 (54-64) (H.Vol. Gas and Steam)	Baltimore	2.10	1.90	1.85	1.75@ 1.90
Pittsburgh sc'd. gas	Pittsburgh	2.60	2.65	2.55	**2.50@ 3.00**
Pittsb'gh mine run (steam)	Pittsburgh	2.10	1.95	1.95	1.85@ 2.00
Pittsb'gh slack (gas)	Pittsburgh	....	....	1.75	*1.60@ 1.65*
Kanawha lump	Columbus	3.50	3.50	3.50	3.25@ 3.75
Kanawha mine run	Columbus	2.25	2.25	2.25	*2.15@ 2.25*
Kanawha screenings	Columbus	....	1.45	1.35	*1.15@ 1.30*
Hocking lump	Columbus	3.25	3.40	3.40	*3.00@ 3.50*
Hocking mine run	Columbus	2.20	2.25	2.15	2.00@ 2.25
Hocking screenings	Columbus	....	1.30	1.20	1.15@ 1.25

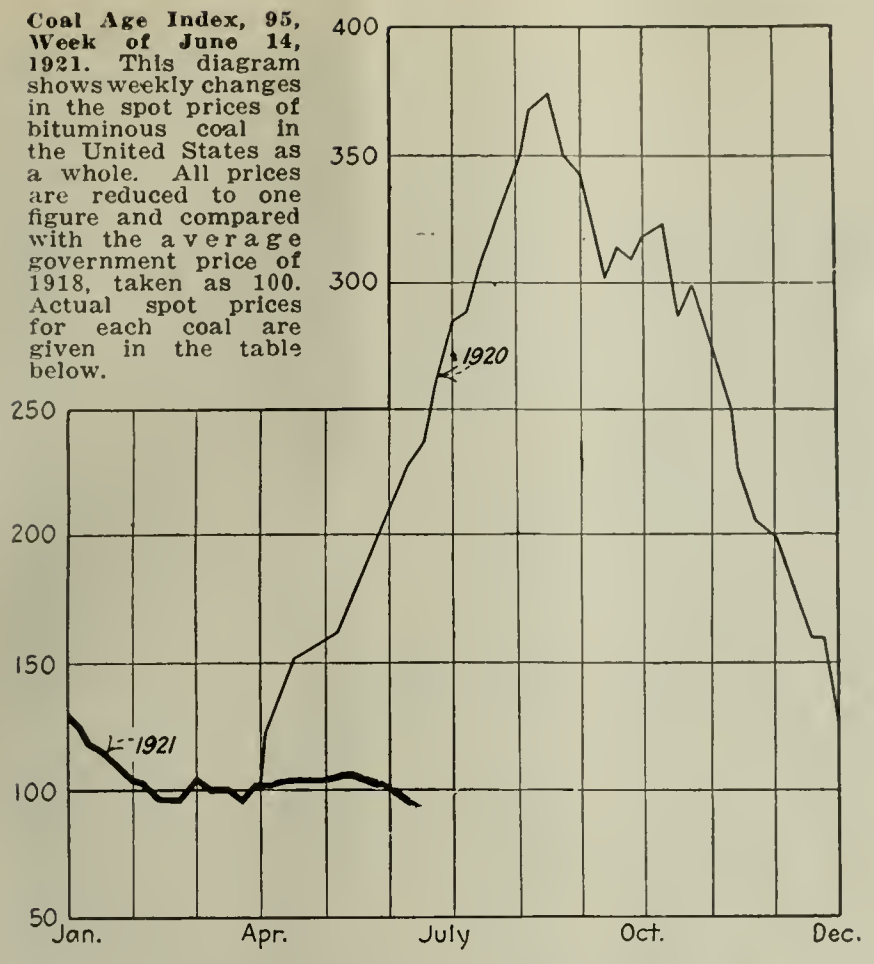
	Market Quoted	May 10, 1921	May 31, 1921	June 7, 1921	June 14, 1921†
Pitts. No. 8 lump	Cleveland	$3.25	$3.25	$3.25	$3.00@$3.50
Pitts. No. 8 mine run	Cleveland	2.20	2.25	2.30	*2.00@ 2.20*
Pitts. No. 8 screenings	Cleveland	....	1.65	1.65	*1.30@ 1.50*
Midwest					
Franklin, Ill. lump	Chicago	3.75	3.65	3.65	*3.00@ 4.05*
Franklin, Ill. mine run	Chicago	3.40	3.00	3.00	2.50@ 3.50
Franklin, Ill. screenings	Chicago	2.85	2.30	2.00	1.50@ 2.50
Central Ill., lump	Chicago	3.25	3.00	3.15	2.75@ 3.50
Central Ill., mine run	Chicago	2.95	2.40	2.50	2.25@ 2.75
Central Ill., screenings	Chicago	2.25	1.70	1.65	*1.15@ 2.00*
Ind. 4th Vein lump	Chicago	3.50	3.15	3.15	2.75@ 3.50
Ind. 4th Vein mine run	Chicago	3.40	2.90	2.75	*2.15@ 3.00*
Ind. 4th Vein screenings	Chicago	2.45	1.85	1.75	1.25@ 2.25
Ind. 5th Vein lump	Chicago	3.25	2.75	3.00	2.50@ 3.50
Ind. 5th Vein mine run	Chicago	2.70	2.50	2.50	*2.15@ 2.75*
Ind. 5th Vein screenings	Chicago	2.45	1.85	1.85	1.15@ 2.50
Standard lump	St. Louis	2.40	2.40	2.15	2.00@ 2.25
Standard mine run	St. Louis	1.90	1.75	1.75	1.65@ 1.85
Standard screenings	St. Louis	1.50	1.40	1.15	*.85@ 1.00*
West Ky. lump	Louisville	2.75	2.55	2.55	2.30@ 2.75
West Ky. mine run	Louisville	2.00	2.10	2.10	*1.50@ 2.25*
West. Ky. screenings	Louisville	1.90	1.65	1.50	*1.10@ 1.65*
South and Southwest					
Big Seam lump	Birmingham	3.70	3.65	3.65	**3.55@ 4.00**
Big Seam mine run	Birmingham	2.95	2.95	2.60	*2.25@ 2.75*
S. E. Ky. lump	Louisville	3.90	3.80	3.70	*3.50@ 3.75*
S. E. Ky. mine run	Louisville	2.60	2.40	2.35	*2.00@ 2.50*
S. E. Ky. screenings	Louisville	1.75	1.75	1.35	**1.10@ 1.75**
Kansas lump	Kansas City	5.00	5.00	5.25	5.25
Kansas mine run	Kansas City	4.40	4.25	4.40	4.25@ 4.50
Kansas screenings	Kansas City	3.75	3.75	3.25	*3.15*

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	May 31, 1921 Independent	May 31, 1921 Company	June 7, 1921 Independent	June 7, 1921 Company	June 14, 1921† Independent	June 14, 1921† Company
Broken	New York	$2.61	$7.45@$7.75	$7.20@$7.75	$7.85@$8.15	$7.30@$7.75	$7.85@$8.15	$7.30@$7.75
Broken	Philadelphia	2.66	7.90@ 8.20	7.35@ 7.75	7.90@ 8.20	7.45@ 7.85	7.90@ 8.20	7.45@ 7.85
*Broken	Chicago	5.62	12.65	12.40	12.65	12.40	12.65	12.40
Egg	New York	2.61	7.45@ 8.35	7.20@ 7.75	7.85@ 8.50	7.30@ 7.75	7.85@ 8.50	7.30@ 7.75
Egg	Philadelphia	2.66	7.90@ 8.20	7.35@ 7.75	7.90@ 8.20	7.45@ 7.85	7.90@ 8.20	7.45@ 7.85
*Egg	Chicago	5.62	12.50	12.35	12.50	12.35	12.50	12.35
Stove	New York	2.61	7.70@ 8.35	7.50@ 8.10	8.15@ 8.60	7.60@ 8.10	**8.15@ 8.75**	7.60@ 8.10
Stove	Philadelphia	2.66	8.15@ 8.60	7.70@ 8.10	8.15@ 8.60	7.80@ 8.20	8.15@ 8.60	7.80@ 8.20
*Stove	Chicago	5.62	13.10	12.70	13.10	12.70	13.10	12.70
Chestnut	New York	2.61	7.85@ 8.35	7.50@ 8.10	8.15@ 8.50	7.60@ 8.10	8.15@ 8.50	7.60@ 8.10
Chestnut	Philadelphia	2.66	7.15@ 8.50	7.65@ 8.10	8.15@ 8.50	7.75@ 8.20	8.15@ 8.50	7.75@ 8.20
*Chestnut	Chicago	5.62	12.85	12.60	12.85	12.60	12.85	12.60
Pea	New York	2.47	5.00@ 6.00	5.75@ 6.10	6.00@ 6.20	5.85@ 6.20	*5.00@ 6.00*	5.85@ 6.20
Pea	Philadelphia	2.38	5.75@ 6.25	6.00	5.75@ 6.25	6.10	*5.50@ 6.00*	6.10
*Pea	Chicago	5.62	10.80	10.70	10.80	10.70	10.80	10.70
Buckwheat No. 1	New York	2.47	3.00@ 3.50	3.50	3.00@ 3.25	3.50	*2.75@ 3.00*	3.50
Buckwheat No. 1	Philadelphia	2.38	3.00@ 3.50	3.50	3.00@ 3.35	3.50	*3.00@ 3.25*	3.50
Rice	New York	2.47	2.25@ 2.50	2.50	2.00@ 2.25	2.50	*1.70@ 2.25*	2.50
Rice	Philadelphia	2.38	2.50	2.50	2.00@ 2.50	2.50	*2.00@ 2.25*	2.50
Barley	New York	2.47	1.15@ 1.35	1.50	1.00@ 1.40	1.50	*.75@ 1.10*	1.50
Barley	Philadelphia	2.38	1.50	1.50	1.25@ 1.50	1.50	*1.00@ 1.25*	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.50	.....	2.50

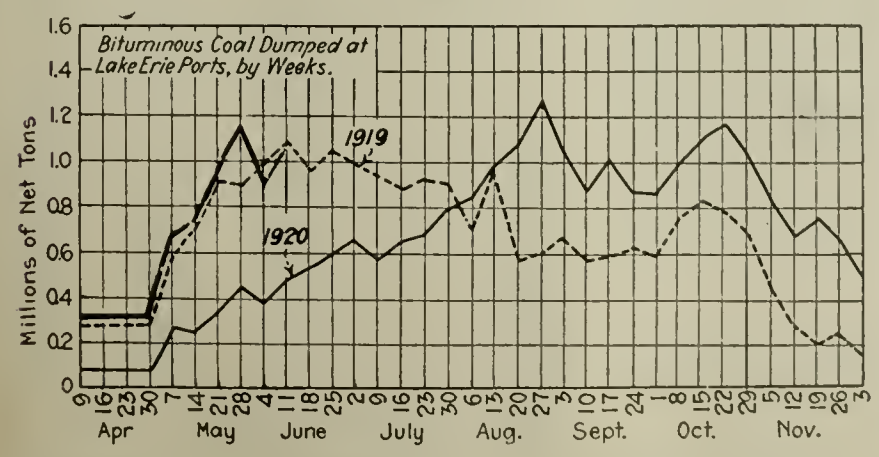
* Prices and freight rates net tons; quotations f.o.b. cars, Chicago. † Advances over previous week shown in **heavy type** declines in *italics*.



Coal Age Index, 95, Week of June 14, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table below.

Two factors are operating against a continuation of the heavy Lake movement. Few cargoes of iron ore are available, which has reduced the number of vessels offering as coal carriers; buying in the interior Northwest is practically at a standstill and coal is piling up on the head of the Lake docks in a manner that threatens to become serious. There is much confusion about the promised adjustment of freight rates off the docks effective July 6. In many cases it has been shown that where a decrease was expected the rate really will be increased. Scarcely any buying activity can be expected until after the new rates become operative, and even then a heavy movement is unlikely. The situation in the Northwest differs little from that in other sections of the country and even the most optimistic coal man fails to see how conditions can support the summer turn-over of dock stocks necessary to absorb shipments of cargo coal in their present volume.

Lake dumpings for the week ended June 13 were 1,029,178 net tons cargo and 26,978 tons of vessel fuel, a total of 1,056,156 tons, according to preliminary reports to *Coal Age*. This season's shipments are 6,886,191 tons cargo and fuel coal as compared with 2,504,000 tons for the same period in 1920 but around 7,000,000 tons in 1919.



Hampton Roads dumpings for the early part of June increased, the additional tonnage going for export. A lively overseas market existed during that period, shippers hastening vessel clearances in order to get tonnage moving before a settlement of the British strike, reported imminent, is effected.

May Tidewater business totaled 3,787,000 net tons, more than 700,000 tons in excess of the April figure. Export activity was practically confined to Hampton Roads, 1,217,000 tons being the figure for that port, or within 200,000 tons of the October, 1920, record. At Philadelphia and Baltimore the export figures were only one-eighth and one-third, respectively, of those of October, 1920.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR MAY, 1921, COMPARED WITH APRIL, IN THOUSANDS OF NET TONS

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	May Total	April Total
Coastwise to New England	103	46	69	360	3	581	633
Exports	...	62	253	1,217	27	1,559	825
Bunker	339	55	59	408	..	861	805
Inside capes	...	164	62	21	..	247	261
Other tonnage	514	...	...	25	..	539	517
May total	956	327	443	2,031	30	3,787	...
April total	977	276	356	1,411	21	...	3,041

ANTHRACITE

Production of anthracite during the week ended June 4 showed the effect of Memorial Day, the output being estimated at 1,573,000 net tons, 21 per cent less than during the preceding week. The year 1921 to date is just 2,000,000 tons ahead of last year.

Domestic shipments are being readily accepted but a slump early in July is expected, as buying by householders for storage purposes is the slowest in years. Stove size only is in easy call. Lake loading is limited only to the number of vessels offering. The present problem of the producers is how to keep down the accumulation of steam coals. Unless some way of disposing of them is found soon, slow production will result.

Independents are having no difficulty in obtaining their prices for domestic sizes but are forced to make concessions to move steam coals. Baltimore dealers are still selling at April prices despite the May and June wholesale advances.

COKE

Beehive production continued to decline. The industry is now in a state of almost complete paralysis, with a total output for the week ended June 4 reaching only 62,000 net tons. The decline was general in the East. Small lots of Connellsville spot furnace coke sold down to $3.10, prices yielding through the efforts of a few operators to keep going. Demand for spot foundry coke is still more limited, the present range of prices being $4.50@$5.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
May 21 (b)	7,989,000	152,459,000	9,246,000	198,181,000
Daily average	1,331,000	1,273,000	1,541,000	1,647,000
May 28 (b)	8,160,000	160,619,000	9,568,000	207,749,000
Daily average	1,360,000	1,277,000	1,595,000	1,645,000
June 4 (c)	6,835,000	167,454,000	9,141,000	216,890,000
Daily average (d)	1,330,000	1,277,000	1,660,000	1,648,000

(a) Less 2 days' production during first week in January to equalize number of days covered for the last two years. (b) Revised from last report. (c) Subject to revision. (d) Rate per working day based on the production reported on the 5 working days, disregarding Memorial Day.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
May 21	1,794,000	35,585,000	1,847,000	33,726,000
May 28 (b)	1,988,000	37,573,000	1,885,000	35,611,000
June 4 (c)	1,573,000	39,146,000	1,536,000	37,147,000

(a) Less 2 days' production during first week in January to equalize number of days covered for the last two years. (b) Revised from last report. (c) Subject to revision.

BEEHIVE COKE

Week Ended June 4 1921 (a)	Week Ended May 28 1921 (b)	Week Ended June 5 1920	1921 to Date	1920 (c) to Date
62,000	68,000	412,000	3,191,000	9,354,000

(a) Subject to revision. (b) Revised from last report. (c) Less 2 days' production during New Year's week to equalize number of days covered for the last two years.

Foreign Market And Export News

Hampton Roads Clearances and C. I. F. Prices

The following vessels cleared this port last week with coal cargoes:

Br. SS. County of Cardigan, for Falmouth, 3,917 tons, Br. SS. Copenhagen, for Italy, 6,130 tons, Br. SS. Penmount, for Gibraltar, 3,259 tons, Fr. SS. Cambronne, for Nantes, 4,417 tons, Ger. SS. Lauterfels, for Naples, 4,849 tons, Grk. SS. Iolcos, for Argentina, 6,780 tons, Port. SS. Vernao Velosa, for Argentina, 5,862 tons, Swed. SS. Lombardia, for Havana, 2,480 tons, Am. SS. Mundelta, for Tiburon, 7,115 tons, Am. SS. Mitchell, for Falmouth, 6,987 tons, Am. Schr. Jere G. Shaw, for Bermuda 1,073 tons, Br. SS. Homecliffe, for Gibraltar, 6,663 tons, Br. SS. Cramond, for Brazil, 3,980 tons, Du. SS. Admiral de Ruitjer, for Rotterdam, 7,306 tons, Jap. SS. Nankai Maru, for Genoa, 5,981 tons, Nor. SS. Hesperos, for Italy, 6,833 tons, Nor. SS. Erle, for Italy, 6,848 tons, Am. SS. Sewall's Point, for Queenstown, 6,979 tons, Br. SS. Nile for Italy, 7,525 tons, Br. SS. St. Patrick, for Queenstown, 6,134 tons, Br. SS. Ethel Radcliffe, for Queenstown, 7,976 tons, Grk. SS. Cephalonia, for Argentina. 6,992 tons, Br. SS. Portgwarram, for Las Palmas, 2,522 tons, Br. SS. Maritime, for Montevideo, 6,336 tons, Br. SS. Darnholme for Buenos Aires, 4,846 tons, Grk. SS. Evros, for Azores, 6,839 tons, Ital. SS. San Rossore, for Genoa, 4,885 tons, Br. SS. Competitor, for St. Vincent, 5,247 tons, Br. SS. Justin, for Brazil, 1 049 tons, Ital. SS. Fiume, for Italy, 8,409 tons, Am. SS. Mosella, for Falmouth, 7,407 tons, Am. SS. Western Knight, for Hawaiian Islands, 6,755 tons, Am. SS. Castletown, for Iceland, 3,695 tons, Br. SS. Ferngarth, for Queenstown, 7 069 tons, Am. SS. Panaman, for Alexandria, 8,151 tons, Fr. SS Buda, for Argentina, 4,725 tons, Br. SS Falls City, for Queenstown, 6,953 tons, Grk. SS. Olympia, for Haifa, Palestine, 6,289 tons, Am. SS. Anaconia, for Marseilles, 7,753 tons, Jap. SS. Glasgow Maru, for Falmouth, 7,022 tons, Nor. SS. Belita, for Kingston, 785 tons, Du. SS. Randwijk, for Falmouth, 3,728 tons, Br. SS. Bradford City, for Queenstown, 7,020 tons, Br. SS. Collegian, for Liverpool, 7,063 tons. Br. SS. Lord Londonderry, for Belfast, 3 976 tons, Am. SS. Sherman, for Peru, 2,490 tons, Am. SS. William A. McKenny, for Falmouth, 7,442 tons, Br. SS. Otarama, for Liverpool, 3,008 tons, Br. SS. Norman Monarch, for Alexandria, 6,432 tons, Am. SS West Celina, for Falmouth, 6 484 tons, Br. SS. Berwindvale, for Havana, 8,015 tons, Br. SS. Hyanthes, for Funchal, 3,409 tons, Br. SS. Siberian Prince, for Queenstown, 7,876 tons, Am. SS. Franklin, for Falmouth, 6,832 tons, Br. SS. Megna, for Queenstown, 7 224 tons, Am. SS. Waterbury, for Falmouth, 7,006 tons, Am. SS. Summerleaf, for Havre, 7,058 tons.

C. I. F. prices reported on coal cargoes to important foreign ports from Hampton Roads last week were as follows: United Kingdom, $12.40@$13; Italian ports, $12.65; French Atlantic ports, $12.15; Scandinavia, $13.40; South American ports, $11.40; River Plate, $11 40; Havana, $8.65.

British Coal Output and Costs

Great interest has been aroused over Lord Londonderry's amalgamation scheme for British coal owners, but on the whole it is looked upon with disfavor. The Monmouthshire and South Wales Coalowners' Association, in condemning the scheme, recalls some of the more salient facts concerning outputs, costs and exports under private enterprise before the war. Between 1889 and 1913 the production of coal per annum increased from 176 to 287 million tons, the returns for the principal districts being as follows:

	1889 tons	1913 tons
South Wales	28,000,000	57,000,000
Durham	30,000,000	41,000,000
Derbyshire	10,000,000	18,000,000
Scotland	23,000,000	42,000,000

It will be seen that in some of the coalfields the production in these 25 years was doubled. And for the country as a whole it showed an increase of 63 per cent. At the same time the cheapness of coal production increased British exports of coal from 27 million tons in 1889 to 73 million in 1913.

Costs increased by leaps and bounds when the industry was removed from the control of private enterprise and brought under the centralized direction of the State. The increase in costs under State control has been as much as 30s. per ton in four years. In 1889 the wages cost was 4s. 2d. per ton; in 1913 it was 6s. 4d. or an increase of over 2s. 2d. per ton. Costs, other than wages and royalties were 1s. 5d. per ton in 1889, in 1913 this figure was increased only by 5d., making 1s. 10d. per ton. The pithead price in 1889 was 6s. 4.20d. and in 1913 10s. 1.52d.

On the question of separate undertakings it is pointed out that there are only 870 which employ more than fifty men; the other 530 employ less and are nearly all small levels and not pits.

RAPID ACCUMULATION OF STOCKS of coal at French collieries and ports has prompted the authorities to consider establishing an organization for the exporting of French coal on a large scale. The administration of the Saar collieries, for instance, is apparently planning to work the Swiss and Italian markets as may be inferred by their establishing a propaganda and sales bureau at Milano while another agency is to be set up at Bâsle (Switzerland). It appears that despite operating the Saar collieries on short-time, the monthly surplus production is still around 300,000 tons for which an outlet must be found.

THE DUTY LEVIED on the sale of coal from the Sarre mines and which goes to the State of Sarre, has been reduced from 20 to 10 francs.

New Prices for German Coal

At the instance of the Rhenish-Westphalian Coal Syndicate, an advance in coal prices has been declared. The increases, effective April 1, amount nominally to 23 marks per ton of which 5 marks are to be handed over to the government to provide cheaper food for mine labor. This is the first increase in prices since May, 1920.

TREND OF GERMAN COAL PRICES
(In Marks per metric ton f.o.b. truck pit-head)

Grades	January 1920	May 1920	April 1921
Bituminous Coal			
Rough	106.90@108 70	198.70	227.40
Through and through*	108.40@110.20	215.40	247.00
Large	109.60@111.40	232.30	266.50
Nuts No. I	117.70@119.50	238.00	273.10
Nuts No. III	117.40@119.20	238.00	273.10
Nuts No. IV	116.80@118.60	228.70	262.30
Coking	118.10@119.90	202.20	231.80
Gas and Flaming Coals			
Gas, rough	108.70@110.80	224.80	257.80
Gas, flaming, rough	107.20@109.30	207.90	238.30
Flaming rough	106.60@108.40	198.40	227.40
Large	109.60@111.40	232.30	266.50
Half-screened	109.00@110.80	.....	.....
Nuts No. I	117.70@119.50	238.00	273.10
Nuts No. III	117.40@119.20	238.00	273.10
Nuts No. IV	116.80@118.60	228.70	262.30
Nuts small	104.80@106.40	194.70	223.10
Small	101.80@108.10	202.20	231.80
Non-bituminous Coal			
Rough	106.60@108.70	196.50	225.20
Large	109.60@112.00	239.90	274.60
Nuts No. I	121.90@124.90	268.00	308.70
Nuts No. III	118.90@124.90	251.10	290.40
Nuts No. IV	114.70@118.60	228.70	262.30
Anthracite nuts	125.50@127.30	262.50	301.30
Anthracite nuts	127.30@132.70	298.10	342.40
Rough, small	104.20@107.20	194 70	223.10
Small, less than 0.4 in	100.00@105.10	187.10	214.30
Coke			
Blast furnace	155.00@156.20	.....	.....
Foundry	155.60@157.40	300.20	344.20
Crushed	175.90@178.90	340.50	394.20
Briquets			
Briquets	147.10@151.90	361.60	375 60

*Through and through 50% of large applied to coals of 19-25% vol. matter.

Holland's Coal Trade in 1920

In 1920, according to the *Colliery Guardian*, 195,040 tons of coal were consumed by vessels engaged in the internal navigation in the Netherlands, while 486,000 tons, mostly imported, were consumed by the maritime services—including only bunker supplies placed on board at Dutch ports. The prices paid were as follows:

	Bunkers, Fl.	House Coal, Fl.	Imported Coal, Fl.
January	43.50	49.00	60.00
February	43.50	55.00	60.00
March	48.50	57.50	68.50
April	57.35	57.50	68.50
May	57 00	57.50	68.50
June	63.30	64.75	75.00
July	63.30	64.75	75.00
August	73.15	71.80	83.00
September	71.70	71.80	83.00
October	71.75	71.80	83.00
November	71.75	71.80	83.00
December	56.80	62.00	73.00

Imports of foreign coals, accordings to origin, were as follows:

	Coal		Coke		Briquets	
	1919 Tons	1920 Tons	1919 Tons	1920 Tons	1919 Tons	1920 Tons
Germany	772,922	1,078,964	281,237	229,833	3,363	2,507
Belgium	1,079,449	30,438	84,501	7,550	199,088	415
England	375,544	234,578	37,679	47,466	4,096	7,195
U. S. A.	663,536	1,416,221	.....	.....	.....	2,000
South Africa	.....	20,115	.....	.....	.....	.....
Canada	65,651	182,199	.....	.....	.....	.....
Other countries	89	285	3,667	142	.....	.....
Totals	2,957,191	2,957,800	407,084	284,921	206,547	12,117
Value (1,000,000 fl.)	138.7	210.0	16.0	15 7	7 9	0.8

THE ARGENTINE REPUBLIC is now securing more than nine-tenths of its coal from the United States as a direct result of the British strike, according to a report of the Guaranty Trust Co. of New York. One-tenth of the imported coal continues to be supplied by Great Britain, our chief competitor in the Argentine coal market, because of her control of practically all of the railroads, which furnish 75 per cent of the total demand for coal in that country. American coal exporters have gained an important foothold on the east coast of the Argentine and a return to normal conditions should see a decided strengthening of their position. Argentine coal importers are faced by a serious situation as a result of the policy of the labor unions.

BRITISH INDUSTRIALS ARE BEING slowed down by a continuance of the coal strike. Unemployment is becoming more serious as factories are being closed daily. The iron, steel, and engineering trades are suffering from the lack of coal to an enormous extent. One result of the strike has been a great increase in the use of oil as fuel. Many enterprises are converting their plants into oil burners and declare they will not go back to the use of coal.

RUSSIA HAS PURCHASED several cargoes of American coal which are on their way to Petrograd and other cargoes are being loaded in American ports, according to a statement appearing in the Communist organ *Rote Fahne*. American sources are being sought in order to make up for the shortage occasioned by the non-arrival of English coal.

THE BELGIAN COAL TRADE has reacted to the British situation, and some 50,000 tons have been shipped to ports on the East Coast of England, while there is a strong call for bunker supplies at Antwerp. During April, deliveries of German coal amounted to 257,710 tons, of which 71,366 tons were of the coking variety. The total imports of fuel into Belgium during the first quarter of the year amounted to 1,264,553 tons of coal, 49,760 tons of coke, and 60,601 tons of briquets. Exports in the same period comprised 899,392 tons of coal, 66,840 tons of coke, and 69,718 tons of briquets.

CENTRAL DISTRICTS OF GERMANY have been without coal from Upper Silesian mines for some time, owing to the unrest in the latter section. The shortage of coal supply is having the effect of restricting the traffic on branch railroads which serve to bring agricultural products to the main lines. Many gas and electricity works are also suffering from the lack of fuel.

ACCORDING TO LONDON REPORTS, the German Coal Commissioner has issued a statement denying that export permits for coal to Great Britain will be granted from any German district.

Reports From the Market Centers

New England

BOSTON

Trade Lifeless—Buyers See No Inducement in Present Market—Prices Show Weak Streaks — Anthracite Demand Falls Perceptibly.

Bituminous—There is every prospect the present extreme dullness will continue through the summer months. Trade shows no signs whatever of any real interest on the part of buyers and the average shipper of steam coal has about lost hope of any reaction for a long time to come. The few purchases that are made proceed from a policy of buying very sparingly about three to four months in advance of need. Consumers who are not in position to adopt this practice or who prefer to take chances for awhile longer are in the majority and it is very hard to see how there can be any general buying in New England until well into the Fall.

With operators striving to maintain the low level of prices they were forced to accept for spot coal two months ago and industrial conditions still at a low ebb, the buyer can see no inducement for increasing present reserves. Reports agree that most steam users have on hand from 90 to 120 days' supply at the present rate of consumption, and the railroads are also accepting only light tonnages for the present. There is everywhere noticed a disposition not to tie up money in coal, and until financial conditions are easier the present close-hauled policy is likely to be continued.

Certain of the Pennsylvania shippers have recently made a special drive to sell spot coal. In many cases a new price concession of 25@35c. has been made, but we have yet to hear of coal being placed in any volume. There have been vigorous attempts also to move coal by water because at so many points in this territory within range of Tidewater the cost laid down is so much less than via the all-rail route.

Pocahontas and New River coals have shown a further decline the past few days and once again conditions at the piers disclose a very inactive market. Quotations range $6@$6.15 for Pool 1 coal, and there are rumors of $5.75 as a quotation on the same grades. The offshore demand has sagged off and to New England relatively small daily tonnages are the rule.

The trade is somewhat amazed at the report from Washington that the War Department has decided upon the purchase of the Cape Cod Canal for $11,500,000. The problem there of tide rips has not been solved, and many times there has been recalled the remark of a coastwise commodore of long experience, "In good weather it isn't needed, and in bad weather it can't be found!" Aside from a passenger line and some of the smaller coal barges from New York the traffic is still around Cape Cod the same as before the canal was opened.

Anthracite—Domestic sizes by water are being absorbed about as fast as the coal reaches the piers, but it grows more apparent each day that unless the public gives up the strike on buying there will be coal to spare during July. Dealers say there has not been a season for years when householders were so loath to put in their season's coal.

The local situation was discussed the past week at a meeting of retailers in Boston with a representative of the state fuel commissioner, but nothing more developed than was already known. It is felt there will be a sharp reaction in the Fall if coal is not moved more rapidly to the consumer.

Tidewater—East

NEW YORK

Steam Coals Worry Producers — Storage Places Filled — Domestic Moving Well — Bituminous Market Slow — Better Grades Moving Quietly — Cheaper Coals Scarce.

Anthracite—The chief cause for worry by the producer and distributor is the problem of how to keep down the accumulation of steam coals. These are increasing in volume until they have become troublesome and unless some way of disposing of them is found soon, slow production will result.

Chestnut and pea sizes are easily moved though it becomes necessary at times to see that purchasers of egg and stove take a portion of their order in either of these two coals. Egg and stove are scarce at Tidewater and along the line, where the demand is just as strong as it is here. Chestnut and pea are in good demand Inland and buyers are taking large tonnages.

Independents are having no difficulty in obtaining their prices for the domestic coals. Some shippers are willing to make slight concessions where the buyer takes liberal lots of chestnut and pea sizes. Pea quotations have been reported as much as $1 below company circular.

Quotations for barley start at 75c. and range to about $1.10. Buckwheat is also being offered at concessions.

Current mine quotations are shown in the Weekly Review.

Bituminous—Except for the better grades, considerable of which are under contract, there is little doing in the buying line. Good grades are easily obtained but the poorer coals are scarce here. Operators are not sending them to this market except on consignment and buyers are not looking for them when they can obtain the better grades at present prices.

One feature of the market is the buying of the product of individual mines for sample purposes. The tendency to buy individual coals, irrespective of the pools to which they belong, is growing and in some cases the question of analysis is not raised, the consumer looking only for results.

The published announcement that the railroads cannot consider a cut in freight rates at this time and the further announcement that the employees of the roads are not taking kindly to the wage cut ordered, did not seem to have any effect on the market here. The matter of freight rates is believed to have had considerable to do with the retarding of buying but it may be possible the public is awaiting further announcement along these lines.

There were some changes in quotations during the week. Some days demand was better, due probably to smaller receipts, and prices would stiffen slightly, only to go back the next day.

The market is spotty. Offers of good grades at lower than the general run of quotations fail to bring orders. Public utility corporations are buying at low prices but not in large quantities because of their standing contract quotas.

There has been no change in the contract situation. Consumers are not talking contracts and producers and wholesale dealers are doing likewise. Slack was quoted here around $1.50@$1.75, Pittsburgh gas coal at $2.25, and Westmoreland ¾-in. at $2.90@$3.25. Quotations for Pool 9, f.o.b. piers ranged $6@$6.25 and Pool 10 $5.65@$5.85.

PHILADELPHIA

Anthracite Demand Continues to Slacken—No Change in Retail Prices—Dull Summer Likely — Bituminous Market Stands Still—Demand Light.

Anthracite—This week the falling off in demand has been more noticeable and the point has been reached where occasionally the dealers have no business at all. It seems quite likely that the well-to-do class have had their requirements filled.

So far there has been no cessation in mining and the companies have been shipping heavily to the local market, with the exception of stove coal, and even this size is beginning to show improvement. The fact is, we believe, the consuming public has become so dissatisfied with the amount of small sizes in chestnut that they insist on having the larger size. Chestnut for the first time this season is showing a tendency to accumulate in the yards. Pea continues to be very free.

With the persistent slackening of the retail demand the question is fast arising whether the independent shippers will be able to maintain prices which they established the first of June. It is fully believed that all companies are going to experience some idle time, but of course the big producers will make no effort to move coal by cutting prices, which is a custom of many years standing with them.

While it was generally anticipated that the retail trade will increase prices, it is now thought with the softening of demand they will be satisfied to take present figures, which are, egg $13.75, stove and nut $14, and pea $11. It has been many a year since there was such strong competition for trade, and as the summer wears on some dealers will be doing business on a pretty thin margin, particularly the ones with a big stock of independent coal on hand.

Steam sizes are in a bad position, as the demand does not improve and the smaller shipper is beset to take care of production. Buckwheat is the size moved in greatest volume, but even this is lagging and the companies are compelled to resort to their storage yards to move it, as well as rice and barley.

Bituminous—There are no signs of a strengthening in soft coal and very light sales are the rule. While some consumers pretend to hold off on account of the anticipated freight reduction, this is only a pretext in most cases, and it is simply a question of not wanting to tie up capital in fuel.

We have heard of some improvement in the contract situation in that some large consumers have come under cover, at prices running $3.50@$3.75 for coal of Pool 9 grade. However, even though they have contracts they are ordering little if any coal on them, and the tendency is to buy current requirements at spot prices.

There has been no change of moment in the spot prices and the market still runs from $2.25, the lowest figure on Pool 11 coal, to $3.50 for Pool 1. We understand there have been some low prices made recently on gas slack, with quotations of $1.25@$1.50. This is no doubt due to the continued idleness of the iron mills and cement plants in this territory, which are the largest users of this size.

BUFFALO

Market Still Slowing Down — More Mines Idle — Anthracite Quiet — Lake Trade Good.

Bituminous—Demand does not increase. The many consumers from the Montreal district are absent, for the Canadian mines are turning out nearly as much coal as is needed.

This market was never so bare of incident as it is now. If that state of things were merely temporary it might not mean much, but it has been the rule ever since the bulge of last fall subsided, and it promises to last till the market returns to normal conditions.

At the same time everything is in readiness to resume operations the moment conditions warrant it. There have been no bad failures to demoralize the situation. Business will come back in good time, as it always does. It is going to be some time before bituminous prices will be high enough to insure a profit, for the railroads are able to make such quick deliveries that consumers are safe in running on small stocks. It usually takes a car shortage to make the trade profitable.

Meanwhile prices seem to be at the bottom at $3.75 for Youghiogheny gas lump, $2.50@$2.75 for Pittsburgh and No. 8 lump, $2.40 for Allegheny Valley mine run and $1.75@$2 for slack. It is reported that slack is selling in Toronto at $1.75.

Anthracite—Local trade is dull and it is bound to remain so, for somebody is still circulating the notion that the price is to come down before winter. The coal trade does not believe it and shipping agents say that there is so little profit in the business now that it will soon be found necessary to cut down on special work on this coal, such as careful sizing and removing impurities, to keep from operating at a loss. The consumer cannot be made to see that it is only a part of the coal that can be sold for domestic purposes and that the steam sizes have to be sold far below cost to get rid of them.

Shipments by Lake are fair, being for the week 97,300 net tons. Freight rates continue at 65@70c. to Chicago, 65c. to Waukegan, 60c. to Milwaukee and 50c. to Duluth and Marquette.

Coke—The situation is as unfavorable as ever. Nearly all the ovens are shut down and there is no prospect of resumption right away. Judging by the iron-ore movement down the Lakes it does not look as if the furnace companies intend to lay in the usual winter supply. Quotations remain $4.50 for 72-hr. Connellsville foundry, $3.50 for 48-hr. furnace and $3 for stock.

HAMPTON ROADS

Demand Dropping — British Markets Apparently Becoming Stocked—American Ships Moving Better.

Unfavorable indications during the first few days of June appear to have been reversed insofar as the local coal business is concerned. For the first week of June approximately 700,000 tons of coal passed over the piers, indicating that the dumpings for the month, at the same rate, will overstep the 2,000,000-ton mark.

The price of Pools 1 and 2 remained at $6.25, while Pools 5, 6 and 7 were somewhat stronger, being offered $5.25@$5.40. The demand for the latter grades during this week has been greater than the supply at all piers.

Few new contracts were made for British coal shipments during the last week. However, a large number of vessels in port are preparing to sail

for the United Kingdom with cargoes already purchased.

American ships are entering the trade, the effect of the strike having decidedly waned. The majority of the shipments during the week went to the British dominions and Italy, with scattered cargoes to the Far East and North.

A comparison of the situation at the coal piers is as follows:

	Week Ended June 2	Week Ended June 9
N. & W. piers, Lamberts Point		
Cars on hand.....	2,053	2,242
Tons on hand (gross)..	97,217	103,947
Tonnage waiting.....	17,550	52,795
C. & O. piers, Newport News		
Cars on hand.....	2,200	1,908
Tons on hand (gross)..	109,660	95,060
Tonnage waiting.....	35,250	69,850
Virginian Ry. piers, Sewalls Point		
Cars on hand.....	1,417	1,561
Tons on hand (gross)...	62,850	72,800
Tonnage waiting.....	35,250	6,350

BALTIMORE

Market Continues Draggy and Prices Are Soft — Temporary Export Lull — Hard Coal Men Subject to Unjust Attacks.

Bituminous—There is not the slightest evidence of snap to the local soft coal market, which continues draggy on both gas and steam lines. Prices are running along the same soft line. The export movement for the first week of June continued well up to the May standard, which was a distinct improvement over the first months of the year, but at this time there is a temporary lull, and on two days of this week no ships were reported at the Curtis Bay piers.

The month, however, is expected to show a pretty fair run for foreign account. The figures for the opening week of June showed a loading on export of 53,157 tons, with 7,979 tons taken by the same ships in bunkers.

Prices on the home market at both spot and contract are weak. In the open market best steam coals are offering $3 and below. Excellent steam coals running to Pool 9 are at times selling down to $2.75. Good coals of lower quality are to be had from $2.15 @$2.35, while the poorer class steam runs around $1.75@$2. Best gas lump is below $3 also, with the lower grades running pretty well along in proportion to steam prices.

Anthracite—With the hard coal trade here still traveling along April prices despite the May and June wholesale advances, and with ordering very light, the business is more concerned for the moment over a series of unjust attacks in a daily newspaper here. The trade is being charged with forcing prices higher than in Philadelphia and Washington, but the figures given are extremely inaccurate and misleading, and do not give credit for differences in conditions, such as cash discount, delivery to cellars instead of sidewalk, zoning, etc.

The whole thing would be passed over as newspaper piffle if it were not for the fact that a Maryland congressman, playing in the limelight, has asked a grand jury inquiry in Baltimore on the subject. The trade would welcome any fair and thorough inquiry, but facts and figures supplied in this case to the representative of the paper in question were not used.

Northwest

MINNEAPOLIS

Heavy Lake Movements Avoid Possible Strike Delay—Lack of Interior Demand Is Rapidly Filling Docks—Freight Rate Situation Delaying the Market.

Increased tonnage moving to the Lake Superior docks seems to be too good to last. The rush for the present is stimulated by the effort to get coal moved ahead of any railway labor trouble occurring on July 1, when the wage scale is reduced.

Conditions are not such as to encourage much more after that date unless there is a radical change in the vessel situation. Iron ore tonnage is hardly 50 per cent of that of a year ago. There may be a little extra stimulus now, because of crowding the coal movement, but it will not last long without a change of conditions.

There is an entire lack of interest from buyers. Should there be any great upward movement, it would mean that the docks would soon be filled and there would not be room to take on additional stocks. Of course, the usual movement to the interior starts around July 1, so there may be some relief at that time. But it would certainly help if a reasonable tonnage were moving to the interior during June.

This is hardly to be expected so long as there seems to be a new cause for hoping for lower costs every week. The latest is a report that the Government may urge a summer freight rate reduction as a means of stimulating the coal movement. All present conditions seem to urge delay. There are reductions real and assumed for July 6, and some others less assured. These cause buyers to delay and hope for more reductions than are intimated. With this seasonal rate reduction as a possibility, it means still further delay at a time when things should be speeded, not delayed.

All the gloomy predictions so far made seem to have very little effect upon the buying trade of the Northwest. They seem to feel assured of sufficient coal for their needs at such time as they are ready to place orders. Salesmen cannot see where there is the slightest chance for any further lower prices, but this has no effect upon buyers.

On the other hand, the predictions that unless coal buyers do come forward with usual purchases in the near future there is bound to be serious difficulty later on, are based upon assumptions which are not wholly supported. There is no doubt that a combination of circumstances may cause exactly that situation. But it is equally possible that another combination of circumstances may entirely prevent it. It is not certain that there will be a big demand from industrial buyers. There has been too much of the emphatic declaration that buyers must order now or all will freeze, only to have later developments show that the most part of it was entirely superfluous.

DULUTH

Heavy Receipts Continue — Dock Congestion Threatens—Interior Market Is Apathetic—Prices Firm.

Extreme dullness prevails, and operators as a whole fail to see much hope for improvement in the near future. Coal continues to pile up on the docks and storage conditions are becoming more serious every day.

Retailers throughout the Northwest are showing apathy in placing orders and contracting is practically at a standstill. Prices, however, continue firm, and wholesalers say that further reductions are not to be thought of.

The high mark set last week in vessel arrivals was equaled this week when 57 ships tied up at the docks. Anthracite receipts dropped, however, only four cargoes arriving during the week. There are 21 cargoes on the way, only one of which is reported as anthracite.

Shipments of coal from the docks during May aggregated 7,833 cars. For the same month last year shipments were 8,444 cars, but at that time the movement was far below normal as a result of the trade being unable to obtain coal.

Mine operators with dock connections are making every effort to ship coal to the Northwest to provide against possible strikes of either railroad men or miners. May receipts aggregate 1,697,600 tons as compared with only 450,900 tons during the same period last year. Anthracite receipts were 176,400 tons and bituminous 1,521,200 tons.

MILWAUKEE

Lake Receipts Continue Heavy — Dealers Endeavor to Stimulate Buying to Make Room for Later Consignments.

The coal market is in a lethargic state, despite the fact that the dock yards were never more lively than they are at present. Coal is piling up and must be moved to make room for more. The coal dealers of the city have joined in an appeal to the public to put in supplies at the earliest possible moment. A constant turn-over is necessary in order to insure a sufficient flow to the Northwest during the season of navigation, as the docks can only hold one-third of the requirements.

With the exception of anthracite, which was advanced 10c. on June 1, prices continue unchanged. Up to this writing 122 cargoes have reached Milwaukee since the opening of navigation, thirty-eight of anthracite and eighty-four of soft coal, the tonnage aggregating 308,512 and 740,585 tons respectively, 1,049,097 tons in all. Total receipts of hard and soft coal last year during the same period were only 366,000 tons.

Inland West

CHICAGO

Market Is Stagnant — Choice Coals Go Begging—Householders Not Buying—Prices Below Cost.

Never was there a time in the history of the Chicago coal market when there were more bargains of first quality to be had, or when buyers were so scarce and so timid. Coal which a year ago today was selling at $5@$6 per ton cannot be moved today at $1.50. And yet people are inquiring whether or not coal is coming down. To sum the situation up in one short sentence, the public absolutely refuses to buy. Dealers are loaded to the guards, and industries are so doubtful over the future that they refuse to buy coal except for immediate needs, and, as the industrial situation in Chicago is extremely stagnant, it can very easily be understood how small a tonnage of coal is moved.

As an example of some of the bargains offered, this week fifty cars of Chilton West Virginia splint arrived in Chicago on consignment. The shipment consisted of about forty-five cars of 4-in. hand picked block, and five cars of 4 x 2 hand picked egg. The whole fifty cars were sold to a jobber on the basis of $1.75 per ton f.o.b. mines. As this was a byproduct coal, it is hard to understand why it did not sell for more money, but inquiry disclosed the fact that it had been offered to every steel plant and byproduct company in the territory, and that they were so loaded with coal and so apprehensive relative to the future that they refused to buy.

The coal trade has been very much interested in the recent meeting in Washington where representatives of the government conferred with delegates of the three great branches of the coal industry relative to stabilizing the coal business for the benefit of the general public and the operators. It seemed that part of the meeting proved too acrimonious, and during the course of it, one of the government members threatened the operators with government owned and operated mines unless the operators reduced the price of coal to the public. As practically every operator in the country has reduced his prices, and did so long ago, the idea met with disfavor.

Prices on anthracite are remaining firm although the demand has fallen off to a very marked degree. The reason is because a great many people who have made a practice of purchasing their coal in the spring have come to the conclusion that they will defer buying this year in the hope that they will be able to obtain closer prices later on.

Steam coals remain steady at very low levels. Prices were not reduced any more than they were last week because coal has been sold during the past two weeks at figures considerably below cost. Operators have reached the point where they prefer to close their mines rather than make further reductions.

DETROIT

Buyers Are Still Holding Off—Receipts Are Light—But Little Free Coal Available.

Bituminous—Neither steam nor domestic sizes seem to arouse the interest of buyers and demand continues very light for each. The lack of demand for steam coal is ascribed in part to the fact that consumption is much less than normal, as manufacturing and industrial plants are running considerably below their usual production schedules.

Wholesalers and jobbers find some buyers who indicate a disposition to hold back in the expectation of being able to obtain their supplies at lower prices after the pressure of the Lake movement is relaxed. This theory is not accepted by the jobbers, who insist that lower prices cannot be made while the cost of mine labor and supplies remains at the present level.

Among other consumers there is a feeling that they will be able to provide for their requirements from time to time in the spot market, taking advantage of such "bargain counter" offerings as may come their way. The small volume of present shipments rather interferes with successful operation of this plan. The present delays in buying have the effect of setting forward into a shorter interval the volume of distribution of both steam and domestic coal which should now be well under way.

Ohio lump is quoted at the mines at $3@$3.25, mine run is $2.15@$2.25 and slack $1.80@$1.90. West Virginia lump is $3.25@$3.50, mine run, $2.40@$2.50, and slack $2. Smokeless lump and egg are offered $5.40@$5.50, mine run at $3.40 @ $3.50, and slack $2.25.

Anthracite—Little progress has so far been made by dealers in distribution of the winter supply. Retail yards are fairly well supplied but orders are delayed.

CINCINNATI

Lake Business Dragging—Some Wage Reductions — Less Distress Coal, but Prices Show Wide Range.

With more coal on wheels than the vessels would absorb, Lake trade is both listless and uncertain. Domestic coals are still in good demand so far as smokeless is concerned, but some Kentucky operators are reducing 25c. on block to encourage more business.

Continued efforts to get miners wages down is being watched here with no little interest. In the big Sandy, Miller's Creek, Harlan and Hazard districts, wage slashes are being made. In Harlan these reductions run from 20 to 25 per cent.

There was less mine run here this week that could be picked up from $1.65@$1.85. Mines were holding it $2 @$2.10. West Virginia lump is $3.25@$3.75, and southeastern Kentucky, $3.50 @$3.75. There still is a disposition to cut on screenings and the general price is $1.

Smokeless values are practically unchanged. The movement of domestic was not quite so brisk, but with a Tidewater demand there was no surplus. The price of $5.75 for lump, $5.25@$5.50 for egg, $3.50 for mine run and $2.75@$3 for slack was maintained. Some Dry Fork coal from the Pocahontas regions sold down to $2.25.

Retail prices are affected by the wholesale market. Some of the smaller dealers are offering steam sizes as low as $5. Smokless and domestic, however, still hold at former quotations. School board bids have been published and show material reductions over those made early in May.

ST. LOUIS

Storage Buying Has Stopped — Public Waiting for Promised Lower Freight Rates—Steam Market Inactive.

The local situation is developing into a serious proposition for the shipper. Demand is so poor that price will not move standard sizes of any kind. Dealers are not buying because their people expect a reduction in freight rates and figure that coal may be cheaper. This has stopped the buying of all domestic storage coal. Only a little Mt. Olive moves in. Carterville is selling better, but not to the extent that it should.

Prices are cut below the circular to steam users on Mt. Olive and Carterville. One large Franklin County shipper is breaking the market to the steam trade and independents are having a hard time selling as low as $1 under the association operators.

Yards are loaded with every grade of Illinois coal, as well as anthracite, some smokeless, and coke. Country demand is almost as bad as the city call, there being very little movement. Country steam business is just about on a par with domestic.

CLEVELAND

Congestion at Lower Lake Ports Compels Slowing Down — Season's Lake Shipments Highest in Years — Slack Coal Prices Weakening.

Bituminous—Some recent significant developments in the coal trade in this district make it clear that industrial stocks are getting near the vanishing point in many cases. Only the excessive curtailment of plant operations is preventing a growth in demand, and with the expected rising tide of industrial activities in the Fall some companies may find themselves short of necessary fuel supplies. Last week a large plant dispatched a hurry call to an Ohio dealer for twenty cars of coal for delivery upon the same day. Due to the present state of the trade the dealer was able to obtain the coal and get it to the customer's yard promptly.

This incident merely illustrates the nature of such trade as there is. Users as a rule refuse to buy until compelled by necessity and then only for immediate needs and at bargain prices. Whereas the seasonal pick-up of business in the early Spring caused some concerns to begin to think of their coal supplies, the secondary slump which has struck the automotive and tire

industries has reacted upon the coal trade. These two industries together with the steel industry, which is undergoing the worst depression in many years, constitute the most important coal consumers in this district.

Mines in Ohio are operating at about 60 per cent, and some mines in the Hocking valley have reopened. Slack is decidedly weak and is being quoted $1.30@$1.50. No. 8 mine run is $2@$2.20 while 1¼-in. lump is $2.50@$3.

Lake—The inability of shippers to get adequate cargo space to carry the large volume of coal flowing to the Lower Lake ports has caused congestion at these ports. As a result the Ore & Coal Exchange has requested that the movement to the Lake be halted until the situation is relieved.

Shipments up the Lakes for the season to June 1 were the largest since 1913. The total was 5,016,586 tons against 5,250,587 tons in 1913. Shipments in 1920 to June 1 were 1,497,304 tons; in 1919 they were 4,714,034 tons, and in 1918 they were 3,902,692 tons.

Receipts of bituminous coal in Cleveland for the week ended June 4 were 965 cars; industrial 735, retail 230 as compared with a total of 1,043 cars the previous week, or a decrease of 78 cars.

COLUMBUS

Lake Trade Fairly Active — Little Else Moving — Uncertainty as to Freight Rates Delays All Buying.

A considerable tonnage is moving to the Lower Lake ports. There is some congestion on the railroads reaching these ports but so far embargoes have not been necessary. The trouble arises over lack of vessels, as the ore trade is dull. The H. V. Ry. has about 5,000 loaded cars awaiting unloading and other roads have large numbers.

The H. V. docks at Toledo have loaded 962,787 tons up to June 4 as compared with 155,440 tons to June 5 of last year. During the week ended June 4 the docks loaded 197,309 tons as compared with 148,823 tons the previous week. The T. & O. C. docks loaded 79,469 tons during the same week as compared with 55,791 tons the previous week, making 240,128 tons for the season.

Dealers are hesitating about placing domestic orders in the belief that freight rates may be reduced. Retail stocks are only fair but are apparently sufficient for the present. Rural dealers are not experiencing much demand, except for threshing purposes. Retail prices are rather strong at previous levels.

Manufacturing is not developing rapidly and where a few plants resume operations others are suspended. The net result is a small consumption of steam grades. Most of the purchasing agents have orders to buy for current needs only and this prevents accumulation of reserves. Mine run is holding up fairly well, but screenings are extremely weak. Screenings sell around $1.15@$1.25 in all of the Ohio producing fields.

South

BIRMINGHAM

Practically No Demand for Steam—Prices Slump—Domestic Buying Fairly Active — R.R. Contract Is Based on Wage Reduction.

The local steam market is very flat and there is no indication of an early improvement. There is little spot buying and the major portion of coal moving is against contracts. Quotations register a decline of 25@75c. per ton on the various grades of steam fuel. These concessions have not as yet stimulated buying, as consumers in the industrial line evidently have sufficient coal in storage to last for some time.

A few municipal contracts have been made within the last week or so and several railroads have closed for fuel for the next year. The Southern Ry. bought 500,000 tons of Big Seam and Cahaba coal, paying $2.30@$2.50 for Big Seam mine run and $3 for Cahaba, dry, at mines. The Atlantic Coast Line closed for 400,000 tons of Big Seam washed at prices ranging $2.30@$2.45. The Seaboard Air Line contracted for approximately 725,000 tons of Big Seam coal, paying $2.27@$2.50 for mine run and $2.65 for washed.

The allotment of the Southern to this field was short about 500,000 tons this year, due to some hold-over contracts in other fields. In addition to the 500,000 tons awarded to the outside mines in this district the Southern will secure approximately the same amount from the operations of the Railway Fuel Co., in Walker County, a subsidiary corporation, the total output being taken by the Southern and allied lines.

Black Creek and Cahaba mine run is $3@$3.25, washed, $3.25@$4; Pratt and Nickel Plate mine run $2.85@$3.25, Carbon Hill mine run $2.50@$2.75, washed $3@$3.25; Corona mine run $2.75@$3.25.

Domestic buying continues fairly active, but there is little retail activity. Mine quotations are as follows for lump and nut: Black Creek, $4.80@$5.05, Cahaba, $4.80@$6.65, Carbon Hill, $3.95@$4.25, Big Seam, $3.55@$4, Corona, $4.80@$5, Montevallo, $6.80@$7.

Production is now on the basis of about 175,000 tons per week. This figure will perhaps be slightly increased after July 1 when deliveries begin on new railroad contracts.

LOUISVILLE

Gloomy Steam Business Outlook — Prices Weak — Lake Market the Only Active Outlet.

The general outlook is a bit cloudy. Operators find it is an especially hard matter to sell steam coal. Many plants which formerly used mine run are using little other than cheap screenings now, and not much over 50 per cent of their usual tonnage at that. Gas coal as a whole is holding a better price than other grades, although byproduct plants are not operating full.

Some operators and jobbers are unable to see much prospect of any real demand for the present, and claim that the longer the domestic consumer waits, the better the price will be later in the year. This may tax production facilities, but it is not expected to swamp railroads in handling, due to the reduction in movement of steam coal.

Although some export business is reported in West Virginia, Kentucky is still without any Tidewater orders, although a few inquiries have been received. Other than Lake movement, demand for prepared has been reduced as a result of retailers having good stocks. Domestic consumers are not buying, although many retailers are granting three to four months credit.

Prices show a good volume of screenings offered around $1.10, some being as low as $1. Spot quotations are shown in the Weekly Review.

Southwest

KANSAS CITY

Higher Prices Stimulate Domestic Demand — Steam Market Quiet — Conditions Serious.

Operators made a general advance of 25c. June 1 and this resulted in more orders coming in. The public will not buy on a downward or stationery price but as soon as an advance, however slight is made, buying starts with a rush.

Steam grades continue to be a drug on the market and oil took another drop last week, which did not help matters. A good many operators express the opinion we will have considerable trouble to take care of domestic orders later on account of low demand for steam grades.

Prices are as follows: Arkansas lump $6.50, mine run $4.50, slack $2.50; Kansas lump and nut $5.25, mine run $4.25@$4.50, mill $3.85, slack $3.25; Missouri lump $4.50, mine run $3.85, washed slack $3.85, raw slack $3.15.

West

DENVER

Heavier Production — Demand Is Still Sluggish—Public Not Storing Coal.

Production during the first week of June came within 35,000 tons of the output of a year ago, which has given operators some encouragement. The output of a year ago rose with phenomenal speed within three weeks, from 220,000 to 285,000 tons and back again to 230,000 tons. Although this year's low mark was recorded in the middle of March, when tonnage had dropped to 120,000 tons, there has been a steady climb since, with a few exceptions.

The mine price is 35@50c. higher now than at the beginning of the stor-

age season, April 1. Buying has not increased much at points within the state. The public seems to disregard the gradual upward trend of prices toward the reguar mine price of $6.50. There is no marked activity in lignite fields, one reason being that this does not store well.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Union Election Causes Mine Idleness—Independent Prices Weaker — Resumption of Washeries.

Weakened independent prices have lowered production somewhat. Election of union officials this week was the occasion of some mine idleness and many of the mines were closed down for at least one half a day.

Some washeries in the Northern field are planning to commence opertions in the next two weeks. A few of the river washeries on the upper part of the Susquehanna have again resumed.

PITTSBURGH

Much Lake Coal in Cars — Operations Decreased — Slack Hard to Sell — No Byproduct Demand.

A serious congestion of cars at the Lake front and enroute is forcing a sharp curtailment in mining operations. Demand from other quarters, except for gas lump, is smaller than at any previous time. It is commonly estimated that the rail mines are operating at less than 40 per cent, while for the week ended May 21 the reported production was 74.5 per cent, a rate that some factors in the trade do not think was actually attained The river mines have been closed since the end of April.

Competition of the Connellsville field, which is non-union, is not felt to any great extent in steam coal, but in byproduct the Pittsburgh district shows no demand whatever. If there is any demand for byproduct coal it is probably all going to Connellsville where with the reduced mining scale a price of $1.75 or less can be made.

Gas coal holds up very well as offerings are relatively limited and demand is fair. Prices show a wide range, according to quality, it being said that $3 is sometimes obtained, while for some grades it has not been easy to obtain $2.50. Slack is a drug on the market. We quote spot steam slack, $1.40@$1.50.

EASTERN OHIO

Production Drops, Due to Holiday and Weaker Demand—Screenings in Over-Supply — Industrial Situation Fails to Improve.

Saturation point in the coal trade has apparently been reached. The outstanding feature of the week ended June 4 was a slump of 120,000 tons in output. This was caused by congestion at the Lake docks and the further fact that May 30 was a holiday. Production amounted to 320,000 tons or 61 per cent of the total rated capacity of the mines for a five-day week. The daily output averaged 64,000 tons as compared with 73,000 tons the preceding week. At least 173,000 tons of production was lost because of "no market." Figures given out by the Pittsburgh Vein Operators' Association indicate that their mines worked 60 per cent of possible work time and produced 61 per cent of rated capacity.

Considerable progress was made in clearances at the Lower Lake docks during the last few days, as operators assisted materially in relieving the situation by curtailing shipments of cargo coal.

Demand in the general trade continues very dull; and with the steel industry operating less than 30 per cent and retrenchment programs now being found necessary in other lines of industry, it is difficult to anticipate when further improvement may be expected. As a result of heavy Lake shipments, large quantities of slack have become the problem of shippers and a number of mines have found it necessary to reduce operations because of this. A softening in spot slack prices has been the inevitable result.

CONNELLSVILLE

Prices Yield Further — No Demand — Another Wage Reduction.

Small lots of spot furnace coke have sold down to $3.10, the minimum a week ago having been $3.25. Prices have yielded through the effort of a few operators to keep going but some are now disposed to abandon the effort. On the other hand, it is reported that one operator has made a further reduction in wages, and will not stop at a $3 price if necessary to maintain his operation. The average operator much prefers to be idle, and is in financial position to do so.

There have been three or four cases of negotiations looking to short term contracts with furnaces, chiefly in the east, but the negotiations seem to have been abandoned, even though a $3 price was probably quoted to the prospective consumer.

Blast furnace operations in May were approximately the same as in April, but in the past two or three weeks the trend has been downward again with several furnaces going out.

Demand for spot foundry coke is still more limited. Prices have yielded about 25c. on various grades. A little trend is noted in foundries being less particular than formerly to get the best grade if they can save money by taking ordinary coke. Spot coke is now quotable $3.10@$3.25 for furnace and $4.50@$5 for foundry.

The *Courier* reports production in the week ended June 4 at 12,100 tons by the furnace ovens and 23,260 tons by the merchant ovens, making a total of 35,360 tons, a decrease of 2,620 tons.

UNIONTOWN

Spot Prices Weaken—Trading Confined to Small Lots—Production at Minimum.

Operators apparently are checked at every turn in their efforts to bring the coke industry back to normalcy. They have found it practically impossible to get orders and from the present outlook seemingly there is nothing to do but wait until future consumers of coal and coke so readjust their own businesses that they will find a need for the fuels.

Practically the only business being done in the market end of the coal and coke industry is the few odd sales which operators and brokers have picked up. A new level of $3.25 has appeared for furnace coke and some sales have been reported at that figure.

Tonnage produced in the region is now so meager that it can hardly be used as a basis for establishing a market. Most operators hold that the prices offered by consumers do not justify production, even at the readjusted wage scale and they seemingly are content to wait until demand returns and favorable prices are quoted. Foundry coke is more active than furnace and prices therefore are more reasonable in the viewpoint of the producer. Foundry coke is quoted $4.75@$5.25.

UPPER POTOMAC

Market Still Dormant—Production Rate Unchanged—Gas Coals Weaker.

There was nothing to stimulate production during the week ended June 4, with the result that only one-third of the mines in the Upper Potomac or Georges Creek regions were in operation.

Prices were virtually unchanged, the best coal moving at $2.50. Pool 9 was still quoted $2.75 and Pool 10 about $2.50. Good gas coal was not bringing more than $2.25.

CENTRAL PENNSYLVANIA

Operators Discuss Proposed Joint Conference with U. M. W.—Long Period of Depression Seen for Coal Men.

Operators met in Altoona on June 10, with the Central Pennsylvania Coal Producer's Association and the Central Coal Association, for the purpose of considering a joint conference with the representatives of the mine workers of District No. 2. At a secret executive session on June 2, the executive board of the district mine workers decided not to consider the request of the Central Coal Association for a conference until that latter organization had laid aside all generalities and set forth a concrete list of subjects which they desire to

take up at the proposed conference.

At the meeting in Altoona on June 10, the executive committees of the two associations went over the letters and prepared recommendations which will be acted upon later. The operators went on record as strongly favoring the Sutherland amendment now in Congress prohibiting assigned cars.

FAIRMONT AND PANHANDLE

Idleness More Pronounced — Lake and Export Demands Weaken—Prices Soft.

FAIRMONT

Mine idleness was more pronounced during the week ended June 4. The Memorial Day holiday was of course partly responsible for this decrease in production. Lake shipments as well as export tonnage fell off in volume. There was little or no spot demand and even inquiries were less plentiful. Shipments to Curtis Bay did not average more than 50 or 70 cars per day.

NORTHERN PANHANDLE

Conditions were unchanged as compared with preceding weeks. A few mines were managing to send a little lump to Lake points at prices ranging $2.75@$3 and there was also a little railroad tonnage being moved. Demand for commercial fuel, however, was extremely poor and prices remained at the low points registered lately.

Middle Western

MIDWEST REVIEW

No Industrial Improvement — Retail Trade Paralyzed — Steam Market Inactive—R.R. Tonnage Declines.

Conditions in the past week have not altered for the better. There has been a noticeable decrease in the demand for high grade domestic coals. Retail dealers in Iowa, Minnesota, the two Dakotas and Illinois are loaded up with as much coal as their bins will hold and report that the public is taking no interest whatever in fuel, absolutely refusing point blank to buy their winter's supply now, basing their actions on their belief that coal will decline to still lower levels and that freight rates will soon be down.

It is no exaggeration to state that the retail trade in the Middle West is practically paralyzed. The steam trade remains in about the same condition in which it has been for the last month; in other words, with but little demand for coal at any price. There will be no improvement in the steam coal market until a number of problems have been solved. The feeling of uncertainty that permeates the whole territory will have to be dispelled before conditions will improve to any marked extent.

Practically all the large railroads serving the Middle West have already placed contracts for their coal requirements, but these contracts stipulate that the railroads can reduce the volume of tonnage they receive every month to a very modest amount. One railroad we know of, after cutting its contract requirements with the mines down to a minimum, found in spite of this that it had nineteen hundred loaded cars of coal over and above what it could use or find storage space for. The explanation of this is that business on some of our Western railroads has dropped to a degree unheard of. One large railroad serving this territory has refused to make contracts for its coal until such time as the operators reduce their mine labor.

Operators in the Illinois and Indiana fields do not feel that any reduction ought to be made at this time or until the expiration of the present agreement with the United Mine Workers, consequently this railroad will have to change its policy or buy its coal on the open market from now until next April, which will be rather a dangerous practice. We understand that some of the operators in the East who happen to be on this same railroad are trying to get their mine labor to agree to a reduction, and the railroad in question is doubtless trying to force the operators along its line in Indiana to undertake the same tactics. We have taken the trouble to talk to a number of the largest producers in Indiana, and feel very safe in saying that the consensus of opinion is very much against any reduction in mine labor until the expiration of the present agreement with the United Mine Workers.

In view of the fact that the present industrial situation, so far as the Middle West is concerned, is as bad as it has been since last fall, a number of experts on industrial and economic questions have come forward with the prophecy that the depths of the depression have now been reached, and that conditions from now on will show slow but steady improvement. They claim that conditions fundamentally have improved very greatly and are now on a much stronger and saner basis than they were last year. It is said that the obstacles before us today will be removed after a reasonable time through hard work, cheap production and sound merchandising.

SOUTHERN ILLINOIS

Domestic Demand Slackens — Steam Sizes Impossible to Move — Coal Goes Begging—R.R. Tonnage Declines.

There seems to be a gradual easing up in the movement of domestic coal. Egg is heavy and nut is almost as much of a drug on the market as screenings in the Carterville field. A little domestic is moving north, but the Southern market and the St. Louis territory is taking practically nothing.

The steam circular has gone to pieces. Independent operators are getting from $3 up for domestic sizes, but mine run is as low as $2.50 and screenings, $1.50. The mines get anywhere from 1 to 4 days a week, but a great many of them are still idle and this is causing much dissatisfaction among the miners. Railroad tonnage is light. The screenings that are piled up at the different mines are causing considerable trouble and loss on account of spontaneous combustion.

The situation in the Duquoin field is somewhat similar to that of the independent Carterville operators. Prices are somewhat the same. The Mt. Olive situation does not show any improvement. One and two days a week seems to be the best running time. Steam coal is not moving, excepting on contracts as a rule. A little domestic tonnage is going to the Northwestern market.

The Standard field shows a condition that seems to be growing worse in every respect. Prices are lower than last week and they have been below cost of production for several weeks. Screenings are quoted at 85c., a low figure, and 2-in. lump $2, with 6-in. lump $2.35, mine run as low as $1.65 and nut and egg as low as $1.75.

The railroad tonnage is light and is not of much assistance in a general way in this field, although the railroad mines are getting better time than commercial operations, which average one or two days per week. It is almost impossible to move screenings, and it is just about as hard to move the other sizes. Such coal as is being moved is scattered through all markets.

WESTERN KENTUCKY

Production Not Heavy, but Prices Being Well Maintained — Southern Market Quiet.

As a result of operators having backed their contract agreements strongly during the shortage period they have secured some new business. One producing company reports that it recently secured an excellent account, and has a well satisfied customer, who quit his old producer as soon as a contract was filled, because of failure to make deliveries under the contract when coal was needed.

Today the lowest quotation heard on western Kentucky screenings is $1.10 a ton, whereas some of the western Kentucky and West Virginia operators have quoted as low as $1. The lowest mine run quotation, and that for an inferior grade, was $1.50, and lowest lump price was $2.05. A considerable amount of prepared at $3 was shipped during the past week.

A good deal of western Kentucky coal is moving into Louisville, some going to Michigan, Indiana and the Chicago district, Southern business continuing rather quiet.

Middle Appalachian

LOW-VOLATILE FIELDS

Market Slightly Weaker—Heavy Tidewater Shipments—Screenings Soft.

NEW RIVER AND THE GULF

Production continued heavy in the New River field during the week ended June 4, except on the first day of the week, which was a holiday. Tidewater movement was good and there was also a considerable tonnage shipped to the

Northwest. Slack was still low at $3, and mine run was quoted around $3.50.

Winding Gulf production reached fully 70 per cent of capacity, there being only four mines still out of commission. The bulk of the tonnage was moving to Tidewater for bunkerage, although Western markets were taking a small amount of prepared sizes.

POCAHONTAS AND TUG RIVER

As a result of less favorable market conditions, Pocahontas production underwent a slight decrease during the first week in June. "No market" losses amounted to about 150,000 tons. Most mines, however, found a market for part of their output at Tidewater and Western domestic demand was holding rather well. Slack was hard to sell and was still off in price.

Tug River conditions were very similar to those prevailing in the Pocahontas region. There was a slight decrease in production as a result of the Memorial Day holiday and also because of poor market conditions. The output was around 100,000 tons, much of which went to Tidewater for bunkerage use.

HIGH-VOLATILE FIELDS

Dearth of Orders Continues — Steam Prices Weaken — Lake Orders Fewer, but Constitute the Main Market Activity.

KANAWHA

As orders were barely sufficient to cause a 30 per cent operation during the week ended June 4, it was not a hard matter to cover the Memorial Day loss of production. Dullness in the spot market continued, about the only tonnage moving being consigned on contracts. Mine run was weak at $2 and slack touched as low as $1.35.

LOGAN AND THACKER

There was a heavy production in the Logan region. Even on the Monday holiday the output reached a figure in excess of 40,000 tons. A large volume of coal was moving to the Lake as well as to Ohio River points, largely for storage. Despite the prevailing dullness producers were optimistic as to the near future and their large shipments of storage coal were based on such confidence.

Production declined slightly in the Williamson-Thacker region, not averaging over 80,000 tons, however, this was considered a very satisfactory showing in view of the fact that there had been so much violence in the field recently. Although there was not an active market, yet a fairly large tonnage was being shipped, most of it on contract.

NORTHEASTERN KENTUCKY

Operations were limited to about 30 per cent of potential capacity. As a rule mines did not run more than a day or so during the week as neither demand or prices justified more extensive operations. A few companies were able to put in more time on Lake orders. Prices were slightly weaker, showing a wider range.

VIRGINIA

Dearth of orders was most marked and there was little spot coal shipped. Even the larger companies with contract orders were able to keep going only part of the time with the result that production did not exceed 80,000 tons. The coke market was still off.

West

UTAH

Coast Trade Improves, but Domestic Market Still Dormant — Uncertainty Over Freight Rates.

So convinced are consumers that prices should and will come down that probably nothing less than a reduction of $1.50 or $2 a ton would induce them to buy storage coal now. If the Federal authorities would cease talking about bringing down the freight rates the situation might be helped and many people buy now, but as it is they decide to "wait another month or two and see what happens."

Dealers are working on a $1.33 margin, having reduced this 25c. a ton and the haulage another 25c. in order to be able to cut the cash price 50c. recently announced. There is one satisfactory feature and that is that the Coast trade has improved and seems to give promise of holding up fairly well.

Personals

Charles A. Owen, president of the Tidewater Coal Exchange and head of the Imperial Coal Corporation, is to spend several months in Europe studying coal conditions there in the interest of the American exporter and his own concern.

Robert Magee and **A. I. Moses,** of the South Eastern Coal Co. of Cincinnati, recently spent a week in the West Virginia mining fields.

W. J. O'Toole, vice-president of the Crystal Block Coal Co., visited the Cincinnati office recently.

The Southern Fuel Co., of Morgantown, was represented in the New York market late in May by **R. R. McFall.**

W. C. Stephenson, a prominent coal operator of the Pocahontas field, was a recent visitor at the Glen White operation of the E. E. White Coal Co.

L. Ert Slack, special assistant to the Attorney-General of the United States for the prosecution of the coal cases now pending in Federal court, was in Washington recently, conferring with the Attorney-General. Practically all defendants residing outside Indiana have filed suits in their own Federal courts to prevent removal to Indiana for trial before Judge Albert B. Anderson.

W. G. Whildin, manager of the Lehigh Coal & Navigation properties in the Panther Creek District, has resigned and will remove to Michigan. His first service with the company dates back about 35 years, and since the retirement of Mr. Ludlow from the vice presidency two years ago he has been in charge of the Panther Creek Valley operations.

A visitor in the Pittsburgh coal market during the latter part of May was **Paul H. Kenner** of Morgantown, of the Metropolitan Coal Co.

A recent visitor in the Kanawha region was **C. F. Somerville,** formerly located in Charleston but now connected with the Kalamazoo Ice & Fuel Co., Kalamazoo, Mich.

Paul C. Sullivan, representing the Equitable Fuel Co. at Fairmont, was in Eastern markets on business during the latter part of May.

A recent visitor in the Huntington market was **R. C. Scott,** general manager of the Guyandotte Coal Co., operating at Kitchen, W. Va.

Industrial News

Cincinnati Ohio—The Ogle Coal Co. of Indianapolis has opened a branch office in 820 Dixie Terminal Bldg. This company now has four branch offices. H. K. Howard is in charge of the Cincinnati venture.

New York, N. Y.—Whitney & Kemmerer has increased its office space on the sixth floor of 143 Liberty St. by adding two large rooms on the opposite side of the hall to be used by the sales force.

Washington, D. C. — The creation of a Bureau of Supply with a Director to centralize government purchases of supplies, with an advisory contract board composed of representatives of each department to aid in standarization of supplies, elimination of unnecessary grades and varieties, preparation of specifications and award of contracts, is proposed in a bill introduced by Senator McCormick, Ill. It would take over the Government Fuel Yards now operated by the Bureau of Mines and which supplies coal to government departments in Washington.

Obituary

Walter A. Marsh of Pittsburgh, died of pleurisy early this month. Mr. Marsh was general sales manager of the Pittsburgh Coal Co., having been associated with the company since its organization. During the war he served with the United States Fuel Administration in charge of the railroad fuel distribution section in Washington.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va. Sept. 19 to 24 incl. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

Oklahoma State Coal Exposition will hold its first annual meeting in Henryetta, Okla., June 23, 24 and 25.

American Institute of Mining and Metallurgical Engineers will meet at Wilkes-Barre, Pa., Sept. 12 to 17. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York City.

Rocky Mountain Coal Mining Institute will hold its summer meeting beginning June 28 at Salt Lake City, Utah. Secretary, F. W. Whiteside, Denver, Col.

Mine Inspectors' Institute of America will hold its twelfth annual meeting at Charleston, W. Va., July 12 to 15. Secretary J. W. Paul Bureau of Mines, Pittsburgh, Pa.

Illinois and Wisconsin Coal Dealers' Association will meet at Chicago, Ill., July 13 and 4.

American Society for Testing Materials will hold its annual meeting at the New Monterey Hotel, Asbury Park, N. J., June 20 to 24. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

American Institute of Chemical Engineers will hold its spring meeting June 20 to 24 at Detroit, Mich. Secretary, Dr. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

MINE And COMPANY NEWS

COLORADO

The report of the **Colorado Fuel & Iron Co.** for the first quarter of this year shows net profits, after taxes, interest, sinking fund and other deductions, of $505,527. After allowances for the preferred dividend this was equivalent to $1.59 a share earned on the $34,235,500 common stock. In the first quarter of last year net profits amounted to $420,568, equivalent to $1.11 a share.

ILLINOIS

The McCraney coal mine, two miles east of Coal Valley is again in operation after being closed for a few months. The mine is not employing a full force of men.

Roberts and Schaefer Co., Engineers, Chicago, have just completed the installation of an additional loading boom to the new tipple of the **Jackson Coal Co.**, of Hallidayboro.

INDIANA

The Fort Wayne Corrugated Paper Co. filed suit in Superior Court at Indianapolis recently against the **Steel-Kattman Coal Co.** and the **Linton Collieries Co.**, alleging breach of contract and asking $40,000 damages. The plaintiff alleges that it entered into a contract with the Linton Collieries on Jan. 23, 1920, under which the coal firm was to supply between 400 and 450 tons each week for one year. However, after May 27, 1920, no coal was delivered and the Fort Wayne company was forced to go into the open market to purchase coal at higher prices. The suit represents that the Steel-Kattman company entered into a contract by which it became sales agent of the Linton company, Jan. 26, 1920.

Tecumseh No. 1 Mine, near Bicknell, commonly known as the Martin, burned May 25. The loss on top was practically complete, estimated at $100,000. The mine belongs to the **Martin Howe Coal Co.**, of Chicago, owners of which are William Howe of Chicago, William J. Freeman of Terre Haute, and Valentine Martin of Indianapolis. Another mine owned by the company will handle its contracts until the Martin has been rebuilt.

William Wood, E. C. Evarts and P. O. Colliver, all of Terre Haute, have organized what is to be known as the **Wood Coal Mining Co.**, of that city. The company has incorporated under Indiana Laws.

Articles of incorporation have been filed with the secretary of state by the **Wabash Mining Co.**, at Clinton, showing a capitalization of $10,000 for the purpose of developing coal lands. Directors are Thomas G. Williams, William T. Brooks and Clyde Little.

The National Coal Co., Terre Haute, has filed incorporation papers with the Secretary of State showing a capitalization of $300,000. The company will engage in the mining of coal and other minerals. Directors are A. N. Sullivan, R. R. Roberts and A. B. Kinsella.

The Linton No. 4 Coal Co., Linton, has field articles of incorporation with the secretary of state, showing a capital stock of $100,000. The company will engage in the coal mining business, and directors of the company are Louis Terry, Lueppo D. Buenting and Guy W. Dixon.

The Rock Creek Coal Co., Terre Haute, has filed its final certificate of dissolution with the secretary of state.

A suit for $300,000 damages, charging breach of contract, was filed in the circuit court at Indianapolis recently by the **Panhandle Coal Co.** and the **Linton-Summit Coal Co.** against the **Indiana Railways & Light Co.** and the **Consumers Coal Co.**. The plaintiffs say they had contracts with the Consumers company to market the output of some of the mines owned by the plaintiffs in 1920 and that the Consumers company entered into a contract with the Indiana Railways & Light Co., whereby the latter company was to buy 100,000 tons of the coal. After less than 15,000 tons had been delivered the contract was repudiated by the company. They declare that the remaining 85,000 tons provided for in the contract, would have brought them $297,697.

Oliver Steele has closed a coal land deal by which a tract of 1,800 acres between Paxton and Sullivan has been sold to the **Dugger-Martin Coal Co.** The consideration was $35 an acre. A modern mine will be sunk on the tract east of the Chicago & Eastern Illinois R.R. between Paxton and Carlisle.

KENTUCKY

Articles have been filed by the **Curtis Coal Co.**, Madisonville, capital $20,000; E. F. Guy, I. L. Clark and F. M. Curtis, incorporators.

The Nebo American Coal Co., Nebo, capital $250,000, has been incorporated by Pearl Bassham, Andy Barton and Gaza Barbas.

Amended articles have been filed by the **Elmer-Elkhorn Coal Co.**, Allen, increasing its capital from $50,000 to $75,000.

The Midwest mine, formerly of the Midwest Coal Co., Henderson, taken over by the **Southland Coal Co.**, in a consolidation about a year ago, suffered $75,000 fire loss recently, when tipple, power house, bunkers and other buildings were destroyed. There were a hundred men in the mines at the time the fire broke out, all of these escaping through the air shaft.

MICHIGAN

Judgment for $58,461.19 has been awarded the Boehme & Rauch Co., Monroe, in a suit before the circuit court of Wayne County, against **John S. Lorimer's Sons Co.**, Detroit coal dealers. The plaintiff charged that the coal firm neglected to carry out terms of a contract signed in 1917, under which the defendants agreed to supply coal requirements of the plaintiff for five years. The plaintiff was obliged to buy in the open market at prices above the contract figures. The defendants contended that having been unable to obtain sufficient coal for all their customers, they were justified in distributing the available supply pro-rata.

MINNESOTA

Two Duluth docks, the No. 4 of the **Northwestern Fuel Co.** and the **Carnegie Dock & Fuel Co.**, received their first cargoes of anthracite for the year recently. Receipts of hard coal have been so light this spring that dealers are growing apprehensive regarding the possibility of moving up a sufficient tonnage during the summer to take care of the requirements of Duluth and the territory next winter. So far the great bulk of the cargoes that have arrived here have been unloaded at three docks, and some of the others have been unable to slip out even the few orders that have been received from dealers.

NEW YORK

T. R. Phillips, A. R. Hendrickson and E. M. Campbell, all of Brooklyn, are named as incorporators of the **Wright Coal Mining Co.** recently granted a charter. The new company starts with a capital of $100,000.

The Morris Run Coal Co., of Manhattan, was recently granted a charter. The company has a capital of $100,000 and the incorporators are given as T. S. Barber, B. H. Keller, R. M. Fulforth and C. E. Jones, of Wilkes-Barre, Pa.

Rubell Coal & Ice Corporation, of Brooklyn, has been incorporated with a capital of $2,000,000. The incorporators are given as J. M. Greenfield, Jr., R. W. Mathews and W. H. Callahan. Leventritt, Cook, Nathan & Lehman, of Manhattan, are the attorneys.

OHIO

The office of the **Pittsburgh Vein Operators' Association** of Ohio, which for some years has been located in the Marion Building, West Third Street, Cleveland, has been removed to 750-754 Leader-News Bldg. The new partners are more centrally located. Michael Gallagher, general manager of the Wheeling & Lake Erie Coal Mining Co., is president of the association and D. F. Hurd, secretary.

The Gem Coal Co., has been chartered with a capital of $10,000 to mine and sell coal in the Hocking Valley field. Incorporators are W. E. Evans, V. G. Miller, L. E. Aumiller, Cora Miller and Gladys M. Aumiller.

The Brown Bros. Coal Co., has been chartered with a capital of $160,000 by A. F. Counts, William A. Brown, F. P. Kneen, E. C. Brown and S. M. Berg.

Papers have been filed reducing the capital of the **Wolf Run Coal Co.**, from $250,000 to $10,000.

The Philadelphia & Cleveland Coal Co., has filed a complaint with the Ohio Utilities Commission, asking for the privilege of "storage in transit" at the storage yards of the company near Groveport. The Philadelphia & Cleveland Coal Co., has erected a large storage yard at that place, with a capacity of 150,000 tons, operated by steam shovels and loading cranes and it is desired to have the privilege of the $1.40 rate from the Nelsonville field to Columbus when coal is put into storage. The Hocking Valley Ry. Co., on which the plant is located has steadily refused to permit the storage privilege and still give the through rate. It is pointed out that by granting the "storage in transit" privilege, a number of idle mines in the Hocking Valley can be opened and coal can be stored near Columbus for all emergencies.

Papers have been filed increasing the authorized capital of the **Summit Coal & Mining Co.**, Canton, from $50,000 to $100,000.

The Mineral Ridge Coal Co., has been chartered with a capital of $20,000 to mine coal in the Hocking Valley field. Among the incorporators are J. Hamer and C. E. Campbell.

Papers have been filed reducing the capital of the **Daniel Boone Coal Co.**, from $575,000 to $100,000. The company opened several large mines in the Hazard field of Kentucky and the property was taken over by the Maynard Coal Co., of Columbus, about a year ago. The corporation is being continued, however.

PENNSYLVANIA

The English Center Coal Co. with offices at English Center, Lycoming County, has been organized with A. M. Hoagland, Eugene A. Shaffer and J. J. Brandt, all of Williamsport, and Vincent P. Grasso of English Center as directors. The company has applied for a state charter. The company will acquire the 17,000-acre tract of Mrs. Anne W. Penfield. A branch railroad, ten miles long, connecting either Cammal or Hoytville, is planned.

The brick plant of the **United Refractories Co.** near Connellsville has resumed operations after an idleness of four months. It is planned soon to open the mines of the company.

The Berwind-White Coal Mining Co. has announced cash prizes to occupants of homes in towns of all the Eureka mines in the Central Pennsylvania field as an inducement toward the better appearances of the homes as to improvements and sanitary conditions. The prizes will be awarded on Nov. 1, by a committee composed of Sylvester Lehman, E. H. McKenzie and Blaine Barefoot, all of Windber.

VIRGINIA

The Kentenia Coal Co. is moving its Richmond office to Norfolk, consolidating the forces of the two offices. E. M. Robertson, manager of the Norfolk office, was in Richmond recently, and has been making a tour of West Virginia and Ohio cities.

The Hampton Roads Steamship Co., flying the flag of the Hampton Roads Lines, has been fully organized. Its first sailing was June 17, with a general cargo for Liverpool, the service to be fortnightly from Hampton Roads to Liverpool, London, Antwerp and Rotterdam. W. F. Taylor, of New York, president of the Export Transportation Co., heads the new company, while L. C. Neff, manager of the Export Transportation Co.'s Norfolk office, will be general manager. This line will carry coal cargoes and will also arrange for the chartering of vessels in the coal trade, it is announced.

Suit has been instituted in the U. S. District Court at Roanoke by the Delaware Steamship and Commerce Corporation against the **Virgina Iron, Coal & Coke Co.**, for alleged failure to live up to a contract, it being claimed that the delivery of 60,000 tons of coal is involved and that the alleged damages amount to $224,000. The action is based on alleged trespass on the case. It is set forth by the plaintiff that an agreement was entered into between the Roanoke company and an Ohio concern on Jan. 16, 1920, under the terms of which the Virginia Iron, Coal & Coke Co. was to ship from its mines near Virginia City, Wise County, 5,000 tons of coal a month. According to the plaintiff's declaration, the defendant took over the Ohio concern's interests some time later, and it is alleged that although the Virginia Iron, Coal & Coke Co. promised to deliver the coal it failed to live up to the original agreement.

WEST VIRGINIA

Arrangements are in progress for an interesting meeting of the **Mine Inspectors' Institute of America, at Charleston, July 13-14.** Secretary James W. Paul, has prepared a tentative program, and the completed program will be mailed to the members at an early date. The program will include an address by Jerome Watson, chief Division of Mines of Ohio, on the subject "How best to secure co-operation of miners and operators, in full compliance with the mining laws." R. M. Lambie, chief Department of Mines, West Virginia, will address the meeting on the subject, "Interchangeable certificates of mine foremen and fire bosses between the states." Seward E. Button, chief Department of Mines, Pa., will speak on the subject, "Should flame safety lamps be discarded for electric lamps, except for testing purposes." W. E. Holland, State Mine Inspector, Iowa, will read a paper entitled "How accidents at the working face may be avoided." There will be other addresses of equal interest and each subject will be discussed by the members present.

It is stated by the secretary of the **West Virginia Farm Bureau Federation** that through their bureau organizations the farmers of Ohio, Virginia, North Carolina, Kentucky, Georgia, Alabama, Maryland, New York, Michigan, Wisconsin, Missouri and the New England States are ready to buy West Virginia coal direct. The county farm bureaus in Berkley, Jefferson and Greenbrier counties are likewise taking steps toward pooling their coal orders and buying direct. Negotiations had reached such a stage that late in May Mr. McLaughlin started on a trip into the state to take up the matter of immediately placing orders from at least three states with the coal operators of West Virginia.

Operations have been resumed at the plant of the **Ashford Coal & Coke Co.**, on Coal River. This is a new company organized a year or more ago. E. C. Berkeley, formerly with the Winding Gulf Colliery Co., is president of the concern.

During the month of April a total of 10,000 tons was produced at the mines of the **Youghiogheny & Ohio Co.**, in the Coal River field, such a production being beyond the most sanguine expectations of the owners of this property, as the property is only in process of development. E. C. Berkeley is directing the operations of the Y. & O. mines.

Organized with a capital of $200,000, the **Logan-Chilton Coal Co.**, in which Raleigh County people are extensively interested will engage in mining oprations in the Logan County field in the vicinity of Henlawson. Offices of the company for the time being are at Fireco. Active in forming this concern were: J. M. Maxwell and Jessie Fisher of Beckley, W. Va.; W. B. Beale, H. P. Wilson and William McPherson of Fireco.

As soon as a siding now being installed is completed it will be possible for the **Belle Coal & Land Co.** to being operations at its plant at Belle, the company being served by the K. & M. The company was organized shortly before the first of the year by Joe Wehrle and associates of Charleston, Mr. Wehrle having been with the Dickinson Fuel Co. prior to organizing the new company, of which he is president.

In addition to continuing the production of Orange byproduct coal obtained from the Cedar Grove seam, the **Splint Orgas Coal Co.**, which has cucceeded to the business of the **Orange Gas Coal Company** at Orange in the Coal River field, is also making preparations to mine coal in the Coalburg seam and in order to improve its facilities is having built a new tipple with shaker screen and other equipment. The company plans to be able to produce coal at the rate of about 750 tons a day. This concern has as its president, A. E. Moore of Charleston.

Traffic News

The St. Paul Gas Light Co., which gets its raw gas from the **Minnesota By-Products Coke Co.**, has petitioned the city council for the continuance of the rate of $1 which was instituted for six months only, as a substitute for the 85c. rate. The company states that it cannot return to the old rate. The coke company states that it must have substantial relief in order to continue. Despite lower coal costs, it is claimed that the lack of a market for coke and for sulphate of ammonia cuts down its chance of profiting by the reduced cost of coal.

Minnesota railroads have asked the state railroad and warehouse commission for authority to raise their intrastate freight rates on coal to equal the interstate rates for the same distance. They propose to make it effective July 6 when the revised rates on interstate rates become effective. The change would add 7c. to the hard coal rate to the Twin Cities and 27c. on soft coal.

The I. C. C. has authorized the **Alaska Anthracite R.R.** to issue $1,500,000 of first mortgage bonds to complete construction of its line which is expected to open up territory containing large coal deposits.

The Kentucky Railroad Commission has held that it has no jurisdiction in the coal cases from Louisville, Newport and Covington, growing out of the increase in rates made by the L. & N. June 16. The commission based its decision on the ground that the case was interstate and was therefore within the province of the I. C. C.

The commission has suspended until Sept. 29 various tariffs which seek to make increases and reductions ranging from 14 to 28c. a ton in rates on anthracite coal from Pennsylvania to points in New York State.

The Central Iron & Steel Co., of Harrisburg, Pa., has complained to the commission against the rate of $3.88 prior to Aug. 26, 1920, and $5.28 since that time on bituminous coal from mines in West Virginia to Harrisburg, on the ground that the rates were unreasonable. He asks for rates of $1 prior to Aug. 26, 1920, and $1.40 since, and refund of charges on shipments above those rates.

The Lincoln (Neb.) Chamber of Commerce in a complaint attacks as unreasonable the reconsignment and diversion rules and charges on coal.

The Central Cypress Co., of Centralia, Fla., attacks as unreasonable rates on coal from points in Kentucky and Alabama to Centralia by reason of the increases under General Order No. 28 to each factor of the combination rates, and requests reparation.

The railroads have indicated their understanding of the order of the Interstate Commission in the **Holmes & Hallowell Co.** case is to allow an increase of interstate rates to the same amount as is charged for the same distance in interstate traffic. This would increase hard coal rates to the Twin Cities from Duluth or Superior by seven cents from $2.29½ to $2.36½ and on soft coal by 27c. to $2.16. This will practically absorb the entire saving gained by the order reducing Lake and rail freights 28c. A vigorous effort will be made to prevent the change from being authorized on that basis.

Representative Ward, of N. C., has presented to the House a memorial of the North Carolina legislature relative to a trans-continental railroad running from the coal fields of Tennessee to Southport, N. C., and for a 30-ft. channel in the Cape Fear River from Wilmington to Southport.

In the case of the **Little Cahaba Coal Co.**, of Piper, Ala., the I. C. C., decides that the rate on coal from Piper, Ala. to Graselli, Ala., during Federal control of railroads was not unreasonable.

There has been a revival of the report that the **Kanawha & Michigan and Virginian railroads** have entered into traffic alliance covering the handling of coal and other freight and that a connecting bridge at Deep Water may be built to make the arrangement effective. Such union of interests as to coal hauling would be greatly to the advantage of the coal industry along the K. & M. as it would afford the mines along the north side of the Kanawha River an Eastern outlet for their coal.

The Southern Ohio Power Co. of Floodwood, Ohio, in a complaint to the I. C. C. alleges that the switching charge of 20c. and a minimun of 25 tons per car on shipments of coal at Floodwood is unreasonable. A refund of $9,569 is requested on former shipments.

In the complaint of the **Dewey Fuel Co.**, the commission decides that the rate on coal from mines in Kentucky in L. & N. group No. 1 to Jackson, Mich, is not unreasonable.

The Southern Ry. Co. has followed the lead of the L. &. N., announcing reductions in coal freight rates to Lexington, and increases in rates to Cincinnati and Louisville, from southern Kentucky and Tennessee mines. The new rates are 22c. lower to Lexington, but show an increase of from 31 to 54c., depending on grade, to Louisville; and 37½ to 43½c. to Cincinnati. Protests have been filed by the Louisville Board of Trade, Cincinnati Purchasing Agents' Association, Southern Appalachian Coal Operators' Association and other organizations against proposed increases as announced by the L. &. N. Newport and Covington interests have filed protest with the Kentucky State Ry. Commission charging discrimination in rates from the Hazard field to Newport, as compared with rates to the Lake

Association Activities

Northern West Virginia Coal Operators' Association

There was a meeting of the board of directors of the association at Clarksburg on May 31, followed by a meeting of the advisory board. Preceding the meetings directors of the association were the guests of the Clarksburg Coal Club, several members of the club being called upon for remarks.

When the advisory board met, there were several operators present who had labor disputes to present, the board adjudicating all grievances presented to it.

At the meeting of the board of directors there was added to the special committee of the board appointed to handle the Ohio rate case, W. L. Andrews, of the Consolidation Coal Co. Full authority was delegated to the special committee by the directors to retain such counsel as might be necessary and to report such action to the board. The interest of all operators in West Virginia in this particular case will be looked after by E. T. McVann.

It was decided to co-ordinate all efforts with other associations in the state and to take no individual association action unless the Interstate Commerce Commission should make a change in existing differentials within the state.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Setting Up a False Oracle

SENATOR FRELINGHUYSEN says that one purpose animating his legislative endeavors is to provide for someone in the government to whom people with questions about coal can turn for light. He, however, would have that "one" such a one as the Federal Trade Commission, to censor the business transactions of the industry, to be wholly concerned not with the advance of the industry but critical of its deeds and interested in the price of coal. His plan would evolve a Coal Trade Commission. What the industry and the country require is a Department of Mines, that will bring together under one roof all Federal activities on other mineral products as well as coal and that will be organized with the interest of aiding mining as Hoover would aid commerce.

A bill (S. 1957) has been introduced to do this very thing. Such a measure deserves the support of the coal industry. It would give us in workable form everything the coal people offered Senator Frelinghuysen—voluntary report and the inclusion of business other than coal—and would give the Senator the fountain head of wisdom in Washington, to which all with coal problems would turn. The Senator is credited with saying that any proposal looking to the creation of a new department has not the ghost of a show at this time. We suspect that the chance of success for his bill also is slim.

Working Cold Iron

THIS Frelinghuysen coal bill business is getting serious. Mr. Morrow has been obliged to postpone, if not cancel, his junket to Europe and Mr. Cushing is turning out memorials to Congress at a rate to burden the mails. Mr. McAuliffe announces that he stands sponsor for the authorship of the coal bills and Senator Frelinghuysen is surprised to find at the last minute that no one seems to agree with his ideas of what and how to do for the ills of coal.

We have read much on the subject of the problems that confront this country in these trying times, of the issues that remain for settlement by the present administration, but in all that we have seen we do not recall that stabilization of coal has been listed by competent authority as a pressing national problem. There was a tremendous outcry against coal last year, which came to a head in the hearings before Senators Calder and La Follette, and now there is a questioning by the public of the reasons for the high prices of anthracite and an oft-expressed belief that since everything else is supposed to be coming down in price, and hard coal is going the other way, there is something wrong with all coal men. Nevertheless, coal is now wholly an academic issue and not a national problem. Nothing but a wholly unexpected and unnecessary shortage and more very high prices can bring it forward into the spotlight again this year. Although jumping on the "coal barons" is still good "copy" for yellow newspapers and ambitious office seekers, the acute inflammation of last year is gone from public opinion and there is opportunity for sensible argument to defeat the avowed purpose of the Senator from New Jersey.

The coal men are pleading with Congress for a hearing on the "Coal Industry Stabilization Act," and they should have it. It would help if the principal witnesses were not coal men but consumers—common, everyday household consumers from all over the country—who should not be required to testify so much as they should be required to listen to the story of coal—the facts of the business. Last year two extended hearings were held on the same subject, and we very much prize the ten pounds and eleven ounces of printed record, comprising 4,595 pages in six volumes, resulting from those hearings. The greatest value to the coal industry from the outpouring of arguments and "memorials," from the protests and indignation letters of the coal men as well as from the speeches on the floors of Congress yet to come, will be the letting off of steam. There can be no peace and quiet until everyone gets this out of his system, and if another ten pounds—yes, even twenty pounds—of record must be accommodated on our bookshelves, we have no objection, but we trust it will soon be over. There are so many real things that the coal industry can do that are constructive that fighting hostile legislation becomes to many an exceeding irritation. The mine workers object that attendance of the operators at so many hearings at Washington is interfering with the proper dispatch of business with them at the mines.

For instance, there is that question of better merchandising which Mr. Cushing has been going to study for the past few years. There is the almost undeveloped field of public relations—getting next to the consumer with a story that he can understand, not telling it once but every day and week until it is understood. There is the problem of promoting a real foreign trade in coal, which the foreign trade committee of the National Coal Association expected Mr. Morrow to study abroad this summer. There also is a big labor problem looming up. But again these things must wait while everyone bends his efforts toward turning aside those who would help the coal industry by regulation.

Because one ton out of every six goes into people's cellars and the bill puts a dent in their bank account, coal is dangerously near being a public utility. And because half the coal that people actually see used is anthracite, and because anthracite is so costly to produce and procure, more than half the trouble between the public and coal is trouble with conditions in the anthracite industry, conditions that legislation cannot cure because they are economic and not political.

Senator Frelinghuysen became interested in coal two years ago because his constituents in New Jersey were

concerned over their local supply. He still is following the subject because these same people are not satisfied with the price they must pay for what they put in their cellars. In his study he has found many things about the whole coal industry that might well be different. It is easy to find these problems. It is difficult to prescribe remedies. One of the missing links is sufficient data on many aspects of coal. The Senator made this discovery early in his investigations, and it has been the *motif* of his proposed legislation since. That he has been converted to regulation to obtain these data is but a sign that he has tackled the problem as a legislator and not as a business man. He is seeking support for his plan by promising something to the citizenry of New Jersey that his and no other legislation can fulfill. Furthermore, he is making the attempt to mold public opinion on a subject on which it is now not hot but barely warm.

A Full Shovel Load and Full Speed Ahead

TOO emphatic has been the complaint about the morale of the day workers in the mine. The fact is that there is less complaint to be brought against these men than against the majority of unwatched and therefore unfearful men in any other line of industry. An inquirer into social conditions, Whiting Williams, who worked to gain his experience at steel works and coal mines, was inclined to the belief that he never seen unhectored day workers so active and anxious to accomplish their work as those in the mines. One reason for this is that the coal mines are cool. In them one must work briskly to keep warm. The air is exhilarating mentally and physically.

However, officials around the mine are quite apt to make a different report as to the efficiency attained. If the instances adduced were inquired into, it probably would be found that when a worker underground had been pulled out of his regular working place and set to unload rock somewhere under the blazing sun, it had been ordered much against his will, but in accord with the union agreement. Accustomed to work at an even temperature of 55 deg. he probably wilted under the glare of 85 or even 100 deg. Besides he smarted under the fact that he was "the goat." There were perhaps 400 miners in the mine, and when one man quit work for some improper reason—to go hunting or fishing perhaps—the lot, or rather the selection, of the foreman had fallen on this one wretched wight. He felt that the less he did the less likely he was to be broiled again on that blazing rock heap.

However, there is a cure for the slackness of the dayman, and that is to have him run a machine or drive an animal. Every motorman sets his controller to the last notch. If not a careful worker he will speed up the motor without any regard for the length of its life and he will continue to try to run it when it should be in the repair shop. The driver of a mule is as impatient to get to the entry as are a farmer and his wife to get to the market. A perpetual "Get up" and frequent flicks of the whip mark his passage up the roadway and he risks his life in his attempts to open a door, to find and set a sprag, or to throw a switch without stopping the trip.

The engineer runs his engine at the speed for which the governor is set. He does not try to modify the setting of the fly balls so that it will go any slower than it should. He has no interest in lowering the output of energy, and he does not attempt it. So also, the elevator boy is always ready to run his cage up and down the elevator shaft. It is a matter of no importance to him how many trips he makes daily. In fact so anxious is he to get down or up, as the case may be, that it is necessary to make rules requiring him to wait until he has more than one passenger or until the other elevator boy, when two are employed, is going in the opposite direction to himself.

And so it goes wherever the machinery installed relieves labor of most of its burden. The speed attained is the speed of the machine; the capacity is its capacity. "A full shovel load and full speed ahead" is ever the motto when there is complete mechanization.

Chauffeurs were arrested for speeding during the war, though everyone was anxious to obtain maximum output. The arrests occurred because the work of running an automobile was so exhilarating and easy that it was indulged in to excess. This shows how men must at all times be restrained from making machines under their charge do an amount of work that is dangerous to others and in other cases to the machine or to the operative. Speed mania is a disease that may be counted on to develop when the leucocyte of hard labor which preys on it is destroyed.

Because the miners oppose a new scale where new labor-saving machinery is introduced our mines need day labor to make complete mechanization pay, and complete mechanization is needed to make day labor economically possible.

Conserving Coal, Wasting Labor

THE room-and-pillar system when it is so planned as to obtain large recovery, as in the Connellsville system of mining under heavy cover, involves an unusual proportion of narrow work both in driving the rooms and drawing the pillars, the ribs being removed by cutting long narrow places through them, crosscutting the pillars thus formed and whittling away the resulting stumps as far as possible. There is little wide mining either in rooms or ribs. Furthermore, as the line of break in the high-recovery mines is at about 45 deg. to the entry and the line of the room faces is on the same inclination, the number of places working at any one time is small. There is no concentration of work. In the Connellsville system the rooms are few, long, far apart, normally not productive of large tonnage and driven only on one side of the heading. Consequently an entry, when pillars are being drawn, is not a lively place and when it is being driven or the rooms are just starting it is extremely lacking in activity. No wonder its gathering costs are excessive and that the storage-battery locomotives, profitable elsewhere, are less profitable in mines such as these.

After all is said, is the Connellsville plan of leisurely development the end to aim at? Are there not methods as conservational or more conservational that are not so expensive in operation and so ill-adapted to the saving of labor? It is worth while inquiring whether some substitute cannot be found that will give to the face a rotational delivery of full trips instead of a shuttle service of individual cars; that will recover the face not by cross-cutting and pillar-whittling methods but by longwall and that will reduce narrow work to a minimum. The concentration system in use in the Pittsburgh district is an improvement but it leaves much narrow work, it gives short pillar faces and it does not enable unbroken trips to be placed at the face.

TIPPLE OF DIAMOND MINES, OF IMPERIAL COAL CORPORATION, JOHNSTOWN, PA. COAL LIES AT TIPPLE LEVEL

Among Other Preparation Devices at Diamond Mines Is One for Picking Each Car Separately

Cars Brought to Feeder by Rope Are Fed to Dump Which Revolves Completely Over, the Cars Being Held by Wheel Clamps—Reciprocating Screens Hang from Rods and Do Not Rest on Rollers

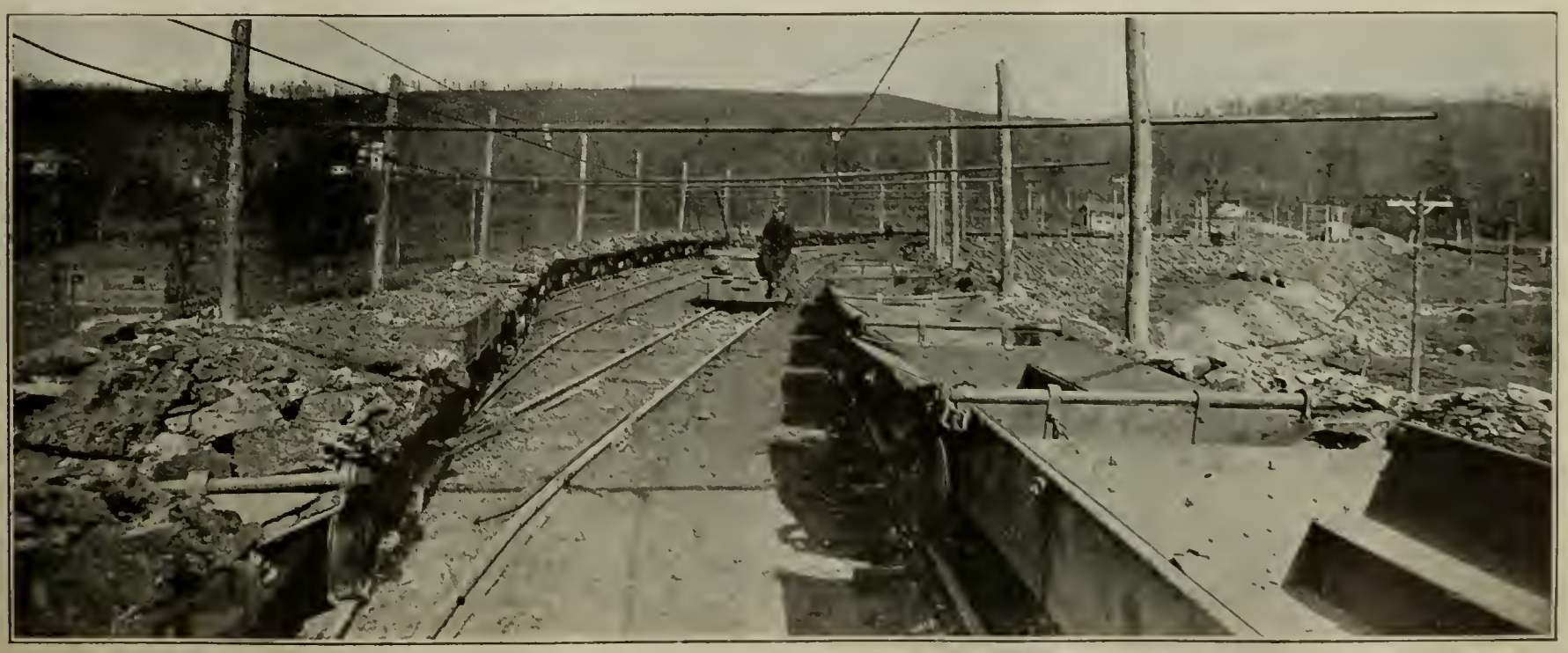
By Donald J. Baker
Wilkinsburg, Pa.

AT THE Diamond Mines of the Imperial Coal Corporation of Johnstown, Pa., has been completed recently one of the best equipped preparator buildings to be found anywhere in the bituminous fields. This structure was built when coal was commanding its highest prices and when the owners could easily have erected a rough tipple and taken advantage of existing conditions. They preferred, however, to build one that would give a product which always will be salable.

The Diamond Mines operate, on a royalty basis, some 2,500 acres of the "Miller" bed of coal located at Boltz, near Seward, on the main line of the Pennsylvania R.R. This measure will perhaps average 46 in. in thickness throughout the tract. Although the company has constructed a surface plant that will bear favorable comparison with those of the newer operations of the Pittsburgh district, it is not the purpose of this article to describe the surface works in general.

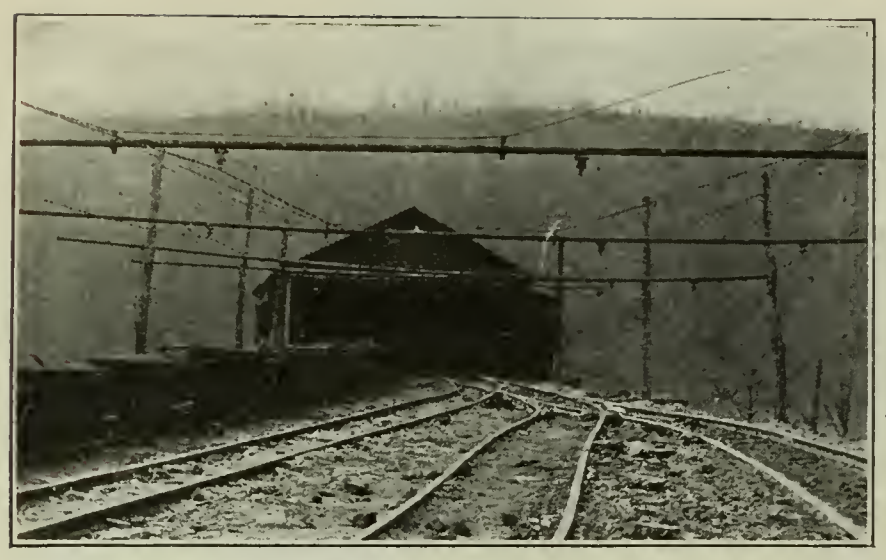
Only the tipple will be detailed, as it is in this building that greatest interest in this operation centers, many innovations in coal handling having been introduced in its construction which clearly discountenance the belief that tipple design and equipment are now largely standardized. Though the tipple differs little in external appearance from others of the state, the means and methods employed in preparation are markedly dissimilar from those ordinarily followed.

The acreage at the Diamond Mines is being developed through two drift openings, the coal bed outcropping along a hillside fronting on the Conemaugh River.



YARDS ABOVE TIPPLE WHERE CARS ARE LEFT BY LOCOMOTIVE AND PULLED BY ROPE TO TRIP FEEDER

The locomotive, after drawing its load toward the tipple, switches to another track. At most drift tipples it then runs back to a switch in the rear of its trip, where it transfers to the track on which the trip stands. From this point of vantage it bumps the cars into the tipple. At the Diamond Mines another plan has been chosen. A rope is used for pulling the trip to the feeder. This makes it possible for the locomotive to go about its business as soon it delivers its trip to a point near the tipple.



APPROACH TO TIPPLE IS CURVED AT SHARP ANGLE

That curvature, however, does not prevent the use of a trip feeder, as the latter is less than 13 ft. long. The front cars only are pulled but those behind move up also, for they are coupled to the cars in front.

Development plans call for the opening of other drifts in the near future to serve as additional feeders to the tipple. Trolley-type locomotives bring loaded trips exceeding fifty cars each into a spacious storage yard. The motors haul their trips almost to the tipple before cutting loose and proceeding into a switching track lying parallel with the tracks for loads.

Trip Feeder at Head of Tipple Building

At the head of the tipple and in the floor of the building, a car-haul—termed a trip-feeder—has been installed for moving the entire trip forward, one load at a time, into the preparator. This mechanism is placed on a 0.6 per cent adverse grade, and the cars when clear of the moving dogs gravitate into the building, to be weighed and dumped. The trip-feeder is electrically driven and operates at a speed of three cars (equivalent to a chain movement of 35 ft.) per minute. The average weight of the loads is approximately 4,200 lb. The carhaul is 12 ft. 8 in. long from center to center of sprockets and is built up of $2\frac{1}{4}$ x $\frac{5}{8}$-in. bars set in pairs connected by steel pins 1 in. in diameter. Heavy forged-steel hooks, acting as dogs, are set in the chain at 10-ft. 8-in. intervals to engage the attachments on the bottom of the cars.

In some of the older cars at this mine, which have been removed from other operations of the same company where there was a surplus of such equipment, the car axle is the point of attachment. On the new solid-body cars, however, a special plate has been affixed to the bed. The head-sprocket shaft is $3\frac{15}{16}$ in. in diameter and the tail shaft is $2\frac{7}{8}$ in. in diameter. Both are equipped with standard adjustable boxes.

The trip-feeding mechanism is driven by a 10-hp. motor through one belt, one cut steel spur-gear reduction and a roller-chain transmission. The driving pulley is fitted with a 14-in. friction clutch which is operated through a system of levers from the head end of the feeder. A man is detailed to the feeder to uncouple the cars in the trip as each comes over the knuckle at the head sprocket. The control lever accordingly is located conveniently near this point.

Cars Pulled by Rope to Trip Feeder

The upper strand of the chain runs in a steel-channel guide and the return strand on a steel-angle track. Structural supports are provided for the head and tail shafts. When the locomotive cuts loose from its string of loads at the tipple entrance the first car is out of reach of the feeder. Some scheme had to be devised, therefore, wherewith to move the entire trip forward so that the initial car might be engaged. This must be done without requiring the locomotive to push the trip from the rear, such a method being considered too prodigal of time. A straight-face drum 26 in. in diameter and 10 in. wide was installed on the feeder head shaft and connected to it by means of a jaw clutch. This drum is equipped with 300 ft. of wire rope.

After the locomotive has cut loose at the tipple entrance the attendant at the feeder attaches the rope to the first car of the trip. The drum is then revolved, and the entire trip is moved forward until the front car is in such a position over the feeder that the dogs will engage it. The rope is then removed and the feeder placed in operation. As each load clears the head sprocket it moves forward and onto the scales, where it is weighed while in transit to the dump.

Cars Emptied by Full-Revolving Dump

Fairbanks platform scales of five-ton capacity are located on the main tipple floor between the trip feeder and the dump. These are equipped with a quick-weighing and reading dial. The weigh room is so designed as to afford a full view of the approach to the scales. Its floor dimensions are 10 x 9 ft. Ordinarily only the gross weight of each car is recorded but sometimes the net weight also is desired, as will be shown later.

From the scales the loads gravitate to the dumping mechanism, which is of the full-revolving type. A pair of horns over the track at the forward end of the dump deny the loads entrance until a lever has been thrown by the operator, which forces these obstructions to the sides of the rails. This revolving dump is built of two heavy steel circles or tires connected by tie beams and stiffened by diagonal braces. Each tire is supported on two 16-in. diameter single-flange traction wheels mounted upon cold-rolled steel axles, the wheels themselves being of chilled cast iron. At the end of the dump two thrust rollers of the same material as the wheels are provided. This dump is operated by a 10-hp. motor of the open type, connection being made through a cut-steel spur-gear reduction to a shaft on which is fitted a steel pinion that meshes with a cast segmented gear encircling the dump at the receiving end. All driving machinery is installed on a steel bed plate. Throughout its complete revolution the dump

AT PRESENT COAL COMES FROM TWO DRIFT MOUTHS

Another drift is to be opened later. The coal outcrops along a hillside fronting on the Conemaugh River. The track on the extreme left leads to drift No. 2, from which trips are backed into the loaded tracks leading to the tipple. Two different trips are thus coupled together for removal to the trip feeder.

Picking Tables

The output is not large enough to make it necessary to use both tables. For this reason the one in the rear is not being used. When both are in use a 9-ft. space separates each carload, and it is possible, therefore, to weigh the refuse from each car separately, the record being given on the scale in the rear. By the use of skylights of ribbed wire-glass the pickers have no difficulty in distinguishing the impurities in the coal.

is governed by means of an automatic electrical control, rotation being started by a push button placed near the operator. The dump is gradually brought to rest at the end of each revolution without attention on the part of the driver other than the initial pushing of the control button. This arrangement is infinitely more conducive to time saving than where the operator has many levers and brakes to operate and must "jiggle" for position at the end of each revolution. Once started the dump completes its movement and comes to rest with the empty car in position to gravitate out at the opposite end.

Horns Embracing Wheels Hold Inverted Car

Within the dump mechanism spring-seated car stops are installed. These are connected by levers to a track treadle located at the dump entrance, the arrangement being such that a car entering the machine will trip the horns and force the empty out at the opposite side. The car-stops, which function as horns, are so curved as to fit around the tread of the car wheels. When a car is upside down it is held in position by the horns alone. Only two men besides the weighmaster are required on the main tipple floor—one to operate the dump and the other to control the movement of the trip-feeder and trip-maker.

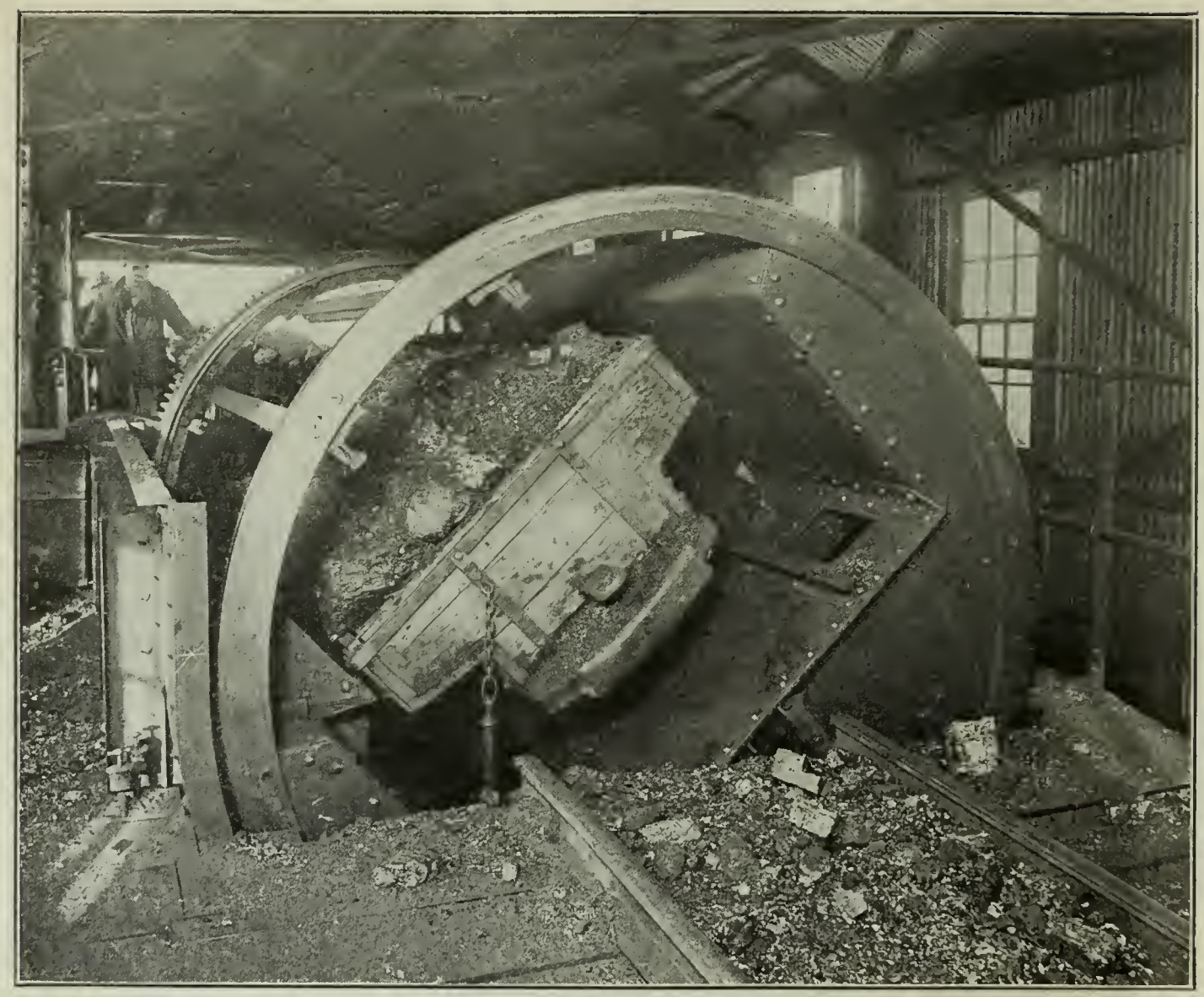
After discharge, the empty car runs by gravity to a kickback in the rear of the tipple, and is thence directed into a track leading to the outside of the building. Here the cars pass into another car-haul, termed in this instance a trip-maker. This is capable of forming a trip of fifty empty cars on a 0.6 per cent adverse grade. It runs at a speed of 60 ft. per minute, and the average weight of each car is approximately 1,700 lb. This car-haul is 44 ft. long—center to center of sprockets—and, like that in the trip feeder, consists of one strand of 8-in. pitch steel-link chain in which heavy forged-steel hooks have been inserted.

These hooks are placed on 5-ft. 4-in. centers to engage the attachments on the bottoms of the cars. The chain is composed of $2\frac{1}{4}$ x $\frac{5}{8}$-in. links set in pairs and connected by steel pins 1 in. in diameter. The pin at one end of each hook link is extended and fitted with two steel rollers. Each end of the pin is threaded and equipped with a nut held in place by a cotter that extends through both nut and axle. All other pins are riveted. The head and tail sprockets are of the same size as those of the trip-feeder.

A noiseless safety device has been installed on the head shaft of the trip-maker to prevent the weight of the cars on the grade from running the haul backward should the power suddenly be shut off. This consists of a ratchet fitted with a pawl held out of engagement

IN THE WEIGH ROOM ON THE MAIN FLOOR

A platform scale records the gross weight of each car on a quick weighing and reading dial. If the net weight of the load is desired, the weight of the pickings is forwarded from the picking room. Recording the amount of impurity in each car is a new wrinkle in mine management and it enables the operator to weed out the undesirables at his plant.



Dumper Holds Car by Wheels

In dumping the car is completely reversed, but most of the coal falls out long before the complete reversal takes place. The dump makes a continuous movement of 360 deg. and not merely a rocking motion through part of a revolution and back again. One push of the button suffices to overturn the car and right it.

with its teeth by means of an adjustable friction block. To minimize the danger of damage to the mechanism as a result of backing a locomotive at too great speed into the trip out in the yard the head shaft has been made extra heavy. The top strand of the chain runs in a steel cageway composed of a bottom channel with hold-down angles. The return strand moves in a track made of two angles with structural brackets supporting it from the ties. To prevent empty cars from dropping back and damaging the chain hooks, a series of pivoted dogs have been installed at the tail end of the tripmaker.

Coal Fed to Screens by Feeder

Upon discharge from the mine car the coal passes into a receiving pan. This is made of ¼-in. plates and is fitted with flaring side guards to prevent spillage. The bottom of the pan is equipped with a two-compartment feeder, controlling delivery of the mine product to the screens. A vertical flygate has been installed in the pan ahead of the feeder to permit delivering cars of coal alternately to the two compartments. This gate is operated by an air cylinder, the control valve of which is moved through a lever attachment to the dump on the main tipple floor. The dump attendant operates this lever and thus distributes the coal to the screens.

The feeder is of the steel apron type and is 17 ft. long, center to center of sprockets. It consist of three strands of 4-in. pitch steel-thimble roller chain to which are fastened ¼-in. double-beaded pressed-steel pans, each 6 ft. 6 in. in length, the whole forming a continuous conveying table. The head and tail shafts are of the same size as those upon the car-moving mechanisms already described. The feeder is driven from an eccentric shaft servir ; the shaker screens, transmission being made through a thimble-roller chain and a single spur-gear reduction. The driving sprockets are keyed onto the hub of the driving pulley on the shaft of the screen so that the feeder may be operated independently when it is desired to load emergency run-of-mine coal.

The feeder is self-contained and carried on a heavy structural-steel frame having $\frac{3}{16}$-in. side and partition plates, the latter dividing the feeder into two equal compartments. A $\frac{1}{8}$-in. plate pan is suspended beneath the return strand of the feeder to collect any dust that may adhere after the coal is discharged. A chute leads from the feeder to the screens. This is built up of $\frac{3}{16}$-in. side and ¼-in. bottom plates. It is equipped with a counterweighted flygate so that it is possible to bypass run-of-mine coal to a chute by means of which cars on track No. 1 may be loaded. The discharge end of the chute is hinged and counterweighted so that it can be raised into the clear when the track over which it is suspended is not being utilized for loading. In this respect the chute is not dissimilar to a loading boom.

Screens Hang From Beams by Adjustable Rods

From the feeder the coal passes directly to the screening rig, which consists of a shaking lump screen, a shaking nut screen, and a slack pan. Each of these three units is divided by a partition into two compartments, one serving each picking table. The lump and nut screens are each 6 ft. wide and 16 ft. long, each compartment thus having a screening area of 48 sq.ft. The screens are supported from the tipple framework by means of adjustable hanger rods. This method of suspension increases the life of the equipment and effects a saving in power consumption by avoiding excessive flange friction that commonly is encountered where the screens are supported on roller mountings. Each hanger rod is equipped with a removable cast-iron bearing box at its extremity, these bearings being

fitted with grease cups, allowing easy application of lubricant.

Both screens and slack pan are built up of ⅜-in. side and ¼-in. bottom plates. The lump screen is provided with perforations 3½ in. in diameter, and the nut screen is made of stepped plate having 1⅜ x 1⅝-in. perforations. Both screen plates are made in removable sections. Thus other sizes of coal may be prepared if desired, or solid sections substituted for loading run-of-mine coal over the screens and delivering to a car by way of the loading boom.

Driving Pulley Functions as Fly-Wheel

The screens are given a reciprocating motion by a 25-hp. motor through a single belt transmission to the eccentric shaft. The sections are balanced against each other so as to reduce vibration. The driving pulley is heavy and functions as a flywheel. It is connected to the eccentric shaft through an 18-in friction clutch. This arrangement provides for disconnection when it is desired to operate the apron feeder independently of the screens, as already has been mentioned in describing the operation of the feeder.

From the screens the coal passes to the picking tables, which are two in number and duplicates in construction. These are of the "doughnut" type. Each is 20 ft. in outside and 10 ft. in inside diameter. They are built up of heavy steel rail bent to a circle and supporting a circular steel frame, upon which is carried a ¼-in. removable cover plate in sections. Each table is provided with a partition which separates the transporting bed into two compartments. Stationary guard angles are placed upon either side of the tables.

Each Car of Coal Can Be Picked Separately

Eight cast-iron pedestals support each table, each equipped with a 12-in. diameter single-flange cast-iron roller, bronze-bushed on a steel axle. These tables are driven by a 25-hp. motor, transmission being made through a line shaft and suitable bevel- and spur-gear reductions. The master wheel is a segmented cast-iron ring secured to the under side of the table. A thrust roller is installed to maintain alignment between the driving pinion and this gear. The driving bevels on the line shaft are equipped with jaw clutches so that either table may be operated independently of the other when desired. The speed of each table is about 50 ft. per minute at its center line or mean diameter. When sufficient orders are on hand to warrant the operation of both tables, the dump attendant on the main tipple floor sends cars of coal to each alternately. Thus when the preparator is working to capacity a space of about 9 ft. separates each car load from that next dumped upon each table, thereby making it possible to pick every loader's car of coal individually.

Beneath each table and resting on the floor is a circular trough. Refuse extracted from either the lump or nut divisions is tossed into chutes which lead to this trough. Here this extraneous material is picked up by bracket scrapers suspended from the under side of the moving bed plate. Chutes for delivering the refuse from the troughs under the tables to bins are built up of ¼-in. bottom and ⅜-in. side plates.

Each chute is suspended from a 1½-ton capacity scale provided with a quick-weighing dial bearing bold figures so as to permit easy reading by the picking boss stationed near the end of the screens. Each chute is equipped with a "chop" type of gate to hold the refuse

ELECTRIC SLATE LARRY UNDER ROCK-AND-REFUSE BIN
Refuse is carried in a hopper which revolves on a turntable. A small conveyor carries the rock wherever it may be needed.

during the weighing operation, and a flygate is provided between the chop gate and the refuse bin so that the rock from any individual car of coal may be drawn into a receptacle for the loader's inspection. By subtracting the refuse weight from the coal weight of the car, as determined by the weighmaster, the net weight of each carload can be computed. This is seldom done, however.

When the percentage of refuse in a car is high, this material is saved for the miner's inspection at the end of the day. If a man persists in loading dirty coal after having been cautioned repeatedly, he is allowed to seek employment elsewhere. This is a detail of construction and operation that is decidedly new, but doubtless one that ultimately all operators will adopt, as it provides an excellent check upon a careless or unskilled workman.

Ease of Inspection Reduces Dirt in Coal

Heretofore the loading of dirty coal has meant extra work for the men employed at the picking tables. It was impossible to know which were the good and which were the careless loaders within the mine. Now, even though the men are seldom checked, they realize that the equipment for so doing is at hand, and consequently they do not risk the loading of a car with a large amount of rock. The refuse-weighing apparatus serves its purpose quite as effectively as if it were being used upon each car. The nut and lump sizes are picked simultaneously by men stationed along both the inner and outer edges of the tables.

After passing over the tables the lump sizes are united on one loading boom for delivery into railroad cars beneath. This boom is 45 ft. 6 in. in length, the hinged section being 21 ft. 6 in. long. It is built up of two strands of 9-in. pitch chain supported by 3½-in. rollers. Double-beaded pressed-steel pans 36 in. long are attached to the chain so as to form a continuous conveying surface. The inner bars of each chain are extended so as to form sides to the pans.

This device is driven from the picking-table line shaft through a roller chain transmission, the driv-

ing sprocket of which is equipped with a jaw clutch. Its speed of operation is about 75 ft. per minute. It is carried on a structural-steel frame, the top strand running on 20-lb. rail and the return strand on an angle track. The hinged section is counterweighted and is raised and lowered by an electric hoist of two tons capacity. It may be moved up or down at the rate of about 17 ft. per minute.

For receiving rock and refuse from the picking tables a three-compartment bin has been constructed below and to one side of the picking room. This bin is fitted with a chop type of gate that is operated from the track beneath. All refuse and rock is loaded into an electric trolley-type of slate larry and removed some distance from the preparator before being dumped as filling material.

The tipple equipment has a capacity of 225 net or 200 gross tons per hour. As will have been noted, arrangements for loading are such that delivery into railroad cars can be accomplished in a variety of ways and in various combinations, as follows: On the No. 1 track (under the loading boom), lump, lump and nut, lump and slack, picked run-of-mine or emergency run-of-mine; on the No. 2 track, nut, slack, or slack and nut. By means of a flygate and chute the picked lump coal from both tables may be bypassed to cars on track No. 2. The picked nut sizes from both tables may be delivered to a chute for loading cars on track No. 2, or through a flygate and chute, may be sent with the lump over the loading boom to cars on track No. 1. The slack coal may be loaded through a chute into cars on track No. 2, or bypassed through a flygate and chute with the nut sizes to the loading boom over track No. 1. The loading equipment is highly flexible and allows for a wide range in combinations of sizes. The building and the apparatus contained within it were designed, fabricated and installed by the Heyl & Patterson Co., of Pittsburgh, Pa.

Method of Dumping Mine Rock by a Self-Tripping and Self-Closing Bucket Traveling on a Ropeway

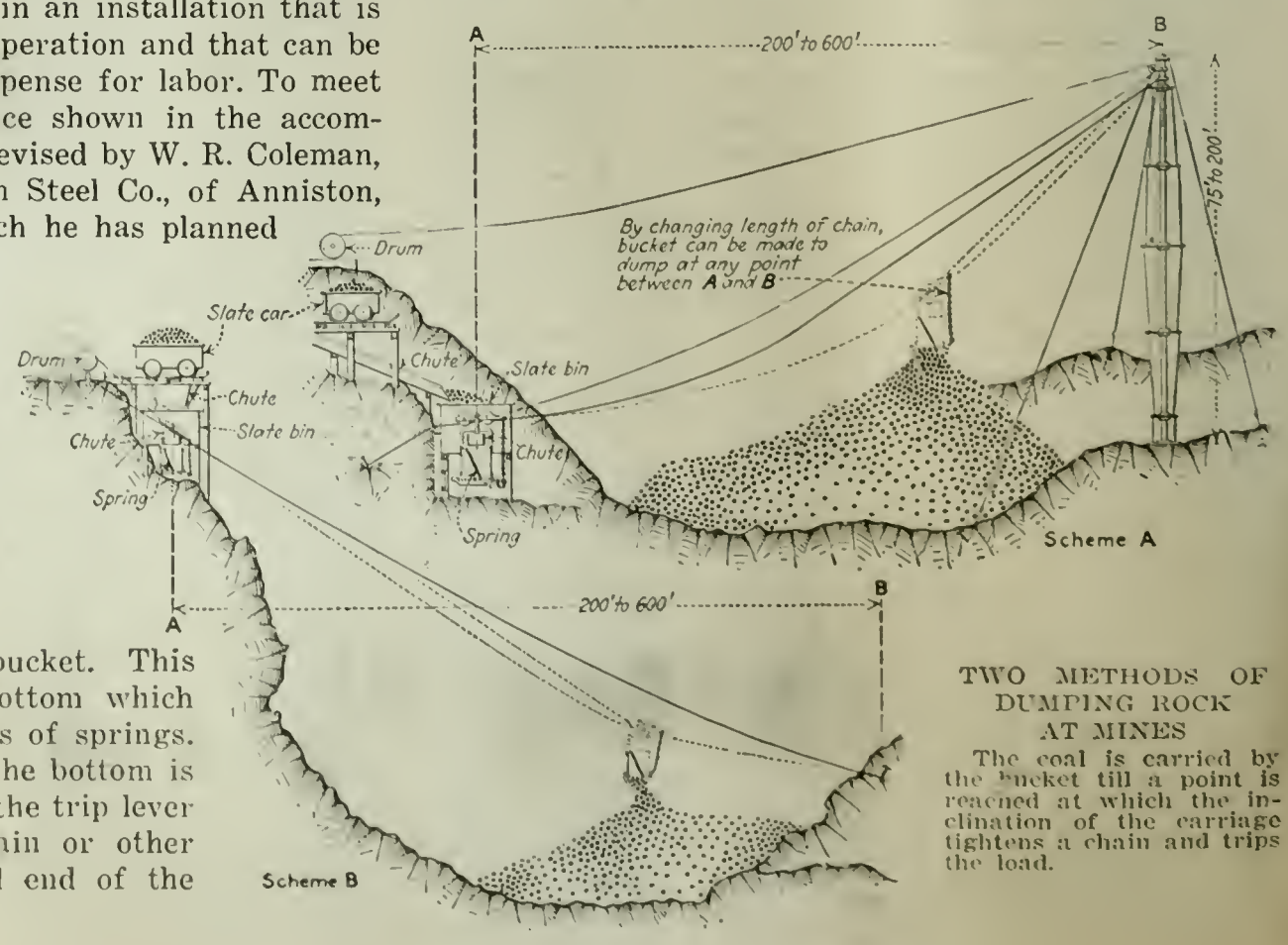
By Raising a Derrick or Tightening the Rope the Catenary Curve of the Latter May Be So Arranged That the Rock Is Automatically Dumped at Any Level or Place Desired

SLATE disposal is no small problem at some coal plants, many having been the schemes devised and put into practice to accomplish the desired result. Among the more common of these is the use of mine cars, aerial tramways, special slate cars and larries, while in some instances, where operations are large and the quantity of material to be moved is excessive, standard-gage side-dump cars are employed. Dragline scrapers also have been used with success.

With most mines, especially where the quantities of slate to be dumped are of only moderate size, the primary desideratum is to obtain an installation that is cheap in first cost, reliable in operation and that can be handled with a minimum of expense for labor. To meet these conditions the contrivance shown in the accompanying illustration has been devised by W. R. Coleman, chief engineer of the Anniston Steel Co., of Anniston, Ala. Although the device which he has planned might be termed an aerial tramway, it differs radically from such arrangements as are usually installed, as the dumping operation depends solely upon the inclination of the supporting or track rope. Referring to Scheme A, slate is dumped from the mine car into a chute or hopper, from which it is drawn into the disposal bucket. This is provided with a hinged bottom which when empty is closed by means of springs. When in position for loading the bottom is held shut by a weighted latch, the trip lever of which is connected by chain or other flexible means to the forward end of the supporting traveler.

When loaded, the bucket is hauled out upon a track cable which extends from the slate bin to the top of a suitable tower. The height of this tower as well as its distance from the point of loading is made to suit conditions, both being variable through wide limits. For practical reasons the span should not exceed about 600 ft., while the height of the tower will seldom be more than 200 ft.

When unloaded the track cable hangs in a smooth catenary curve. The load on it, however, changes its slope radically and the less initial tension upon it the



TWO METHODS OF DUMPING ROCK AT MINES

The coal is carried by the bucket till a point is reached at which the inclination of the carriage tightens a chain and trips the load.

greater will be the difference in grade in front of and behind the load. As may be seen, the traveler supporting the bucket is provided with two pulleys, the hanger being pivoted between them. This traveler accordingly takes the inclination of the track rope while the hanger remains vertical. As has been stated, the latch of the bucket is connected to the forward end of the traveler by means of a chain. As the inclination of the traveler increases, the chain first becomes taut, then trips the bottom, allowing the contents of the bucket to be discharged, whereupon the springs return the bottom to its closed position, where it is again latched as soon as the bucket is lowered to a more nearly level track cable.

Scheme B shows a modification of this device or, rather, how it may be adapted to transporting slate from a higher to a lower elevation. In this case a highly-tilted traveler permits the latch to remain closed, while a level or more nearly level position trips it. Regardless of whether Scheme A or B is followed, the point along the track rope where discharge will take place is governed by the length of chain between traveler and latch.

It will be at once appreciated that this apparatus is simple and comparatively inexpensive. In many instances the traveler track may be old hoisting cable from the shaft. If the loads to be handled are excessive, twin track cables may be installed. The chief advantage of the whole scheme, however, lies in its simplicity, ease of operation and reliability. All parts may, moreover, be built cheaply yet of ample strength.

Large Dump Cars for Use in the Absolute-Removal System of Stripping Overburden from Coal

Will Carry Rocks Up to 18 Tons Weight—Gives 5 Ft. Clearance for Dumping—Will Hold 43 Cu. Yd. of Material and Discharge Running or Standing and Right or Left

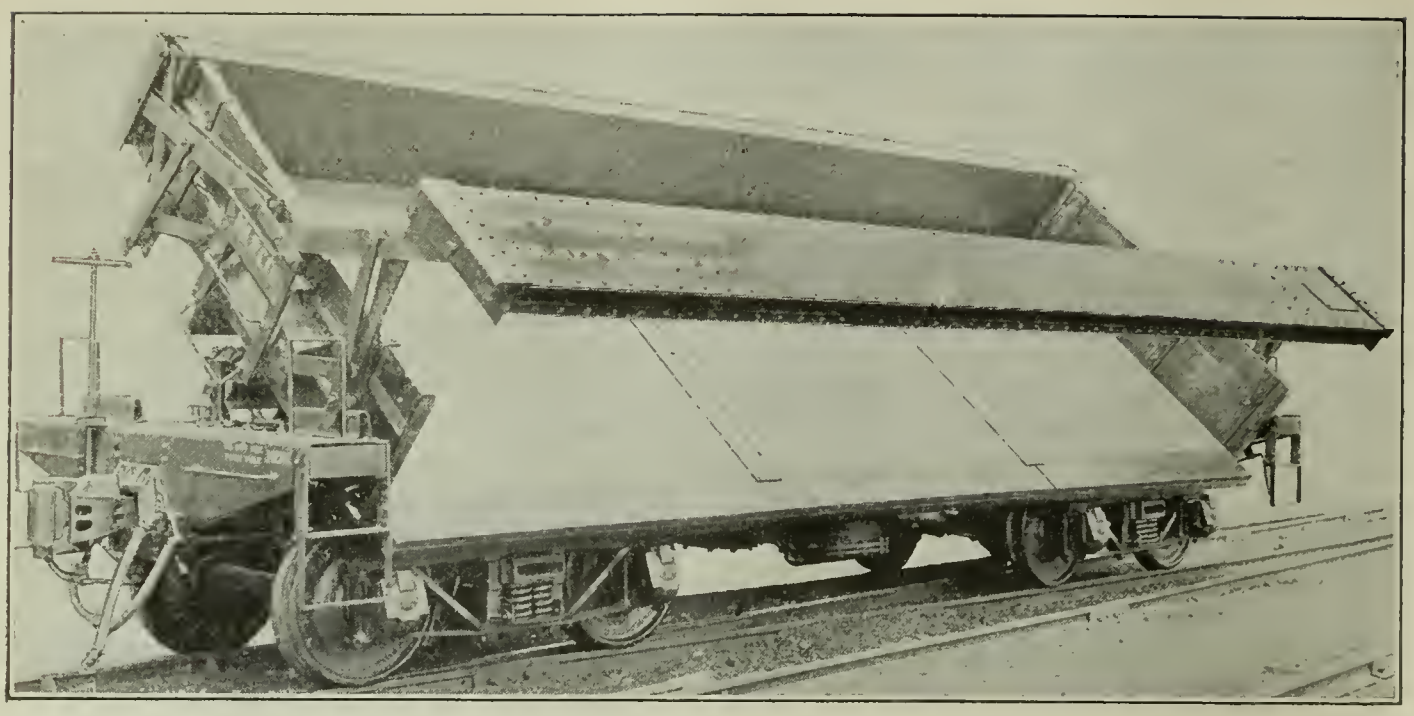
YEAR by year the stripping of coal, where this process of mining is possible, becomes more and more popular. This process of mining has many advantages over underground methods, not the least of which is the greater safety gained. Starting from a small beginning with hand shovels and wheelbarrows the equipment employed has steadily increased in size as have the strip pits until today the world's largest steam shovels are used in this industry.

Two general methods of operation are used in handling overburden above coal beds—the casting and the absolute removal. The casting method, as its name implies, consists in moving earth by steam or electric shovel or dragline excavator only. In the absolute-removal method excavated material is loaded onto cars and hauled away to a spoil bank at some distance. The former is available in general where the coal bed is level and cover does not exceed more than about 40 ft.; the latter where the coal bed is contorted and the removal of overburden can be accomplished only in two or more lifts. This is the procedure rendered necessary by conditions existing throughout the anthracite region.

Unfortunately earth moving has been, or at least was, considered, when coal stripping began, to be a contractor's job, and as such one demanding contractors' equipment. This was in most cases small and as a rule has so remained, and in fact in most regions the contractors engaged in this work have not begun to show the same enterprise as has been exhibited by railroad builders. In most strip pits now employing spoil cars, for instance, these cars are of narrow gage and comparatively small—that is, one to two cubic yards capacity. Thus a giant job is attempted with a pigmy tool.

Utilization of equipment more nearly commensurate with the work in hand, however, is rapidly gaining favor. Many of the coal companies as well as the stripping contractors have seen the advantage derived from using large units. Nowhere is this advantage more potent than in the cars employed in spoil transportation. In order to be effective in this service a car must be flexible, reasonably light in comparison to the load it will carry, must be sufficiently rugged to withstand successfully the neglect, abuse and general punishment to

LOADING SPOIL INTO TRAIN OF DUMP CARS STANDING ON THE BANK OF A THIRTY-FIVE FOOT EXCAVATION



Dump Car

Weighs empty slightly under twenty-six tons. Rated capacity forty tons or 20 cu.yd. Operated by air it has such reserve power that when any material lodges, the car may be righted and tipped till the obstruction is freed.

which it inevitably will be subjected, but above all it must be capable of being quickly discharged without the expenditure of any great amount of manual labor.

Standard-gage side-dump cars when properly constructed fulfill the requirements above enumerated admirably. As built by the Kilbourne & Jacobs Mfg. Co., of Columbus, Ohio, one of the oldest builders of this type of equipment, such a car is fitted with side boards which upon dumping are raised to such a height as will permit the discharge of material of any size that can be loaded upon the platform. Discharge is effected by means of air cylinders that draw air from a supply reservoir upon each car. This relieves the tank on the engine of this burden and renders possible the simultaneous discharge of several cars or a complete trip when the train is standing still or moving rapidly forward.

Discharge of the trip may be controlled from the locomotive or from any desired car in the train. After the cars have been emptied of their contents they are righted by reversing the action of the cylinder and making a return stroke of the piston. The return of the car body to normal position is thus both rapid and positive yet under the perfect control of the operator. The only air connection between cars is made by means of an ordinary air-brake hose and the reservoir upon each car holds enough air to discharge and right the car body several times without replenishment.

As capacities are figured upon a car box level full an amount of material appreciably larger than that indicated may be loaded. A car of the capacity mentioned, when completely filled as far above the side boards as is possible without spilling, will hold 43 cu.yd. or even more. It will dump in from ten to thirty seconds. The material flows without interference, because when the door is opened there is approximately 5 ft. of clearance. Cars like these reduce the delay to traffic and make it possible to dump from tracks which are in use for other purposes. Rocks up to eighteen tons in weight have been handled on these cars.

DUMPING THREE CARS OF SPOIL BEYOND EDGE OF TIES ON A RUN AND FINISHING OFF BERM WITH DITCHER

The flanger, ditcher or scraper behind the rear car cleans up the edge of the dump so that the next trip will find an unobstructed site for discharging and so that if necessary the track can be relined to a point nearer the edge of the dump without any hand shoveling. Note how the gates flung upward about five feet clear of the car bottom give the material such fairway that it does not choke but shoots outward so that much of it travels to the bottom of the dump.

CLUBHOUSE AT IDAMAY MINE OF CONSOLIDATION COAL CO., IS VISITED BY THE WEST VIRGINIA COAL MINING INSTITUTE

West Virginia Coal Mining Institute Meets in Fairmont

Progress in Mine-Car Construction—Was the Carboniferous Era a Reign of Terror?—Testing Out Protective Electrical Devices—Mules Versus Storage Batteries—Haulage Accidents

ASSURANCE could always be felt that the West Virginia Coal Mining Institute would receive new impetus whenever it would meet in Fairmont. Why it has not held meetings there more frequently is a puzzle. Bluefield and Fairmont are far better centers than Huntington and Charleston, as far as attendance is concerned. The number present at the meeting of June 7 and 8 at Fairmont carried memory back to the earlier days of the institute, when it was stronger than it has been in recent years but hardly any more active than it proved to be at this last meeting.

J. W. Bischoff, of Elkins, the president of the institute, opened the meeting with the annual address, declaring that during the war the great problem was to get coal and any makeshift was excusable if it produced the desired output. Today with the mines idle much of the time for lack of orders and with prices too often below a remunerative level economy is the most important of all needs, as indeed it is even in normal times. He therefore urged the importance of the institute as a means of acquiring a knowledge of the principles of economy in operation.

Cars of Large Capacity Yet of Small Size

Ira E. Stevens, mining engineer and manager of the mine-car department of the Fairmont Machinery Co., gave an extemporaneous address on "The Mine Car and Mine-Car Truck Design," discussing the evolution of the mine car from a simple box to a box with flares, then with offsets and finally square once more but with a housing over the wheels. He described the development of the car door and expressed his preference for a door that is hinged so as to lift vertically as against the door that merely swings from a crossbar to which it is directly hung.

He favored combination cars with wood bottom and steel sides, the corrosion of the steel bottom having brought prompt discredit on the all-steel car. The use of an axle box that made it possible to lubricate all the rubbing parts and which would run as long as 2½ years without relubricating was strongly urged as a big improvement on cars that have to be oiled "as often as you see them." The solid corrugated plate truck with divided axle was described and its advantage emphasized. The speaker laid stress on the value of roller bearings.

In the discussion Mr. Little, of the Star Car & Foundry Co., declared that roller bearings had apparently come to stay. Ninety-five per cent of the product of this car factory is roller-bearing cars. The Hyatt Roller Bearing Co. puts out 200,000 mine-car roller bearings per year. All the trouble in the past with these anti-friction devices arose from the faulty construction of the boxings in which they ran and in using a bearing too short for its diameter.

Carboniferous Era a Period of Disturbance

Josiah Keeley, general manager, Cabin Creek Consolidated Coal Co., addressed the institute on "The Origin of Some Local Coal Formations." His paper was a really eloquent attempt to correct the general belief that the carboniferous era was a period of gentle upheavals and slow sedimentation. Prefacing his remarks by an account of the early stages in the formation of the world, when the vapors of which it was composed condensed into an envelope of liquid which was responsive to the attraction of the sun and moon, as is the water of the oceans today, he asked his hearers whether the carboniferous era, which lay between our period of quiet and the period just described, was not in a sense a reign of terror marked by convulsions and cataclysms and by rapid depositions of material consequent on volcanic action—a condition far different from what geologists in recent years have hypothesized for that era.

The discussion was short and not as animated as might have been expected. With only one fault in the bituminous section of Pennsylvania—that in the first basin—and one dyke — that near Brownsville — and only one fault — the Warfield—and no dyke in West Virginia one would naturally be disposed to think that the carboniferous measures must have been laid under conditions of unusual quiet. And yet it is questionable whether even these disturbances occurred when the measures were being deposited or took place some time later. The persistence of seams and even binders seems to sustain amply the orthodox view that the carboniferous era was one of quiet which was broken only

at its close, when the "Grand Push" occurred, as the state geologist of Pennsylvania, G. A. Ashley, terms it. Frank Haas and A. C. Callen welcomed the boldness with which the author criticised the theories of the present-day geologists but they refused to commit themselves to any approval of his declarations.

Much Supposition, but No Sustaining Proof

Among Mr. Keeley's statements was one to the effect that he doubted if the peat and lignite of recent deposition would ever in the progress of time be converted into coal. For all his theories, Mr. Keeley advanced no proof except to point out that at the same horizon shale was found in one place and sandstone in another and that beds of splint coal and cannel were found in juxtaposition with beds of ordinary coal. Much remains to be determined, but surely nothing is more certain than that small readjustments and quiet sedimentation with some erosion marked the carboniferous era, though toward its close mountain masses were being pushed up in the East and were tending to rumple the beds along what is now the eastern rim of the field, thus folding the beds to the west in miles-wide corrugations and bringing to an end the carboniferous period.

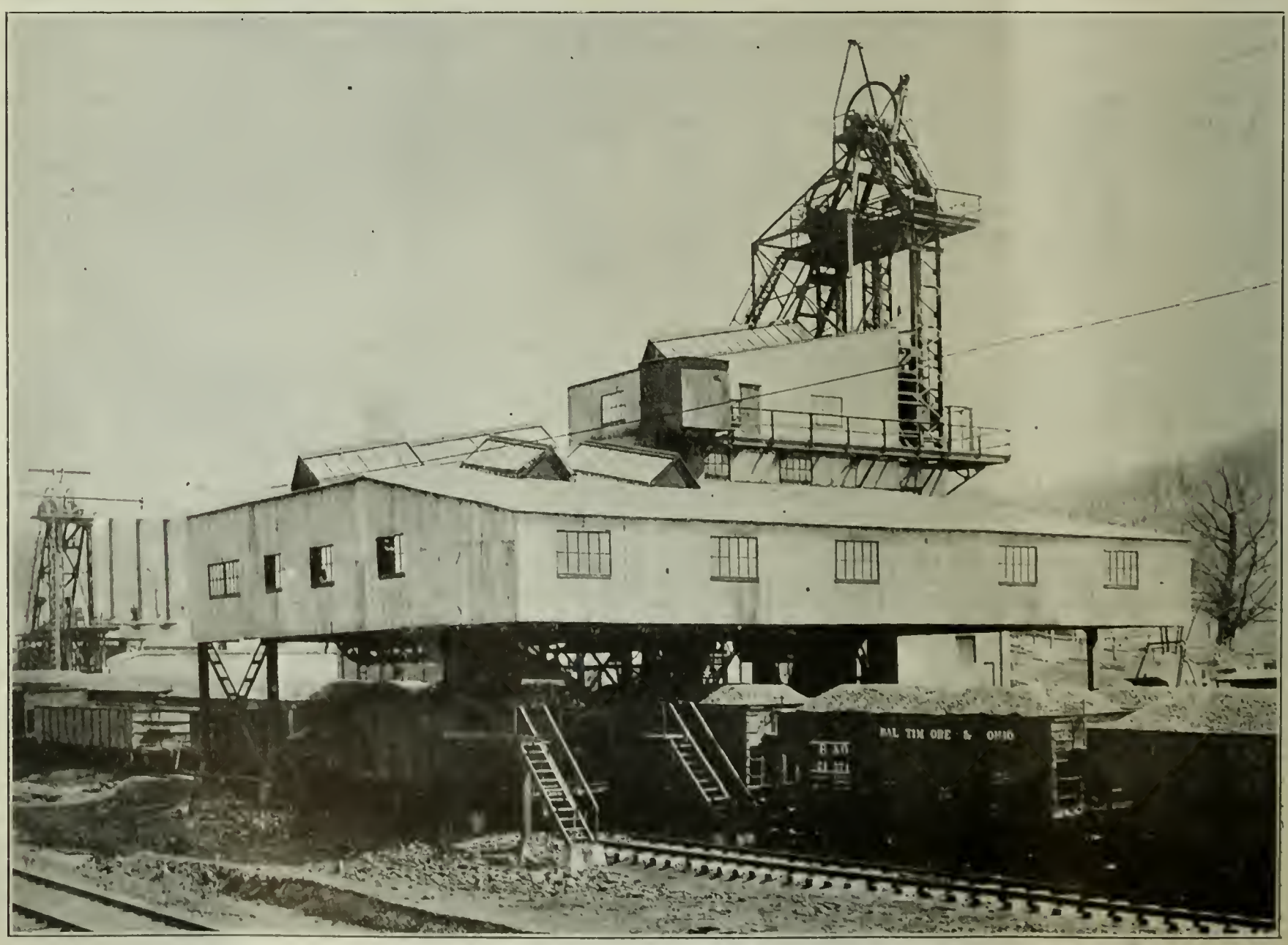
B. T. Grim's paper entitled "Protection of Electrical Equipment" followed. Mr. Grim is of the power and mechanical department of the Consolidation Coal Co. The introduction of electricity has been the cause of many fires in the mines, and these the recently introduced electrical devices seem likely to make less frequent, dangerous and destructive. He declared that arrestors should not be discharged into the mine rails, and that all protective devices should be tested by artificially creating the conditions against which the devices were intended to guard, watching them meanwhile to see that they furnished the desired protection. It was better engineering to spend time testing the apparatus than to expend it in making repairs after the electrical equipment had been damaged.

In the afternoon E. E. Boon, manager of the coal and oil section of the Westinghouse Electric & Manufacturing Co., made an excellent talk on "Storage-Battery Versus Reel-Type Gathering Locomotives," presenting the following table of relative costs:

	Trolley Cable-Reel	Trolley Rope-Reel	Storage-Battery	Combination
First cost	100	105	142	139
Total installation cost	150	160	165	195
Interest and depreciation	16	17	26	27.5
Yearly maintenance	9.5	6.2	5	7
Power	1.2	1.2	1.1	1.2
Attendance	1.0	1.0	1.5	1.5

R. Dawson Hall inquired whether in making the calculation any consideration had been given to the fact that the storage battery drew on the night current and so consumed energy that was produced when there would be little load on the line and yet when there was enough load to make it necessary to keep the power-house force at work. It might therefore be regarded as cheap power that, if not used for that purpose, would make the night load per kilowatt excessively expensive to meet. Furthermore, as it avoided the peak periods of generation and use, it made the average power cost lower when power was purchased.

The author in reply said that the power was figured at the same rate for all kinds of locomotives; the power used by the cable-reel and rope-reel locomotives, though generated during the day, was charged at the same rate as that used by the storage-battery locomotives, which was generated during the night, and that used by combination loco-



HEADFRAME AND PREPARATION BUILDING AT IDAMAY MINE, IDAMAY, W. VA.

The reader will note the many skylights in the roof of the building and the convenient passageways for car trimmers. Light and other conveniences for cleaning coal efficiently are more evident in modern tipples than in those that preceded them. Formerly the windows at the side were regarded as a sufficient source of light.

VILLAGE AND PLANT OF IDAMAY, TAKEN IN THE BLEAK OF THE YEAR

Idamay is one of the newer plants of the Consolidation Coal Co., being in the area where a shaft is needed to reach the coal. This shaft is over 500 ft. deep. The Consolidation Coal Co. fortunately has the terrain in its favor in laying out its towns, few West Virginia coal-mining villages being so little cramped for room.

motives, which was generated partly in the night and partly by day. In consequence, the figures showing the relation that exists when all power is regarded as equally expensive would be modified so as to give a better rating to the storage-battery power if the hour at which the power was produced were duly considered. It may be added that one anthracite company, the power plant of which is already overloaded by day, is ordering its superintendents to requisition for storage-battery locomotives whenever they can be used and is doing this for the express purpose of cutting down the day load, which is excessively high. Mr. Appleton said that some depreciation charges against the storage battery should in his estimation be regarded rather as maintenance than as depreciation charges.

Live-Stock Haulage Still Advocated

C. H. Tarleton questioned whether it would not have been better to put live-stock costs into the table. He had found that in many places live stock had given better results than any kind of gathering locomotive. Josiah Keeley said that at one mine where 300 tons per day had been produced by a mule team and a single mule and where the coal could have been obtained with two single mules, a combination storage-battery locomotive was installed and it did not pull as much coal as the mules had been hauling. Scattered work might possibly have been the cause, the coal being drawn from five headings. The storage battery was hampered by the long distances it had to cover.

E. E. Boon said that in some mines where mules were in use short passageways from heading to heading had been provided, greatly shortening the distances the mules had to travel. When storage-batteries were introduced they could not use these short cuts and the ability of the storage-battery locomotives was accordingly reduced.

J. Appleton, of the Ironton Engine Co., said that where switches were made by the mine blacksmith, as was too often the practice, no two room switches were alike and derailments were frequent. It was advantageous to lay out the mine appropriately if the storage-battery locomotive was to be used. With 12-lb. rails in the rooms the locomotive had a hard time to keep on the track. Accumulator locomotives, given a fair opportunity, acquitted themselves with credit. He had known one 6-ton storage-battery locomotive to haul 132 two-ton cars per day. He advocated the use of factory-made switches with the curves at room necks of 18-ft. radius with 30-lb. switch rails and 30-lb. rail on the room entries. He had found that a storage-battery locomotive would pull as much coal as two mules.

Mr. Keeley said that with a real mule and a real driver as much coal could be hauled by one mule as by a storage-battery locomotive. Somebody then suggested that there were big differences in drivers and mules and that many mules could be purchased before an animal such as Mr. Keeley referred to could be obtained. Mr. Tarleton declared that good roads were as helpful to mules as to locomotives and that the roads of the Consolidation Coal Co. were fitted for either, 60-lb. rails being used on the main roadways, 40-lb. on the secondary roads, 30-lb. on the room entries and 20-lb. rails in the rooms. He found that live stock would gather coal for 10c. per ton less than any form of locomotive.

L. C. Ilsley called attention to the fact that the Bureau of Mines had established Schedule 15 under which storage-battery locomotives were being examined for approval. He stated that one locomotive had already been approved and that three others were under examination.

Depreciation, Depletion and Obsolescence

The next paper to be read was that by Frank Haas on "Depreciation, Depletion and Obsolescence." He declared that all these items were more or less charges not to be decided by accountants but by engineers. As for depreciation, he said, it paid to buy a new machine when the excessive upkeep of the old machine equalled the interest charges on a new machine plus its depreciation. Many a machine could go on working many years after it was no longer profitable to continue operating it, because the frequency and magnitude of the repairs made the upkeep excessive.

As to obsolescence, a machine became obsolete when the excess of cost of operating the old machine exceeded the interest charge on the new machine plus its depreciation. Formerly a mine could be equipped for as many dollars as there were tons of annual production. Now with a drift mine the investment was $2 per ton produced annually, with a shaft mine $3 per ton, and when loading machines were used the relative cost would be even greater. Machines had the advantage that they did not strike or migrate and that was one reason why they were so popular.

Mr. Haas declared that as shares of stock passed from hand to hand the directors who were intrusted with the conduct of the company's affairs were not justified if they did not make provision for charges large enough to balance the decline in values consequent on depletion, depreciation and obsolescence. If consideration to this fact were not shown, future purchasers of stock would find that the property which they acquired would be of considerably less value than that which the stock in the first place had represented.

W. E. Fohl then delivered an address on "Transportation Hazards as Applied to Mining." He said that according to British returns nine-tenths of the fatalities were due to carelessness of employees and eight-tenths to the negligence of the victim himself. He urged that failure to take thought was at the bottom of the failure to take care, and that this was often the outcome of fatigue, sickness, discontent with working conditions or with the personnel on the job or of disagreements or troubles at home. Healthy, happy men were in a degree protected against accidents. He then began to ask questions as to the precautions being taken against transportation hazards.

Speaking about the marking of manways, Mr. Reed declared that at the Columbia mine wherever manways crossed ropeways a band was painted along the manway, and the men were directed into and away from the length of roadway so marked by a sign reading "To the left" or "To the right," as the case might be.

When the question was presented as to the use of sprags, Mr. Reed said that he found that there were fewer accidents from sprags than from brakes, as brakes often failed and a good spragger rarely failed in the placing of a sprag. Another question presented was whether the substitution of locomotives for mules had increased accidents. A. C. Callen said that in twenty years the animal-haulage fatalities in Illinois, the returns from which he had examined, constituted 80 per cent of all transportation fatalities, the locomotive fatalities representing the other 20 per cent. This statement was somewhat thrown into the discard, as there was nothing to show how much coal was hauled by either method.

Another question raised concerned the safest type of coupling for mine cars. C. H. Tarleton said that at all new mines of the Consolidation Coal Co. the single-link coupling would be used, but he failed to say whether he believed this the safer form of coupling. The rules for clearance also were discussed, Inspector W. B. Riggleman declaring that 3 ft. of clearance should be required on the brake side. As a matter of fact the law does not specify any given amount but requires that the haulage roads in the mine "shall be made of sufficient width to permit persons to pass moving cars with safety." It is the state department that has ruled apparently that the distance needed for full compliance with the law is 3 ft.

In the evening the Northern West Virginia Coal Operators Association took the institute and its guests to the Fairmont Country Club and entertained them lavishly at a dinner. There was no speech making.

Advocates Larger Room-Entry Pillars

At the morning session of Wednesday R. Z. Virgin, professor of coal mining at Carnegie Institute, read a paper on "Some Considerations in Rib Drawing." Mr. Virgin said that no entries in the mine were subject to more stress than those which were used for the opening of rooms. These room entries nevertheless frequently had wholly inadequate pillars, though the main entries, which were subject to little stress, usually were provided with pillars of great size. He believed that it would be better to give more protection to the room entries.

He urged that the pillars if cut at an angle when they were being drawn would give a longer working face. A cutting line at an angle of 45 deg. to the pillar line would give the machines an opportunity to cut more coal than they could have where they cut the pillars at right angles to the length of the room. He also advocated making the break line parallel to the line of fracture of the roof because the latter then would break with less resistance, and would then fall at an even distance from the pillaring face and so bring less weight on the cutting face and it would be easier to hold the roof so that it would not jeopardize the men who were mining and loading coal.

He urged also that water should not be allowed to collect in idle rooms because the water would cause the floor to deteriorate and would make it impossible to get a fair footing for props and also would weaken the support of the pillars.

Joseph W. Reed declared that in pillar drawing there was an advantage in cutting the pillar at right angles to the room length and that the stepped pillar line was not a disadvantage even though it involved the support of a larger area of roof over the excavation. The cutting of the roof on an inclined line parallel to the line of break was both unsafe and unconservational.

Frank Haas declared that what Mr. Virgin regarded as a desideratum—the lining of the pillar face with the break line—was anything but an advantage. Keeping water out of an unpillared section did not appeal to him as good practice. Has not the floor of the mine, he asked, been subjected to wet conditions for centuries prior to mining, for coal in its natural state is always wet. So long as the mine floor is under water, new—that is, atmospheric—agents cannot affect it and it is better preserved in consequence. Dry conditions, he declared, accentuate deterioration.

Mr. Keeley could not assent to Mr. Haas' statement, for he said he had found in places that water had a distinctly bad effect. Mr. Virgin in reply said that near Wheeling he had much trouble from water flooding the workings. The river rose and entered the mine, and thereafter he could not find footing for props, and the pillars cracked. Continued submergence might be well, but if the air has once been allowed to act and if it be permitted to act a second time the result is not so favorable.

In regard to these contentions it may be said that the stepped roof makes it possible to let the roof receive at places the full support of the coal. Where the line is cut straight the roof for the whole length of the face is resting on props which, as placed in practice, are unequal to the load. In regard to the effect of water on the clay it may be said that the weight on the floor causes it to heave, giving the water opportunity to be more active in the disintegration of the bottom than it was before the coal was excavated. Where the pressures are not so great the floor is not broken, and the water cannot act to any depth. The natural floor may be wet on top and so freed from carbonate of lime, but lower down it may contain bodies of that substance that will dissolve and swell, causing the floor to become unduly weakened. The effect of water depends on the degree of pressure on the bottom and on the material of which the bottom is composed. In some mines water seems to act as a preservative.

Storage of Coal as an Operating Facility

W. A. Weldin, of Blum, Weldin & Co., engineers, of Pittsburgh, read a paper on "Coal Storage at Mines." He declared that, as pursued at mines, storage had two purposes: (1) to carry the mine over short periods of delay, such as are caused by failure of cars to arrive owing either to the railroad's inability to place cars according to its promises on that or the previous day or to the necessity for holding back cars that were imperfectly cleaned or needed some trifling repairs, or (2) to enable the mine to run when the orders called for specific sizes of coal and did not provide a balanced demand for all the sizes which the mine produced. He regarded the storage pile at the mines rather as an operating facility than as a corrective of the seasonal character of the coal industry.

It, however, had some seasonal value. The Lake shipments were largely of screened coal. While Lake movement was brisk and other shipments were unduly low there was apt to be an excessive demand for screen sizes and something should be done to find a place for the slack. Later the slack became in somewhat greater demand than lump or nut coal. He declared that storage should provide for the separate piling of the different sizes and held that the coal, when recovered, should be returned to the tipple above the screens, so that it could be resized.

Mr. Weldin said that a hold-up of cars for a few hours should no longer be a valid cause for wasting the time of daymen in the mine and on the tipple. The mines should run steadily all day long, and when loading into railroad cars was resumed then the storage machinery should be reversed and coal brought back to the tipple for loading. He said that often a manager was much pleased to find that three or four men on a holiday could load out a whole day's run and so make use of railroad cars where otherwise they would have to be held idle.

Sometimes when the railroad company has placed cars,

it may be hard to get out enough men to load them. In this case the railroad has a grievance, and the rating of the mine may be cut down. In cases the rating may be kept higher if enough coal has been stored to keep the mine running steadily regardless of the number of absentees.

Mr. Weldin said that coal could be stored in mine cars. This system though high in first cost saved labor, because the coal could be held and dumped without involving any additional charge. There were, of course, other advantages in having more cars than normal operation demanded.

Storage in bins has always been practiced in the Connellsville region, the coke ovens being charged at a certain time each day from the coal in the bins. Such storage also has been customary where railroad locomotives have to be coaled at night. At these places the benefits of the balancing effect of storage have always been felt. The main subject of Mr. Weldin's remarks, however, was ground storage. He remarked that it is easy enough to store coal. Many have embarked in it, forgetting that recovery is more difficult than storage unless proper preparations for recovery have been made. Speaking about storage over tunnels he said it might prove inadvisable owing to the freezing of the coal during severe winters.

Build a Pile of Piles, Not a Single Pile

In reference to fires in coal piles he stated that the forming of a single pile of coal by dropping the material onto the peak and letting it roll down the sides was likely to favor spontaneous combustion. Coal should be stored by dropping little heaps at different points in the yard. By making a number of such piles the coal could be built up so that the large and small coal would be completely intermingled. At some plants it has been possible to prevent heating by washing the coal prior to storage.

E. A. Holbrook, assistant director of the U. S. Bureau of Mines, spoke on the topic "The Bureau of Mines' Interest in the Coal Industry." Mr. Holbrook said that the Bureau of Mines' appropriation ran about 50c. for each man engaged in the industry. No individual service could well be rendered by the bureau with such a small appropriation. All the bureau could do was to point out the right methods and to ascertain what kinds of apparatus and equipment are permissible for use in the mines.

Should inspection be added to its duties the bureau's appropriation would have to be greatly increased. He hoped that this function would not be given to the bureau, but that duties such as these would be performed by state institutions. It was a great surprise to foreign visitors that the Federal Bureau had no regulatory powers and had been given only advisory functions. Mr. Holbrook said that the bureau was assisting much in standardization work. There was a need for greater similarity in track gages and other like dimensions and much need for greater uniformity in state laws regulating mining.

Bureau a Fact-Finding and Announcing Body

The bureau, he said, is a fact-finding body which acts as a clearing house for all the clearing houses in the industry. It drew together the experience of all individuals and institutes in the country and abroad and gave the digested results to the mining public of the United States.

William K. Wilbur, of the Koehler Manufacturing Co., described the Wheat lamp, which gives as much as 2.1 candlepower and is unusual in other ways. Francis McQuillan, of the Monongahela Power & Railway Co., of Fairmont, showed how a small company using machines rated at 400 hp. probably would supply generators capable of producing that amount of electrical energy, but if five plants went together they might be able to get along satisfactorily with 1,100 hp., though the aggregate capacity of the installed machinery would be 2,000 hp.

Where several plants are combined the several machines make their separate demands at different times and with care to keep the diversity factor low, by pumping at night and charging batteries at that time, the whole load of 2,000 hp. can be handled by generators rated at 550 hp. or 400 kw. There is, therefore, an advantage in central station power which is based not alone on efficiencies in equipment and better power-house management but on the lowering of the diversity factor by taking on the needs of plants which make demands for current at different times.

In the afternoon transportation was provided to the Idamay mine of the Consolidation Coal Co., where the shaft was inspected on the surface and below, a visit paid to the amusement hall and the power house. Idamay shaft is slightly over 500 ft. deep and, being a gaseous mine, the men use electric lights exclusively.

Government Wants Oil and Gas Valuation Engineers and Aids

THE U. S. Civil Service Commission announces that it will receive applications until Sept. 1 for positions under the income tax unit of the Bureau of Internal Revenue, Treasury Department, as follows: Valuation aid (oil and gas), at $1,200 to $2,500 a year; assistant valuation engineer (oil and gas), at $2,500 to $3,600 a year; and valuation engineer (oil and gas), at $3,600 to $4,800 a year or higher.

Appointees at an annual compensation of $2,500 or less, whose services are satisfactory, will be allowed the increase of $20 a month granted by Congress. Competitors will not be required to report at any place for a written examination, but will be rated upon the subjects of (1) physical ability, weighted at 10 per cent, and (2) education, training, and experience, weighted at 90 per cent.

Full information and application blanks may be obtained from the U. S. Civil Service Commission, Washington, D. C., or its representative at the post office or custom house in any city.

Want Work Divided Evenly Between All Men Working for Any One Company

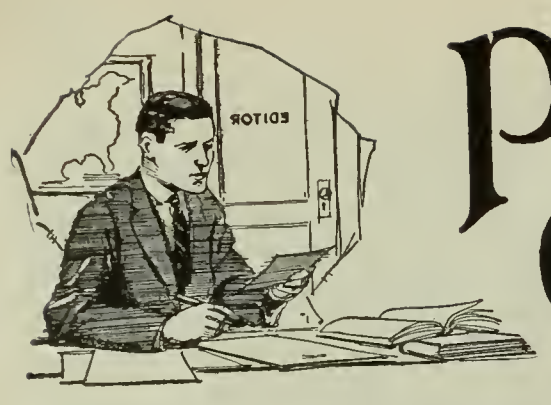
ONE thousand miners assembled at Petersburg, Ind., June 9, from all points in southern Indiana to protest against the Pike County Coal Co., a subsidiary of the Martin Howe Coal Co., of Chicago, hiring men to do syndicate work at the Atlas mine, north of Petersburg, the company having a score of miners at work at that mine cutting entries for winter trade. The miners contended the syndicate work should be divided equally among all men employed in the mine, numbering nearly 400. Matters were settled amicably when the men in the mine came out and told the protesting miners that they would refrain from further work until an agreement could be reached by the operators and the miners.

Illinois Mine Catches Fire; Men Escape

WHEN the underground machine shop of a mine belonging to the St. Paul Coal Co., a subsidiary of the Chicago, Milwaukee and St. Paul R.R., located at Mark, Ill., caught fire, June 10, it blocked the exit of 600 men but nevertheless they managed to escape. The shop is located half a mile back from the main shaft. It was announced that all the men had been checked out of the mine. The operation is in Putnam County, in the La Salle district.

It is understood that the Bureau of Efficiency will recommend that all statistical activities of the government be consolidated into a Bureau of Statistics in the Census Bureau, to embrace a division of mineral production statistics to include statistics now handled by the Geological Survey, and a division of occupational statistics to take over mine-accident statistics now handled by the Bureau of Mines.

Secretary of Commerce Hoover plans to improve the position of the United States in the foreign and domestic coal trade by the organization within his Department of a coal trade group under a supervisor, with assistants, and an advisory committee.



Problems of Operating Men

Edited by James T. Beard

Economy and Efficiency in Ventilation

Poor Mine Ventilation Means Loss of Efficiency. Bad Air Renders Men Incapable of Performing a Day's Work. The Daily Tonnage Drops Accordingly. Good Ventilation Quickly Pays for Itself.

THE letter of Henry Bock, entitled "Efficiency in Ventilation," *Coal Age*, April 28, p. 755, draws timely attention to the need of good mine ventilation. There is no way of estimating the real cost of failure to provide ample ventilation at the working face of a mine.

A comparison between a well ventilated mine and one that has little or no ventilation reveals a marked difference in the physical ability of the workers to accomplish the tasks given them. Even the most casual observer will notice this difference, on his visit to mines of either class. In the one there is action on every hand, while in the other nothing appears to move except at a snail's pace.

It is quite common on going into a mine to find one section of the workings where everything is in order and there is action. In another section of the same mine, perhaps vastly different conditions are observed. Disorder and complaint are on every hand. Generally, one has not far to look to find the excuse for this difference. It is in the quantity or quality of the air furnished the men.

No Miner Can Be Blamed for Not Working When Air Is Bad

Entering a place where the air is poor, we are not surprised to find the miner seated in the breakthrough where he can get what little air is passing. On calling his attention to the condition of his place, he yawns and manages to say, "Yes," and then yawns again, adding, "I'll attend to that after awhile." Continuing on our way through the section, we find a very tired lot of men and the animals, if any, have the same jaded appearance. The trouble is, there is not air or, I would rather say, oxygen enough to keep the men alive to their work. Everything drags along and the result is a low tonnage and a high cost-sheet.

This condition is not the fault of the men. They have complained from time to time, but there has been no response on the part of the management, who are wont to claim that this section of the mine is not a good producer. Even the foreman reports that the air is fairly good, but forgets that a man walking through a section consumes about one-tenth of the amount of air required by a man who shovels coal or mines a shot.

Few mine officials will deny that it pays and, indeed, is absolutely necessary to provide good ventilation underground. At the same time, the means to bring this about are often lacking in the mines of which they have charge. Once in a great while we find a board stopping that does not leak, at least for a year; but, as a rule, this kind of stopping is an ineffective means of distributing the air and should be condemned.

Build Solid Air-Tight Stoppings

To my mind, there is just one way to insure good ventilation at the working faces in a mine, and that is to build substantial stoppings on all main entries. Such stoppings should be built of concrete or brick laid in cement. Overcasts should be built of the same material. All of this class of work should be constructed in a manner that will lend support to the roof and not be destroyed or rendered ineffective by reason of settlement in the strata.

While there are many well ventilated mines, I know of none better than one mine I now have in mind where the stoppings are all built of brick. The main-entry stoppings in that mine are laid up three bricks thick for half the distance and two bricks thick the remaining half. On the cross-headings or flats, the stoppings are carried up halfway with a thickness of two bricks and finished with one brick in thickness the remaining half.

Stoppings Built by Contractor

All the stoppings are built by contract, the company furnishing the material and delivering it where it is needed, before the contractor goes to work. In this connection, it is interesting to note the work two men can accomplish when they have the necessary material at hand and there is no delay.

In contrast with this instance, I recall another mine that was old and poorly ventilated. The condition was such that the mine inspector compelled them to rebuild all the main-entry stoppings. He asked that there should be 15,000 cu.ft. of air per minute passing through the last breakthroughs on the main north and south entries, which were over a mile from the shaft bottom.

The work was to be accomplished in ninety days. In that case, the company took the opportunity of brushing the roof, which gave them plenty of good stone for the stoppings. With this material, they built 8-in. walls up against the old stoppings, which produced the desired result and has kept the mine ventilated during the past seven years. The new stoppings were all of stone.

GEORGE EDWARDS.

Pikesville, Ky.

Coal Pulverizing Stations

Efforts made by producers of coal to render their product adapted to the particular use of consumers and assist in its distribution.

WE read with interest the editorial that appeared in *Coal Age*, April 7, p. 612, entitled "Pulverizing Stations." It would seem that the writer of the article was not familiar with the methods employed by us in the manufacture and handling of powdered coal here in the West.

The plant where we manufacture this product is located close to and, indeed, is practically at one of our mines, where it has the advantage of being centrally situated with respect to our other mines, numbering seven in all. These mines are at distances apart varying from five to twenty-five miles.

The powdered coal is shipped in specially designed cars to our distributing yards in this city where it is bunkered. Distribution to consumers is made by large motor trucks, as we observe is recommended in your article. To the best of our information, we are the only manufacturers of powdered coal who employ this method of handling and distributing their product.

Again, the editorial states, "The man who has coal to sell must do his part to convert a potential into an actual market," which we are also doing by maintaining a department of experimentation that furnishes service and advice to the present consumer, in the handling of all engineering problems.

Our engineering department has perfected a scheme for marine installation that makes it possible to use restricted bunker space in ship bottoms. Such an installation will soon be made in a local boat, which we expect will demonstrate the practicability of the use of powdered coal in marine practice.

PACIFIC COAST COAL CO.,
J. T. Dovey, Assistant to the
Seattle, Wash. Vice-President.

Depth of Water, Airway Half-Full, Another Solution

Applying a principle in geometry, instead of employing an algebraic equation.

PERMIT me to offer the following solution for finding the depth of water in an airway having the form of a trapezoid and half-full, which question was asked and answered in *Coal Age*, April 14, p. 676. My solution does not depend on the use of algebra or a complicated formula.

This airway being a trapezoid having a width of 9 ft. on the floor and 6 ft. at the roof and its height being 6 ft., its sectional area, as found in the previous solution, is $6 \times \frac{1}{2}(6 + 9) = 45$ sq.ft. When the airway is half-full the area of the wetted section is, therefore, $22\frac{1}{2}$ sq.ft.

Now, if the two sides of the trapezoid be extended till they meet at a point, there will be formed a triangle whose base is the floor of the airway, or 9 ft. But, since the two sides approach each other $9 - 6 = 3$ ft., in a height of 6 ft., or at the rate of one foot in each two feet of height, the altitude of the triangle formed is $2 \times 9 = 18$ ft., and its area is $\frac{1}{2}(9 \times 18) = 81$ sq.ft. The area of the triangle above the water when the airway is half-full is then $81 - 22\frac{1}{2} = 58\frac{1}{2}$ sq.ft.

We can now apply the principle of geometry that the areas of similar figpres are to each other as the squares of their like dimensions. Or, in other words, the like dimensions of similar figures are to each other as the square roots of their areas. On this basis, the ratio of the altitudes of the two triangles is equal to the square root of the ratio of their areas.

Therefore, calling the altitude of the triangle above the surface of the water x, we have

$$\frac{x}{18} = \sqrt{\frac{58.5}{81}} = \sqrt{0.7222} = 0.85$$

$$x = 18 \times 0.85 = 15.3 \text{ ft.}$$

Finally, subtracting this altitude from the altitude of the large triangle, gives the depth of the water when the airway is half-full; thus, $18 - 15.3 = 2.7$ ft.

JOSEPH NORTHOVER.

Pittsburgh, Pa.

Safety in Machine Pillar Work

Safety, the primary object in coal extraction. The breakline in pillar work never regular. Greater protection afforded by solid coal than by post timbering.

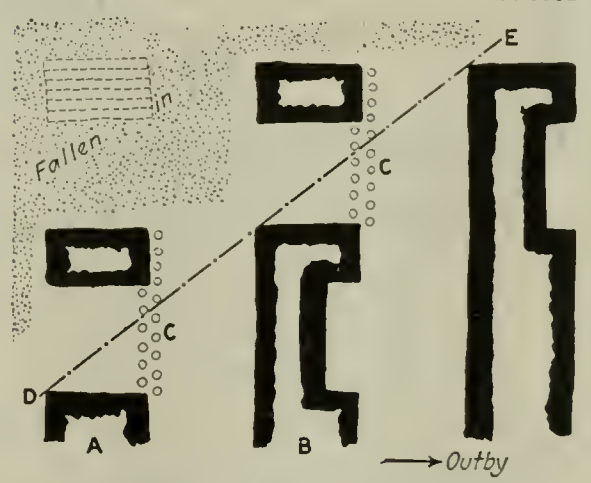
REGARDING the relative safety and completeness of extraction of the coal afforded by the two methods suggested of starting to cut the rib, in drawing back pillars on the retreating system, *Coal Age*, Apr. 28, p. 757, permit me to say, safety is always the first thing to consider in the extraction of coal.

The retreating method of mining if properly conducted, presents a maximum degree of safety, as the workmen are protected by the natural support of solid pillars of coal between them and the mine opening. When these pillars are made of suitable dimensions they are more effective in maintaining a secure condition of the roof than any artificial means that can be applied for that purpose.

How Roof Falls in Pillar Work

In order to illustrate my idea, I am presenting a small section of pillar-work on the retreating system, showing two pillars *A* and *B* that have been cut through by the machine, leaving two stumps of coal to be taken out with the pick. As here shown, in the retreating method the end of each consecutive pillar is behind that next adjoining.

Now, if the machine cut is started on the outby rib, as appears in the figure, the miner is protected by the solid coal behind him. On the other hand, if the cut was to be started on the inby side of the pillar the only protection afforded the miner or cutter



SHOWING SMALL SECTION OF PILLAR WORK

would be a few posts. Such protection would only be adequate if it were possible to maintain a safe unshattered condition of the roof by standing props.

My experience is, however, that even when posts are stood in double rows they will be knocked out by the fall of roof common in pillar-work. The idea often prevails among mining men that the breakline in pillar extraction will coincide with the line of the ends of the pillars, as indicated by the broken line *DE*, in the figure.

Instead of this, experience teaches that the roof will fall, in any and all directions, up to the line of a natural support, if the coal is taken out completely. It is also a fact that each successive fall will generally be of greater extent than the preceding one and will exert a greater crushing force on the supporting pillars.

Removing Stumps by the Pick Is Always Dangerous Work

But, referring again to the figure, before the stump can be removed with picks, posts must be stood as shown at *C*; and, unless these posts practically fill up the roadway as far as the waste, the roof fall that follows the taking out of the stump will either extend across to the opposite rib or so shatter the formation as to make the place unsafe for work.

In taking out the stump, the work should be started from the inby end and progress from *A* toward *B*, in order to lessen the effect of the crushing action on the decreasing size of the stump. In this manner, the work is made less hazardous, as it is constantly approaching the point of natural support.

If the work on the stump, however, was to progress in a direction from *B* to *A* the hazard would be greater; because, at the moment of the most imminent danger, the miner is at the greatest distance from the point of natural support and would have farther to go to reach safety.

Cutting the Rib from the Inby or Gob Side of the Pillar

In respect to the complete extraction of the coal, the plan of starting the machine cut on the inby rib of the pillar would doubtless give good results if safety of access could be maintained. In my opinion complete extraction depends on maintaining a safe access to the working face and this seems to me to be more certain when the work is started on the outby rib and the pillars cut through to the gob side.

Reference has been made, by way of comparison, to the plan of cutting across the ends of pillars with machine or pick. If advisable at all, this should be done only under an exceedingly strong roof, where a large area can be extracted before a fall occurs, and should be limited to the first fall that takes place.

Though not having seen the plan followed of starting the machine cut on the inby rib, I fail to understand how there would be either greater safety in its adoption or a more complete extraction of the coal. I have seen the machine cut started on the outby rib, under ordinary and bad roof conditions, and believe the remaining stump can then be extracted completely and with the greatest degree of safety.

Holsopple, Pa. I. C. PARFITT.

Angle of Shotholes in Blasting Coal

The depth to which a shothole is drilled may comply with the requirements of the law, but the direction of the hole make the shot dangerous. The angle the hole makes with the face of the coal has an important bearing on safety.

IN RESPECT to the real meaning of the wording of the Bituminous Mine Law (Art. 4, Sec. 9) referred to in *Coal Age*, April 14, p. 676, I fully agree with the editor that the word "undercutting" should read *cutting* and apply to any cut made in mining the shot.

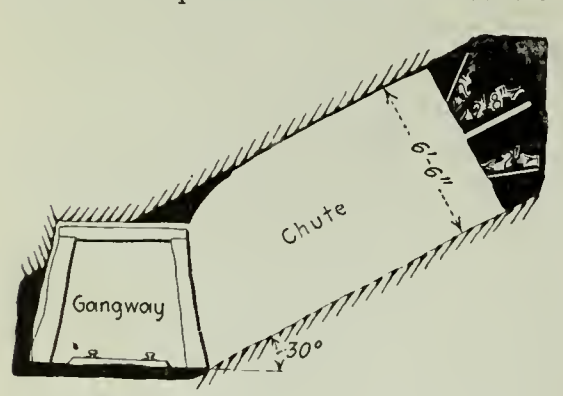
However, it occurs to me that a matter of greater importance which is not mentioned in the law is the angle that the drillhole should make with the face of the coal. To my mind, this feature should receive the careful attention of every mine foreman when inspecting a hole before it is charged.

For instance, a hole may be drilled to a depth much less than the cutting and yet the angle of the hole be such that the shot will be out of balance. When such a hole is fired there will most probably result a windy shot that would be dangerous if any gas is present, or much worse if dry dust has accumulated as is often the case in a mine known to be free from gas.

Firing Two Badly Placed Shots Causes Explosion

To illustrate this point, may I recite briefly the terrible result of firing two shots that had been drilled at a wrong angle with the coal face? The accident happened in a 6½-ft. seam having an inclination of 30 deg., and where the ventilation was natural.

In a room driven about 12 ft. to the rise of the gangway, a centercut had been made in the face of the coal, to a depth of 2 ft. 8 in. The place was driven narrow to be used as a chute when drawing back the pillars, in retreating. The accompanying figure shows the position of two shotholes,



DRIVING CHUTE ON A 30-DEG. PITCH

one in the top and the other in the bottom of the coal and each drilled to a depth of only 2 ft.

The top hole made an angle of about 40 deg. above the pitch of the seam, while the bottom hole dipped 20 deg. with the floor. Most men will agree that while the holes were not as deep as the cutting the angles at which they were driven required a much deeper cut to avoid danger.

The two holes were charged with black powder and fuse. The firing of the holes resulted in a windy shot and a dust explosion followed that killed 43 men. It was thought that both holes blew their tamping. Some argued that the shots did not explode at the same time and the flame of the second shot was projected into the explosive gases and dust created by the first shot.

Men Were Killed by the Afterdamp; Bodies Not Burned

There were 23 men working in that section and, while eight of these managed to escape, they died from the effects of their burns within three days. The remaining 20 men were killed with the afterdamp which was carried by the current into another section of the mine. The velocity of the air was about 120 ft. a minute. These men had no traces of burns.

Investigation showed that where the flame extended it traveled low near the floor. A mule boss was found dead with his lower limbs and body burned, while clothes that hung on the timbers near the place were not scorched. It appears that any of these burns were not sufficient to cause death, which must have resulted from the deadly afterdamp.

The force of the explosion was not great, as shown by the fact that no cars were overturned, nor any great fall of roof found on the roads. At the same time, much coked dust was found on timbers at a distance of 575 ft. from where the shots were fired. The explosion caused no fire, probably owing to the lack of oxygen in the mine air.

It should be stated that two men were found, three hours after the accident, lying unconsious in the mine and were revived when brought to the surface. They undoubtedly were at a point where the afterdamp had become more diffused so that the percentage of carbon monoxide or other gases present was not sufficient to cause death.

This accident happened, of course, where the miners were permitted to fire their own shots, a practice not yet abolished in many mines. Where competent shotfirers are employed, men will hardly take the risk of placing shots in a manner that they know will not be accepted and fired. This should be an argument in favor of the employment of shotfirers.

Inasmuch as the mine foreman is charged with the duty of safeguarding the lives of the men and the property, it is important that he should see that all shotholes are drilled at safe angles with the face of the coal. It is not enough to test the depth of the hole.

Peru, Ill. Gaston Libiez.

Inquiries Of General Interest

Endless vs. Tail-Rope Haulage on a Slope

Choice of Rope Haulage in a Slope Opening Depends on Practical and Physical Conditions. Endless System Gives Uniform Output, but Costs More to Install

WE ARE opening a new slope mine where it will be necessary to haul the coal from the bottom up the slope and over a tramway, a distance of about 2,000 ft. in all. As yet, we have not been able to decide what is the best system of haulage to employ. The choice lies between the endless-rope and the tail-rope systems. We have been advised to adopt the endless-rope system, which is said to have peculiar advantages that make it superior to the tail-rope system. The chief objection to following this advice, however, is the fact that we would not then be able to use our present hoisting drum, which has a spiral groove that would cause the cable to feed off the drum.

Will *Coal Age* or any of its practical readers give us what information they may have that will enable us to decide on the best course to follow; or state were we can get such information?

———, Mo. General Manager.

Regarding the choice between an endless-rope and other systems of haulage, on a slope 2,000 ft. long including the tramway, it should be stated that much will depend on such conditions as the grade of the slope, available trackroom at the slope bottom and on the tipple, the daily tonnage desired and conditions in the mine that will make possible a uniform supply of coal at the slope bottom.

Under favorable conditions, there is no question but that the endless-rope system of haulage affords a more uniform output and supply of coal at the tipple. This system, however, has the disadvantage that the rope is kept running continuously; and, in order to maintain a uniformly constant load on the engine, the cars must be attached to the rope at regular intervals, which requires a constant supply of coal at the slope bottom.

The system has one decided advantage over other rope systems in that it requires a minimum space or trackroom, both on the tipple and at the foot of the slope. In the use of another system of rope haulage, it will be necessary to provide sufficient trackroom at the top and bottom of the incline for the landing of any number of cars that the engine will haul.

Ordinarily, a tail-rope system would not be employed on a slope, unless the inclination was so slight that the empty cars would not run, by gravity, down the incline and drag the rope after them. While an endless-rope system can be used to advantage on slopes where the inclination is not too great, it is generally advisable to construct an engine plane or use a reversed gravity-plane system.

The engine-plane system of haulage is best adapted to steep inclines. The engine is located at the head of the incline and hauls the loaded trips up to the tipple and lowers the empties to the foot of the slope, which requires the use of a single track only.

Gravity-plane haulage is better adapted to more moderate inclinations. In this system, however, two tracks are required, an empty and a loaded track; or a passing track, or parting, must be arranged at the middle of the incline

to allow the two trips to pass each other. In this system, the descending empties help to balance the ascending loaded cars, which reduces the load on the engine.

In both engine-plane and gravity-plane haulage, the cost of installation is less than in endless-rope haulage, as the former are more simple and require a less length of rope than the latter. While a hoisting drum having a spiral groove can be used on an engine plane, a gravity plane operated with a single rope will generally require a double drum, in order to avoid the fleeting of the rope on the drum. The same is also true in an endless-rope haulage, for a like reason. When a double drum is employed, the grooves are circular instead of being spiral. As the rope makes but half a turn on each drum, there is no fleeting or side movement. One advantage of either the engine-plane or gravity-plane system is that it is not operated except when coal is to be hoisted.

Examination Questions Answered

Examination, Mine Foremen and Firebosses, Bituminous (Pa.), April 5-8, 1921

(*First-Grade Questions*)

QUESTION—*In shaft and slope openings generating explosive gas, what are the requirements in airways and travelingways according to law?*

ANSWER—The Bituminous Mine Law of Pennsylvania requires (Art. 6) that there shall always be two openings available for the use of the workmen; such openings, if shafts, to be not less than 200 ft. apart and, if slopes, 150 ft., except with the consent of the inspector. The passageway connecting the two openings must be kept in safe condition for travel; and (Sec. 3) a passageway 5 ft. high and 3 ft. wide must be cut in the solid strata around the shaft, at each landing.

Mines generating explosive gas in sufficient quantities to be detected on a lamp must have at least four main entries, two leading from the main opening and two from the second opening. Where locked safety lamps are used exclusively there must be provided a fifth main entry to be used wholly as a travelingway for the men, provided these entries are expected to reach a length of 5,000 ft.

Non-gaseous mines are required to have at least two main entries, one leading from the main opening and one from the second opening. Where these entries are expected to reach a length of 5,000 ft. the law requires that the employees shall be hauled in and out of the mine at the beginning and end of each shift; or a third entry must be provided to be used entirely as a travelingway for the men by which they can safely reach the surface.

Where the coal is less than 3½ ft. in height, the law requires the travelingway to have a clear height of at least 4½ ft.; but if the height of the coal is 4 ft., that of the travelingway must not be less than 5 ft. and its width 6 ft. Travelingways must be well drained and free from refuse, smoke and noxious gases, and contain no electric wires unless these are protected in a manner not to endanger life. The law further provides (Sec. 5) that an overcast or undercast passageway must be provided by which employees can cross the main slope if there are workings on both sides of the mine.

QUESTION—*Give your views as to the cause of crushing of coal pillars in working faces and roadways, and state what method you would adopt to overcome it.*

ANSWER—The crushing of pillars left for the support of the roof is due to the size of the pillars not being proportioned to the depth of cover, thickness of the seam and character of the roof, floor and coal. Crushing may result also from maintaining too large a standing area, which has the effect of throwing an excessive weight on the pillars. At other times, pillars are crushed by the advance of a creep or squeeze started in another place.

To prevent crushing larger pillars must be provided, taking out less coal in the first working. Also, every effort must be made to induce falls of roof in the waste and abandoned areas in the mine. A careful study must be made of the character of the roof, floor and coal, thickness of the seam and depth of cover, to determine the width of opening and size of pillars.

QUESTION—*Name and describe the explosive gases met with in bituminous coal mines. What are their dangers to life and injurious effects on the health of the workmen? Give their symbols and specific gravities and say where they are usually found and how the law requires them to be removed.*

ANSWER—There are three explosive mine gases, commonly found in the bituminous field: namely, methane or marsh gas (CH_4), specific gravity 0.559; carbon monoxide (CO), specific gravity 0.967; hydrogen sulphide (H_2S), specific gravity 1.1912. Olefiant gas (C_2H_4), specific gravity 0.978, and ethane (C_2H_6), specific gravity 1.0366, occur less frequently, associated with methane.

Methane being lighter than air accumulates at the faces of steep pitches or in rise workings where it may be found, or at the roof in level seams. The gas has no color or odor and is not poisonous. As it has no available oxygen it will not support life when unmixed with air. Likewise, the pure gas will not support flame; but mixed with air it forms firedamp, which is inflammable or explosive, according to the percentage of gas present.

Carbon monoxide is an exceedingly poisonous gas, very small percentages present in the air breathed being instantly fatal to life. It is rapidly absorbed by the blood from which it is removed with difficulty. This gas is found in close, poorly ventilated places where a gob fire may be in progress. It is also produced in the explosion of powder, or wherever the oxidation of carbonaceous matter takes place in a limited supply of air. Carbon monoxide forms a considerable proportion of the afterdamp of gas or dust explosions.

Hydrogen sulphide is also a poisonous gas and is generally to be found in low damp places in the mine, particularly if the coal contains much pyrite. The gas has a strong, unpleasant odor. Mixed with air in certain proportions it forms an explosive mixture that is dangerous.

QUESTION—*What precautions should be taken to safeguard the workmen in dry and dusty mines generating explosive gas?*

ANSWER—Such a mine should be well ventilated and the air distributed so as to meet the requirements in each section or split. Every means must be adopted to prevent an explosive condition of the mine air at the working face. Where safety lamps are required at any point, the entire mine should be worked exclusively with locked safety lamps of an approved type. Mixed lights should not be allowed, except drivers and motormen may be permitted to use open lights on main-intake airways. It is far better, however, for them to use electric cap lamps. Strict regulations must be enforced in respect to blasting. All shots should be charged and fired by shotfirers, after the men have left the mine. No accumulations of dust or fine coal should be permitted at the working faces, and all roadways and travelingways should be cleaned at regular intervals. Only permissible explosives should be used to charge the hole. All electrical installations should be made by a competent electrician familiar with mining conditions. It may be necessary to install an efficient sprinkling system throughout the mine. Finally, careful examination of all working faces should be made within three hours of the time when the men enter for work, and firebosses or safety inspectors should make frequent inspection of each working face throughout the day.

West Virginia Coal Output Gained While Coke Production Shrank During 1920

ALTHOUGH the annual report of the West Virginia Department of Mines for the fiscal year ended June 30, 1920, has not been printed, the report has been compiled and discloses the fact that during the period mentioned there were 882 companies reporting 1,440 operating mines, which together with the small wagon mines produced 89,590,274 net tons of coal, an increase over the coal produced during the previous year of 5,586,853.4 net tons.

Below is given a comparison of the production of coal and coke for the fiscal years 1919-1920, together with increases and decreases in net tons:

	1919	1920	Increase or Decrease	Change in Per Cent
Coal	84,980,552 2	89,590,274	5,586,853 4(I)	6.09 (I)
Coke	1,956,068	1,172,217	783,851(D)	40.06 (D)

From the above it will be observed that the production of coal for the year covered by the report was increased to the extent of 5,586,853.4 net tons over the year 1919, yet the production of coke during the same period decreased 783,851 net tons.

The estimated value of all coal produced during the fiscal year, according to the State Department of Mines, was $271,970,474.40; the value of the coal used in operating was $4,726,615.40 and the value of coal sold in local trade and to tenants was $5,225,208.40. It is also estimated that the value of coal used in coke ovens was $6,366,007, making the value of coal shipped from the mines $252,252,643.60. The value of coal mined by small country mines is estimated at $3,400,000. The Department of Mines estimates the value of all coal sold at $250,877,852 and of all coke sold at $7,455,300.12, a combined value of $258,333,152.12.

The change in value compared with the previous year is as follows:

Coal (Increase)	$66,364,424.44
Coke (Decrease)	5,278,702.56
Net increase in value of product	$61,085,721.88

Tonnage of originating geographical districts during 1920, compared with 1919, was as follows, in net tons:

District	1920	1919	Increase	Decrease
Panhandle	3,771,201.3	3,251,381.3	519,820.0	.....
Fairmont	14,408,782 1	12,671,426.9	1,737,355.2	.....
Preston-Barbour	6,084,564 6	5,163,129.4	921,435.2	.....
Elk Garden	2,722,079.4	2,854,929.3	.....	132,849.9
Mason	202,533.0	143,754.2	58,778 7	.....
Putnam	368,245.9	319,284.0	48,961.9	.....
Kanawha	11,615,019 4	11,463,159.7	151,859 7	.....
New River	14,502,352.5	13,272,574.6	1,229,777.9	.....
Logan	11,482,349 8	10,893,282.4	589,067.4	.....
Pocahontas	20,202,264.3	21,046,546.1	.....	844,281.7
Mingo	3,110,881.7	2,781,084 3	329,797.4	.....
Small mines	1,120,000.0	1,120,000 0	.....	.....
	89,590,274 0	84,980,552 2	5,586,853 4	977,131 6

During the year there were 3,542 mining machines in use at 1,027 mines, employing 34,547 men and producing 62,780,349 net tons of coal, which is 78.62 per cent of the total production of the state and which is 5,256,898.1 net tons more than the machine-mined coal during the fiscal year ended June 30, 1919.

The total acreage of coal mined during 1920 in West Virginia, based upon returns from the operators to the Department of Mines, was, as nearly as can be estimated, 9,618. The mines of the state averaged 182 days during the fiscal year as compared with 204 during the preceding year.

There were 75 coke plants operated in the state during the year, reporting a total of 10,359 ovens, of which number 4,232 were in actual operation, there being 6,127 ovens not in use during the year. There were 2,097,037.6 net tons of coal converted into coke, yielding 1,172,217 net tons of coke. The decrease in the production as compared with the previous year was 783,851 net tons, at a decreased valuation of $5,278,702.56. The average price per ton of coke was $6.36, a decrease of 15c. per ton compared with the preceding year.

During the year there were employed at the mines and coke ovens within the state an average of 97,426 persons, an increase over the previous year of 5,860. Of the total number employed there were: 14,385 pick miners, 29,425 machine miners, 5,122 machine runners and helpers, 28,237 inside laborers, 19,237 outside laborers, and 1,205 coke workers.

Counting superintendents, mine foremen, firebosses, store managers, store and office clerks, it would be safe to add five persons per mine employed in these capacities. Basing this estimate on 1,440 producing mines, it would make a total of 7,200 persons, or a grand total of employees directly connected with the operation of the mines of 104,626.

During the year the average price received by pick miners throughout the state for mining mine-run coal was 91c. as against 80c. in 1919. The average tonnage produced by each pick miner was 1,595, an increase of 51 tons over the fiscal year 1919. The average annual wage of pick miners (all pick miners included) was $1,451.45, which was an increase of $216.25 over that of 1919.

There were 320 lives lost in connection with the mining industry of the state during the year ended June 30, 1920. Of the above number, 287 were killed inside the mines and 33 outside, or a total decrease of 58 during that period, 44 of which decrease was inside and 14 outside.

Coal Shipments to Head of Lakes to June 1 Nearly Six Times Those of 1920

SHIPMENTS of bituminous coal to the Duluth-Superior docks this year have far exceeded in volume those made during the corresponding period last season. No doubt this is due in a large part to the earlier opening of navigation this year. Until June 1, 1920, only 276,400 tons had been received at the Head of the Lakes. This year 1,633,200 tons were on the docks June 1.

The smaller companies have received their quota of coal and are in infinitely better condition this year than last, according to a survey made for *Coal Age* by the Tomlinson Company, Duluth, vessel agents.

Coal receipts at Duluth and Superior from the opening of navigation to June 1, 1921, compared with the same period last year, are as follows, in net tons:

	1920		1921	
	Anthracite	Bituminous	Anthracite	Bituminous
Northwestern	8,700	66,800	30,200	232,800
Berwind	.....	30,500	.....	175,000
Pittsburgh	13,000	11,300	39,300	310,000
Carnegie	35,000	18,500	15,300	113,800
Hanna	31,500	16,400	10,300	97,300
Reeves	.....	.....	.....	5,500
Boston	.....	.....	.....	56,200
Inland	3,000	5,000	.....	114,800
Clarkson	.....	30,000	.....	98,000
Northern	7,000	.....	.....	80,000
Zenith Furnace	.....	.....	.....	34,000
Philadelphia & Reading	.....	.....	20,200	.....
Corporation	.....	70,000	.....	63,400
Reiss	6,300	7,200	11,000	88,000
Pursglove	.....	12,800	.....	6,200
Lehigh	70,000	.....	50,100	.....
Great Lakes	.....	7,900	.....	45,800
May receipts	174,500	276,400	176,400	1,521,200
Total to May	None	None	85,500	112,000
Totals	174,500	176,400	261,900	1,633,200

Anthracite receipts in excess of last year, 87,400 tons.
Bituminous receipts in excess of last year, 1,356,800 tons.

THE NEW YORK STATE COAL MERCHANTS ASSOCIATION of Albany has protested to Congress against government control or regulation of the coal industry.

SECRETARY OF INTERIOR FALL has endorsed the pending bill to authorize the Bureau of Mines to purchase coal for all government services, but suggests that the navy and coast guard be exempted and be allowed to purchase their own fuel.

THE EXECUTIVE COMMITTEE of the National Retail Coal Merchants Association had a two days' conference in New York on June 10 and 11 at which the Frelinghuysen bill, now being considered in Washington, was discussed. The committee also considered the Pennsylvania State tax bills The meetings were executive and no statement was given out as to what action the commtitee took regarding the proposed legislation.

Byproduct Coke Plants in the United States

Manufacturers of byproduct coke in the United States May 1, 1921, as compiled by the U. S. Geological Survey:

Operator	Address	Name or Location of Works	Number and Kind of Ovens
Alabama			
Alabama By-Products Corp	American Trust Bldg., Birmingham	Birmingham	50 Koppers
Gulf States Steel Co	Brown-Marx Bldg., Birmingham	Alabama City	37 Koppers
Semet-Solvay Co	Syracuse, N. Y.		
Also in Ill., Ky., Mich., N. Y., Ohio, Pa., W. Va.			
(Tenn. C. I. & R.R. Co.)	(Birmingham)	Ensley	240 Semet-Solvay
(Central Iron & Coal Co.)	(Holt)	Tuscaloosa	60 Semet-Solvay
Sloss-Sheffield Steel & Iron Co	American Trust Bldg., Birmingham	Birmingham	120 Semet-Solvay
Tennessee Coal, Iron & R.R. Co	Birmingham	Fairfield	434 Koppers
Woodward Iron Co	Woodward	Woodward	80 Koppers 60 Wilputte 90 Koppers being rebuilt
Colorado			
Colorado Fuel & Iron Co	Boston Bldg., Denver	Minnequa	120 Koppers
Illinois			
Chicago By-Product Coke Co	Peoples Gas Bldg., Chicago	Chicago	100 Koppers building
Coal Products Mfg. Co	Aurora	Joliet	35 Koppers 18 Wilputte
Illinois Steel Co. (Also in Ind.)	208 South La Salle St., Chicago	Joliet	280 Koppers
International Harvester Co	606 South Michigan Ave., Chicago	South Chicago	88 Wilputte
North Shore Gas Co	Waukegan	Waukegan	13 Semet-Solvay
St. Louis Coke & Chemical Co	208 South La Salle St., Chicago	Granite City	80 Roberts 240 Roberts building
Semet-Solvay Co. (Also in Ala., etc.)	Syracuse, N. Y.		
(By-Products Coke Corp.)	(Chicago)	South Chicago	280 Semet-Solvay
Indiana			
Central Indiana Gas Co	Muncie	Muncie	22 Klonne
Citizens Gas Co	Majestic Bldg., Indianapolis	Langsdale	41 Semet-Solvay
		Prospect	100 United-Otto 40 Wilputte
Illinois Steel Co. (Also in Ill.)	208 South La Salle St., Chicago, Ill.	Gary	700 Koppers
Indiana Coke & Gas Co	Terre Haute	Terre Haute	30 Gas Machinery 30 Koppers
Inland Steel Co	South Dearborn St., Chicago, Ill.	Indiana Harbor	130 Koppers
Linton Gas Co	Linton	Linton	3 Gas Machinery
Steel & Tube Co. of American (Also in Wis.)	111 W. Washington St., Chicago, Ill.	Indiana Harbor	120 Semet-Solvay
Kentucky			
Semet-Solvay Co. (Also in Ala., etc.)	Syracuse, N. Y.		
(Kentucky Solvay Coke Co.)	(Ashland)	Ashland	108 Semet-Solvay
Maryland			
Bethlehem Steel Co. (Also in Pa.)	Bethlehem, Pa.	Sparrows Point	300 Koppers
Massachusetts			
New England Fuel & Trans. Co	111 Devonshire St., Boston	Everett	400 United-Otto
Michigan			
Ford Motor Co	Dearborn	Dearborn	120 Semet-Solvay
Michigan Alkali Co	Wyandotte	Wyandotte	54 United-Otto
Semet-Solvay Co. (Also in Ala., etc.)	Syracuse, N. Y.	Detroit	215 Semet-Solvay
Minnesota			
Minnesota By-Product Coke Co	1000 Hamline Ave., St. Paul	St. Paul	65 Koppers
Minnesota Steel Co	Morgan Park Station, Duluth	Duluth	90 Koppers
Zenith Furnace Co	West Duluth	West Duluth	65 United-Otto
Missouri			
Laclede Gas Light Co	1017 Olive St., St. Louis	St. Louis	56 Koppers 8 Piette building
New Jersey			
Camden Coke Co	80 Park Place, Newark	Camden	150 United-Otto
Seaboard By-Product Coke Co	Box 267, Jersey City	Kearny	165 Koppers
New York			
Donner-Union Coke Corp	Box 193, Buffalo	Buffalo	150 Koppers
Empire Coke Co	Geneva	Geneva	46 Semet-Solvay
Lackawanna Steel Co	Buffalo	Lackawanna	94 United-Otto 282 Rothberg 60 Semet-Solvay
Semet-Solvay Co. (Also in Ala., etc.)	Syracuse	Solvay	40 Semet-Solvay
(Wickwire Steel Co.)	(Buffalo)	Buffalo	60 Semet-Solvay
Ohio			
American Steel & Wire Co	Western Reserve Bldg., Cleveland	Cleveland	180 Koppers
Brier Hill Steel Co	Youngstown	Youngstown	84 Koppers
Hamilton-Otto Coke Co	Hamilton	Kokotto	100 United-Otto
McKinney Steel Co	Perry-Payne Bldg., Cleveland	River Furnaces	204 Koppers
National Tube Co	Frick Bldg., Pittsburgh, Pa.	Lorain	208 Koppers
Penn Iron & Coal Co	Leader-News Bldg., Cleveland	Canal Dover	24 Roberts
Republic Iron & Steel Co	Republic Bldg., Youngstown	Youngstown	143 Koppers
Semet-Solvay Co. (Also in Ala., etc.)	Syracuse, N. Y.		
(Otis Steel Co.)	(Cleveland)	Cleveland	100 Semet-Solvay
(Ironton Solvay Coke Co.)	(Ironton)	Ironton	60 Semet-Solvay
(Portsmouth-Solvay Coke Co.)	(Portsmouth)	Portsmouth	108 Semet-Solvay
Toledo Furnace Co	Western Reserve Bldg., Cleveland	Toledo	94 Koppers
United Furnace Co	Western Reserve Bldg., Cleveland	Canton	47 Koppers
The Youngstown Sheet & Tube Co	Stambaugh Bldg., Youngstown	Youngstown	306 Koppers
Pennsylvania			
Allegheny By-Product Coke Co	McKeesport	Glassport	120 United-Otto
Bethlehem Steel Co. (Also in Md.)	Bethlehem	Bethlehem	424 Koppers
		Lebanon	90 Semet-Solvay
		Steelton	120 Semet-Solvay 60 Koppers
Cambria Steel Co	Widener Bldg., Philadelphia	Franklin	210 United-Otto 92 Koppers 190 Cambria-Belgian 60 Camb.-Belg. bldg.
		Rosedale	60 Cambria-Belgian 88 Semet-Solvay bldg.
Carnegie Steel Co	Carnegie Bldg., Pittsburgh	Clairton	768 Koppers
		Farrell	212 United-Otto
Jones & Laughlin Steel Co	Pittsburgh	Pittsburgh	300 Koppers
Philadelphia Suburban Gas & Electric Co	Chester	Chester	40 Semet-Solvay
Pittsburgh Crucible Steel Co	Pittsburgh	Midland	100 Koppers
Rainey-Wood Coke Co	52 Vanderbilt Ave., N. Y. City	Swedeland	110 Koppers
Semet-Solvay Co. (Also in Ala., etc.)	Syracuse, N. Y.		
(American Manganese Mfg. Co.)	(Philadelphia)	Dunbar	110 Semet-Solvay
Rhode Island			
Providence Gas Co	Turks Head Bldg., Providence	Sassafras Point	40 Koppers
Tennessee			
Chattanooga Coke & Gas Co	James Bldg., Chattanooga	Alton Park	24 Semet-Solvay
Washington			
Seattle Lighting Co	Stuart Bldg., Seattle	Seattle	20 Klonne
West Virginia			
Domestic Coke Corp	Drawer 436, Cleveland, O.	Fairmont	60 Koppers
La Belle Iron Works	Steubenville, O.	Follansbee	94 Koppers
Semet-Solvay Co. (Also in Ala., etc.)	Syracuse, N. Y.		
(National Tube Co.)	(Pittsburgh, Pa.)	Benwood	120 Semet-Solvay
Wisconsin			
Milwaukee Coke & Gas Co	Milwaukee	Milwaukee	120 Semet-Solvay
Steel & Tube Co. of America	First Nat'l Bank Bldg., Milwaukee	Mayville	108 United-Otto

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

ADDRESSING the American Institute of Banking at Minneapolis, June 16, Francis H. Sisson, vice president of the Guaranty Trust Co., of New York, said that the foundation for a revival of business was being soundly laid.

"Notwithstanding that there is still considerable 'frozen' credit in this country," Mr. Sisson said, "the principal economic problem is not the credit situation, although many, especially in agricultural districts, appear to think so. The chief obstacle to a general revival of business is the difficulty of developing an adequate demand for goods.

"Superficial consideration of that problem would suggest that the solution would lie wholly in the readjustment of prices. But lower prices in many lines have not aided materially in stimulating buying. As a matter of fact, in some instances, paradoxical though it may seem, the lower the price the less buying there has been. This curious antithesis has been due to the belief generally entertained that practically all commodity prices were certain to recede even more than they have, which has tended, naturally, to prolong the buyers' strike.

"It would be well, however, for the public to study recent price trends and their underlying factors, for many significant developments are occurring. For instance, the wholesale prices of several basic commodities, namely, wheat, corn, cotton, sugar, rubber, copper, lead, pig iron, petroleum and timber, increased 2½ per cent last month. That advance marked the end of a steady decline in the prices of these commodities from their peak, on June 1, 1920, which represented a fall of more than 54 per cent.

"While there is great unevenness in price levels and some commodities must undergo further liquidation, it is equally true that other prices have depreciated too much and are now beginning to ascend to their rightful level. It is essential for the public to realize that the turn has arrived in the prices of some commodities.

"Many buyers seem to be pursuing a hand-to-mouth purchasing policy in the hope that prices generally will recede to the pre-war level. Apparently they fail to understand that it is of little consequence at what level prices are stabilized—so long as they are stabilized, which is the important object. And stabilization will come when there is proper adjustment of various commodity prices one to another and between costs of production and distribution of commodities and their prices to consumers."

Rail Freight Movement Gains

An increase of 18,907 cars loaded with revenue freight during the week ended May 28, compared with the previous week, is shown by reports from the railroads. The total for the week was 787,237 cars. This was 110,970 cars less than for the corresponding week in 1920, but 23,476 more than were loaded during the corresponding week in 1919. Increase compared with the previous week were reported in all commodities except ore. The largest gain was made in grain and grain products, 9,085 cars more than the week before. A total of 164,870 cars were loaded with coal, which was 6,358 cars greater than during the preceding week but 9,700 less than during the same week last year.

Endicott-Johnson Co. Growing

The Endicott-Johnson Shoe Co. is about to increase operations by opening the west half of the Victory factory building at Johnston City. This half of the building has never been occupied. It has been used as a gymnasium and dance hall. The work of equipping it for manufacturing purposes began June 17.

Railroads Plan Shop Work

The railroads are preparing to begin intensive shop work on the repairing of their freight cars on July 1, the date of the abrogation of the national agreements. The Association of Railway Executives reports that there are about 400,000 idle freight cars at the present time, and 309,091 were in bad order on May 1. The total number of freight cars owned by the railroads is 2,400,000, all of which will be pressed into service if the shipping and traffic of the country pick up to normal. The companies also will be helped financially when the 12 per cent reduction in wages becomes effective July 1.

Southern Textile Mills Resume

The Putnam Cotton Mills, Eatonton, Ga., are preparing to reopen on full time. The Bothwell Hosiery Mills, of Chattanooga, Tenn., resumed operations with a full force of employees this week. Textile mills of Kinston, N. C., are working five days a week, an increase from the three-day schedule effective earlier in the year. The Kingsport plant of the Mead Fibre Co., Bristol, Tenn., began operations June 16. The plant, which employs several hundred men, had been closed down for several months because of lack of orders and general business depression.

Plant Operations Gaining

General Manager A. E. Swan states that production is steadily gaining at the plant of the Sharon Pressed Steel Co., Sharon, Pa., manufacturer of automobile parts and frames, according to the *Iron Age*. Every department is on part time, with average production between 35 and 40 per cent. The Oneida Motor Truck Co., Green Bay, Wis., which had been shut down since shortly after Jan. 1, reopened its plant on a 50 per cent production basis on June 6 to handle an accumulation of new business enabling a schedule of about 50 trucks per week for several months forward.

Bridgeport Plant to Employ 8,000

The General Electric Co. purposes making its plant at Bridgeport, Conn., one of the foremost in the country's industries, General Manager Joseph Clarke announces. He states that tentative schedules call for a payroll of 8,000 workers there compared with 1,200 at present. The company expects to employ 2,000 by next month.

Hercules Knitting Co. Expands

An addition to the plant of the Hercules Knitting Co. at Milwaukee, Wis., will be in operation by autumn. Part of the machinery has already arrived from Europe. The company has more than doubled its capacity by additions to its plant.

Extracts from George H. Cushing's Memorials on Coal Legislation

I.

To the Hon. J. S. Frelinghuysen, U. S. Senate:

If we were governed by the dictates of self interest alone we would agree with you that the bituminous coal industry should be stabilized; that all unnecessary mines be closed and hence competition in coal be destroyed; that buyers of coal be compelled by law to purchase their full annual requirements in twelve equal monthly installments and that thereby our cost of soliciting orders be more than cut in half; and that it be arranged by law that downward as well as upward fluctuations of prices of bituminous coal shall cease. But as Americans we cannot agree that this interest in the financial success of the coal industry is a proper function of government.

Also, if we should consult our pocketbooks alone, we must agree with you that the government should put upon our desks every Monday morning the amount of coal on hand, the amount produced during the preceding week and the prices obtained for that coal. It would give us the strongest possible hint as to how much coal we should produce at once—or fail to produce—where we could best look for a market, and what price we could reasonably expect to get.

However, there are much larger considerations, many of which we cannot discuss here. We are chiefly concerned, as an association of business men, with a need to keep faith with the public. We have said and reiterated that this industry served the public best—and itself least—when it was free from governmental restraint and dictation. We have made certain promises to the American people touching prices and supply which promises were hypothecated upon the retention of our economic freedom.

Further, we cannot overlook the fact that when the President and his party were seeking the suffrage of the electorate, they did so, in large measure, upon the slogan: "Less government in business and more business in government."

Neither the President nor his party has repudiated that slogan. The people have in no way indicated a change of mind or heart. We see no reason for reversing our views.

Others may do as they please about "less government in business." We take our stand behind the President and his party and on our pledge to the American people. Until all parties to that pledge are definitely released we have no choice but to oppose your bill.—June 13, 1921.

II.

To the Hon. A. B. Cummins, U. S. Senate:

In this memorial you are asked to consider one point. At the proper time, other points will be raised. These various memorials will raise issues which in the long run cannot be ignored. You may stand with the author of this bill and for the moment close your eyes to these issues. But that does not dispose of them. They are public questions which should be discussed before legislations. If that is not done, they will still be discussed.

The first question is: What is the real purpose of this bill?

The ready answer is: To give Congress and the people the facts about coal.

If it is information only that Congress wants, the Census Bureau has now all needed power in existing statutes to compel coal companies to supply the very data here demanded. Besides, the coal companies have been giving accurate information promptly for twenty-five years and promise to continue to do so.

Confronted by this fact, Senator Frelinghuysen says there is a need to have in the government someone to speak about and for the industry. That very thing was tried in 1917 and 1920, following which we had the only panics in coal history.

But if it is regulation that you are beginning, this proposed bill may be, as Senator Calder suggested, a necessary first step. However, Senator Frelinghuysen and Secretary Hoover emphatically deny that this bill starts regulation.

Your committee passed out this bill without a hearing. Presumably you know what its objective is. Would you mind telling the people what it is you are trying to do—to get information or to begin regulation? . . .

With so much now admitted, it is perfectly clear to the mind of the representatives of the coal industry that this is intended as the beginning of detailed regulation of coal by the government. Can you say anything to the contrary?

If the government wants information, we will supply it. But we warn you that its publication will do much to advance prices, but nothing to reduce them. Coal men will understand your reports and how to use them. The public must remain ignorant and defenseless.

But, if you wish to start regulation, then our president and membership desire me to say:

You may, in your optimism, believe that mere tables of figures—duly explained and interpreted—will end the disputes between capital and labor or between buyer and seller. Our practical experience teaches us differently. We know that, confronted by facts which show that a great industry is out of joint, you will want to set it right.

Your first effort, of course, will be to control the market—to control the product itself. When that is proved a failure unless you can control the plants which produce the coal, you must next try to control the competition between the plants. To do that you must eliminate some 3,000 unnecessary mines now in existence and then arrange that only the mines which are considered necessary may be opened in future.

When you launch upon that interesting undertaking you confront at once the fact that we have enough coal in the ground to supply all needs of a thousand generations but only one generation extant to consume it today. Before you can proscribe a new coal mine you must control all of the coal in the ground. That you may do in two ways only: (a) by buying from present owners all of the four trillions of tons of coal, or (b) by dispossessing those owners without compensating them. This last proposition is, then, the tremendous undertaking to which you, innocently, find yourself committed when you start regulation.

Our president and membership are amazed that you should enter upon such a project without public hearing. They believe that in fairness to themselves and the public you should now state clearly whether you merely want to gather information about coal or whether you want to start to regulate coal—and hence to enter upon the long program here outlined. Will you not dissolve our doubts as to the purpose of the government by giving to us and the public concretely the understanding which you have of this bill which led you to report it out without a hearing?—June 13, 1921.

III.

To the Hon. A. B. Cummins, U. S. Senate:

The president and the membership of the American Wholesale Coal Association, renewing their appreciation of the courteous treatment you have accorded to them, desire that I supplement my letter of June 13 by saying:

Laying aside, for the moment, all of the multitude of considerations which press for attention, we ask you to consider whether it is now wise to enact any such legislation as the proposed in S 1807.

We ask you to assume that the law may pass both houses of Congress, may have the approval of the President and may be administered righteously and faithfully for a period of years. A time must come when it must be subjected to the test of time and of experience. We ask you to try to project your mind into that future period. As you see matters today, are you convinced beyond a shadow of a doubt you will be able then to say that what is now proposed was a wise thing to do?

Before you try to answer that question, we ask you to consider carefully the times in which this legislation is presented for enactment. Only recently our business was wholly abnormal and artificial because of the need to make war. The demand for certain things was abnormally expanded; the demand for other things was all but suspended. Tomorrow we hope to be in a period of peaceful prosperity when our major interest will be in commerce and when the measure of our success and security will be the volume and diversity of our interests.

Today we are in the half-way stage between those poles

of national activity. Today the demand for the few things needed in war is suspended; the demand for the many things wanted in times of peace has not been revived.

In the time of war, prices were wholly out of joint; distribution was dislocated; transportation was in consequence demoralized; labor was thrown off its stride; capital in a new and strange atmosphere. . . .

Readjustment is naturally difficult because so much has to be done; because it takes time to destroy the artifices in business, to remove the confusion in capital, to allow labor to get its stride and to encourage the people to effect their own distribution of things.

Notwithstanding the handicaps already facing business, it is proposed in S. 1807 that the nation shall attempt by statute to fasten new artifices upon a suffering trade to predetermine the program—not only for the present but for all time—of coal and do it in advance of any knowledge of what demands the people may soon make upon that industry.

We ask you: Is this a wise thing to try to do? . . .

You must realize that coal is not an initial business. Its activities are measured exactly by the activities of the manufacturer, the carrier and the merchants. It is only active when those other interests play upon it. It follows the lead strings which they hold in their hands. It follows then that any man who can prescribe a program for the coal industry can with equal precision outline a program for all industry. Why are we favored and the others neglected?

Is it wise for the U. S. Senate to accept—without public hearing and protracted consideration—the haphazard recommendations of a few earnest men who may be more venturesome than wise?

If the same program is not to be applied to all industries we ask you: Is it wise to put shackles upon the coal industry which must remain the common servant of all industry? Is it possible to have a free industry and a bound coal trade?

We especially ask you to consider: It is obvious and trite that the only secure foundation of business is "confidence." Business men, of course, must have confidence in one another. Above everything they must have confidence in their government. . . .

Finally, we ask you: Do you believe that to compel the industry to supply information about what *has been done* will reduce—even by one—the number of unnecessary mines, cause the withdrawal from investment in mines of a single dollar, add one day's working time annually to mines which are now idle for the lack of demand, equalize as between the months the distribution of coal? We think not. Those are questions of supply and demand wholly beyond the reach of statutes.

Will it do anything to stop the quarrel between capital and labor in the coal fields? Will it do anything to alleviate the eternal struggle between producer and consumer or seller and buyer? We think not. Those are personal relations with which Government cannot safely concern itself. . . .—June 15, 1921.

IV.

To the Hon. A. B. Cummins, U. S. Senate:

There is no reason why we, as coal men, should object to giving any information which the government may want. We have no secrets to guard; no large profits to conceal.

That is, and bluntly, the information which is demanded will be of immediate and considerable monetary value to all coal companies. They alone will understand what the figures mean. They alone will know how to use them—to curtail output, to seek their market only where stocks are small, and to correct today's prices in the light of those paid yesterday. That same information will be of no service to the public because the people will not know what the figures mean. They will not know how to use them. It is a hug-handle proposition, a container with a handle on one side only, and coal companies can monopolize that handle.

So, the information is worth millions to the coal companies but not a penny to the public. Besides, if it is merely information which is wanted, we are informed that this law is wholly unnecessary. If the government has this power and if the proponents of this bill know that it has, we are justified in believing that they are not merely and needlessly duplicating their own past efforts. We are justified in looking beyond the mere demand for information to something else concealed in the bill. We find that concealed purpose in those provisions which show clearly an intention to begin detailed regulation of coal. We refer to the clauses calling for a study of statutory zoning, a study of statutory standardization of coal, the emergency powers given to the President and the injunction laid upon the Secretary of Commerce and the director of the Bureau of Mines to recommend annually any further legislation which, in their opinion, may be needed.

Frankly, we do not believe that this is an information bill at all. We believe it is the beginning of regulation.—June 16, 1921.

V.

To the Hon. A. B. Cummins, U. S. Senate:

The proposed coal measures pretend merely to get information. But the true purpose is to begin detailed regulation. . . .

When we expressed amazement at the audacity of this program those who are supposed to speak for this government said: "If you do not accept this mild regulation, you will get something far worse."

In private and in public meetings they have held that threat over us for two years. They have gone so far as to name the exact sources from which our punishment would come. We could not escape the conclusion that we were asked to enter a race to defeat the ambitions of certain radicals—who were named—and thus to prevent them from seizing the government and perverting its purpose.

These alleged spokesmen of the government have characterized regulation as socialism and bolshevism. In the same breath they have invited us to become socialists and bolshevists in order to escape both.—June 17, 1921.

Roderick Stephens Says Cost-and-Profit Reports Violate Constitutional Rights

RODERICK STEPHENS, president of the National Retail Coal Merchants' Association, has sent a letter to Senator Frelinghuysen explaining the reasons for the opposition of retail coal dealers to the Frelinghuysen bill.

Extracts from Mr. Stephens' letter, dated June 13, follow:

"We cannot reconcile the administration program of lower taxes and of governmental economy with a Federal stabilization program for the coal trade or any other trade or business, and remind you that the collection, tabulation and publication of the fact information desired by Secretary Hoover would require a large bureau, and if cost and profit information also is to be required, the bureau would necessarily become one of the most costly bureaus of any department of the entire government.

"While we earnestly doubt the efficiency of the proposed information service of the Department of Commerce, and seriously question whether such a service would substantially modify price or supply conditions resulting from the inability of the railroads, while in a state of lowered vitality, to meet the pressure of a belated demand, nevertheless, we are willing and have offered to supply, voluntarily, such information, exclusive of costs of doing business, and profits, as is required under your bill (S. 1807), in order that the plan may be perfected, made operative, and a practical determination of its true value, if it has any, may be obtained.

"We are opposed to the provision that all retail dealers may be required to compile statistics showing their business costs and profits, because we hold that this provision invades our constitutional rights; is likely to make available to our competitors, as well as to the public, information of no proper concern of theirs, and we doubt that proper consideration has been given the practical difficulties of this requirement.

"The retail coal dealers have not yet been heard on the subject of your bill, nor have they yet had an opportunity to clearly define their attitude toward legislation affecting their interests, and confidently believe that their request for such a hearing will not be unfavorably received by the Senate Committee on Interstate Commerce.

Operators Join Opposition to Coal Bill; Frelinghuysen Measure Made Unfinished Business of Senate

By Paul Wooton
Washington Correspondent

THE National Coal Association has come out as being unequivocally opposed to any legislation intended to exercise federal control over private business. It has been stated frequently that the Frelinghuysen coal stabilization bill was drafted by the National Coal Association. Officials of that organization have had difficulty in convincing certain elements in the coal business that this was not the case. The matter was cleared up last week, however, when Eugene McAuliffe authorized the National Coal Association to announce that it was he who drafted the bill in its original form. Some changes have since been made, notably that in Section 5, in which it is provided that no investigation of costs and profits is to be made unless authorized by the President. This change is said to have been made at the personal suggestion of Secretary Hoover.

The National Coal Association believes that the Frelinghuysen coal stabilization bill is a vicious example of an effort to regulate the coal industry. This action was taken after a meeting in Washington on June 15 of the Board of Directors of the association and its government relations committee. In addition to determining the policy of the association, an outgrowth of the meeting was a statement pointing out where the Frelinghuysen bill is regulatory. In this statement the bill is analyzed to show that it is highly inquisitorial in its nature. Arguments are advanced to show that the provisions of the bill, if enforced, would violate the Constitution in that it attempts to force the disclosure of information concerning matters which are not within the power of Congress to control; in that it violates the guaranty against unreasonable search and seizure; in that it attempts to delegate legislative power to the executive.

The statement also shows that the bill would allow the publication of private affairs. It is claimed that this legislation would entail great expense to the national government for its administration and would increase the cost of producing coal, and even then would fail to accomplish its ostensible purpose. Emphasis is given in the statement to the belief that this bill would be a forerunner and precedent for legislation of regulatory and paternal character which would apply to all lines of basic private industry.

Frelinghuysen to Press Bills for Passage

Senator Frelinghuysen on June 17 succeeded in having the stabilization bill and the seasonal rate bill made the unfinished business of the Senate. He expressed the most determined intention to press the bills to final passage at the earliest possible moment. He spoke almost regretfully of the action taken by the National Coal Association in determining to fight the stabilization bill. He expressed the opinion that the coal industry is making a vital mistake. He declared that the public is fully convinced that it is entitled to enough information as to the handling of coal to enable it to know how costs are made up.

The jobbers, through the American Wholesale Coal Association, have been directing their efforts against this legislation by a series of letters to Senators Frelinghuysen and Cummins as well as by a statement to the president of the Senate, urging that they be given the opportunity to be heard in opposition to the bill. [Extracts from these letters will be found on the preceding pages.] The retail dealers likewise are on record in opposition to the Frelinghuysen program.

Extracts from the National Coal Association's statement setting forth the objections of the bituminous coal operators to the stabilization bill are as follows:

" 'Stabilization' of an industry necessarily means control of that industry. That the purpose of this legislation is not merely information but the ultimate regulation of the coal industry, is clearly indicated by many of its provisions.

"Private industry cannot voluntarily submit to legislation in which the deliberate purpose is announced, as it is here, to control ultimately every phase of such industry.

"The bill contains specific provisions for the 'investigation' of every conceivable branch and detail of the coal business as conducted by operator, wholesaler, or retailer.

"The greatest ingenuity has been exercised to make this 'investigation' of the most sweeping character. It descends even to such details as the terms of 'purchase,' which would include trade discounts, time of payment, etc., etc.

"In Section 19 of the bill the private 'books, papers, records, accounts, documents, or correspondence of any operator, dealer, or other person subject to the provisions of this act' are made 'subject to examination by the secretary or the director or their duly authorized agents.' Inasmuch as every consumer of coal using more than 100 tons per year is a 'person subject to the provisions of the act' and required to furnish information to the secretary or director (Section 16), it is obvious that each and every one of such consumers, including practically every manufacturing company, apartment or hotel owner, common carrier, public utility, etc., etc. (estimated to be more than half a million in number), as well as all operators, wholesalers, and dealers in coal (estimated to be sixty thousand in number), would be liable to have all of their books, records, correspondence, etc., examined under the provisions of this bill; and the heavy penalties imposed by the bill upon any person who refuses to produce such books, papers, records, correspondence, etc., for examination would apply equally to each and every one of those consumers as well as to those engaged in the coal industry (Section 19).

Unconstitutional Features Charged to Bill

"The bill makes possible the publication of private affairs.

"The bill violates the Constitution in that it attempts to force the disclosure of information concerning matters which are not within the power of Congress to control.

"The bill violates the Constitution in that it attempts to delegate legislative power to the Executive.

"In Section 5 it is left to the unguided judgment of the President as to when, if at all, 'costs and profits' shall be investigated by the secretary. The exercise of such power does not depend upon any finding of fact by the President. Such an unlimited discretion amounts to a delegation of legislative power to the President to make laws and violates the Constitutional provisions creating the Executive, Legislative, and Judicial departments of the government and confining their separate functions to them respectively.

"There is no reason whatever to believe that the passage of this bill would accomplish any such purpose as has ostensibly prompted its introduction into Congress.

"The bill, if passed, would be a forerunner and precedent for similar paternal and regulatory legislation with reference to every line of private business.

"If Congress has the power to enact legislation of this character concerning the coal industry and all consumers of coal, it must have the same power to enact similar legislation with reference to other lines of private business.

"This bill is directly contrary to the announced policy of 'less government in business' which has made such a popular appeal to the people.

"The bituminous operators, like those engaged in other branches of the industry, have offered voluntarily to furnish all proper commercial information to the government.

"The bituminous operators join with the other branches of the industry in announcing their opposition to this pending legislation, which is both regulatory and inquisitorial in its character and singles out the coal industry as one for particular legislative direction and control."

Reading Decree Filed; Trustees Named

COUNSEL for the Reading Company last week filed with the U. S. District Court a form of decree in conformity with the decision of the court for carrying out the segregation plans. The decree is lengthy and makes no change from the program laid down by the court in its decision.

The Central Union Trust Company, of New York, was named as trustee to take over the Lehigh & Wilkes-Barre Coal Co. stock owned by the Central Railroad of New Jersey. Newton P. Fairbanks, of Springfield, Ohio, and Joseph B. McCall, of Philadelphia, were appointed trustees to hold the stock of the new corporation to be formed to take over the stock of the Philadelphia & Reading Coal & Iron Co. R. E. McCarty, of Pittsburgh, and C. S. W. Packard, of Philadelphia, were named trustees of the stock of the Central Railroad of New Jersey owned by the Reading Company.

The appointments were made by the court. The decree, entered June 6, provided that the stock of the new corporation was to be issued to a trustee or trustees and that certain voting powers were to be given them. The purpose of placing the stock of the Jersey Central in the hands of trustees was to keep the shares intact until a favorable market arrived for their sale.

Senator Edge Warns Against Regulating Business Out of Existence

SENATOR EDGE, of New Jersey, who as a member of the Calder reconstruction committee last session investigated coal, in a speech in the Senate against the packer control bill opposed over-regulation of business. He said that he had been trying to ascertain the reasons for continued high prices of anthracite, as it was the only staple product of general and large consumption that has continually gone up in price since the war and has shown "absolutely no response to the general deflation throughout the country." He said, however, that the condition would not be helped by nationalization of the industry. He favored trusting the people to see if they go too far in profiteering and over-profits. "Do not let us regulate them out of business," he asked.

Form Committee to Avert Bankruptcy Proceedings Against Old Tidewater Exchange

DEBTORS and creditors of the old Tidewater Coal Exchange have formed a protective committee for the purpose of endeavoring to forestall the bankruptcy proceedings pending against the old exchange in the Federal courts. In addition the committee will endeavor to secure the right of debtor shippers to an adjustment of their accounts at a just rate for the coal; to set off unsettled claims of debtor shippers against the railroads for confiscations, diversions, double freight collections, railroad demurrage, etc.; to obtain the co-operation of shippers in such action as may be necessary to have the railroads assume and pay all the liabilities of the exchange after collecting a reasonable and just amount from the debtor shippers, and to preserve the cash assets, which are in danger of dissipation and waste if the proposed policy of petitioning creditors is pursued.

The committee is composed of Howard Adams, of the S. M. Hamilton Coal Co.; Kenneth W. McNeil, of Archibald McNeil & Sons Co.; Roy B. Ayers, of the Shawnee Fuel Co.; R. W. Wigton, Morrisdale Coal Co., and Robert S. Hill, of Madeira, Hill & Co.

The protective committee will invite the creditors' committee to a conference at which the matter is to be discussed.

May Anthracite Shipments 173,570 Tons Less Than Those of April

SHIPMENTS of anthracite in May, as reported to the Anthracite Bureau of Information, amounted to 5,793,895 gross tons, a decrease as compared with the preceding month of April of 173,570 tons, and 361,983 tons less than tonnage shipped during May of last year, when 6,155,878 tons were shipped to market and reflected the benefit of the termination of the switchmen's strike.

Shipments by originating carriers, in gross tons, were:

	May, 1921	April, 1921
Philadelphia & Reading	1,108,476	1,123,585
Lehigh Valley	1,027,688	1,102,965
Jersey Central	544,716	537,822
Lackawanna	915,191	929,271
Delaware & Hudson	753,039	812,967
Pennsylvania	409,027	416,847
Erie	630,574	630,471
New York, Ontario & Western	153,809	128,684
Lehigh & New England	251,375	284,853
Totals	5,793 895	5,967,465

No Unlawful Combination of Coal Dealers in Union County, New Jersey

RETAIL coal dealers of Union County, New Jersey, have been absolved from suspicion of maintaining an unlawful combination for the purpose of fixing and maintaining the retail price of anthracite coal by the May Grand Jury of that county, which made a presentment to the court in Elizabeth on June 9. The presentment was the result of a probe following a request by the Elizabeth Chamber of Commerce to "investigate and ascertain if an unlawful combination exists among retail coal dealers of the county for the purpose of maintaining coal prices and exacting excessive profits."

IN A SUPPLEMENTAL STATEMENT to the Senate Interstate Commerce Committee in the railroad investigation, Julius Kruttschnitt, of the Southern Pacific R.R., says the chief material item in transportation is coal. An estimate by twenty-seven representative railways of the probable reduction in coal prices during the next twelve months as compared with the prices prevailing in May, 1921, was 6.4 per cent.

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of May*

(In Net Tons)

Ports	Railroads	1921 Cargo	1921 Fuel	1921 Total	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total
Toledo	Hocking Valley	821,739	20,518	842,257	126,136	1,859	127,995	979,882	29,459	1,009,341
	Toledo & Ohio Central	196,039	5,342	201,381	68,825	4,959	73,781	219,262	6,036	225,298
	Baltimore & Ohio	402,239	10,629	412,868	101,844	10,270	112,114	242,199	5,293	247,492
Sandusky	Pennsylvania	223,214	6,060	229,274	64,544	995	65,539	312,597	8,919	321,516
Huron	Wheeling & Lake Erie	424,250	11,132	435,382	301,890	25,451	327,341	396,647	12,442	409,089
Lorain	Baltimore & Ohio	625,935	24,727	650,662	387,512	43,496	431,008	647,912	33,654	681,566
Cleveland	Pennsylvania	512,323	20,143	532,466	38,664	6,522	45,186	458,111	60,129	518,240
	Erie	126,769	4,260	131,029	.....	.....	.....	.....	.....	.....
Fairport	Baltimore & Ohio	.....	.....	.....	.....	.....	.....	10,956	10,022	20,978
Ashtabula	New York Central	462,355	16,887	479,242	48,660	21,415	70,075	455,339	26,711	482,050
	Pennsylvania	532,897	17,128	550,025	51,344	16,138	67,482	476,938	16,364	493,302
Conneaut	Bessemer & Lake Erie	196,091	1,911	198,002	299,800	9,360	309,160	318,868	919	319,787
Erie	Pennsylvania—West	235,231	7,392	242,623	680	.....	680	155,144	7,959	163,103
	Pennsylvania—East	43,585	5,509	49,094	7,405	12,456	19,861	40,179	2,099	42,278
Totals		4,802,667	151,638	4,954,305	1,497,304	152,918	1,650,222	4,714,034	220,006	4, 34,040

* Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, Manager.

Mingo Inquiry Probably Will Not Be Made

OPPOSITION having developed to the proposed Senate investigation into the strike troubles in the Mingo County, West Virginia, coal fields, that inquiry probably never will be made. The resolution which provided for it was denied passage on the objection of Senator Myers of Montana following arguments against the investigation made by Senators Underwood, of Alabama, and Overman, of North Carolina. They took the position that as the troubles had subsided there was no need for the Senate to expend the money which such an inquiry would entail.

The resolution authorizing the investigation came up in the Senate on Monday, June 13, and was debated during the "morning hour." Senator Johnson asked for further consideration of the resolution, of which he is the author, but Senator Myers objected, and it went over, subject, however, to further consideration whenever again called up. Senator Sutherland, of West Virginia, said the investigation probably would be helpful in getting the operators and unions around the conference table.

Senator Johnson had other reasons. Economic questions, he declared, were involved, as coal production was curtailed. He urged also that the law was being maintained by the use of "force"—a condition justifying inquiry. Senator Underwood doubted if any affirmative action by Congress would result from the investigation and did not think the inquiry was justified at this time.

Senator Overman saw no reason for interfering with the state or airing the troubles of the miners and operators. The investigation which a house committee conducted several years ago into the coal strike in Colorado was regarded as a strong argument against making an investigation of a like character at the present time. Senator Myers then objected to the resolution and it went over.

Magruder Succeeds Howe as Commissioner of Tidewater Coal Exchange

THE Tidewater Coal Exchange, Inc., handling bituminous coal at the ports of New York, Philadelphia and Baltimore, has elected R. A. C. Magruder as commissioner, effective June 15, 1921, in succession to J. W. Howe, who recently resigned after four years of service with the present exchange and its predecessor. Mr. Magruder joined the staff of the previous Tidewater Coal Exchange in Washington while it was being organized in 1917 and has for the past year been assistant commissioner of the present exchange. He was connected with the Southern Ry. in various capacities for twenty-one years and during the four years of his service with the Tidewater Coal Exchanges has become well and favorably known to the shippers and consignees of tidewater bituminous coal.

10,000 Miners of Pennsylvania Coal Co. in Pittston District Strike Again

A GENERAL strike in the Pittston district of Pennsylvania, affecting ten collieries and 10,000 men of the Pennsylvania Coal Co., was ordered by the general grievance committee, effective Monday, June 20. The men charged that the company was not paying the wage scale ordered by the Anthracite Wage Commission, and that there was no set scale of wages for company men, the rate varying with the colliery. Last July the mine workers of this company struck because the company would not abolish the contract system of mining. They were out eleven weeks that time.

Will Meet at Salt Lake City, Utah

ALL plans have been completed for the annual meeting of the Rocky Mountain Coal Mining Institute, which will be held in Salt Lake City, Tuesday, June 28. A special pullman will leave Denver for the place of meeting June 27, stopping at Rock Springs, where the mines and other points of interest will be visited.

The technical sessions will be held in the Utah Hotel, Salt Lake City, Wednesday, June 29, addresses to be delivered including those by A. C. Watts, of the Utah Fuel Co.; D. C. McKeehan, of the Union Pacific Coal Co.; Benedict Shubart, of Lindrooth & Shubart Co., Denver; E. R. Gibson, United States Fuel Co., and R. Dawson Hall, *Coal Age*.

Senate Considers Seasonal Freight Bill; Coal Stabilization Measure to Follow

COAL legislation is now before the Senate for action, the bill providing for seasonal freight rates on coal having been taken up June 17 on motion of Senator Frelinghuysen, to be followed by the coal-stabilization bill. Debate on the seasonal rate bill began June 20, Senator Frelinghuysen opening with an elaborate discussion of the coal situation, supplemented by numerous charts placed around the walls of the Senate chamber. The determination to give the rate bill precedence over the stabilization bill was due to the desire to hasten action looking to reduced freight rates, it being felt that the regulatory bill could follow consideration of the rate bill without losing time.

Senator McLean, of Connecticut, in closing the debate on the packer control bill, which was passed, said that while he favored investigation and publicity he was against price fixing. He said the packer legislation would be followed by regulation of coal "until instead of a country where a free man can do business under economic liberties and natural rights to which he is entitled, the government will have a series of industrial graveyards, and it will lead to abolition of private property."

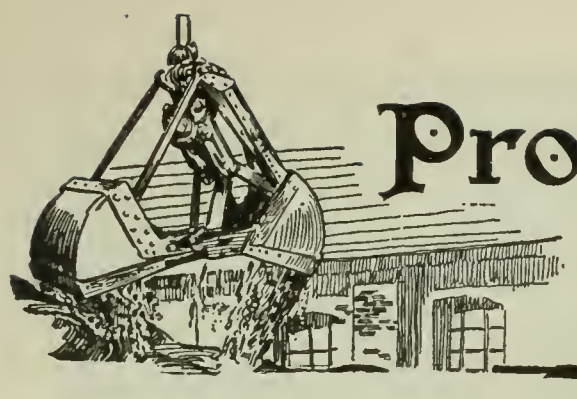
In a speech June 20 Senator Frelinghuysen declared that abuses in the coal trade and uneconomic conditions surrounding it required relief measures and expressed impatience over objection by coal interests.

AN ITEM IN *Coal Age*, June 16, announcing the publication by the Central Pennsylvania Coal Producers Association of a map of bituminous collieries in Pennsylvania neglected to state the price of the map. The price is $20.

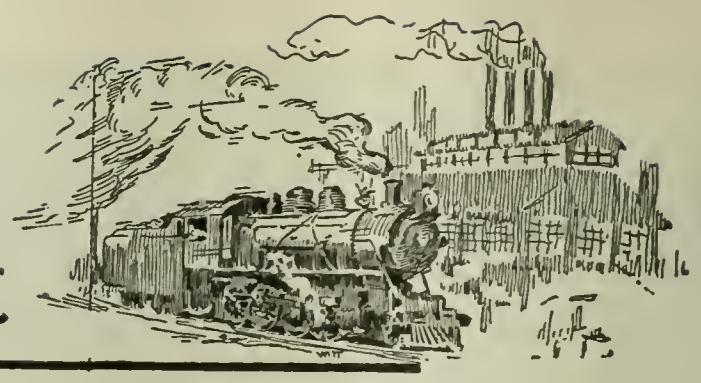
Over Two-Thirds of British Miners Vote for Strike Continuance

SO PERSISTENTLY optimistic are the British people that it is difficult to size up the coal strike situation. The mine workers' ballot showed 183,827 for acceptance of the terms of the mine owners and 432,511 for their rejection. The majority was 21,669 above the required two-thirds. The federation has a membership of 957,610, and of these probably 10 per cent are boys under sixteen who are not entitled to vote. As only 616,338 votes were cast, about 29 per cent of the voters must have failed to vote. Wales and Durham strongly opposed acceptance.

The leaders are said to have been disappointed at the result of the ballot, but on learning the outcome, June 17, they notified the government that the strike would be continued. On the following day Lloyd George announced the government's offer of a subsidy of £10,000,000 would be withdrawn that night if it had not been accepted by that time, and it was accordingly withdrawn. It is announced that the men were then preparing to go to work, ignoring the strike decision. It is a self-contradictory situation and it would be bold indeed to form a conclusion. In view of the past optimism in Great Britain it would be well to await the outcome of the issue and prophesy after instead of before the event. Mines in several districts were opened Monday, June 20, but few men returned to work.



Production and the Market



Weekly Review

PRODUCTION of bituminous coal is being maintained around 8,000,000 net tons a week by the strenuous efforts of shippers. It is with difficulty that this coal is being forced on the market, price recession giving evidence of the selling pressure being exerted. *Coal Age* index of spot prices is 92, a drop of 3 points from 95 the previous week. Exports and shipments to Lake Erie ports for transshipment by boat and storage on the Upper Lake docks represent the only steady outlets now open to the trade, and it is only the Northern and Middle Appalachian fields that are in position to participate in these markets.

The situation at the Lake front is steadily drifting into a deadlock. Accumulation of coal in cars at Lake Erie ports now exceed 1,300,000 tons and were it not that, contrary to usual practice, the Steel Corporation boats are taking coal on the up trip, shipments by water would fall off for lack of boats. Steamers are now being tied up in Duluth Harbor because ore is not being shipped down and it does not pay to operate the boats with a one-way cargo of coal.

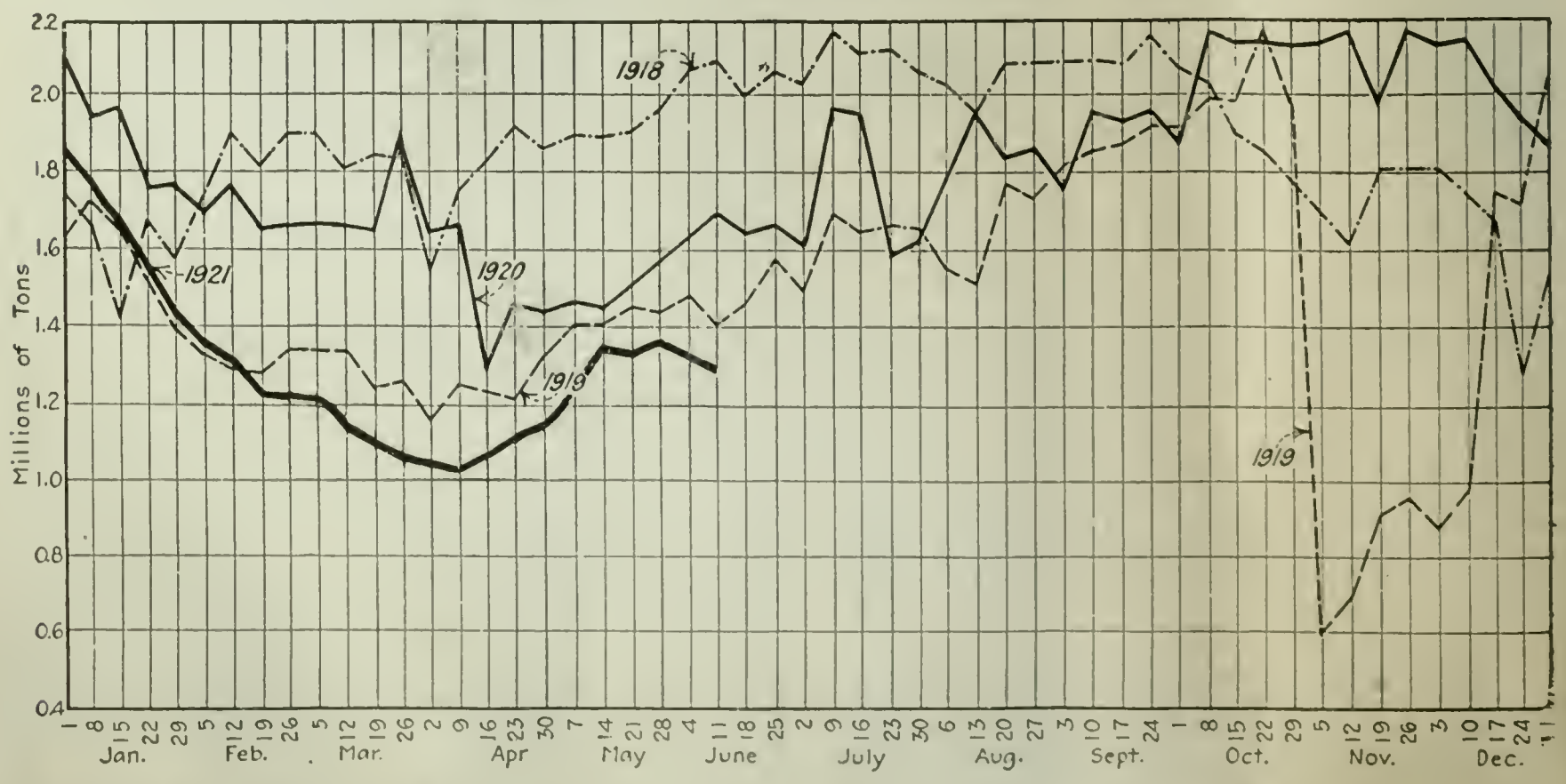
Exports offshore are being maintained. In the first half of June foreign shipments through Hampton Roads were, in round numbers, 700,000 net tons, compared with 1,217,000 during the month of May, while total dumpings at this port were 1,300,000 net tons to June 15, compared with 2,030,000 net tons during May. The striking thing about the statistics of May exports is the disclosure of the movement to the United Kingdom—"coal carried from here to Newcastle"—344,000 net tons. This figure bears out the estimate made in this review a week ago that our export trade would benefit to the extent of 1,000,000 net tons by the end of June as a result of the British strike.

Midwest Gloomy; Glutted with Eastern Coal

While the Eastern bituminous fields are pegging along at a rate only slightly better than half of normal, the Middle West is in deep gloom. The steam market is dead and 400,000 tons of slack piled up at mines in Southern Illinois is reported to be taking fire. Free coal is abundant, Eastern shippers crowding coal at bargain prices in this market on top of local offerings. Last year's crop of new coal companies are getting a taste of adversity. For the most part these parvenus have faded away and such as remain are investing last year's profits in this year's losses. The sad part about it is that there will be a new crop next time to upset business by extortionate prices as in 1917 and 1920.

Production of bituminous coal at 8,000,000 tons a week represents between 70 and 80 per cent of the best that could be expected if industry were not depressed,

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

for 10,000,000 tons a week, or 520,000,000 tons a year, would represent prosperity in the soft coal trade. In view of this, the bituminous-coal industry has no such cause for complaint as for instance, iron and steel, operating at less than 30 per cent of normal.

Anthracite, on the other hand, is going full blast. Production between 1,900,000 and 2,000,000 net tons a week represents the best this field can do. Steam sizes of hard coal are suffering from lack of demand and as produced are largely going into storage, but domestic sizes are readily moved. Production from January to date is 37,700,000 net tons, a figure exceeded since 1913 only in the war years of 1917 and 1918. There are signs, however, that demand for household sizes is becoming less urgent.

BITUMINOUS

Weekly production of soft coal remains around the 8,000,000-ton mark with the output for the week ended June 11 at 7,945,000 net tons, a decrease of 221,000 tons as compared with the last preceding full-time week. On Monday and Tuesday, June 13 and 14, loadings were 52,778 cars, indicating little if any change in the rate of production.

Production of bituminous coal during May, 1921, was approximately 33,255,000 tons, an average of 1,316,000 tons per working day. The following data from the Geological Survey show the output of coal in May during the past eight years and the cumulative production in each year to May 31:

PRODUCTION OF BITUMINOUS COAL
(In Net Tons)

Year	May	Calendar Year to May 31.
1913	37,205,000	188,000,000
1914	28,551,000	173,000,000
1915	30,938,000	159,000,000
1916	38,804,000	208,000,000
1917	47,086,000	226,000,000
1918	50,443,000	231,000,000
1919	37,547,000	176,000,000
1920	38,993,000	213,000,000
1921	33,255,000	162,000,000

Though much below the output in May in any recent year of active business, the May, 1921, production surpassed both May, 1914, and May, 1915. The cumulative output during the first five months of 1921 was 69,000,000 tons behind 1918, and 51,000,000 tons behind 1920, both years of active business. It was, however, only 11,000,000 tons behind the year of depression, 1914. Compared with the first five months of 1915, when coal consumption had not begun to feel the stimulus of the Allied War orders, 1921 shows a gain of 3,000,000 tons.

The Northern and Middle Appalachian output declined during the first week of June because of the observance of Memorial Day, the total being 4,372,000 tons, as against

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	May 17, 1921	June 7, 1921	June 14, 1921	June 21, 1921†
Pocahontas lump	Columbus	$5.60	$5.75	$5.75	*$5.00@$6.00*
Pocahontas mine run	Columbus	3.60	3.30	3.45	*3.25@ 3.50*
Pocahontas screenings	Columbus	....	2.65	2.40	2.25@ 2.50
Pocahontas lump	Chicago	5.25	5.25	5.25	**5.50@ 5.75**
Pocahontas mine run	Chicago	4.00	3.15	3.15	2.75@ 3.50
*Smokeless mine run	Boston	6.40	6.45	5.95	**6.00@ 6.25**
Clearfield mine run	Boston	2.40	2.35	2.25	1.85@ 2.60
Somerset mine run	Boston	2.90	2.95	2.75	*2.15@ 3.00*
Pool 1 (Navy Standard)	New York	3.40	3.50	3.45	3.25@ 3.65
Pool 1 (Navy Standard)	Philadelphia	3.25	3.35	3.35	*2.95@ 3.50*
Pool 1 (Navy Standard)	Baltimore	3.30	3.30	3.20	*2.80@ 3.10*
Pool 9 (Super.Low Vol.)	New York	2.80	2.85	2.85	2.75@ 2.95
Pool 9 (Super.Low Vol.)	Philadelphia	2.90	2.95	2.95	*2.65@ 3.00*
Pool 9 (Super.Low Vol.)	Baltimore	3.00	2.95	2.85	*2.60@ 2.75*
Pool 10 (H.Gr. Low Vol.)	New York	2.55	2.50	2.45	**2.35@ 2.60**
Pool 10 (H.Gr. Low Vol.)	Philadelphia	2.70	2.60	2.55	*2.25@ 2.60*
Pool 10 (H.Gr. Low Vol.)	Baltimore	2.55	2.35	2.40	*2.35*
Pool 11 (Low Volatile)	New York	2.15	2.15	2.15	**2.25@ 2.45**
Pool 11 (Low Volatile)	Philadelphia	2.45	2.35	2.35	*2.00@ 2.20*
Pool 11 (Low Volatile)	Baltimore	2.30	2.10	2.10	2.00@ 2.20
High-Volatile, Eastern					
Pool 31 (54-64) (H.Vol. Gas and Steam)	New York	2.00	1.95	1.90	**1.90@ 2.05**
Pool 34 (54-64) (H.Vol. Gas and Steam)	Philadelphia	2.10	2.05	2.00	*1.70@ 2.00*
Pool 34 (54-64) (H.Vol. Gas and Steam)	Baltimore	1.90	1.85	1.85	*1.75*
Pittsburgh sc'd. gas	Pittsburgh	2.70	2.55	2.75	*2.40@ 2.60*
Pittsb'gh mine run (steam)	Pittsburgh	2.10	1.95	1.95	*1.75@ 1.90*
Pittsb'gh slack (gas)	Pittsburgh	2.00	1.75	1.65	*1.55@ 1.65*
Kanawha lump	Columbus	3.40	3.50	3.50	*3.25@ 3.65*
Kanawha mine run	Columbus	2.30	2.25	2.20	*2.00@ 2.25*
Kanawha screenings	Columbus	....	1.35	1.25	*1.10@ 1.25*
Hocking lump	Columbus	3.30	3.40	3.25	*3.00@ 3.25*
Hocking mine run	Columbus	2.20	2.15	2.15	2.00@ 2.25
Hocking screenings	Columbus	....	1.20	1.20	1.10@ 1.30

	Market Quoted	May 17, 1921	June 7, 1921	June 14, 1921	June 21, 1921†
Pitts. No. 8 lump	Cleveland	$3.15	$3 25	$3.25	$3 00@$3.50
Pitts. No. 8 mine run	Cleveland	2.30	2 30	2 10	*2 00@ 2.15*
Pitts. No. 8 screenings	Cleveland	....	1 65	1.40	*1 15@ 1.35*
Midwest					
Franklin, Ill. lump	Chicago	3.70	3.65	3.55	**3.25@ 4 05**
Franklin, Ill. mine run	Chicago	3 25	3 00	3.00	*2.25@ 3.50*
Franklin, Ill. screenings	Chicago	2.55	2.00	2.00	*1.25@ 2.65*
Central Ill., lump	Chicago	3.25	3.15	3.15	*2.25@ 3.00*
Central Ill., mine run	Chicago	2.60	2.50	2.50	*2.00@ 2.75*
Central Ill., screenings	Chicago	1.90	1.65	1.60	1.00@ 2.25
Ind. 4th Vein lump	Chicago	3.50	3.15	3.15	*2.50@ 3.25*
Ind. 4th Vein mine run	Chicago	3.10	2 75	2.60	*2.25@ 2.75*
Ind. 4th Vein screenings	Chicago	2.25	1.75	1.75	*1.25@ 2.15*
Ind. 5th Vein lump	Chicago	3.25	3.00	3.00	*2.25@ 3.25*
Ind. 5th Vein mine run	Chicago	2.50	2.50	2.45	*2.00@ 2.75*
Ind. 5th Vein screenings	Chicago	2.20	1.85	1.85	*1.25@ 2.15*
Standard lump	St. Louis	2 50	2.15	2.15	2 00@ 2.25
Standard mine run	St. Louis	1 90	1.75	1 75	1 65@ 1.85
Standard screenings	St. Louis	1 75	1.15	.95	.75@ 1.00
West Ky. lump	Louisville	2 65	2.55	2.55	2 30@ 2.75
West Ky. mine run	Louisville	2 00	2.10	1.90	**1.75@ 2.25**
West. Ky. screenings	Louisville	1 90	1.50	1.50	*1 25@ 1.65*
South and Southwest					
Big Seam lump	Birmingham	3 70	3.65	3 80	*3.55@ 3.75*
Big Seam mine run	Birmingham	2 95	2 60	2.50	2 25@ 2.75
S. E. Ky. lump	Louisville	3 75	3 70	3.65	3 50@ 3.75
S. E. Ky. mine run	Louisville	2.60	2.35	2.25	2 00@ 2.50
S. E. Ky. screenings	Louisville	1.70	1.35	1.45	1 10@ 1.75
Kansas lump	Kansas City	5.00	5.25	5.25	5.25
Kansas mine run	Kansas City	4.40	4.40	4 40	4 25@ 4.50
Kansas screenings	Kansas City	3 75	3 25	3.15	3.15

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

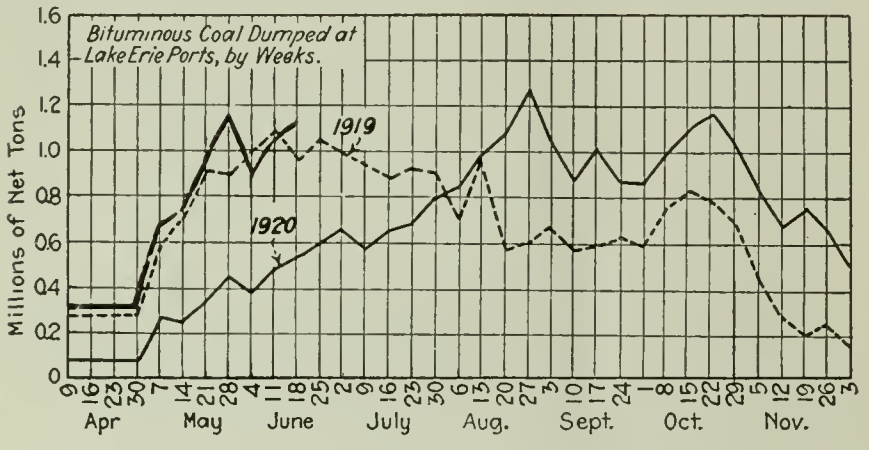
	Market Quoted	Freight Rates	June 7, 1921 Independent	June 7, 1921 Company	June 14, 1921 Independent	June 14, 1921 Company	June 21, 1921† Independent	June 21, 1921† Company
Broken	New York	$2.61	$7.85@$8.15	$7.30@$7.75	$7.85@$8.15	$7.30@$7.75	$7 85@$8.15	$7 30@$7.75
Broken	Philadelphia	2.66	7.90@ 8.20	7.45@ 7.85	7.90@ 8.20	7.45@ 7.85	7.90@ 8.20	7.45@ 7.85
*Broken	Chicago	5.62	12 65	12.40	12.65	12.40	**12 75**	**12.50**
Egg	New York	2.61	7.85@ 8.50	7.30@ 7.75	7.85@ 8.50	7.30@ 7.75	7 85@ 8.50	7.30@ 7.75
Egg	Philadelphia	2.66	7.90@ 8.20	7.45@ 7.85	7.90@ 8.20	7.45@ 7.85	7 90@ 8 20	7 45@ 7.85
*Egg	Chicago	5.62	12.50	12.35	12.50	12.35	**12 60**	**12.45**
Stove	New York	2.61	8.15@ 8.60	7.60@ 8.10	8.15@ 8.75	7.60@ 8.10	*8.15@ 8.60*	7 60@ 8.10
Stove	Philadelphia	2.66	8.15@ 8.60	7.80@ 8.20	8.15@ 8.60	7.80@ 8.20	8.15@ 8.60	7 80@ 8.20
*Stove	Chicago	5.62	13.10	12.70	13.10	12.70	**13.20**	**12.80**
Chestnut	New York	2.61	8.15@ 8.50	7.60@ 8.10	8.15@ 8.50	7.60@ 8.10	8.15@ 8.50	7.60@ 8.10
Chestnut	Philadelphia	2.66	8.15@ 8.50	7.75@ 8.20	8.15@ 8.50	7.75@ 8.20	8 15@ 8.50	7 75@ 8.20
*Chestnut	Chicago	5.62	12.85	12.60	12.85	12.60	**12.95**	**12.70**
Pea	New York	2.47	6.00@ 6.20	5.85@ 6.20	5.00@ 6.00	5.85@ 6.20	**5 50@ 6 00**	5 85@ 6.20
Pea	Philadelphia	2.38	5.75@ 6.25	6.10	5.50@ 6.00	6.10	5.50@ 6.00	6 10
*Pea	Chicago	5.62	10.80	10.70	10.80	10 70	**10 90**	**10 80**
Buckwheat No. 1	New York	2.47	3.00@ 3.25	3.50	2.75@ 3.00	3.50	2 75@ 3.00	3.50
Buckwheat No. 1	Philadelphia	2.38	3.00@ 3 35	3.50	3 00@ 3.25	3.50	*2.75@ 3.00*	3.50
Rice	New York	2.47	2.00@ 2.25	2.50	1.70@ 2.25	2.50	1.70@ 2.25	2.50
Rice	Philadelphia	2.38	2.00@ 2.50	2 50	2 00@ 2.25	2.50	*1 75@ 2.25*	2.50
Barley	New York	2.47	1.00@ 1.40	1.50	.75@ 1.10	1.50	**75@ 1 25**	1.50
Barley	Philadelphia	2.38	1.25@ 1.50	1.50	1.00@ 1.25	1.50	1.00@ 1.25	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.50	....	2.50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago. † Advances over previous week shown in **heavy type**, declines in *italics*.

5,273,000 for the preceding week. However, the daily rate of production was well maintained and this region contributed about 65 per cent of the total output for the country during this period, as a result of heavy export and Lake shipments.

Export business was the mainstay of the market during the last week. Even this demand was slightly weakened, for a time at least, by the prospect of an early settlement of the British strike. However, this does not now appear to be imminent and it is expected that buying will be resumed.

Lake shipments are piling up at the lower docks despite continued heavy dumpings, which for the week ended June 20 were 1,111,773 net tons cargo and vessel fuel. The movement for the season now stands at 8,015,047 tons, compared with 3,011,378 tons for the same period of 1920.



All-rail movement of soft coal to New England increased slightly during the week ended June 11, but anthracite shipments declined, as shown in the following table:

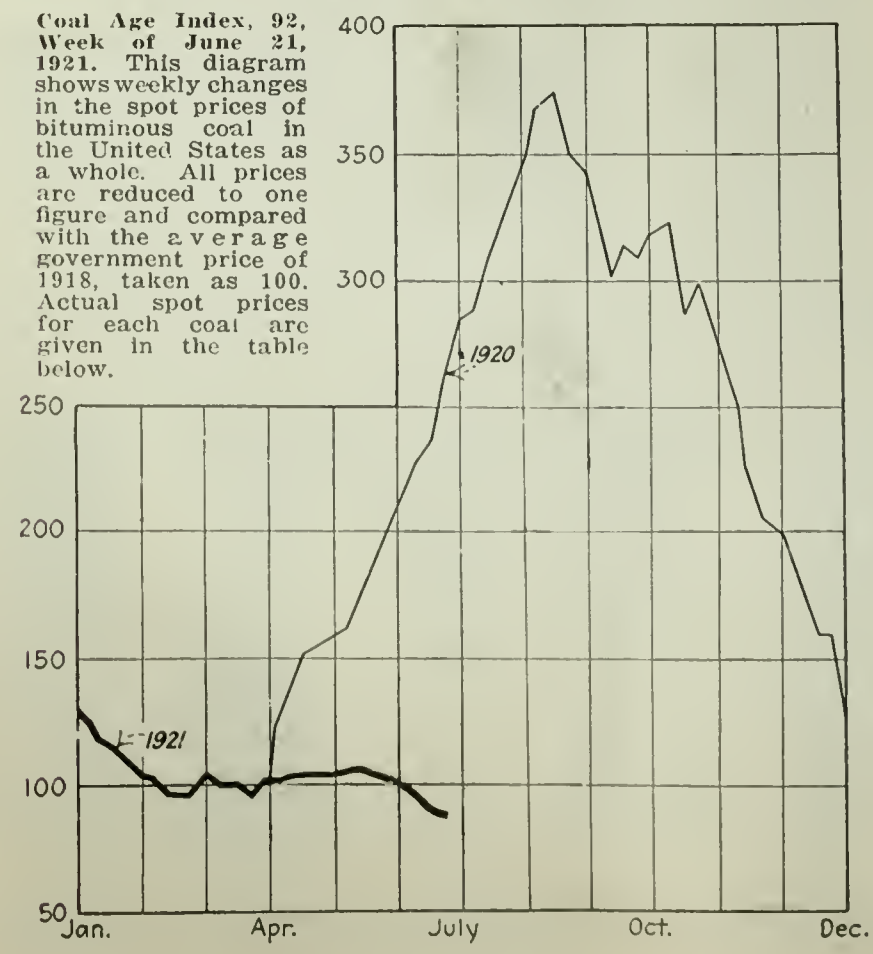
CARS OF COAL FORWARDED OVER THE HUDSON TO EASTERN NEW YORK AND NEW ENGLAND

Week Ended	1921 Anthracite	1921 Bituminous	1920 Anthracite	1920 Bituminous
June 4	3,067	3,052	3,607	3,562
June 11	3,030	3,143	3,432	2,817

ANTHRACITE

Production of hard coal during the week ended June 11 was 1,963,000 net tons, according to the Geological Survey. This compares favorably with the figure of 1,988,000 tons for the last preceding full-time week, that of May 28. Demand for domestice sizes continues satisfactory, but steam coals are even weaker than last reported.

Revised estimates place the total production of anthracite for the month of May at 7,479,000 net tons, an average of 300,000 net tons per working day. From the following table it will be seen that although this was smaller than in any May since 1916, the total for the first five months of 1921 compared favorably with that in any recent year except the war period, when washery coal was being shipped in large amounts.



Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date *a*
May 28*b*	8,166,000	160,625,000	9,568,000	207,749,000
Daily average	1,361,000	1,277,000	1,595,000	1,645,000
June 4*b*	6,821,000	167,445,000	9,141,000	216,890,000
Daily average	1,330,000	1,277,000	1,662,000	1,648,000
June 11*c*	7,945,000	175,290,000	10,355,000	227,245,000
Daily average	1,324,000	1,279,000	1,726,000	1,651,000

(*a*) Less 2 days' production during the first week in January to equalize number of days covered for the last two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date *a*
May 28	1,988,000	37,573,000	1,885,000	35,611,000
June 4 (*b*)	1,573,000	39,146,000	1,536,000	37,147,000
June 11 (*c*)	1,963,000	41,109,000	1,960,000	39,107,000

(*a*) Less 2 days' production during the first week in January to equalize number of days covered for the last two years. (*b*) Revised from last report. (*c*) Subject to revision.

BEEHIVE COKE

Week Ended June 11 1921 *a*	Week Ended June 4 1921 *b*	Week Ended June 12 1920	1921 to Date	1920 *c* to Date
60,000	61,000	400,000	3,251,000	9,755,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less 2 days' production during New Year's week to equalize number of days covered for the last two years.

PRODUCTION OF ANTHRACITE

(In Net Tons)

Year	May	Calendar Year to May 31
1913	7,945,000	38,300,000
1914	8,348,000	35,600,000
1915	7,807,000	35,200,000
1916	7,212,000	36,100,000
1917*	8,933,000	39,500,000
1918*	8,880,000	41,200,000
1919	7,525,000	32,500,000
1920	7,946,000	36,100,000
1921	9,497,000	37,700,000

* Years of very large washery production.

Although the retail trade feels the slowing down that has been in evidence for two weeks, operators so far have been able to go along without much trouble. However, unless householders take up the "buy-early" idea at an early date a slump in production is inevitable. Independent producers, by sacrificing steam sizes, are able to maintain a good rate of production, although their premiums are more difficult to obtain than a short time ago.

On June 20, 10,000 miners employed in the Pittston district of the Pennsylvania Coal Co. went on strike, which was called in an effort to force a transfer of all colliery superintendents to new positions and to establish uniform wages at all collieries, in addition to several minor complaints.

COKE

Beehive coke production was practically unchanged during the week ended June 11. The industry remained in a state of complete depression, the total output being placed at 60,000 net tons, a decline of 1,000 tons from the preceding week and but 15 per cent of production in the corresponding week of 1920.

Some independents are making further wage reductions, but as the demand does not exist, lower Connellsville quotations fail to attract the interest of buyers. Quotations now stand at $4.50@$5 for foundry, and for furnace at $3.10 @$3.25.

Foreign Market And Export News

Hampton Roads Market

The coal business at the local piers during the past week took a decided reverse, and prices dropped to the lowest level of the year. Pools 1 and 2 are now offered for $6, while Pools 5, 6 and 7 are quoted $5.15@$5.25.

C.i.f. prices reported were as follows: United Kingdom, $12.15; French Atlantic ports, $11.90; Rotterdam, $11.20; West Italy, $11.70; Rio Grande de Sul, $10.65; Scandinavian ports, $13.15.

C.i.f. prices quoted do not always represent the full price charged the consumer in the United Kingdom, for, in some instances, the orders are received in this country through factors in England who add several shillings as their commission. The above quotations do not represent the top of the market, for the range on Pool 1 to West Italy has been as high as $12.50, and on gas coal to the U. K., from $12.50@$12.90.

Clearances of coal cargoes last week from Hampton Roads were as follows: (Ports given when of record.)

	Tons
For Italy	
Swed. SS. Skagern	7,542
Am. SS. Kentuckian	7,936
Am. SS. Waukau	7,224
For France	
Jap. SS. Yoye Maru, for Bordeaux	8,860
Fr. SS. Ontario, for Havre	2,178
Span. SS. Cabo Ortegal	2,488
Br. SS. Clan Macbeth, for Havre	6,046
Am. SS. Kameist, for Bordeaux	7,187
Br. SS. Monadnock, for St. Nazaire	3,903
For Cuba	
Am. SS. Cotopaxi, for Havana	3,580
Swed. SS. Holmia, for Havana	2,546
Nor. SS. Bratland	3,033
For Brazil	
Br. SS. Adrogowan, for Buenos Aires	4,408
Br. SS. Marshal Plumer, for Rio de Janeiro	4,053
Br. SS. Kurdistan, for Rio de Janeiro	6,039
Br. SS. Framington Court, for Rio de Janeiro	....
For United Kingdom	
Grk. SS. Rokos Vergottis	7,890
Am. SS. Celeron, for Dublin	2,982
Br. SS. Roseden	6,662
Am. SS. Tollard, for Queenstown	7,402
Br. SS. Glenclevon, for Falmouth	5,712
Du. SS. Winterswijk, for Falmouth	4,754
Br. SS. Cornish City, for Falmouth	7,189
Am. SS. Yesoking, for Falmouth	7,017
Br. SS. Fullerton, for Falmouth	4,434
Am. SS. Ozette, for Portland	7,800
Br. SS. Knebworth	3,649
For Portugal	
Br. SS. Admiral Hastings, for Lisbon	4,292
Grk. SS. Meandres, for Azores	3,923
For Spain	
Am. Schr. Anandale, for Teneriffe	2,453
Br. SS. Leeds City, for Malta	3,136
Nor. SS. Truth, for Rosario	4,640
Br. SS. Bideford, for Rosario	4,960
Am. SS. Corozal, for San Juan	4,023
Br. SS. Bereby, for Las Palmas	2,308
Ital. SS. Nonentum, for Gibraltar	5,653
Nor. SS. Mount Vernon, for Kingston	843

Belgian Production for April

Belgian production of coal in April, 1921, amounted to 1,712,490 tons, as compared with 1,800,040 in March, and a monthly average of 1,867,845 tons in 1920. Stocks at the end of April were 1,159,120 tons. Coke production amounted to 132,720 tons as against 160,130 tons in March. Total briquet production was 203,730 tons in April and 204,590 tons in March.

Arrivals at French Ports

During the two weeks ended May 21 the following coal cargoes were received at French ports:

	Tons
ROUEN	
S. S. Utaritz, for Quitard, from Antwerp	1,600
S. S. Niobé for Un Gaziere, from Rotterdam	2,300
S. S. Johim Shaw, for P.— L.— M., Rotterdam	2,100
S. S. Mortagne, for Ch. Fer Etat, from Rotterdam	1,865
CHERBOURG	
S. S. Aulne, for Sté Union Commerciale	1,469
SAINT NAZAIRE	
S. S. Woerths, for Transports Maritimes, from Dunkirk	306
S. S. Nouvelle-Ecosse, for Energie Electric, from Antwerp	1,000
S. S. Montjoie, for Irugnac, from Ghent	1,300
LA ROCHELLE	
S. S. Argonne, for Delmas, from Rotterdam	3,005
S. S. Soutier, for Usine à Gas, from Antwerp	1,095
PAUILLAC	
S. S. Nantes, for Ch. Fer Midi, from Ghent	3,983
MARSEILLE	
S. S. Serbistan, for Cie P.— L.— M., from Rotterdam	4,922
S. S. Canada, for Cie Fabre, from New York	1,000
S. S. Burnhope, for P.— L.— M., from Rotterdam	3,700
S. S. Ustaritz, for Quitard, from Antwerp	1,600
S. S. Fondeur, for Office Charbons, from Antwerp	1,200
HONFLEUR	
S. S. Cholet, for Ch. Fer Etat, from Rotterdam	1,073
BAYONNE	
S. S. Luga, for Forges Adour, from Rotterdam	3,277
S. S. Industria, for Worms, from Antwerp	200

Coal and Coke Exports from the United States During May

Exports of coal and coke, as reported by the Department of Commerce, for May, 1921, and the figures for May, 1920, as finally revised, are as follows, in gross tons:

	May, 1920.	May, 1921
Anthracite	277,197	434,308
Bituminous, total	2,400,821	2,500,374
Exported to:		
France	245,915	50,136
England	7,751	173,175
Ireland	.....	51,717
Scotland	.....	81,865
Italy	380,015	332,851
Netherlands	215,823	22,864
Sweden	84,532	10,220
Switzerland	84,272	.....
Canada	716,453	1,124,246
Panama	.....	.....
Mexico	7,121	7,915
British West Indies	6,232	8,888
Cuba	113,861	14,345
Other West Indies	11,438	2,986
Argentina	101,144	113,733
Brazil	73,190	103,474
Chile	40,488	4,685
Uruguay	31,128	30,455
Other countries	281,458	366,819
Coke	42,077	15,641

Shanghai Market Report

Deliveries of Japanese coal are moving very slowly, according to Wheelock and Co.'s market letter, issued at Shanghai, May 19, 1921. Stocks are ample and a quantity of inferior coals awaiting disposal has weakened the market. The recent decision of the Japanese Mine Owners' Association to reduce production by about 20 per cent should soon have a steadying effect.

Fushun and Fuchung anthracite coals are quiet. Supplies of Kaiping coal have been more regular and there is a good call for the better grades.

Prices quoted are as follows:

	Taels per ton ex wharf
Japan Coal	
Kishima lump	14.00
Shakano lump	13.50
Arate lump	13.00
Shimoyamada Kirigomi	12.00
Shin Shakano Kirigomi	12.00
Yoshinotani No. 1 lump	13.00
Yoshinotani No. 2 lump	11.00
Ochi lump	13.50
Kaiping Coal	
No. 2 lump	11.50
Washed nuts	13.50
Washed slack	10.50
No. 1 slack	8.50
No. 2 slack	8.00
Fushun Coal	
Dust	10.00
Kirigomi	11.00
Fuchung (anthracite) Coal	
Nos. 1, 2 and 3 cobbles	14.00
Boiler coal	13.50
Dust coal	9.50

Coal Unloaded at French Ports

	Week Ended May 12	Week Ended May 19
CHANNEL PORTS		
Dunkirk	34,602	
Boulogne	1,500	3,475
Dieppe	2,642	1,096
Le Havre	6,500	5,600
Rouen	10,100	6,300
Caen	4,982	5,350
Cherbourg	250	1,219
Fecamp	138	.....
Legue-St-Brieue	360	.....
Le Treport	383	.....
ATLANTIC PORTS		
Brest	3,000	1,128
Saint-Nazaire	3,408	5,478
Nantes	3,420	677
Bordeaux	18,973	11,180
Bayonne	1,171	1,175
Lorient	2,748	1,765
Les Sables-d'Olonne	450	.....
Tonnay-Charente	.....	209
Marseilles*	4,998	4,148
La Rochelle-Ville	.....	1,095
Total	99,625	49,895

* Mediterranean port.

BRITISH BUNKER SHIPMENTS during April were 661,800 tons, as compared with 1,175,564 tons in April, 1920, and 1,796,619 tons in April, 1913. During the first four months of the present year, 3,798,145 tons were so shipped, as compared with 4,520,957 tons and 6,744,106 tons in the corresponding periods of 1920 and 1913.

BITUMINOUS COAL DEPOSITS in the neighborhood of Halle on the Saale in Germany, which have not been worked for about a hundred years, are about to be exploited again. Careful examinations have been made during the last few months and according to the report of the experts the veins are well worth being developed again.

THE CAPITAL OF ICELAND is reported to be suffering from lack of coal, on account of the British strike, and has been forced to buy from Belgium.

Reports From the Market Centers

New England

BOSTON

Dullness Is Unrelieved — Operators Struggle to Get Orders — Industries Await Developments — Anthracite Demand Continues to Slacken.

Bituminous—The past week disclosed no change in the general situation. Two months ago the trade was talking hopefully of a possible revival in July, but today has about abandoned hope of improvement until well after the vacation period. Only by most careful combing of territory are any orders found, and then only for small tonnages that in the aggregate amount to only a few thousand tons a week. The largest buyers are consistently staying out of the market, content to wait until present reserves show signs of depletion. To talk with certain of these consumers one might suppose the present price level would last through next winter, so little faith is there in higher figures.

At Hampton Roads the market coastwise is extremely quiet, the monotony being relieved only by intermittent inquiry off-shore. Contract quotas are being shipped to New England, but the volume is less than in other years. Fewer plants are dependent upon smokeless and the larger part of current movement here is to factors who strive to place the coal inland as it reaches the rehandling port. On these coals there is practically no spot sale in this market.

Operators are not relaxing in their strenuous efforts to get orders. In the Somerset district, in particular, special inducements have been made to move current output, such efforts being all the more necessary because of the existing differentials against B. & O. coal in large areas of New England. Cuts of 50c. have been quite frequent, but there is no sign that these have resulted in much tonnage. In Cambria and Clearfield counties prices have not receded to the same degree, but even there it has not been unusual for a shipper to quote 25@40c. less than the week previous. There are frequent instances, too, where coal has been sent to Tidewater in the vain hope an order would turn up at a price that would not be ruinous.

Industrial conditions show the same slackness that has been characteristic for months. Aside from a few special lines, there is nothing like the recovery that was predicted for the summer months. Sales continue on an extremely light basis and the retail buyers' strike continues in full force. Until production is on a higher level there will be no hope for the depleted stocks of coal toward which the trade has been looking wistfully for many months.

Railroads here are accepting coal only sparingly on contracts. Many shippers are shut off for weeks at a time and it is only by constant effort on their part that contractors are permitted to make deliveries in the proportion ordered. The financial situation has an acute bearing on this, because of the great difficulty experienced by the roads in securing money to operate on any satisfactory basis.

Anthracite—It becomes increasingly evident that the market for domestic sizes is by no means in the hands of producers. Where a month ago the dealer was willing to take a fair proportion of chestnut to secure egg and stove, he is now insisting upon the two larger sizes. Of course this is forced upon the retail distributor by the attitude of the average consumer. The latter, when he buys at all, is most independent and insistent upon the sizes in shortest supply.

Tidewater—East

PHILADELPHIA

Retail Anthracite Continues to Ease—Stove Only in Demand — Consumers Seek Credit—Bituminous Trifle Weaker —Prices Shade Off — Railroads Take Cheap Fuel.

Anthracite — Although the retail trade feels the slowing down that has been in evidence strongly for two weeks, the operators so far seem to have been able to go along without much trouble. They realize that they are going to have difficulty to work to capacity this summer. Thus far the strongest demand comes from the West and the fact that the big shippers are filling up their Lake docks no doubt accounts for the comparatively heavier shipments in that direction.

There is a general feeling among retailers that their margin of gross profit has shrunk so much as to be out of line with good business practice. However, the public is so much agitated over price that there is a general hesitation to add to the figures established in May. If the operators decide to increase mine prices on July 1 to cover the recent tax assessments made against them, the retailers must increase their delivered prices in accordance.

It is quite a common practice lately for the retailers to hold all their orders except stove. In spite of the slackening in demand the independents have thus far firmly held to their prices, with the possible exception of pea. It will be extremely interesting to watch developments in this direction during the summer, as retailers are somewhat anxious to take advantage of cut price coal, should the opportunity offer.

Steam sizes are unimproved and in some respects buckwheat has even lost ground. Usually heavy stockers of this size are somewhat inclined to cut down their storage. Rice and barley continue in extremely light demand.

Bituminous—The trade has grown even less favorable, and it would seem that the call from the consumer is about at the lowest ebb of the season. Most manufacturing plants continue to take their barest necessities, and were it not for the utilities the business would be close to a standstill.

There has also been some easing off in prices recently, as some fairly important shippers seem determined to get a market. It is also likely that some shippers have been able to lower the wage scale at open-shop mines and this is shown in lower figures for spot coals.

There has been somewhat of an increase in tonnage taken by the railroads. The roads are occasionally taking advantage of particularly low prices, as some shippers are accepting this business at an almost cost basis. Inasmuch as there is likely to be an extended wait for payment this all tends to show how anxious the producers are to do business.

NEW YORK

Anthracite Demand Easier — Independent Prices Hold — Steam Coals Accumulating—Bituminous Market Quiet—Movement Slow but Prices Are Maintained.

Anthracite—Falling off in demand by consumers is not being felt by dealers and shippers. The former have plenty of orders on their books to take all the domestic sizes sent for several weeks to come. Local houses report a good demand from Western points fed through the Lake and a steady but not urgent demand from the New England States.

Most local yards are well stocked and deliveries are made rapidly. Some of the smaller yards have been closed up because of the dull business. Retailers are well caught up with their summer orders.

With but a couple of weeks before the Pennsylvania State Tax on anthracite becomes effective the trade is anxiously awaiting some announcement of the policy to be followed by the operators. It is the belief however, that the tax will be added to the price of the coal at the mine, eventually to be paid by the consumer.

At this time the domestic coals are being quickly absorbed but it is apparent to many that there will be a much easier situation next month, with a possible surplus of certain sizes.

Pea is hard to move and is accumulating. The smaller coals are burdensome. Stocks are accumulating and are being stored by both companies and independents. There are many loaded boats in this harbor, some of which contain

barley that has been offered at prices slightly above the freight charges.

Bituminous—Nothing that looks like a revival of buying can be seen in the situation. Conditions could hardly be worse. There are some who fail to see any sunlight until the late fall or early winter, but they admit that much will depend upon general business conditions.

Coal, unless on consignment, is not being sent to Tidewater in large quantities. Receipts here are below normal, reports of June 17 showing 2,268 cars in and out of the pools at the various local piers as compared with 3,055 cars on May 17.

The refusal of the British miners to return to work will, it is thought, stimulate the demand for coal for export. Inquiries have been coming in slowly. Bunkering demand is quiet.

Quotations fluctuated considerably during the week. Slack was quoted $1.50@$1.75; Ligonier $2.15@$2.30; Shawmut $2.35@$2.55 and Punxsutawney $2.40@$2.55. Quotations for Pool 9, f.o.b. local piers ranged $5.90@$6; pool 10, $5.60@$5.75; Pool 11, $5@$5.25, and Pool 18 $4@$4.50. There was very little Pool 11 or 18 available here.

BUFFALO

Market Inactivity Continues — Lake Movements Still Heavy — Anthracite Moving as Usual — Market Dull.

Bituminous—Shippers are of the opinion that there is too much coal on the market and are prepared to see more mines shut down before there is any improvement. The Lake movement is also too heavy, for the coal does not sell as fast as it arrives at the upper docks and congestion is in sight. All consumers believe that prices are to go lower before the general state of business improves, so they buy mostly when a cut in price is offered.

The shippers do not see any immediate decline promising and believe that so far as that part of the business is concerned we are likely to go into cold weather with conditions much as they are now, unless cost adjustments can be hastened more than is in sight now. The consuming public is prepared to go on without much variation at least a while yet.

Bituminous prices continue weak on the basis of $3.50 for Youghiogheny gas lump, $2.75@$3 for Pittsburgh or No. 8 steam lump, $2.40 for Allegheny Valley mine run and $1.75@$2 for slack, with a little Pennsylvania smokeless at $2.50 and smithing at $3.

Anthracite—Demand continues light. Consumers are so afraid that they will miss a small decline in the price that they hold off and take their chances of going into winter without any coal. Meanwhile the mines have to run at a low rate and may be unable to meet the needs of the trade when they are most urgent. Canadian retailers have full bins and no trade.

Lake shipments are still good, the loadings for the week ended June 11 being 111,400 tons, of which 38,800 cleared for Duluth and Superior, 23,000 for Chicago, 18,000 for Milwaukee, 9,000 for Houghton, 7,800 for Fort William, 7,500 for Sheboygan and 7,300 tons for Manitowoc. Freight rates remain 65@70c. to Chicago, 65c. to Houghton, 60c. to Milwaukee, 55c. to Sheboygan and Manitowoc, and 50c. to Duluth, Fort William.

Coke—The trade is as quiet as ever, with no stir in immediate prospect. The movement of iron ore down the Lakes is very light and yet it is piling up much as it was in flush seasons when the amount coming in was up to the limit. One Pennsylvania shipper quotes 72-hour foundry coke at $4.75, and 48-hour furnace $3.50@$3.75.

HAMPTON ROADS

Accumulations Increase with Lighter Demand—Prices Weaken—May Dumpings Record for the Year.

Tonnage awaiting cargo at the three piers at the last of the week had been reduced to scarcely 25,000 tons in the aggregate, and accumulations at Tide were increasing. During the first part of the month the N. & W. piers were operating three shifts, and the outlook now is that the piers will return to two shifts.

Very little coal is now being shipped to Great Britain. Considerable tonnage is going to France and Italy, and much of it is being carried in American bottoms.

A comparison of the situation at the coal piers is as follows:

	Week ended June 9	Week ended June 16
Virginia Ry. piers, Sewalls Point—		
Cars on hand	1,561	1,752
Tons on hand	72,800	76,600
Tonnage waiting	6,350	26,150
C. & O. piers, Newport News—		
Cars on hand	1,908	2,095
Tons on hand	95,060	104,410
Tonnage waiting	69,850	1,575
N. & W. piers, Lamberts Point—		
Cars on hand	2,242	1,953
Tons on hand	103,947	91,988
Tonage waiting	52,795	3,860

BALTIMORE

Home Market Still Softer — Export Trading Continues to Increase — Hard Coal Merely Marking Time Until July 1.

Bituminous—There is not a doubt but that the soft coal business of Baltimore is dragging even more heavily than it was two weeks ago. This is in sharp contrast with the export trading, which has continued to increase steadily during the past two weeks as far as this port is concerned.

Except for a very few exclusively held fuels, the best steam coals are now to be had in the spot market around $2.75. Coals of high grade are frequently offered as low as $2.40 while the poorer grades are running $1.75@$2. Quotations on best gas lump are frequent at $2.75 while best run of mines is on the market at $2.40 or less. There is no demand even at these prices either in the spot market or on export. As stated however, the export movement is extremely healthy and the total loading for the first half of June, on 26 ships, ran to 147,219 tons. Eighteen of these ships took 19,962 tons additional in bunkers.

Anthracite—The hard coal trade is merely marking time. There is no demand to any extent for any class or size. The dealers have given up the attempt to convince the public that it should buy early because there is likely to be a sharp advance in retail prices due to wholesale increases after July 1. Dealers report that the small amount of coal now coming in is better prepared than was the case some weeks ago, when a formal joint complaint was made to the mines.

Canada

TORONTO

Trade Continues Quiet—Orders Coming in Slowly—Yards Well Stocked—Bituminous Easier.

Trade continues quiet as orders from domestic consumers are coming in slowly and are mostly confined to present requirements. Many buyers are holding back in the hope of reduced freight rates, which if granted may be more than offset by the increased price of coal later in the season. The yards have ample supplies on hand of all grades. Bituminous is easier owing to the limited call for industrial purposes and there is no appreciable indications of a more active market in the near future.

Quotations are as follows:

Retail	
Anthracite egg, stove, nut and grate	$15.50
Pea	14.00
Bituminous steam	$11.00@$11.50
Domestic lump	12.25
Cannel	16.00
Wholesale f.o.b. cars at destination	
¾-in. lump	$8.00@$8.50
Slack	6.00@ 6.75

Northwest

DULUTH

Increasing Dock Stocks Menacing — Trading Dull Despite Falling Prices — Lay-Up of Boats in Harbor.

The first indication of any return to life in the coal industry here came last week with the announcement that a railroad coal contract had been let for 300,000 tons. Names of those interested were not made public. The price is understood to be much lower than standard.

Constantly increasing stocks on docks are proving a menace. This has not as yet reached a crisis, but there is no hope that coal will move out speedily in the future. Two large concerns on the iron range, the Winston-Dear Co. and the Butler Bros. have stopped stripping, which is unprecedented at this time of the year.

Although no formal reductions in bituminous prices have been listed, lots were quoted at 50c. below last week. Youghiogheny and Hocking are being offered at $6.50 with run of pile at $6 and screenings at $4.25. There has been no response from dealers who continue their non-buying policy in the hope of still lower levels.

In all fifty-six boats arrived with coal during the week ended June 11, of which six were anthracite. Nineteen cargoes are reported on the way, but none of these are hard coal. A possible shortage in hard coal looms as the shipments decrease, and prices are holding firm.

Several boats have been laid up in the harbor because of inability of getting down cargoes. Two or three of the lines which have laid up their boats have announced that it is for the balance of the season, while other ship owners say that the time of the lay-up will depend upon iron ore activities.

MINNEAPOLIS

Buying Delayed in Anticipation of Lower Freights—Dock Supplies Heavy —All-Rail Situation Slow.

Waiting for the coal trade to develop is a good deal like waiting for the circus parade of boyhood days. It will be a tribute to the ability of the men in the business to control their emotions if there is not an epidemic of nervous prostration as a result of the present season's interminable delays. People are simply convinced that all commodities must come down in price, and they are not convinced that the coal trade has done its share.

It is easy enough to account for the present situation to those familiar with general conditions. But the bulk of coal buyers—at least retail buyers—are not familiar with these conditions. They see in coal only a moderate concession which they declare is nowhere near enough of a decline, and they propose to do all possible to get the rest of the concession. The several possible freight reductions have naturally created hope for some relief in that direction, in fact caused expectations which are likely to be disappointed for many localities. The changes on the mileage basis of certain interstate shipping points will give a number of increases as well as many decreases.

Those who are waiting for the changed rates will have a chance to ship under them. Buying usually picks up shortly after July 1, and with the delays which have occurred in buying so far, it ought to get under way actively, to make up for lost time. It would be a bold prophet who would say that it will, however.

There has been a good tonnage sent forward to the docks, sufficient to give a good start on the fall needs. But the situation is threatening, if there is not some relief in the way of coal going to the interior. The docks cannot handle an indefinite tonnage, except by some of it going out. So far the outgoing traffic has been materially under a year ago and less than usual. Now the upbound traffic is likely to be handicapped by the lack of return cargo.

The all-rail situation is as slow as ever. There is but little tonnage being placed in this territory. Indiana coal of a superior quality has been offered in this market at $2.60 at the mine, which with the freight, makes the cost on track Twin Cities a little over $6. This seems to be as low as could be expected under present freight and mine labor costs, but it has not been regarded as especially alluring.

MILWAUKEE

Market Very Dull — Little Buying Being Done—Coal Piling Up in Yards—Arrivals by Lake Continue Heavy.

Naturally this is the quiet season in the fuel trade, but in the past and up to the time the coal supply became erratic, there has invariably been a reasonable movement during the summer months, and before the winter began a large percentage of consumers always had their supplies in their bins. Unless consumers can be aroused from their indifference there is bound to be an overwhelming rush of orders next fall. The general public regards coal prices as being too high, and is looking for a possible decline. Perhaps when anthracite is put up another 10c. on July 1, consumers will begin to realize that coal prices are here to stay.

Thus far 1,152,905 tons of coal have reached this port, of which 335,212 were anthracite and 817,693 soft coal, which is more than double the amount received up to this time last year.

Inland West

DETROIT

Little Demand Is Developing—Receipts Continue Small and Free Coal Is Scarce.

Bituminous — Consumers are still holding back and there is seemingly little interest among buyers of either steam or domestic. With industrial and manufacturing activities showing so greatly decreased volume, the consumption of steam coal is largely diminished.

Jobbers say, however, that some of the curtailment in volume of their business is attributable to a theory among some buyers that a reduction of railroad freight rates may be expected in the near future and that coal will then be delivered at a slight reduction from present costs. Jobbers maintain that even conceding that lower freight charges are made effective, buyers will find themselves bidding against each other and that in the rush to get coal in a limited period, selling prices will be worked upward to a point which will more than counterbalance the amount saved on transportation charges.

In the attitude of delay, jobbers see also a serious menace to adequate coal supply. They believe that the requirements of other shippers and the pressure of crop movement, owing to an unusually large number of defective railroad cars, will tend to create a shortage in transportation facilities that may seriously interfere with movement of coal.

Buyers of domestic coal are now giving attention to other matters than providing for winter fuel requirements, with the result that little business is going to retailers.

West Virginia lump is quoted $3.25@$3.50, mine run $2.40@$2.50 and slack around $2. Ohio lump is $3@$3.25, mine run $2.15@$2.25 and slack $1.15@$1.90. Smokeless lump and egg are $5.50, mine run about $3.50 and slack $2@$2.25.

Anthracite—While some anthracite is arriving, the supply is not large. Retail dealers, generally, have a fair supply, but find their customers are manifesting no interest in stocking up. The indifference of buyers is attributable in part at least to unwillingness to pay $14.25@$14.75 a ton for domestic sizes.

MID WEST REVIEW

Retail Stocks Not Moving — Buying Slumps—Eastern Coals at Bargains—Mushroom Operators Dropping Out.

In ordinary years at about this time the demand for domestic falls off very sharply, but, on the other hand, the call for steam is strong and these coals ordinarily sell at a premium during June and July. This annual depression has been very strongly pronounced this year, probably on account of the unfortunate industrial condition in the Middle West.

Retail dealers are very worried. They report that the people are refusing to buy as they claim both freight rates and prices will be reduced shortly. Any one closely in touch with railroad affairs knows that it will be a matter of months before rates are reduced if at all. Should the operators be called upon to make further reductions without reducing labor, it will mean that the mines will have to close down or go bankrupt. If conditions get much worse, it is expected that the banks will step in, forcing some of the operators to discontinue running their mines.

The average retail yard is filled to overflowing, and has been since early in the spring. A great many cars which have been shipped are reported in bad order somewhere between the point of origin and destination. The percentage of bad-order cars has shown a marked increase, and will continue until various coal carriers find themselves in a position to make some expenditures on their old equipment. Motive power is in almost as bad shape as rolling stock.

A year back, old established companies saw a great influx of new blood. All over the Middle West there sprang up mushroom companies which were out to make as much money in a short time as possible. These operators usually took over some abandoned mine which had been forced to close down on account of the poor quality coal it produced. Now that the situation is subnormal rather than normal, these mushroom companies are finding themselves faced with many difficulties. A number have already failed, but a greater number are still hanging on, living, no doubt, off the substantial surplus they were able to accumulate last season. The fact that these speculators are being shaken out of the market is about the only benefit the legitimate trade is

able to derive from the present unsatisfactory industrial slump.

During the past week eastern coals such as splint and smokeless from West Virginia, block from Kentucky, etc., have been offered at reduced prices. Operators with mines in the East took on early in the spring substantial orders for Lake shipments to the Northwest. The operators who obtained these orders started right in running their mines full time, trusting to fill the orders along the latter part of August. Unfortunately, the normal demand for prepared coal did not eventualize, consequently, instead of shipping out a considerable tonnage to the domestic trade, the operators have been forced to concentrate on their Lake orders, a number of which have been nearly completed. Operators are now casting about for additional business in order to insure running time until the movement of domestic coal will have to take place.

It is surprising to note that one of the largest engineering concerns, so far as the development of coal mines is concerned, is doing more business than it has done in years. In fact, this group of men have reached the point where it is almost impossible for them to assume any new contracts. Many mines, which have been closed down, were worked pretty hard ever since the war period and are in poor shape. Operators are seizing upon the present situation to have them thoroughly rehabilitated inside and out so as to be ready for the winter rush which must come inevitably.

COLUMBUS

Lake Tonnage the Only Feature — No Industrial Improvement—Domestic and Steam Business Is Dead.

Buying for domestic and steam is restricted to actual immediate needs and as a result little tonnage is moving. Everyone appears to be playing a waiting game, in the hope that freight rates will be reduced and also because of unsettled industrial conditions.

Lake trade is still the big feature of the business. Shippers who have contracts are straining every point to get a large tonnage to the lower ports. Most of the trade is being carried on by operators who have their own dock connections. Little contracting has been done outside of these concerns. Vessels are still scarce and there is some congestion at the lower ports.

Dealers are not moving much tonnage. Some of the better grades such as Pocahontas and New River are moving but Ohio-mined coals are dull. Rural sections are not absorbing much, although some dealers are buying coal for threshing purposes.

Manufacturing is not being resumed to any extent, especially in northern Ohio industrial centers. Some lines show an increase while others show a falling off in operations. The policy of these concerns is to pick up bargains when they desire fuel.

Production is rather quiet. During the week ended June 4, the Southern Ohio Coal Exchange reports a production of 131,258 tons from th 396 mines reporting. The holiday at the first of the week interfered with production.

CHICAGO

All Demands Reach New Low Level—Unemployment Curtails Domestic Buying—Anthracite Bargains Appear.

Without doubt, it is very safe to say that the coal market has, during the past week, been more stagnant than at any time during the last six months. The demand for coal has steadily decreased since last December, and we believe we have now reached the point where the market is just as stagnant as it can be. The low level has been reached, and, from now on, it is the opinion of those closely in touch with the situation, there will be some small improvement.

Chicago retailers report that the public is refusing to buy coal. Those who have money to spend are refusing to buy on the ground that prices will be reduced during the course of the next six weeks. In addition to this, a great many men who usually buy their household coal early find themselves out of work, and, consequently, have no money whatsoever to spend on coal. The percentage of those out of employment in and around Chicago is growing steadily, and supplying these people with coal later on is going to be a problem.

A great many bargains have been offered, both in steam and domestic coals, during the past few weeks. Some of the independent producers of anthracite have made special prices to wholesale agents in Chicago, quoting prices which are considerably below those quoted and held by the old line operators.

CINCINNATI

Distress Coals Drive Down Prices—Slack Goes Begging — Retail Figures Fairly Steady.

Full pressure of a non-absorbing market was applied this week to drive prices on slack lower. Southeastern Kentucky bituminous made the new distress level for 80c. On the other hand, certain of the mines were actually quoting as low as 90c. and their price to wholesalers must have been under this figure, for they too were making the same price. West Virginia slack was $1, even for tonnage that was on demurrage or nearing it in the yards. Mine prices were a bit stiffer than in Kentucky and good coal commanded as high as $1.50 for better grades of gas. Smokeless also sagged. Dry Fork in the Pocahontas field has been the low spot with $2@$2.10 sales recorded, but No. 3 vein was to be had cheaper than for some time, around $2.50.

Block was offered to bear the burden of the slump in screenings. Wholesalers asked as high as $4 for it, where $3.50 was the outside price. Those who do business in the Carolinas and north Georgia say that the price has gone even higher.

Smokeless lump has evinced a little tendency toward softness. Another drop of 25c. has been shown while nut and egg are quoted from $5@$5.25. Mine run is unsteady and can be had at $3@$3.25.

There have been scant changes in the retail market other than a 25c. advance on the top grades of smokeless, making this $10.25 for city and 25c. extra for hill-top deliveries. Slack has dropped to $5.75@$6.

ST. LOUIS

Market Is Quiet—Steam and Domestic at Standstill — Prices Have Gone to Pieces.

A continued lag in ordering prevails. There is no storage coal being put in, excepting a little anthracite on orders taken several weeks ago. Dealers' yards are full and the only soft coal moving is that for public schools and apartment houses.

The dealer trade is not doing anything. One branch office of a large company which sells 50 or 100 tons daily, occasionally has days when not more than five tons are sold. There is a feeling prevailing among the public that coal must come down.

Steam is almost at a standstill. The buyer can name his own price and he is not buying any more than he has to. In the country a little threshing coal has moved out, but it does not begin to compare with the tonnage of past years.

The St. Louis Coke and Chemical Co., of Granite City, have begun advertising their byproduct coke made from Illinois coal at $8.50 delivered to the trade, which is $2 under the local byproduct coke price. However, there have been no orders taken to any marked extent and it is likely none will be taken, because the public feels that there is going to be a fight for the coke business.

CLEVELAND

Lakes Chief Outlet for Coal — Industrial Demand Lighter — Slack Prices Weaken.

Bituminous—Further curtailment of industrial activities is reflected in the smaller demand for steam coal. Operators estimate that less Ohio coal is being produced and marketed than in May, a fact which coincides with the slowing down in automotives, rubber, iron and steel plants. The present outlook continues for a summer of unusual dullness. Many large coal users who follow the market carefully are inclined to agree with the opinion of George H. Cushing, managing director of the American Wholesale Association that "it is pure romance to predict now any such shortage of coal as will advance prices sharply."

The lack of a fear of advancing prices is resulting in most companies drifting along in the matter of fuel. When stocks are exhausted, prompt orders are placed. On the other hand the announcement of Secretary Hoover of the failure of efforts to bring about freight rate adjustments on coal

through voluntary agreements between producers and railroad interests, has undermined the hope of lower coal prices through reduced freight rates for many months to come. This consideration is expected to have some slight stimulating effect upon the market.

An outstanding feature has been the collapse of the slack market. This is due to the abundance of slack, the result of production of prepared sizes for Lake trade. Other prices remain unchanged.

The export demand at Hampton Roads is stimulating the West Virginia coal market and retailers here do not look for any price reductions in Pocahontas. Demand continues extremely light. Dealers report they are doing about 50 per cent of the business done at this time last year and demand is confined to higher grades of bituminous and to anthracite. Receipts of bituminous coal for Cleveland consignees, in week ended June 11, amounted to 1,153 cars; divided, industrial 851 cars, retail 302 cars; as compared with a total of 965 cars the preceding week, or an increase of 302 cars.

Lake—Dumping at the lower docks is increasing and stocks are being reduced. Dumpings last week amounted to 1,033,684 tons, a big increase over the corresponding week in 1920, when the total was 430,640 tons. Shipments up to June 1 of 4,802,667 tons were the heaviest for the period since 1913. Last season to June 1 only 1,497,304 tons were moved.

Southwest

KANSAS CITY

Domestic Buying Is Active — Market Overloaded with Steam — Prices Are Unchanged.

Buying of domestic grades produced in Kansas is on with a rush. Some operators are behind two weeks in shipments and steam grades of all kinds are a drug on the market, due to the general stagnation of business, low price of oil, and dumping of coal from outside markets.

Kansas and Missouri wheat crops are being harvested and the yield is good. If the wheat moves promptly to market it will result in an increase in the demand for locomotive coal. Railroads generally have been using only about one-third the coal ordinarily consumed. No change in prices from last week.

South

LOUISVILLE

Local Domestic Demand Fair, but General Markets Are Slow - - Demand Weaker as Lake Tonnage Dwindles.

Lack of Lake shipping facilities as a result of transportation companies refusing to haul coal with no ore or down bound freight, is resulting in congestion of coal at Lake ports, as movement has been heavy. It is claimed that some Lake buyers have had to stop the movement for the time being, and that there is some danger of railroads placing embargoes if coal doesn't get started from the lower ports.

This condition has hit the eastern Kentucky shippers to the Lake section, making for weaker prices on domestic sizes, this along with small ordering on the part of retailers, who after geting stocked have been unable to force consumers to stock. Slump in prepared size demand may work for a stronger steam market.

Steel mills, not having orders, are not taking much ore this season, and this can clearly be seen by the fact that they are not taking much coal. Demand for gas and byproduct is quiet, while industrial, public utility, railroad and general demand for steam is about the same as it has been.

Quotations are shown in the Weekly Review. West Virginia and Hazard prices are generally about a quarter lower than Harlan, while Straight Creek and Jellico, along with Hazard No. 4, are in line with Harlan, which is commanding a top price, due to its being high-grade gas or byproduct coal.

BIRMINGHAM

Almost Complete Stagnation Envelopes Trade — Spot Sales Light and Prices Shaded—Domestic Buying Is Reduced.

An optimist connected in any manner with the coal trade is almost as scarce as the proverbial "hen's teeth." The steam coal market has been in a bad way since the Christmas Holidays and the opinion is generally expressed that improvement will be very slow and that normal conditions will not be reached this year. Railroad contracts have about all been placed with the exception of the Western of Alabama, which line also operates the Atlanta & West Point and Georgia Railways. Bids on the fuel supply for these lines are now being considered.

No other interests are considering contracts and spot buying is at a low ebb. Such coal as is being sought can be bought at almost any price demanded by the purchaser. However, there is not enough of this business to use as a criterion for quotations, representative figures running about as follows: Carbon Hill $2.50@$2.75, Big Seam $2.25@$2.75, Corona $2.75@$3.25, Pratt and Nickle Plate $2.85@$3.25, Black Creek $3@$3.25, Cahaba $3@$3.25.

Domestic dealers are still taking coal fairly well though there is considerable complaint to the effect that consumers are not buying any considerable amount, which is tending to slow down deliveries from the mines to some extent. Quotations f.o.b. mines have not changed the past week.

West

DENVER

Revival Seen — Storage Price Fails to Produce Business—Trade Prepares for Busy Days.

Operators are looking forward to a revival, beginning with July, after a period of uncertainty that is without equal. The mine price will be back to $6 for lump, following a storage price that started in April with $5.65, and in some instances as low as $5.50.

For the first time in many months there is a scarcity of good mine labor, due to local conditions, many men making a practice to get into the best fields and through intensive work and long hours, average more pay than they could get in the mines.

With production at 250,000 tons a year ago, present activities are not sufficient to reach the sudden jump in output recorded a year ago, from 210,000 to 250,000 tons within two weeks.

The tendency during early summer to cut the price and keep below the graduated scale of the storage rates is no longer apparent, operators and dealers preparing for a rush of orders in another month or six weeks.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Production Well Maintained — Steam Coals Sluggish — More Labor Disputes.

Production increased during the week ended June 11. The total output was 1,963,000 net tons, compared with 1,573,000 for the week preceding, which was affected by the observance of Memorial Day. Demand for the domestic sizes continues good but steam coals are perhaps a trifle weaker. Many independents are now sacrificing the smaller coals in order to maintain their production of domestic.

A general strike is in progress in the Pittston district of the Pennsylvania Coal Co. where the General Grievance Committee charges that the company is not paying the wage scale and that there is no set scale for company men, the rate varying with the colliery.

PITTSBURGH

Production Declining — Decrease in Lake Shipments Expected — Market Easier.

Mine operations continue to slow down on account of the pressure exerted to reduce the accumulation of loaded cars at the Lake. Recently the Penn-

sylvania applied demurrage rules, but there are still probably 30,000 cars en route and at Lake front.

The U. S. Steel Corporation, which will have a moderate movement of ore, is taking coal on all its up-trips, when in previous years it has carried no coal, its boats going up in ballast. Expectations are that the bulk of the coal needed in the Northwest will be moved in the first half of the season. Then, if conditions as to demand have not improved, the miners will have reason to propose a lower wage scale in hope of stimulating demand.

Industrial requirements have grown even lighter. The steel industry has come to an almost complete stoppage, prospects being that by July 1 steel production in the country at large will be down to about 15 per cent of capacity. Demand for gas coal continues at a moderate rate.

Spot prices are a shade easier and for steam coal are well below what is claimed to be the production cost. Quotations are shown in the Weekly Review. There is no market on byproduct coal. Some Connellsville byproduct has been offered at about $1.75, but there is one case of a consumer continuing to take a high grade of Connellsville byproduct at $2.50.

CONNELLSVILLE

Some Small Business Closed — Prices Off — Some Plants Operate by Reason of Special Conditions.

Two contracts for furnace coke have been closed on the week. The Empire Steel & Iron Co. bought about 7,000 tons a month for third quarter at $3, and the Colonial Iron Co. about the same monthly tonnage for July to November, at $3.15. The latter company had trouble with its miners at its coke works adjacent to the furnace, and closed the department. The higher price in the contract running through October and November is in keeping with the usual trade appraisal that coke is worth more money during unfavorable weather. Prices done on the latest business are the lowest since the summer of 1916.

Spot coke has also declined. In the past few days one operator has been selling single carloads, through dealers, the price being $3, the consumer paying $3.10@$3.15. It is probable that consumers if buying in any tonnage could do $3. Spot foundry coke is off 25c.

The region is operating, as to coke, at about 10 per cent of capacity, but is shipping moderate quantities of coal. At the regular independent wage scale it is probably unprofitable to sell coke at less than $3.25@$3.50. Two or three plants are said to be threatened with squeezes, thus being forced to run, one is said to be reducing wages farther, and others are possibly getting a larger "hump" on the wagons than normal payment being by wagon count.

The *Courier* reports production in the week ended June 11 at 11,500 tons by the furnace ovens, and 21,490 tons by the merchant ovens, making a total of 32,990 tons, a decrease of 2,370 tons.

UNIONTOWN

Coke Prices Weaker — Coal Firm, but Trading Shows No Improvement.

Both coal and coke have scaled down to the point where it is most difficult to discern the existence of a market. For months past the volume of business done in selling offices has tapered off gradually until at the present time a substantial tonnage being sold becomes an event.

While there is little difference in the volume of business done in either fuel, the coke market is showing a softening tendency while coal prices remain firm at low levels. The declining coke market may be ascribed to the production of tonnage for which the operator had no destination in the expectation of finding a market. Unable to find a buyer the tonnage has stood on the side track while the market was canvassed and is now described as distress tonnage.

There being virtually no market at all and with a surplus of tonnage over the few inquiries made, the natural result has been to soften prices. Furnace coke has a range of $3@$3.25 but foundry coke continues stiff, ranging $4.50@$5. In the coal market, while business is limited, prices remain at the same level.

EASTERN OHIO

Lake Tonnage Dropping with Growing Accumulation at Ports—Industrial and Retail Demands Are Light—Production Recovers Slightly.

While there was a slight recovery in the output during the week ended June 11, it is quite evident that the maximum for the summer was reached and passed during recent weeks, unless there is an unexpected change in the various conditions affecting the markets served by this field.

Total tons mined amounted to 394,000 or about 63 per cent of rated capacity. Daily average was 65,667 tons as compared with 73,000 tons the second preceding week, which latter figure is the maximum established for the current year. Output for the year up to June 11 is conservatively estimated at 7,311,327 tons or 53 per cent of capacity. This aggregate tonnage is at least 1,000,000 tons ahead of the same period last year, when the car supply never exceeded 50 per cent in this field.

Figures given out by the operators indicate that association mines worked 50 per cent of possible worktime and produced approximately 61 per cent of rated capacity. Production for railroad account amounted to about 31 per cent of the total output.

The majority of consumers are buying in small quantities. If there is not some quickening very soon in the movement of coal from the Upper Lake docks, the shipment to Lake, which has been the great stimulant to production since May 1 will beign to show marked recession. Railroads have about 20,000 loads at the lower docks awaiting dumping, and 6,000 cars in transit. Lake shipments are now being curtailed because of prevailing conditions in that trade.

Both industrial and retail demand continues light, and with the steel plants running at less than 25 per cent capacity and retrenchment programs in effect at other manufacturing plants, coal shippers are not optimistic over the outlook for the immediate future.

CENTRAL PENNSYLVANIA

Production Rate Low — Present Scale Too High to Compete with Other Fields.

Production continues far below normal and reports thus far in June show no material change over May. There is much idleness among the miners of the district and operators contend that no relief is in sight as long as competitive fields are operating on a 1917 basis while this district must hold on to the war scale.

It was reported that the Vinton Colliery Co., operating at Vintondale, had made a big reduction in wages and that the men were satisfied to accept the reduction upon a promise that the mines would be operated continuously. All other mines in that vicinity are either closed or working part time.

UPPER POTOMAC

Even Less Demand — Production at Minimum — Prices Soft.

There was even less of a demand in the week ended June 11 and mine idleness was more pronounced. Even the larger companies were operating only slightly better than half-time. Only three or four companies in the neighborhood of Dodson and Potomac Manor had orders enough to justify running.

Pool 9 quotations were $2.75 and Pool 10 $2.50. No unclassified coal was being sold to amount to anything.

FAIRMONT AND PANHANDLE

Production Drops with Lighter Demand —Export Market Weakens—No Contracting.

Fairmont

Production conditions were not as satisfactory during the second week of June and mine idleness was more pronounced as a result. Out of 76 mines on the Charleston Division of the B. & O. only about six were in operation. A slump in Lake and Tidewater shipments was in evidence, the export demand having undergone a pronounced decrease. It was difficult to find a market for spot coal and prices as a result were soft.

Northern Panhandle

Only about 72,000 tons were produced during the week, the bulk of the output moving to Northern markets, Inland West points and the Lake. There was no activity in the spot market and practically no contracts were closed. Under the influence of poor demand even prepared sizes were not bringing more than $2.50@$2.90, with mine run ranging $2.25@$2.50 and slack about $1.50.

Middle Western

INDIANA

More Mines Closing—No Market for Coal — Serious Situation Threatens.

Mines continue to close down each day because of no market. Sidings are filled with loaded cars for there are no orders. Each day more mines drop from the list of those working and join those which have been idle for several months.

Miners seldom get more than three days work per week. Many of the men have not worked a day for over a month. Operators have given the men every opportunity possible for work, but they cannot operate when they cannot dispose of their coal.

It is probable that there will be an unusual fuel shortage during the winter months, as mines cannot supply enough coal for all domestic and industrial consumers unless they can produce the coal before the winter months. The Indiana situation threatens to become serious unless the public takes action immediately. Coal cannot possibly be cheaper next winter unless the mines are operating at this time.

WESTERN KENTUCKY

Demand a Little Quiet — Prices Well Maintained — Producers Operating About 40 Per Cent — No Efforts to Push Coal.

Western Kentucky mines are operating about 40 per cent and the operators are maintaining prices, and getting very fair figures as a whole, as they are no longer giving screenings or anything else away in an effort to keep running.

There is some little demand from the Chicago district, and from some Indiana points, with fair movement to Louisville, Nashville, Memphis and Evansville. The Southern movement is slow but fairly steady as a whole. There is some little river movement from western Kentucky to Mississippi River towns also, and some export business to Cuba, which while small, is being handled regularly. Prices are holding.

SOUTHERN ILLINOIS

Steam Coal Clogs the Market — Spot Sales Impossible — Prices Break Further—R.R. Tonnage Is Light.

The situation in the Carterville field shows no improvement over the past week. Only meager shipments are moving, going principally North and Northwest. Shipments for the South in St. Louis territory have dropped off.

The steam situation is a serious problem and it is a question how much longer mines will be able to take care of domestic orders unless steam business gets better on the smaller sizes. It is estimated that there are over 400,000 tons of steam coal on the ground in Williamson and Franklin counties. Many of these piles are burning, causing a lot of trouble. Several mines are still idle. Railroad tonnage continues light.

For the first time there has been a serious break in the association operators' prices. Independents, however, are as low as $3.25 on lump and egg, $2.75@$3 on nut, $2.75 on mine run and $1.50 on screenings, with very little of it moving.

The Duquoin field is in somewhat similar condition. Steam coal here is hard to move, but not much harder than domestic. In the Mt. Olive district one and two days a week is the working rule with most of the coal, both steam and domestic, moving North. St. Louis prices on domestic sizes are $3 and $3.25 on country shipments.

The Standard district is worse, if anything. Screenings are down as low as 75c., and there are no takers for anything. Screenings are, however, hardest to move and it is a question how much longer some operators can hold out, producing coal that is netting them about $1.40 when the actual cost ranges $1.75@$2. Railroad tonnage is light in this field.

Middle Appalachian

HIGH VOLATILE FIELDS

Lake Shipments Slowing Down — Market Is Weaker — More Inquiries, but Little Additional Tonnage Closed.

Kanawha

Less coal was produced during the week ended June 11 than during the earlier part of the month. Comparatively few spot sales were made and there was a marked dullness in contract business. Prices were soft, mine run $2 and even less, slack was as low as $1.25 and even prepared sizes did not range more than $2.75@$3. No export business had developed and Lake shipments were slowing because of accumulation at the lower docks.

Logan and Thacker

The Logan field continued its high rate of production throughout the week. Shipments continued at the rate of about 50,000 tons daily. But little tangible business had materialized and prices remained stationary. However, inquiries were becoming more numerous.

Williamson production was not over half of potential capacity; however, with the restoration of peace for the time being at least, the output increased to 93,000 tons. There was a fair market for the coal although little of it was moving on a spot basis.

Virginia

The output remained at the rate of about 50 per cent of potential capacity. Operations were limited to the larger tipple mines. Spot sales were few and prices were flabby.

Northeastern Kentucky

With no general demand for coal, production was on the decrease and prices were weaker. Lake shipments were dwindling and there was no demand for steam coal whatsoever. Prices ranged $3.50@$4 on domestic, mine run $2@$2.50 and slack sold off around $1@$1.25.

LOW-VOLATILE FIELDS

Market Conditions Not So Satisfactory — Lake and Exports Are Weaker — Prices Soften with Lower Demands — Production Slumps.

New River and the Gulf

Market conditions for New River coal were not so satisfactory during the week ended June 11. The coal mined was moving principally to Tide although there was a pronounced lessening of demand at the seaboard. Congestion at the Lake front was preventing a quick dispatch and lowered shipments resulted. Prevailing conditions were reflected in lower prices.

Lack of markets still prevented a few companies in the Gulf region from resuming operations. Some coal was being sold but the spot market was rather listless, especially as to Tide demand.

Pocahontas and Tug River

Pocahontas production hovered around 250,000 tons, there being a loss of about 180,000 tons due to "no markets." Lack of spot demand kept the output about 100,000 tons less than it had been during a large part of May. Tidewater was claiming the bulk of the output but there was a fairly good western domestic market. Slack prices ranged $2.50@$3 and mine run around $3. Prepared sizes had weakened somewhat and ranged around $5.

Tug River production was slightly off, but the effect of a dwindling market was not so severe as in the Pocahontas region. The field was doing better than 50 per cent of potential capacity. Prices ranged about the same as in the Pocahontas region.

West

UTAH

Low Rate of Production—Storage Program Being Urged.

The situation in Utah remains about the same with practically no coal being purchased for storage purposes. Mines are working from 20 to 25 per cent time and further reduction would be completely demoralizing.

Secretary Banning of the Utah State Public Utilities Commission, is urging the public to store coal for winter use. He advises householders wherever possible to strive to reduce the danger of a coal famine by placing storage orders. Later in the season equipment will not be so plentiful. It will then not be a question of what it will cost for coal, but whether it can be obtained. An increase in the coal movement at this time will give work to men who mine, transport and deliver the product, and to that extent it will alleviate the present labor situation.

MINE And COMPANY NEWS

ALABAMA

Pending arrival of the line of the Central of Georgia, the **County Coal Co.**, which has opened new coal mines at Grant's Mill in the Cahaba basin, near Leeds, is moving coal from the mines in trucks. Meanwhile the railroad is speeding the work of construction and will soon have penetrated this basin. Not only the County Coal company's properties will be tapped, but the new line will also reach virgin coal properties of the DeBardeleben and Alabama Fuel and Iron companies, which will be extensively developed.

ILLINOIS

A coal deed recording sale of certain coal rights in Hillsboro township by Arthur Kinkead to the **Indiana and Illinois Coal Corporation** has been filed in Montgomery County, the transfer giving the Taylor Springs mine a greater area for operations.

The Colfax mine will be reopened soon. The workmen overhauling it have found the shaft to be in good condition and none of the cribbing has been broken or so badly decayed as to need replacement except for the first twenty feet. The steam pump at the 165-ft. level was put into operation after a little cleaning and it is now pumping water, just as it was used twenty years ago. The mine is 400 ft. deep.

INDIANA

C. B. Meredith, F. C. Jones and R. C. Jones are the directors of a new coal mining company recently organized in Terre Haute. The company will be known as the **J. & M. Coal & Mining Co.** and has a capital stock of $60,000.

The Star City Coal Mining Co., of Shelburn, has contracted for the installation of a new wooden tipple which will be fitted with Marcus screen and all loading facilities. The work will not interfere with the operation of the existing tipple during the construction period.

The Eureka Block Coal Co., of Pimento, recently contracted with the Roberts & Schaefer Co. for the installation of a wood tipple to be equipped with a Marcus screen and loading chutes.

KENTUCKY

Louisville retailers, in dealing with some of their best customers, have guaranteed prices against decline on prepared sizes, not touching steam coal, as steam is weak and it is not known whether the bottom has yet been reached. The weakness in steam should make for a higher prepared market, with the result that the retailers are not taking many chances. Another offer is a 25c. discount for cash within ten days. Retailers this year are also offering a like reduction from advertised prices, where the coal is dumped and does not have to be hand shoveled.

MINNESOTA

The Superior Coal & Dock Co. has let a contract for a new dock to be located on the Duluth side of the Duluth-Superior harbor. The dock will have a storage capacity of 600,000 tons and will have a loading bridge 365 ft. in length. The dock itself is to be 2,400 ft. long. The contract has been let to Whitney Bros. of Superior, and the bridge will be built by the Brown Hoist Co. of Cleveland. The total cost is estimated at between $600,000 and $700,000.

The Pursglove Coal & Dock Co. is a new corporation which will operate at the Duluth-Superior harbor. The new company has acquired a dock at Superior, equipped with efficient handling machinery, shaker screens and Manierre box car loaders. The company is now receiving coal at its dock. Roy O. Eastman, formerly sales agent of the Pittsburgh & Ashland Coal & Dock Co. has resigned his position to become vice-president and general manager of the Pursglove interests in the Northwest.

The M. A. Hanna Coal Co. has been awarded the contract for furnishing the water and light department of the town of Buhl with 9,000 tons of coal on its bid of $4 per ton for Kentucky screenings f.o.b. Duluth. Other bids were as follows: **Great Lakes Coal & Dock Co.**, Youghiogheny, $4.15; **Northern Coal & Dock Co.**, yard screenings, $4.50; **Northwestern Fuel Co.**, Millers Creek Kentucky screenings, $5, and the **Dower Lumber Co.** of Buhl, Youghiogheny, $4.10 and Kentucky screenings $4.25.

OHIO

George W. Black of Marion has purchased the **Progress Coal Co.** property, located near Nelsonville. The headquarters which have been in the Ferris Bldg., Columbus, will be moved to Marion. B. A. Weadlock was president of the company and will continue in that capacity for some time.

The Gem Coal Co., chartered recently with a capital of $10,000, has opened a retail yard at Columbus. W. E. Evans is treasurer and general manager; V. G. Miller, president, and C. E. Aumiller, vice-president and secretary. The yard was leased from the Columbus Builders' Supply Co.

The Carr's Fork Coal Co., Perry County, has been organized with a capital of $400,000.

The Lorain Coal & Dock Co., Columbus, has closed a deal for the purchase of 15,000 acres of virgin coal lands in Marshall and Ohio counties, W. Va., in the Panhandle part of the state. There is no railroad near the property at present although the Pennsylvania has a right of way. The property will not be developed for the present. The Lorain company operates large mines in Logan Co., W. Va., as well as in the eastern Ohio field.

Liens for $1,050 and $351, alleged to be due for services rendered as attorneys, were filed in the United States Court at Cincinnati by counsel for the **General Coal Co.** in its suit against the **Sloat Darragh Coal Co.**, of Hamilton, in which the General Coal Co. obtained a judgment for approximately $11,000. The attorneys declare that the company has failed to pay their bills which they have rendered.

PENNSYLVANIA

The Connellsville Hygrade Coal Co. and the **Clearwater Coal Co.**, of which C. W. Downs is general manager and sales agent, have opened offices in Connellsville.

Applications for the merging of thirty-seven light and power companies in Armstrong, Clarion and Butler counties with the parent organization, the **West Penn Power Co.**, have been approved by the Public Service Commission of Pennsylvania following hearings in Pittsburgh several weeks ago.

Seventy five members of the Johnstown Kiwanis club with a number of coal operators visited the plant of the **Penn Public Service Corporation** at Seward on June 9. This plant was erected at a cost of $5,000,000 and was much admired by the business men and operators.

A charter has been issued to the **Fuel Service Co.**, of Scranton, with a capital stock of $50,000. A. Markle, Jr., Hazleton, is treasurer and one of the incorporators, the others being Donald Markle, Scranton and Eckley, B. C. Markle, Hazleton. The shares of stock are $100 and each of the incorporators holds fifty shares.

A charter has been issued for the **James L. Sense Coal Co.**, of Philadelphia. It has a capital stock of $25,000, and its purpose is to mine, prepare, buy and sell coal and coke.

Reports are in circulation to the effect that when the Glen Alden Coal Co. formally takes over the coal holdings of the Delaware, Lackawanna & Western its headquarters will be located in Wilkes-Barre. It is also said that certain of the shops now located in Scranton will then be removed to Wilkes-Barre. Headquarters of the Lackawanna coal mining department have always been located in Scranton.

WISCONSIN

May was a good coal month at Ashland considering the number of boats, the dull season and the amount of coal deposited on the docks there. A total of 116,200 tons of which 93,600 tons were soft coal and 22,600 tons anthracite, were deposited on the docks. Sixteen vessels entered the harbor with an average cargo of 6,262 tons. Considering the fact that Ashland is not a hard-coal port the amount brought up during the month is considered a good record.

UTAH

As a result of a meeting held in Salt Lake City, tentative plans were discussed for the erection of a steam power plant in Carbon County at a cost of about $1,000,000. John H. Tonkin, F. H. Rolapp and F. A. Sweet were appointed a committee to go into the matter and to determine the feasibility of the plant and its construction. A member of the committee declared that coal producing companies will be able, if the plant is erected, to get their power for about half what it costs now. The plan will probably be to set aside an amount each month about equal to what is now paid for power, bond the plant and then take up the bonds monthly instead of paying the money into another company for power.

WEST VIRGINIA

S. H. Goodloe, Harry Scherr and C. P. Early will organize the **Wilhelmina Collieries Co.** to mine coal in the Williamson district. The capitalization of the company is to be $250,000.

Those interested in the **Upland Coal & Coke Co.**, the **Page Coal & Coke Co.**, and the **Crozier Coal & Coke Co.**, producing companies in the New River field, spent the first ten days of June in a special car on a visit to the properties. Every operation was carefully inspected. Those making the trip were, Mr. & Mrs. Louis R. Page, Mrs. Casper Hacker, Messrs. E. C. Page, L. R. Page, Jr., J. Marechal Brown, Harvey E. Wilson and J. J. Tierney.

BRITISH COLUMBIA

There is to be a conference of coal operators, dealers and consumers of British Columbia to consider the whole question of production, transportation and distribution with a view to deciding whether it is not possible to "cut" expenses and reduce the cost to the user. This is in line with a recommendation made by A. Henderson, who recently conducted an inquiry into the matter of coal costs in this province. The conference will take place at an early date and all the recommendations made by Commissioner Henderson and General R. G. E. Leckie, the mining engineer who acted as the former's technical counsel, will be given careful consideration.

Judgment has been given against the **Pacific Coast Coal Mines, Ltd.**, Vancouver Island, for $69,500 which amount is made up of wages due and unpaid to miners who had been in their employ. This company's mine, known as the Morden Mine, has been closed since Dec. 11. It is considered likely that, as soon as the financial affairs of the concern have been straightened out, such obligations as those indicated will be met and operations will be resumed.

Traffic News

In the complaint of the **Benton Coal Mining Co.** and the **Franklin County Mining Co.** an examiner recommends that the practices of the C. B. & Q. R.R., with respect to furnishing coal cars and transportation facilities to certain mines served by it under trackage or switching absorption arrangements with other roads while refusing to serve complainants' mines under similar arrangements did not give the road undue preference or subject complainants to undue prejudice or disadvantage.

Hearings in the matter of anthracite coal rates to stations in New York will be given by Interstate Commerce Commission Examiner Quevedo on June 27 at the Merchants' Association Rooms, 233 Broadway, New York.

An examiner recommends that the rate on coke from St. Paul to St. Louis be held to be reasonable and that the complaint of the **Mississippi Valley Iron Co.** be dismissed.

In the case of the **Nye Schneider Powder Co.** an examiner recommends that the rates on coal from points in Colorado, Wyoming, Kansas and Arkansas to Iowa and Nebraska be held to be reasonable.

At a meeting of the Kentucky Railroad Commission held in Frankfort there was a general readjustment of rates for intrastate business while rates were increased to Covington, Newport, Latonia and Louisville. These amounted to 15 to 32c. a ton in round figures. As an excuse for its action the commission declared that the old rates that obtained were to meet the lower river rates when there was active competition but since this was only of small importance now it was desired to have the coal freight rates adjusted so that all towns would be on the same footing. There were some sweeping reductions to some of the inland towns and cities.

A petition has been filed with the Utah State Public Utilities Commission by the **Spring Canyon, Peerless and Standard Coal Companies** against the Bamberger Electric Ry., the Bingham & Garfield, Los Angeles & Salt Lake, O. S. L., Salt Lake & Utah, S. P., U. P. Toocle Valley, Utah-Idaho Central, Utah Ry. and the Utah Terminal railroad companies to have rates fixed from the Utah Terminal road in Spring Canyon connecting with the other lines. The complaint sets forth that there are no through rates in effect from complainants' mines beyond the junction point of the Utah Terminal R.R. and the Utah R.R. Co.

The Canadian Board of Railway Commissioners recently announced a reduction in freight rates for coal transportation in the Prairie Provinces, to be effective for the summer months, to encourage the practice of purchasing winter supplies during the fine weather. The collieries of eastern British Columbia are speculating as to whether the reductions apply to them.

The Chaffee R.R. Co. has applied to the commission for authority to operate an existing line from Vindex, Md., to Chaffee, W. Va., where it connects with the Western Maryland. The road was constructed and operated by the Chaffee Coal Co. until May, 1920, when the Manor Coal Co. purchased the coal property. There are four companies now mining and shipping coal which depend upon this road to transport the coal to the connection with the Western Maryland.

Personals

The South Manchurian Ry. had a representative in the Twin Cities recently and engaged **Dean W. R. Appleby**, of the Minnesota State University college of mines and **W. R. Emmons**, of the geology department, to go to Manchuria at once for consultation as to methods of making coal production more profitable.

J. G. Hood, secretary of the West Virginia Coal Co., with headquarters at Richment, to go to Manchuria at once for conpart of June both at Charleston and Huntington, W. Va.

A recent visitor in Michigan markets was **Joseph Maloney**, president of the American Export and Inland Coal Corporation, Huntington, W. Va.

The Pittsburgh & Ashland Coal & Dock Co., of Minneapolis, announces the election of **P. F. Herrly**, heretofore treasurer, to the position of treasurer and general manager and of **F. O. De Groff**, formerly manager of retail sales, to the position of manager of sales, succeeding R. U. Eastman, resigned. **A. B. Francis** succeeds Mr. De Groff as retail manager of sales. The company has disposed of its dock at Superior and has taken a larger dock in Duluth, which with its new dock in Ashland enables the company to handle a larger business.

Joseph Revere, who for the past twenty years has been purchasing agent for the Dominion Coal Co., has retired from active service. Following the announcement of the retirement of Mr. Revere, officials of the company stated that in future all purchasing done for the Dominion company would be effected through the purchasing department of the Steel Co., under the supervision of **D. S. Hines**, at present acting purchasing agent for the corporation.

Robert Buka, sales manager, and **P. W. Sherman**, lake forwarder, both of the Valley Camp Coal Co., Cleveland, are making an extended tour of the Northwest.

George Balker, formerly with the National Coal & Trading Co., has opened an office in the Kirby Bldg., Cleveland, for the Pittsburgh & Erie Coal Co.

George C. Schlehr, formerly with the Lake Erie Coal Co., has become associated with the Glens Run Coal Co., Kirby Bldg., Cleveland.

C. E. Maurer, president of the Glens Run Coal Co., delivered an address June 16, at Cedar Point, before the annual convention of the Michigan-Ohio-Indiana Coal Association.

A. H. Fay has been appointed acting chief of the natural resources subdivision of the income tax unit of the Bureau of Internal Revenue. Mr. Fay is a mining engineer who, for many years, had charge of the statistical division of the Bureau of Mines.

D. H. Harrington, supervising mining engineer of the U. S. Bureau of Mines, with headquarters at Denver, is in Washington conferring with the chief mining engineer of the Bureau.

W. C. Mendenhall, the head of the Land Classification Board of the U. S. Geological Survey, has been designated by the Secretary of the Interior as his agent in administering the naval oil reserves. These reserves have been transferred by an exexcutive order from the Department of the Navy to that of the Interior.

Association Activities

National Coal Association

The Advisory Committee to the President of the Association appointed June 1, 1921, is composed of the following:

W. K. Field, president, Pittsburgh Coal Co., Pittsburgh.

H. N. Taylor, vice-president, Central Coal & Coke Co., Kansas City, Mo.

D. B. Wentz, president, Stonega Coke & Coal Co., Land Title Bldg., Philadelphia.

Ira Clemens, president, Clemens Coal Co., Pittsburg, Kan.

A. M. Ogle, president, Vandalia Coal Co., Terre Haute, Ind.

Erskine Ramsay, first vice-president, Pratt Consolidated Coal Co., Birmingham, Ala.

J. J. Tierney, vice-president, Crozer Pocahontas Coal Co., Philadelphia.

J. D. A. Morrow, vice-president, National Coal Association, Washington.

W. B. Reed, secretary, National Coal Association, Washington.

Northeast Kentucky Coal Association

A strenuous effort is being made by the officials of the association to secure an adjustment of the Chesapeake & Ohio freight rates to Tidewater from the Big Sandy Division of the road, so that the rate will put the northeast Kentucky producers on the same freight basis as southern West Virginia operators. Northeast Kentucky producers are hopeful that the existing differential may be wiped out, believing that with a better rate there will be a material increase in the shipment of coal to seaboard.

Logan Operators' Association

Members of the Logan Operators' Association and of other operators' associations in southern West Virginia held a conference with representatives of the Huntington Chamber of Commerce early in June, at which Sept. 22 was agreed upon as the date for the coal and industrial exposition which is to be held in connection with the annual style show of Huntington merchants. Nearly all the operators' associations in the state have assured those arranging for the exhibition their fullest co-operation and have promised to interest mine owners in exhibiting new devices for the mining of coal.

Central Pennsylvania Coal Producers' Association

At a recent meeting of the association the following executive board was selected: T. H. Watkins, R. H. Sommerville, Woodland Derringer, F. B. Kerr, W. R. Kerr, W. R. Craig, H. J. Meehan, J. S. Sommerville, M. J. Bracken, Richard Peale, G. Dawson Coleman, Charles A. Owen, T. Lawry Eyer, A. R. Hamilton, James B. Neale, G. Webb Shillingford, I. A. Boucher, George H. Francis, J. William Wetter, W. S. Blaisdell, J. H. Allport and Thomas V. Gould. The board organized by electing these officers: President, H. J. Meehan; Vice-President, G. Webb Shillingford; Secrtary, Charles O'Neill; Statistician, W. A. Jones.

Central Coal Association

At the meeting of the association held in Altoona on June 10, the following members of the executive board were selected: G. Dawson Coleman, Charles A. Owen, James B. Neale, A. R. Hamilton, R. H. Sommerville, Samuel T. Brown, T. H. Watkins, H. J. Meehan, J. S. Sommerville, F. B. Kerr, G. Webb Shillingford, I. A. Boucher, J. William Wetter, James H. Allport and Thomas V. Gould. Following the meeting, the executive board organized by electing these officers: President, J. S. Sommerville: Vice-President, G. Dawson Coleman; Secretary and Commissioner, Charles O'Neill.

Obituary

George S. Clemens, for many years with the Philadelphia & Reading Coal & Iron Co., died in Philadelphia recently. He was almost 73 years old. Soon after the Civil War he was appointed resident mining engineer in the Minersville district for the Reading.

William B. Cogswell, founder of the Solvay process and for many years a commanding figure in mining and engineering circles, died recently at his home in New York City. He was a native of Oswego, N. Y.

An appraisal of the estate of the late **John F. Schmadeke**, a Brooklyn coal dealer, shows that he left $1,280,569. The bulk of this is distributed equally among his four children. He left $19,200 to the House of St. Giles the Cripple and small shares of stock in his coal company to a number of his old employees.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 incl. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

American Institute of Mining and Metallurgical Engineers will meet at Wilkes-Barre, Pa., Sept. 12 to 17. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York.

Rocky Mountain Coal Mining Institute will hold its summer meeting beginning June 28 at Salt Lake City, Utah. Secretary, F. W. Whiteside, Denver, Col.

Mine Inspectors' Institute of America will hold its twelfth annual meeting at Charleston, W. Va., July 12 to 15. Secretary, J. W. Paul, Bureau of Mines, Pittsburgh, Pa.

Illinois and Wisconsin Coal Dealers' Association will meet at Chicago, Ill., July 13 and 14.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

Volume 19 New York, June 30, 1921 *Number* 26

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

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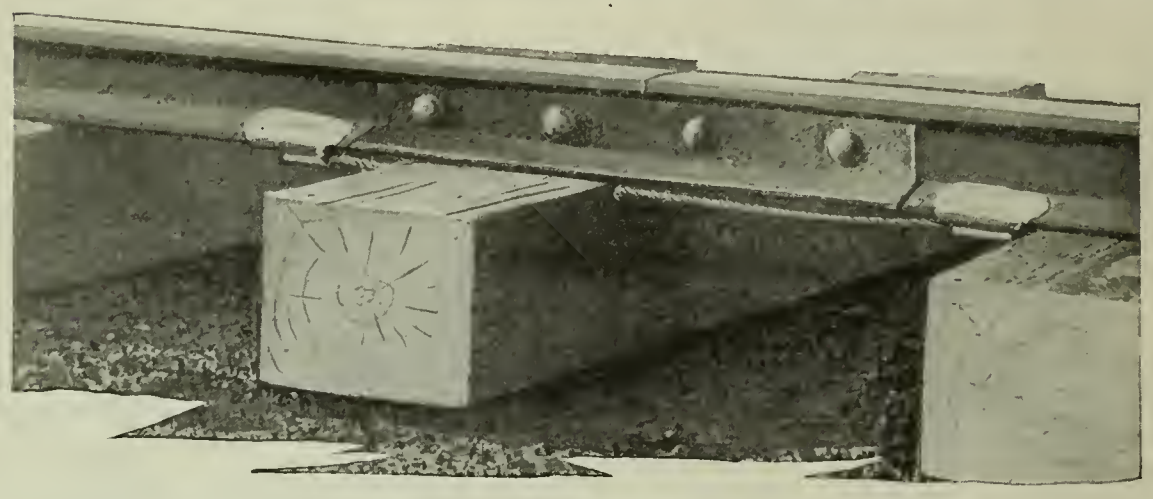
Everlast Rail Bonds



"Everlast" in practice as well as in name

You place them in service and they *stay there,* out of the way of injury — giving perfect connections over unlimited periods of time. For temporary tracks the terminals need only be welded along the upper edge.

Here are five points of "EVERLAST" superiority:

1. The copper cable and its connecting sockets are located beneath the base of the rail and are thus protected from injury.
2. The sockets are protected from the arc during the process of welding.
3. The steel terminals fit tightly over the rail flange, and hold themselves firmly in position while being welded.
4. For temporary work the terminals need only be welded along their upper edge. They can then readily be cut loose and used a number of times again.
5. The method of securing the copper cable to the steel terminals assures maximum durability and conductivity.

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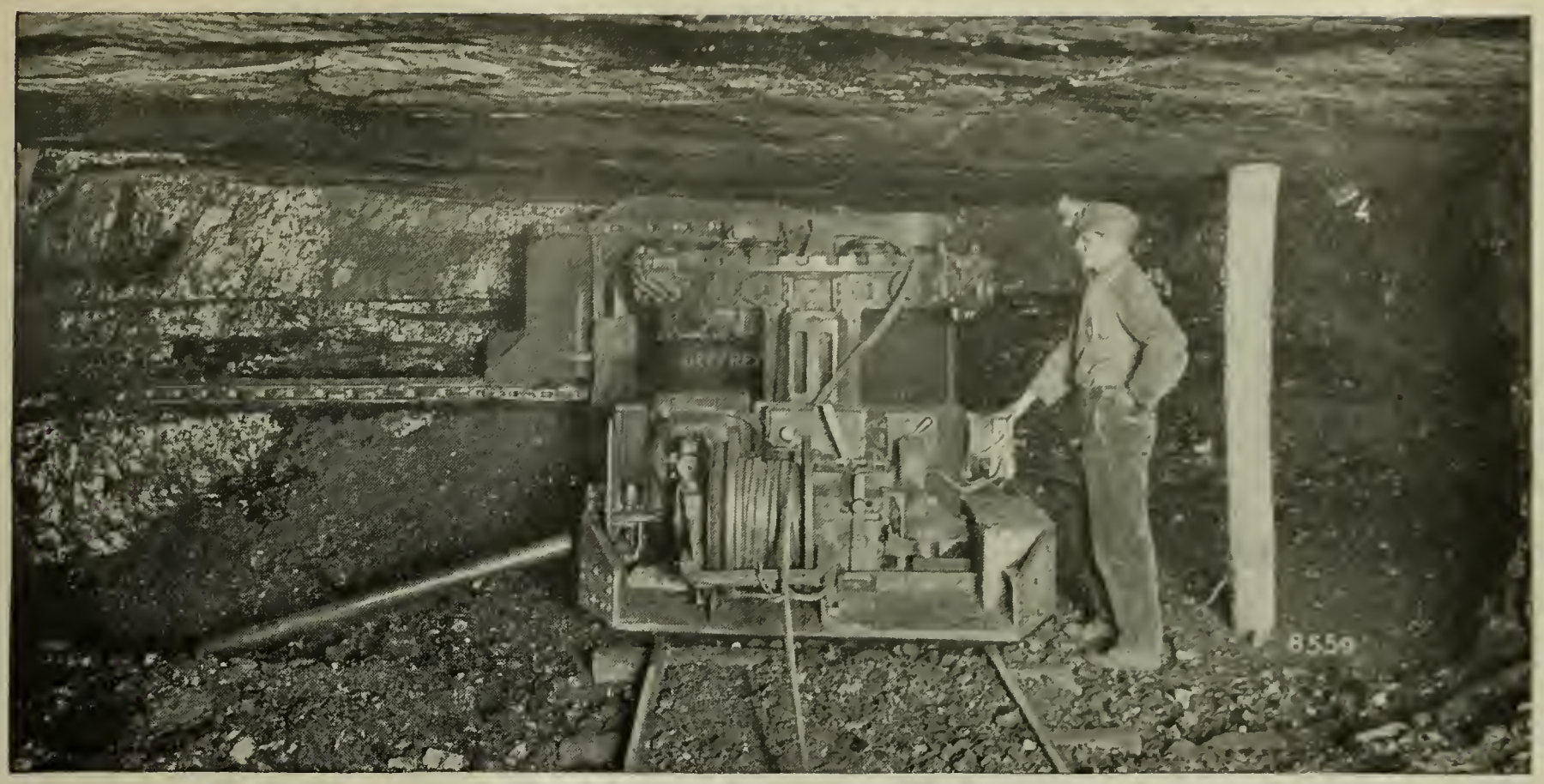
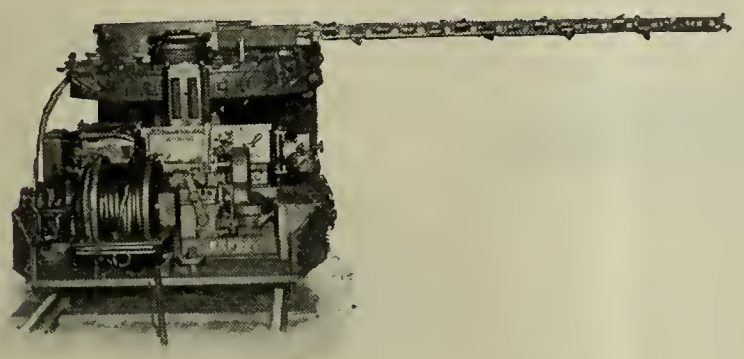
Trolleys and Trolley Parts
Sectional Insulators

Flood City Mfg. Company
Electric Equipment for Coal Mines
Johnstown, Penna.



Cut Out the Bone, Binder or Dirt
It Means Cleaner Coal With Less Work



Send for new Bulletin No. 331-A—featuring the Arcwall Coal Cutter

Start preparing your coal at the face. The dirt that is kept out of it there is removed for all time.

THE JEFFREY ARCWALL COAL CUTTER is self-propelled, adjustable in all directions, even adjustable to an irregular binder while cutting. It is built to cut the bottom as well as the top or any place between.

Today you are competing on quality. Cut out the bone, binder or dirt and ship cleaner coal at a smaller production cost by using THE JEFFREY ARCWALL CUTTER.

Average cutting record is two to three times that of any other machine.

Under shooting makes a greater percentage of large coal and less percentage of slack; also lessens danger to bad roofs.

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JEFFREY
MINING EQUIPMENT

Handy accessories for along the trolley line

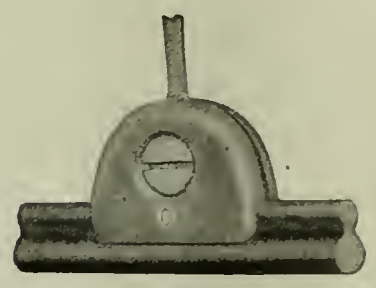
O-B Machine Connector Safe as It is Convenient

A man can grab this O-B Connector and shove it on the wire without thought of danger. The soft rubber handle and the big fibre guard protect him.

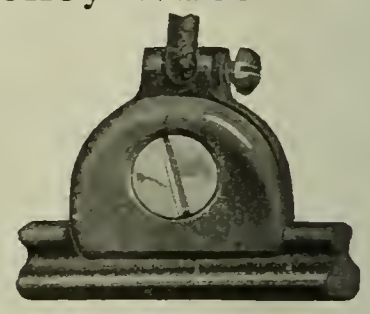
O-B Connector is used for attaching electrical machinery to the trolley line. It fits every size and style of trolley and takes a No. 4 stranded insulated cable.

Page 308, Catalog No. 18

O-B Current Taps Clear the Trolley Wheel



No. 11160 — Malleable Iron. When screw is tightened clamp grips both trolley and extension wire.



No. 13684 — Bronze. Extension wire held by set screw.

Lighting circuits and other small loads are easily attached to the trolley wire with O-B Current Taps. These handy little devices grip 2-0, 3-0 and 4-0 Grooved or Fig. 8 trolley and offer no obstruction to the wheel.

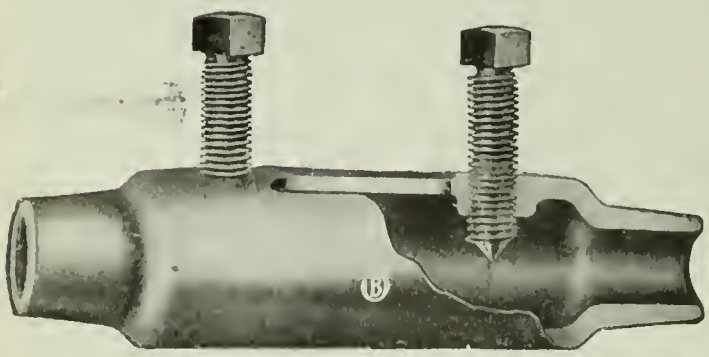
Page 308, Catalog No. 18.

O-B Feeder Wire Splicers and Connectors

Convenient ways of connecting feeder cable and tapping off for trolley or machinery.

For Solid Wire

Barbed and tapered dogs grip the wire. Solder poured in top provides permanent electrical contact. Two sizes for 0 to 4-0 wire. Page 350, Catalog No. 18.



For Stranded Cable

Set screws spread the cable wires. Solder poured in the top completes a strong, mechanical and excellent electrical contact. Six sizes for 4-0 to 1,000,000 C. M. Cable. Page 350, Catalog No. 18.

For Solid Wire

Four set screws grip the wires. Six sizes for No. 6 to 4-0 Wire. Page 352, Catalog No. 18.

Tee Connector

Nine sizes for No. 6 solid wire to 1,000,000 C. M. strand in main and No. 6 solid to 250,000 C. M. strand in branch. Large sizes are tinned for soldering. Page 352. Catalog No. 18.

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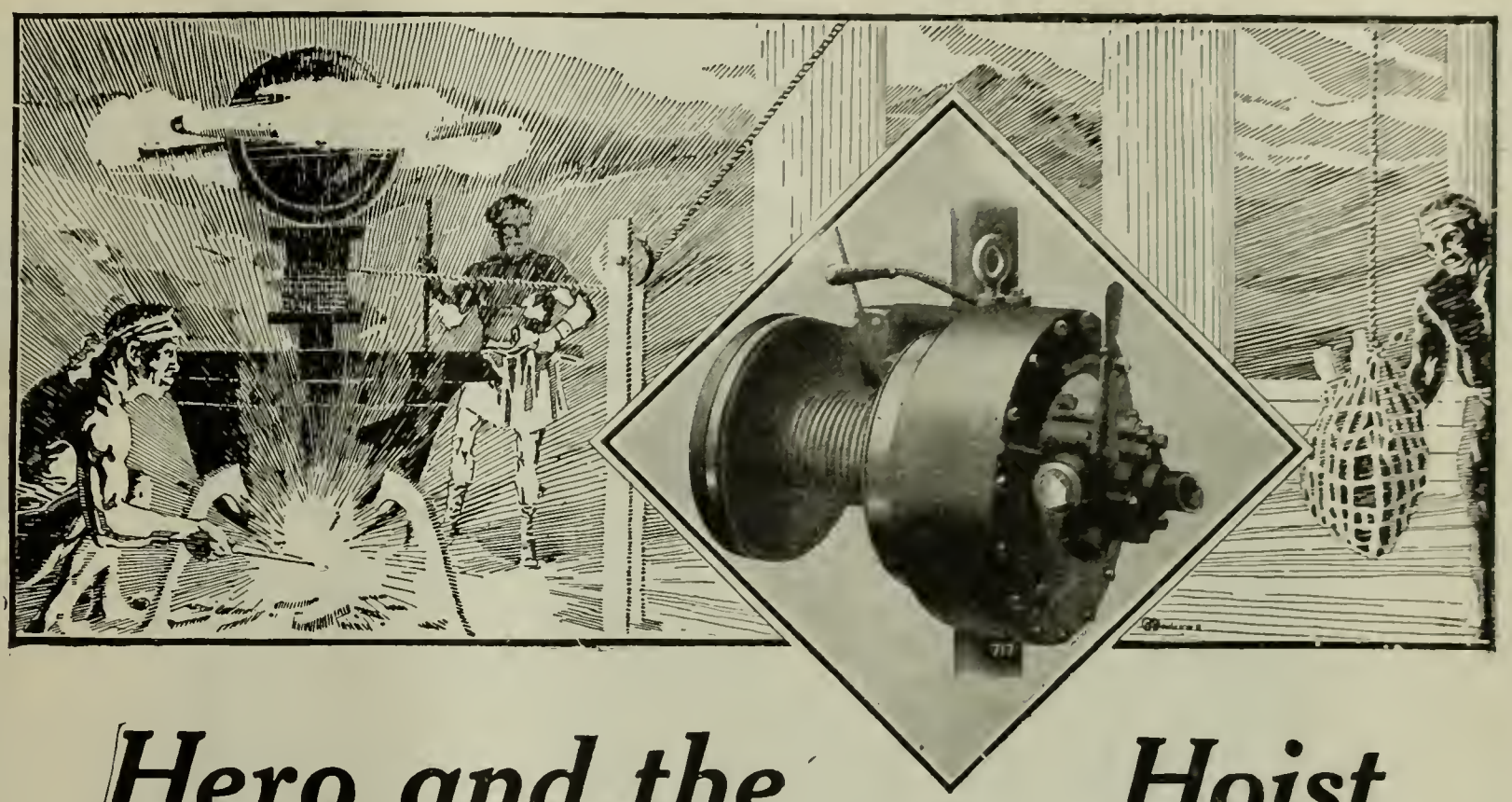

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THE first rotary engine described by Hero, the Greek writer of ancient times, was a toy.

BUT now, after sleeping 3,000 years, the rotary idea of Hero's toy, incorporated in the new Waughoist, is solving the lifting problems of the mining industry and speeding up hoisting operations everywhere.

BY minimizing friction in this remarkable new engine, the ideal of its manufacturers has been attained—greater power from less air, longer life and completely satisfactory service from every point of view.

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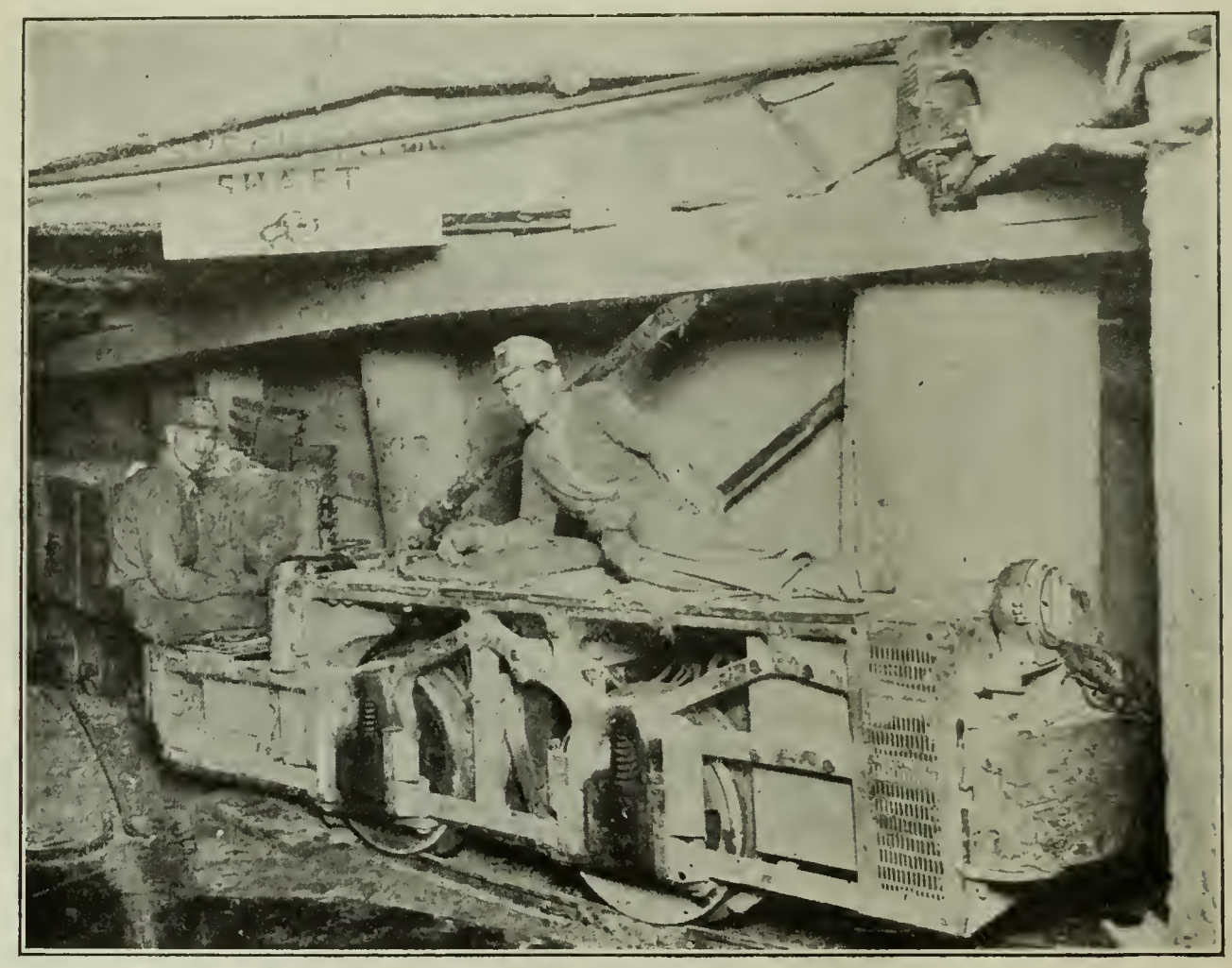

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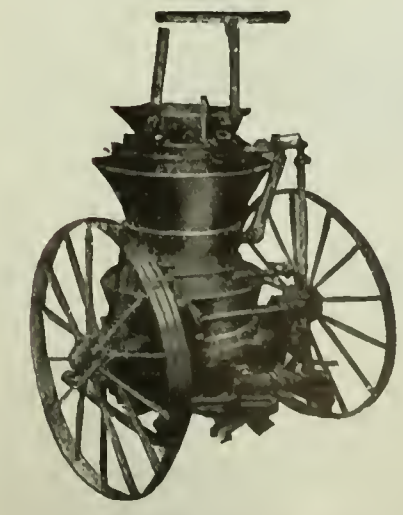
Gunite meets these conditions just as well 2,000 feet below ground as it does on the surface.

We have an interesting booklet for you which tells of the work the "Cement-Gun" is doing in and around the mines.



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Wears 4 Times as Long as Any Other Cable

The double reinforcement of two layers of hard twisted seine twine, wrapped between layers of rubber compound, gives Tirex Cable the extra strength that results in extra wear and durability.

Built and Wears Like an Automobile Tire

Send for samples

Tirex Cable is made with a tough outer jacket of high grade 60% rubber compounded to resist the hardest wear and abrasion.

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The construction of Tirex Cable makes it practically impervious to water, oils and acids.

Tirex Cable costs more in the first place, but in actual use it wears four times as long as other cables, thereby actually costing less in the long run.

TIREX CABLE
is made in all regular sizes and types

2 Conductor Cable

Concentric Cable

Locomotive Cable

Tirex Cable is made in all sizes and types used in mining operations.

The Construction Which Ensures the EXTRA WEAR

Flexible conductors.

Conductors 30% rubber insulation.

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Double reinforcement of hard twisted seine twine.

Outer jacket of 60% rubber compounded to withstand hardest abuse.

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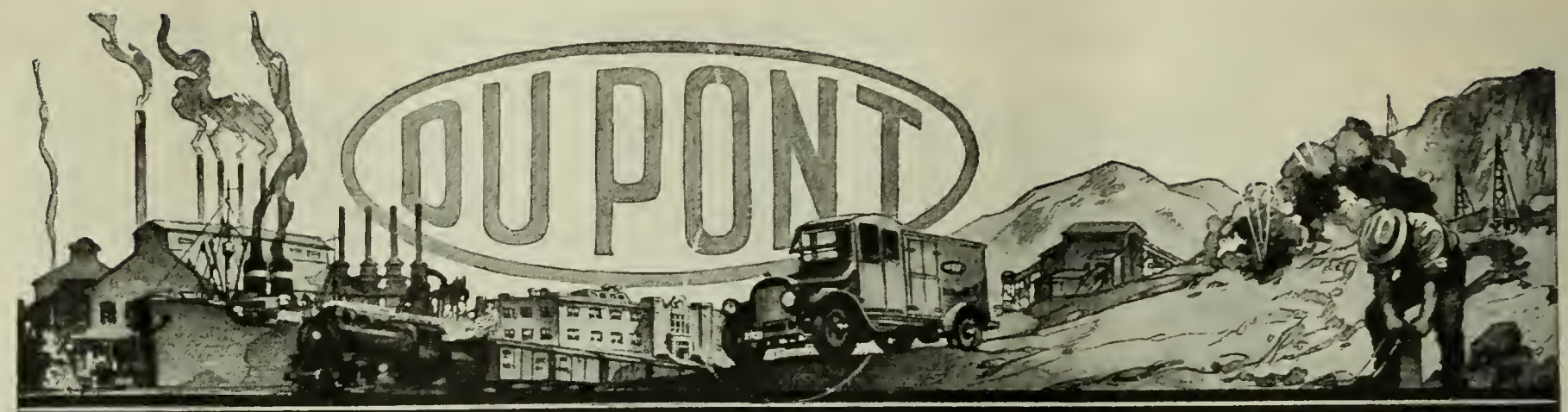

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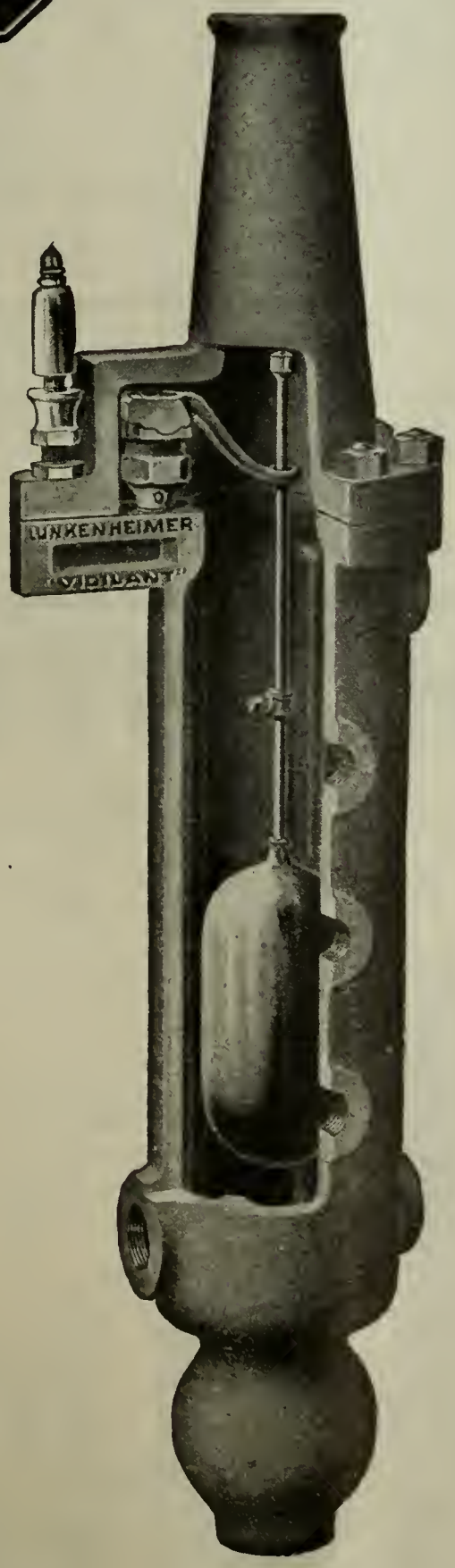

A *safety appliance* necessary for protection against the dangers incident to high and low water levels in steam boilers.

THE "VIGILANT" SAFETY WATER COLUMN will automatically sound an alarm and notify the attendant whenever the water level approaches either danger limit. It thereby safeguards life and protects the boiler from serious disaster which may be caused by the low level allowing the fire to play on the crown sheets and tubes when unprotected, or extreme high level which causes priming of the boiler and consequent damage to the power unit and the connecting pipes and valves.

The action of the "VIGILANT" operating mechanism is simple but positive. The single float actuates the double acting valve through the medium of stops set for high and low level limits. When the water approaches either danger limit the valve is opened, permitting steam to pass and blow the signal whistle.

A sediment chamber is provided at the bottom to trap scale or dirt which may enter the Column; Gauge Cock connections are tapped on both sides to permit right or left hand assembly; the top is removable for inspection of working parts, and all parts are renewable.

The "VIGILANT" Safety Water Column is recommended for working steam pressures up to 250 pounds; is made in a variety of sizes to suit all makes of boilers, and from the extensive line of LUNKENHEIMER Water Gauges and Gauge Cocks available a combination can be selected to suit every individual installation.

Specify LUNKENHEIMER "VIGILANT" Safety Water Columns and insist on getting what you specify.

THE LUNKENHEIMER CO.

"QUALITY"

LARGEST MANUFACTURERS OF
HIGH GRADE ENGINEERING SPECIALTIES
IN THE WORLD

NEW YORK CHICAGO CINCINNATI BOSTON LONDON

EXPORT DEPT. 129-135 LAFAYETTE ST., NEW YORK

CURRENT EDITION
OF CATALOG BEARS
No 58
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20-16-9

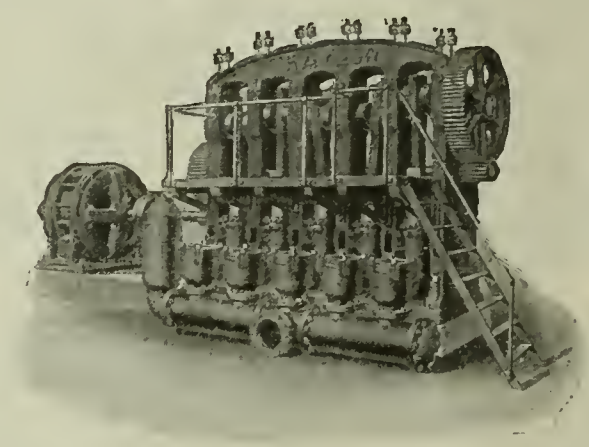
Buy a SUPERPUMP!

If there's water in the mine workings, a SUPERPUMP is needed.

Any pump won't do.

Present-day conditions demand present-day methods.

The SUPERPUMP is a modern pump, designed by mining men for mining men.



It is a highly sectionalized, acid-resisting unit that will handle all conditions of water economically, against even unusual heads.

Bulletin No. 101 describes the various sizes and construction fully. We are holding a copy for you.

TRAYLOR ENGINEERING & MFG. COMPANY, Allentown, Pa.

BRANCHES: New York Chicago Pittsburgh Los Angeles Spokane

Truck and Tractor Division, Cornwells, Bucks, Co., Pa.

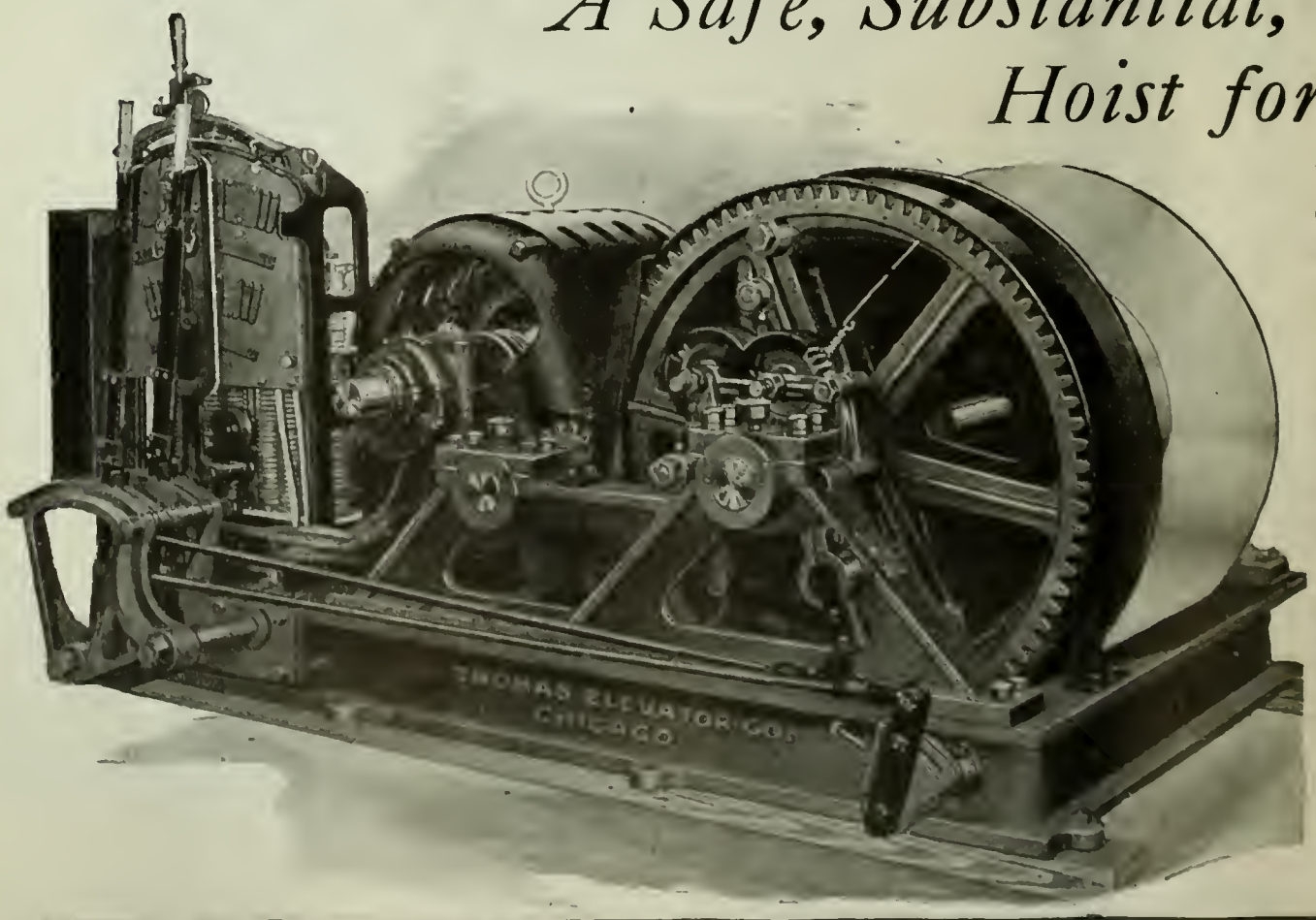
For Immediate Delivery

10 in. x 20 in. Type "A" Jaw Crusher
14 in. Bulldog Gyratory Crusher
No. 7½ Gyratory Crusher
36 in. x 16 in. Type "A" Crushing Roll

Traylor Motor Trucks and All-Purpose Tractors are necessary to economical haulage and farm development.

THOMAS HOISTS

A Safe, Substantial, Economical Hoist for Inclines

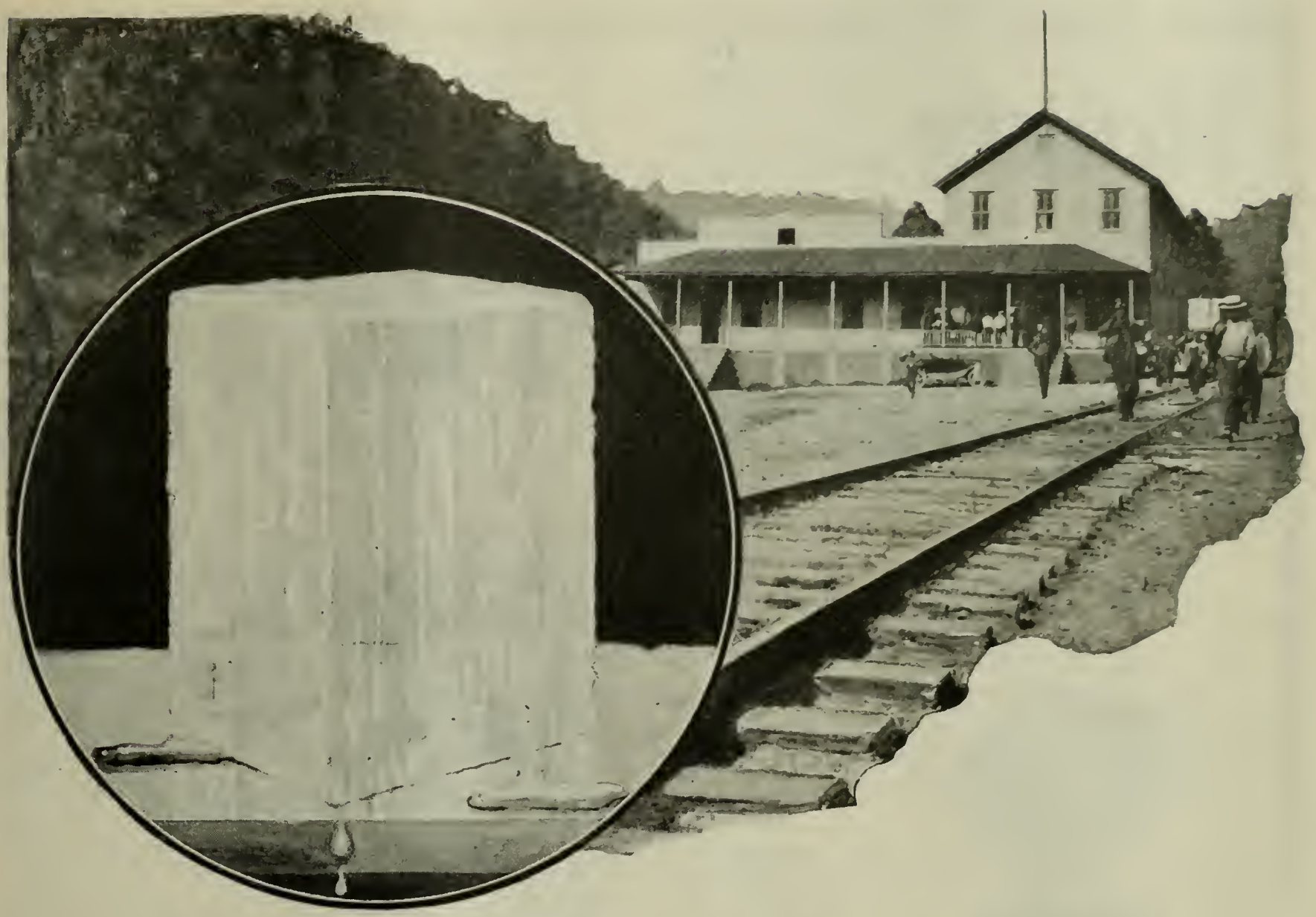


This type of hoist is especially well adapted for pulling cars up inclines.

It is equipped *with band friction*, and a heavy composition lined brake on the opposite end of the drum from friction.

The advantages of the band friction are apparent on incline work. It operates without a thrust bearing of any kind; there is no possibility of the friction becoming hot.

Thomas Elevator Co.
29 So. Hoyne Ave.
Chicago



You can sell ice at 1c. a pound and pay for the "Automatic"

Your two years' profits on the sale of ice alone—at 1c. a pound only—will pay for an installation of the Automatic Refrigerating Plant.

Thus your town can derive the benefit of ice at a reasonable price and, at the same time, be assured of fresh, clean food during the hottest months.

The "Automatic" automatically manufactures all the ice needed for your town, as well as keeping all perishable goods stored or displayed to advantage—*without waste*—at the commissary.

Plan today for the summer. We install all our plants and furnish service to keep them in condition.

Send for particulars—*today.*

The Automatic Refrigerating Co.

Main Office and Works:
HARTFORD, CONN.

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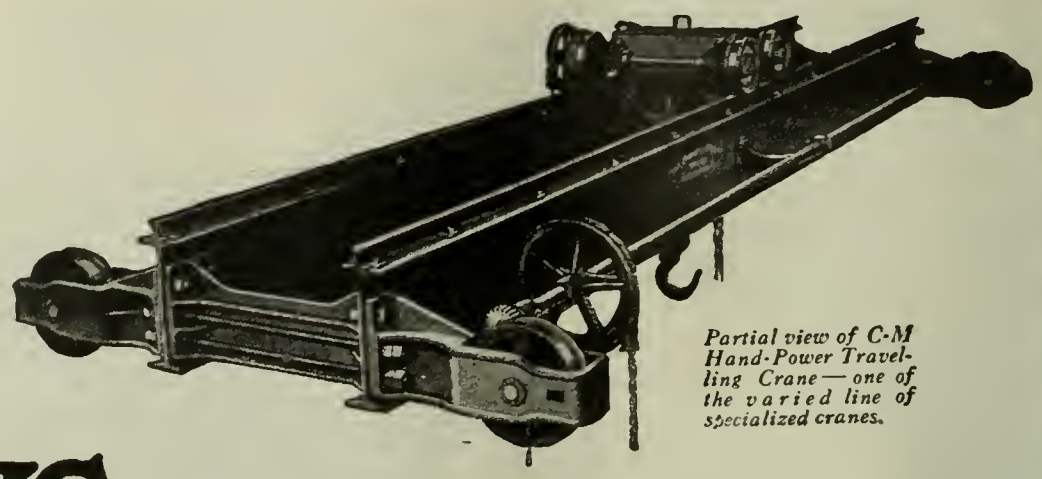
San Francisco	Los Angeles	New Orleans	New Haven	Jacksonville	Philadelphia

AUTOMATIC REFRIGERATION

A FACT — THERE IS BUT ONE AUTOMATIC

Hoists Cranes Trolleys

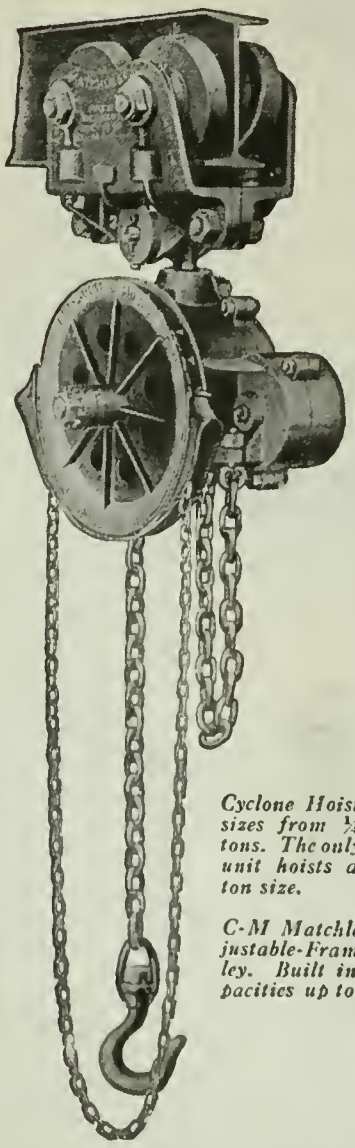


Partial view of C-M Hand-Power Travelling Crane—one of the varied line of specialized cranes.

A QUARTER CENTURY of lifting experience is behind every C-M hoist, crane or trolley. For twenty-five years our representatives have been studying the material-handling problems of scores of varied industries. The result is that a C-M catalog today illustrates a varied range of perfected equipment which answer virtually every specific problem of this type.

A conference with a C-M representative will usually solve the most difficult problem in the simplest and most economical manner.

For a rapid picture of the scope of C-M equipment, write for "*The Lift Book*" (handy pocket size). For a more detailed description, ask for our 96-page Catalog No. 25.



Cyclone Hoists—all sizes from ¼ to 40 tons. The only single-unit hoists above 3-ton size.

C-M Matchless Adjustable-Frame Trolley. Built in all capacities up to 40-ton.

The Chisholm-Moore Mfg. Co.
Cleveland, O.

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Peoples Gas Bldg. CHICAGO
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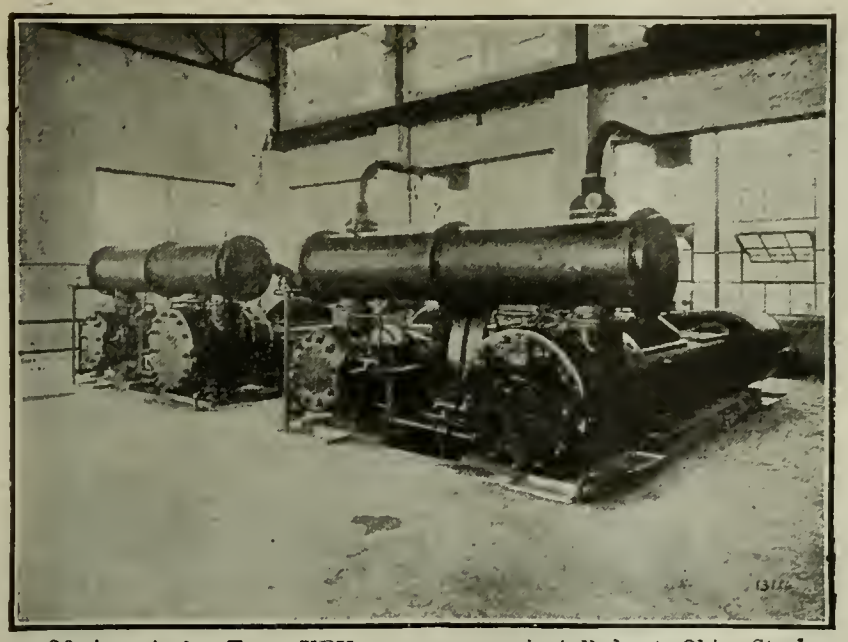
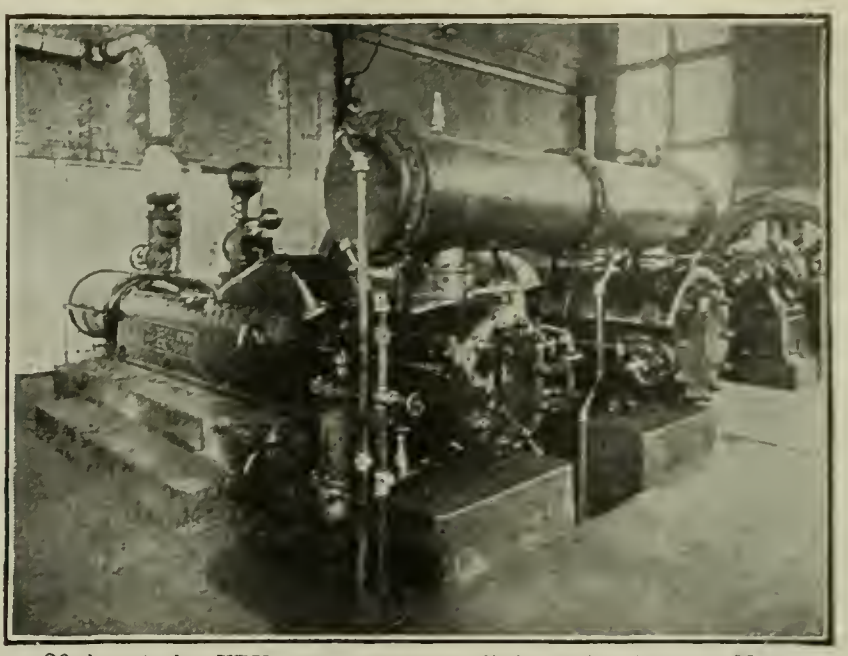
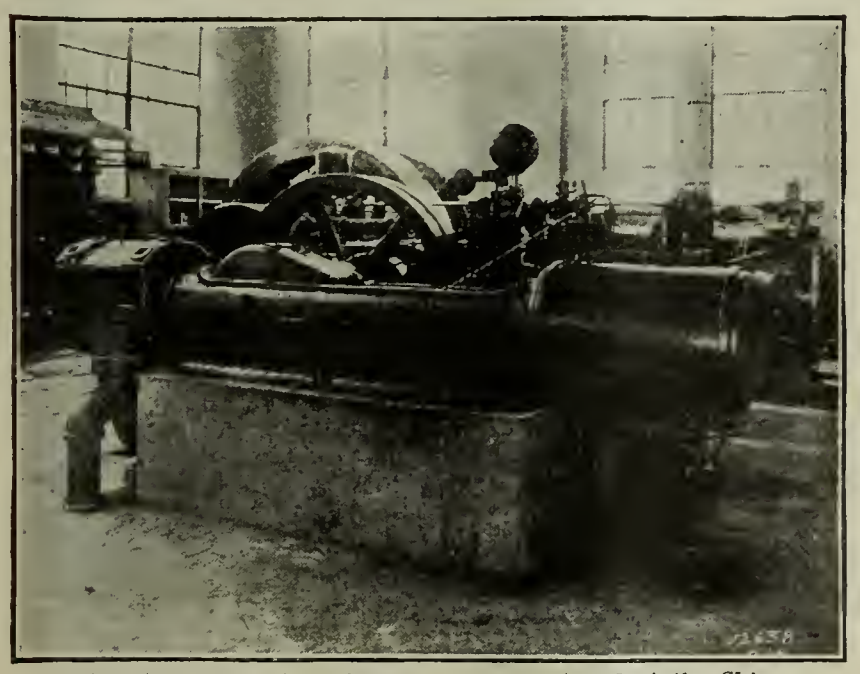
Chisholm-Moore



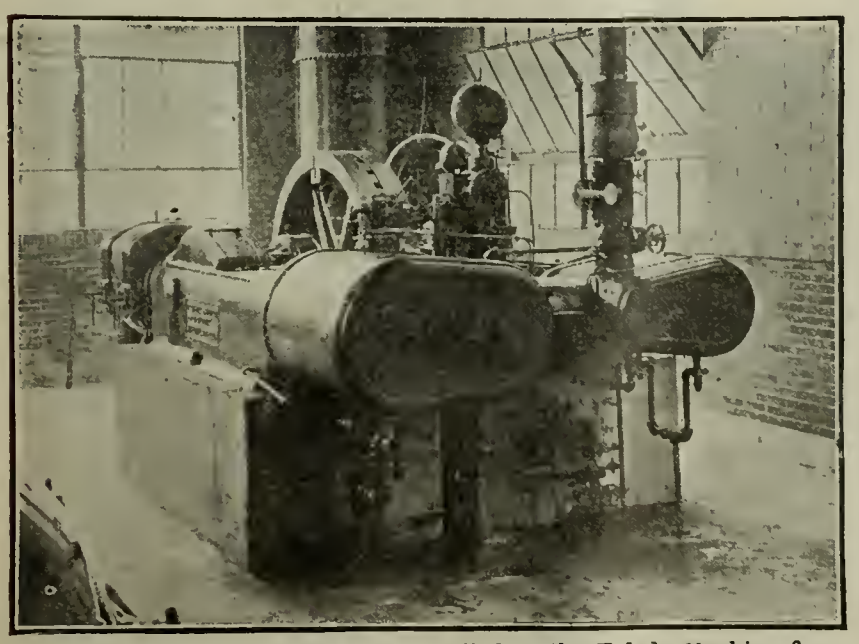
20 in. stroke Type XPV compressors installed at Ohio Steel Foundry Company, Lima, Ohio. Piston displacement 1955 cubic feet per minute.



20 in. stroke XPV compressor installed at the Garford Motor Truck Company, Lima, Ohio. Piston displacement 1531 cubic feet per minute.



16 in. stroke Imperial XPV compressor installed at the Skinner Company, Omaha, Nebraska. Piston displacement 940 cubic feet per minute.



14 in. stroke XPV compressor installed at the Toledo Machine & Tool Company, Toledo, Ohio. Piston displacement 648 cubic feet per minute.

Compressor Economy

Thousands of Industrial Plants have stamped their approval on Ingersoll-Rand Compressors

Where steam compressors are desired they prefer our Type "XPV" because of its operating economy. Its piston steam valves permit the use of high steam pressures and superheat as well as saturated steam. An automatic governor varies the position of the high pressure steam cutoff in accordance with the demand for air giving high steam economies at full and partial loads.

These and other features result in an unusually low power cost per cubic foot of air delivered. A comparison of this compressor's performance with a similar size unit having flat steam valves and throttling governor will reveal startling advantages for Ingersoll-Rand "XPV" compressors.

Send for your copy of Bulletin 3033

Ingersoll-Rand Company

General Offices: 11 Broadway, New York City

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567-C

Ingersoll-Rand

SHIP AND SAIL IN AMERICAN SHIPS

FOR seventy years there has been no American Merchant Marine of sufficient importance to be called such. Before that—back in the days when the clipper ship carried the world's freight—the American skipper was known in every port.

The war came, and with it a need for "ships, money and men." The three were found to fill the need—and the American Merchant Marine came back.

As the steam vessel drove the clipper off the seas, so is the oil-burning American ship once more gaining its old-time place in world commerce.

The ships are there. Good ships, making the ports of all the world, with freight rates and schedules that are on a competitive basis.

"American ships for American goods" is as vital a thought as can be presented to business men. The development of the American Merchant Marine is imperative if America is to progress—and that development is in the hands of American Business to make.

U. S. SHIPPING BOARD
WASHINGTON, D. C.

For sailings of passenger and freight ships to all parts of the world write Division of Operations, Traffic Department, U. S. Shipping Board Emergency Fleet Corporation, Washington, D. C.

B-2

AMERICAN SHIPS FOR AMERICAN GOODS

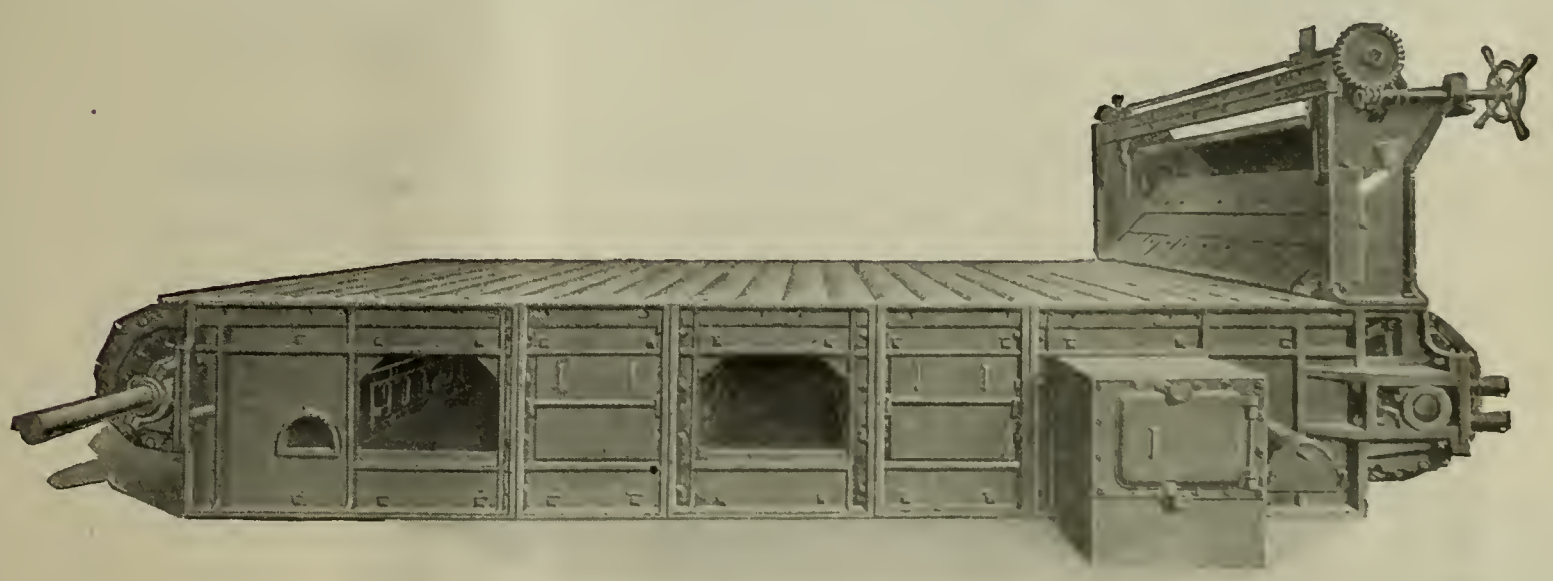
Ease of Operation

It requires no special training or exhaustive study on the part of the man who operates one or a battery of

Coxe Stokers

Common sense and a general working knowledge of power plant operation are all that's necessary.

Ask any man who tends them



COMBUSTION ENGINEERING CORPORATION

Combustion Engineering Building, Broad Street, New York City

Owners and Manufacturers of

Type E Stokers—for Bituminous Coal Lopulco Pulverized Fuel Systems The Grieve Grate—Hand-Firing

Coxe Stokers—Anthracite Coal, Coke Breeze and High Ash Bituminous Coal

PHILADELPHIA, PA. PITTSBURGH, PA. MINNEAPOLIS, MINN. BIRMINGHAM, ALA.
HAZLETON, PA. BOSTON, MASS. CHICAGO, ILL. SALT LAKE CITY, UTAH ALBANY, N. Y.
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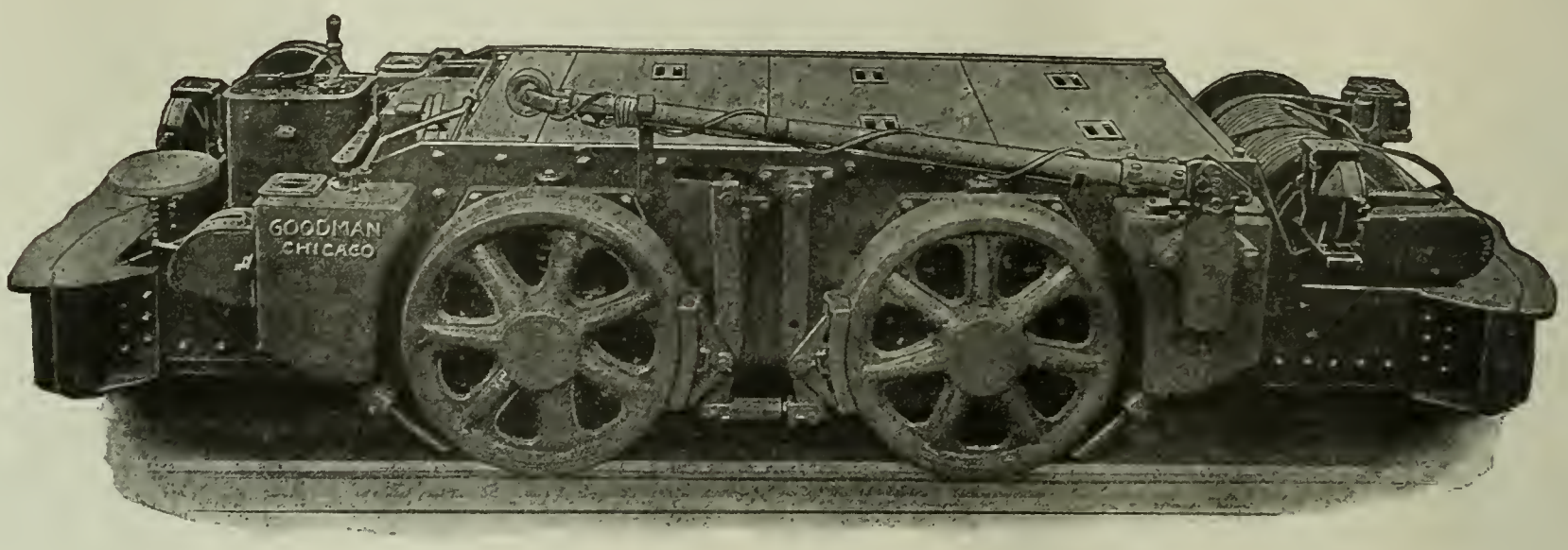
TAYLOR ENGINEERING CO., VANCOUVER, B. C.

GOODMAN TWO-MOTOR GATHERERS



One Type of 6-Ton Outside Wheel Gathering Locomotive

The locomotive shown is just one type from a varied line, permitting selection to suit any combination of operative conditions.

Outside wheel types are preferred by many users because of the ease of access of brakes and the facility with which the wheels may be rerailed when off the track.

Generous motors give reserve capacity for long, hard, continuous service. Goodman motors are not of commercial types; they are specially designed for the rigors of mining work.

Ample controllers assure the best of performance. Each controller has all its fingers of one size throughout, using them in duplicate or multiple wherever more than one are required.

Frames are of extreme rigidity, with corner construction which assures permanent alignment.

Spring Bumpers are Goodman standard equipment. They reduce the violence of car handling, cause less spillage of coal from car tops, and make braking and hauling easier.

Gathering Reels—electric cable or wire rope—may be fitted, either or both, to suit requirements.

Let us send you photos and data covering various types.

(99)

GOODMAN MANUFACTURING COMPANY

PITTSBURGH NEW YORK 48th to 49th Streets on Halsted **CHICAGO, ILL.** BIRMINGHAM ST. LOUIS

CINCINNATI – CHARLESTON, W.VA. – SEATTLE – DENVER

Big Cut in *International Motor Truck Prices*

THESE new prices on International Motor Trucks are made for the buyer who has been waiting for lowest prices, yet would not be satisfied with anything short of highest quality.

COMPARED price for price, quality for quality, the International line stands today the lowest-priced line of motor trucks on the market, backed by an inspection and service organization without equal.

Model	Capacity lbs.	Tire Equipment	New Price	Reduction
101	10,000	Solid	$3,600	$900
61	6,000	Truck Cord	2,750	700
41	4,000	" "	2,395	565
31	3,000	" "	2,032	393
21	2,000	" "	1,874	286
61	6,000	Solid	2,400	400
41	4,000	"	2,100	300
31	3,000	"	1,850	200
21	2,000	"	1,750	100

Our new 1500 pound Speed Truck, electric lights and starter, 34 x 5 cord tires, is the best buy in its class for $1,500.

Prices quoted are for chassis, f. o. b. factory.

Come in to our Branch House or the salesroom of our nearest dealer and let us show you these motor truck values.

International Harvester Company of America

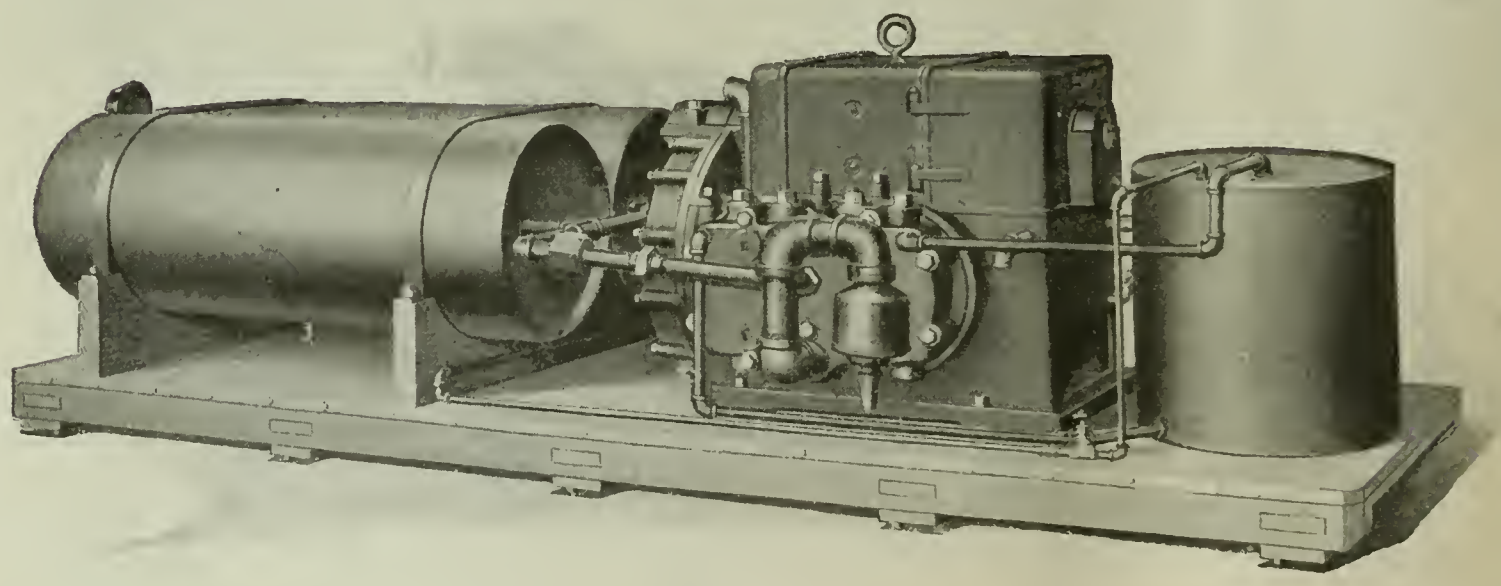
(Incorporated)

Chicago, U. S. A.

Branch Houses in 92 Principal Cities
Dealers' Service Stations Everywhere

Impressive 10,000-pound International truck hauling coal for Dooley Bros. of Peoria, Ill. There are hundreds of Internationals in the coal business.

AIR COMPRESSORS FOR COAL MINES



Reasons for Using Portable Units in Mines

1—All air leaks from long pipe lines eliminated.

2—Owing to continually shifting points of usage the pipe line system is far from satisfactory since extensions are expensive and cause delay.

3—Transmission of air through long pipe systems is inefficient.

4—It is much more economical to operate a number of small compressors giving the right amount of air as needed at the point of application than to operate a large compressor all the time irrespective of the demand for air.

5—Inspection and repairs on individual portable compressors can be made without interferring with the general use of air where more than one portable unit is used about a mine.

ALLIS-CHALMERS
MANUFACTURING COMPANY
MILWAUKEE, WISCONSIN, U.S.A.

ROME WIRE

A new Cable— built like a Cord Tire

Here at last is the practical wear-resisting Locomotive Gathering Cable. We have named it the

SUPER SERVICE

It cannot kink or tangle, but always lies flat.

It is extremely flexible and reels freely.

It may be run through water and oil puddles without harming the insulation.

It may be pulled, jerked, and bent around sharp corners without breaking the insulation or conductors.

It may be dragged along a rough stone roadbed, or driven over by heavy trucks, without harm to the outer wall.

Why? Because we have built its insulating wall just as they build Cord Tires. We use a tire tread rubber compound—we put a loose cord braid *inside—and we vulcanize under tons of compression.*

This is not an experiment—it is an accomplished *fact.* For years we have planned and built, and tested, and improved. Lengths of Super-Service Cable have been thrown into concrete mixers for 32 hours, laid across roadways for 45 days, bent, hammered, immersed in water, oil, light acids, and alkalis.

Super-Service Cable withstands these brutally severe tests, harder than any it would receive in service, *only because it is vulcanized under compression.*

We would like to show you how to cut down your annual outlay for Gathering Cables. Write us now for full particulars and sample.

Rome Wire Co., Rome, N.Y. Diamond Branch, Buffalo, N.Y

NEW YORK
CHICAGO

SUPER SERVICE CABLE

Built like a Cord Tire

RUBBER OUTSIDE
-FABRIC INSIDE-

Vulcanized under Compression

R

DETROIT
LOS ANGELES

2019-X

WIRE = ROME

The technical knowledge that comes to you from SKF engineers is

as it is the sum of the data gathered by SKF organizations in all industrial countries.

This fund of engineering information we bring to the fabrication of all products bearing the mark SKF and the operation of those industries which we are requested to supervise. In order that complete reliance may be placed in the endorsement expressed by the mark SKF it is necessary not alone that we control and supervise each step in the manufacture of a product but also its final installation.

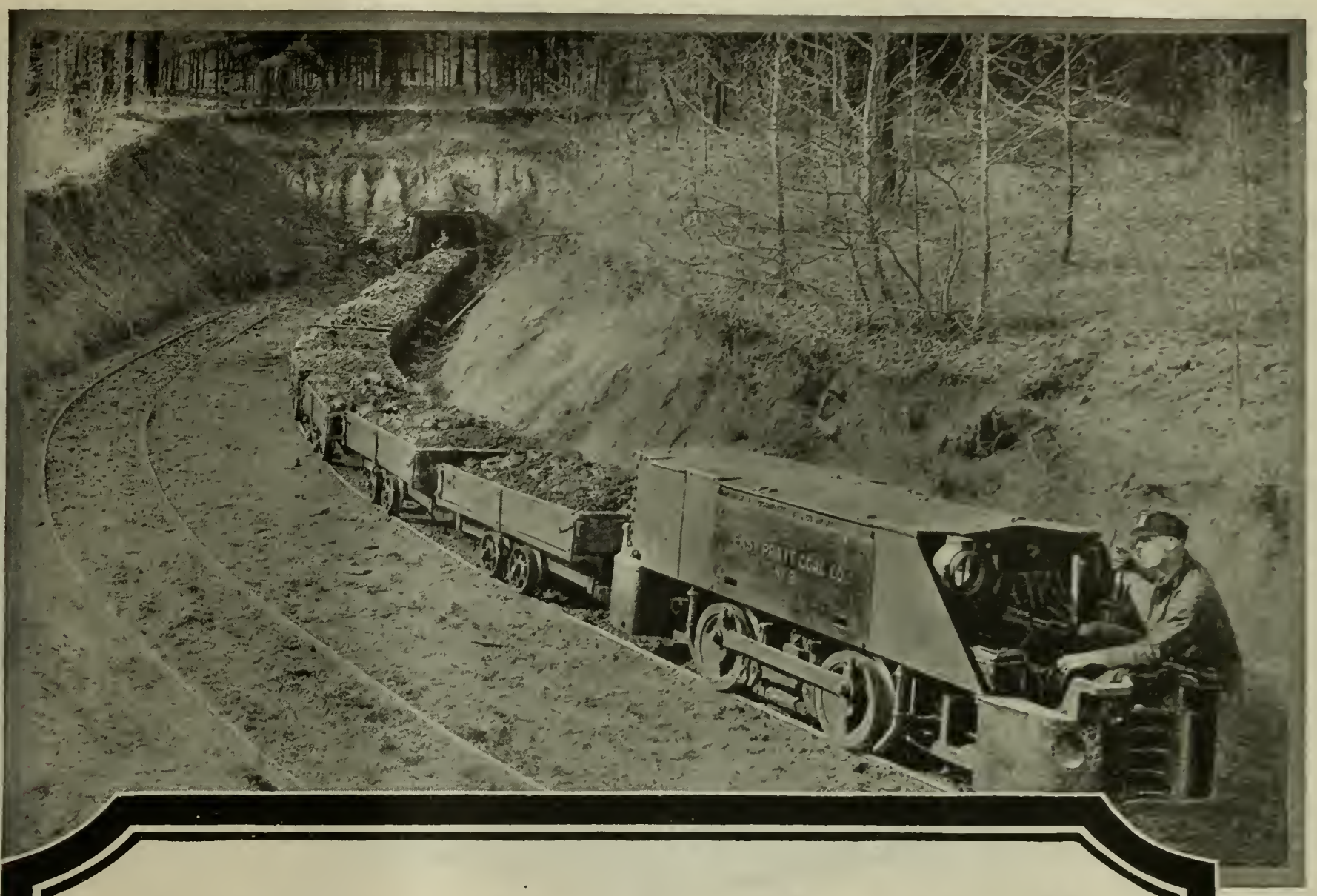
Because every effort is made to assure the most satisfactory use of products marked SKF we welcome requests for information concerning their proper application and maintenance.

Manufacturers of mining machinery should feel that this technical knowledge is always available. You are urged to use it freely without any sense of obligation.

SKF Industries, Inc.
165 Broadway, New York City

Supervising at the request of the stockholders.
- The Hess-Bright Manufacturing Co.
- The Skayef Ball Bearing Co.
- Atlas Ball Co.
- Hubbard Machine Co.
- SKF Research Laboratory

620



"A Bear-Cat for Service"

That's the kind of recommendation you'll invariably get from every user of a **Milwaukee Gasolene Locomotive.**

And the fact that 80 per cent of the Milwaukee Gasolene Locomotives sold fifteen years ago are still on the job—giving ***Bang-Up Service,*** hauling just as much as the day they were installed—proves that they are designed right and ***built to stand the gaff.***

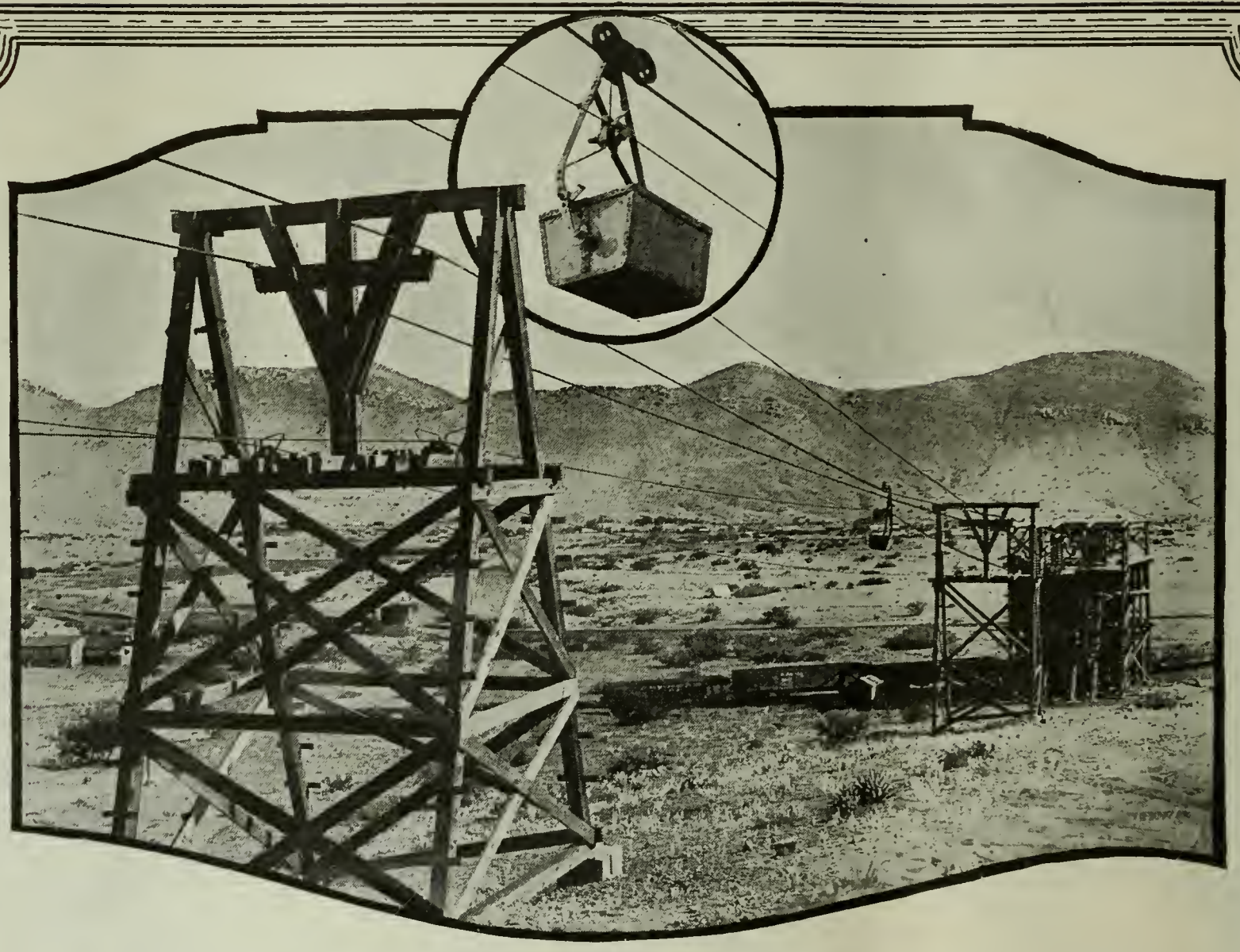
You Simply Can't Go Wrong

if you'll haul your coal with a ***Milwaukee***, because it's sold on a positive guarantee based on actual performance.

Write for Catalog A-118

Milwaukee Locomotive Mfg. Company
Milwaukee, Wis., U. S. A.

MILWAUKEE GASOLENE LOCOMOTIVES



Overtime or Overhead?

No need working overtime to haul the day's quota of coal from mine to tipple. Adopt an overhead system of transportation with capacity guaranteed.

B & B Aerial Tramways

stick to their schedule under all conditions. More reliable and economical than teams or surface cars in hilly coal country.

Operated by gravity, steam, gasoline or electricity, according to local conditions. Two-Bucket Type for short hauls needs only one attendant; Friction Grip System seldom more than two.

Write for Catalog 9

BRODERICK & BASCOM ROPE CO., St. Louis

New York Seattle

Manufacturers of celebrated YELLOW STRAND
Powersteel and all standard grades of wire rope

B20B

8000 Sets In Use

Sufficient proof of their worth—the thousands of Hollow Axle Trucks being used today in the mines. And this number is on the increase.

Economy of lubricating oil, economy of power, less labor, less wear—all these things added together mean a very decided reduction in haulage costs. Hence the ever-growing demand of Hollow Axle Trucks.

The Hollow Axle acts as a reservoir which lubricates the wheels automatically, when they need oil—and only when they need it. Never too much oil is fed to the wearing parts and never too little. And the reservoir requires filling only once every six months.

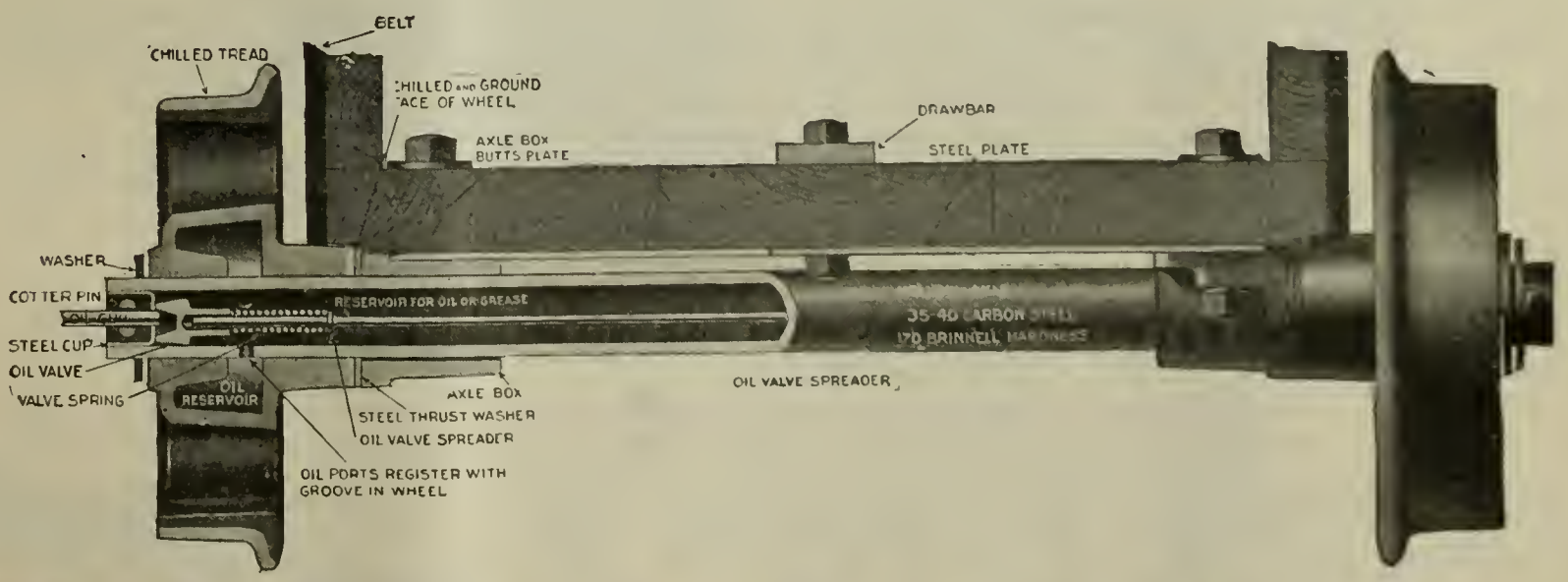
Perfect lubrication results.

The trucks are especially durable and the wheels, one-piece and deep-chilled, have an extraordinary lasting capacity.

***"An Easy Running Car by Proper Lubrication"*—this is the title of a book full of interest for you. Send for your copy.**

Southern Wheel Co.

St. Louis, Mo. Birmingham, Ala.



HOLLOW AXLE TRUCKS

Is Water Ash?

Some say "Ash is anything that won't burn." That includes oxygen and moisture and carbon dioxide as well as earthy substances. Colonel O'Toole, general superintendent of the United States Coal & Coke Co., one of the livest yet most retiring of our American mine executives, points out, in an article we are pleased to publish next week, that when fine bituminous coal is washed the water added often does more damage than the ash which it removes.

Moisture is ash if we define ash as something that won't burn. But earthy matters which properly constitute ash won't freeze and water will, and the results of its freezing are often disastrous. In the depth of winter the coal needs second mining — at its destination as well as at the mine. You will enjoy Colonel O'Toole's account of the difficulties of the man who tries to clean the finest of coals, how impossibly expensive it is to pick the dirt out by hand and how the water remains in the coal for weeks and has to be driven out as steam.

It is an interesting article by a man who has always done his own thinking and done it on his feet, around the job. He always keeps himself closely in touch with operating conditions, and with fresh and wholesome vision seeks their solution.

A few weeks ago the readers of *Coal Age* saw his mining machine in one of the articles of this magazine. Now we have his helpful remarks on coal cleaning. However, he does not discuss thickeners and filters, which in metallurgy remove the water jinx from fine granular material and do it well.

Keeps Scraper Down on Ground

Objection has been made to scraper loaders that don't keep down to the job — that "just naturally" rear up in front and ride over the top of the coal instead of getting down under. A mine superintendent has invented a scraper which is said not to do this and has been using it underground.

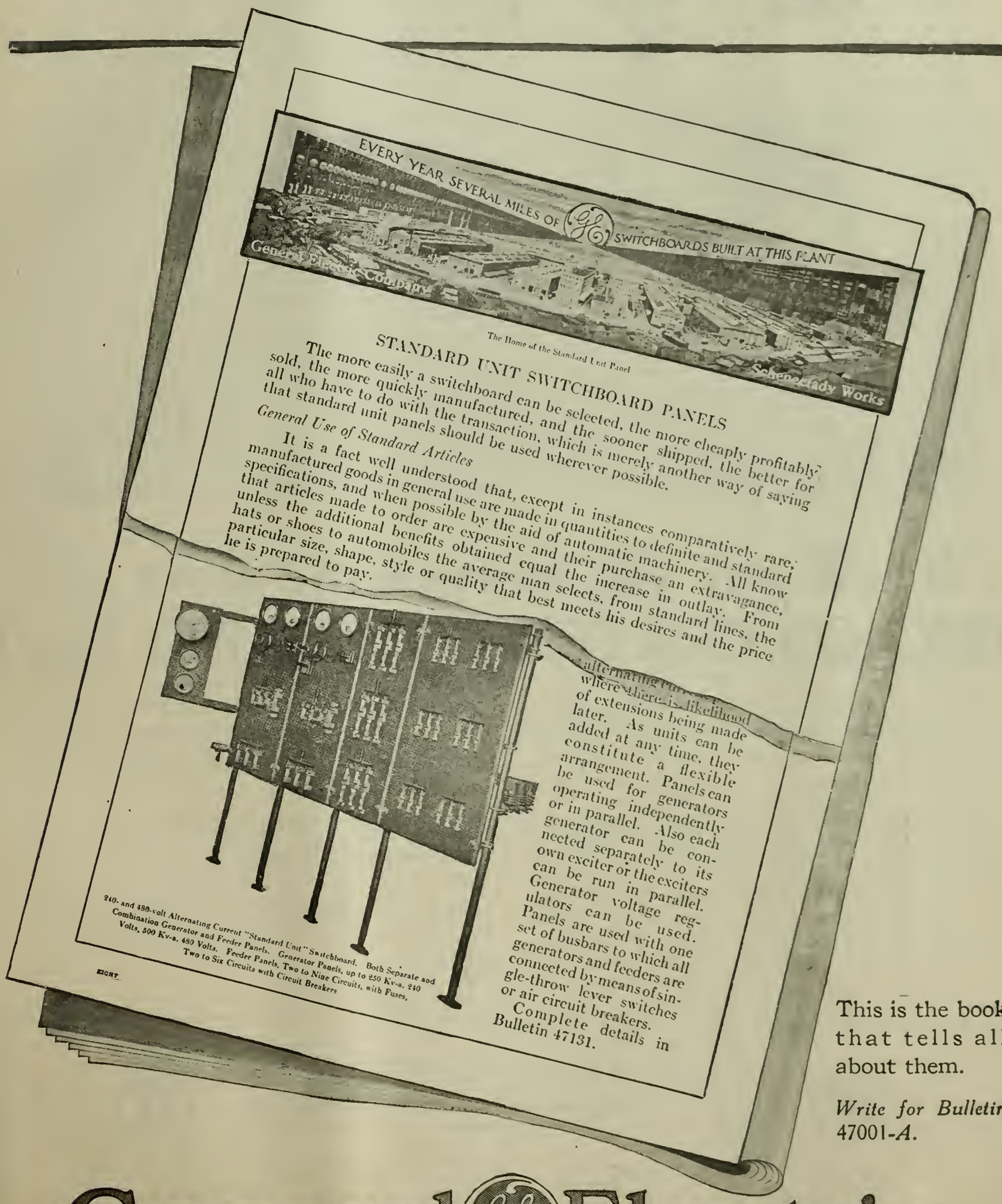
This scraper will be described next week.

Smothering Mine Fires

The Bureau of Mines has made some interesting experiments on the effect of carbon tetrachloride in the extinction of mine fires. As that substance enters into many patented extinguishers, of which Pyrene is one of the best known, its suitability for mine use is well worthy of the Bureau's consideration. The article detailing the results of this inquiry which appears next week also makes a report on the availability of Foamite for the same purpose.

Be sure to read it.

The purchaser of standardized equipment, besides saving time and money, buys the result of long engineering experience



This is the book that tells all about them.

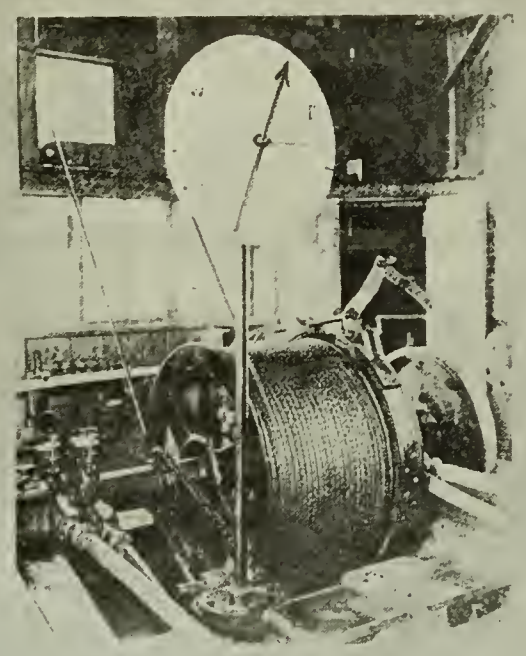
Write for Bulletin 47001-*A*.

General Electric Company

General Office
Schenectady, N.Y.

Sales Offices in all large cities

540-39



16

WIRE ROPE LUBRICATION

Compound No. 1 when the rope is in operation, there is no dripping effect.

A Well Lubricated Rope

Texaco Crater Compound No. 1 meets all the requirements mentioned in our specifications for an efficient wire rope lubricant. It spreads in a fine dark oily film over all the wires, protecting them from the action of water, acids, and other destructive elements. It reduces the wear due to frictional contact and as it penetrates to the core of the rope, it causes the latter to act as a reservoir for the lubricant. The working strains and stresses caused by the rope bending over the sheave wheel and around the drums squeeze out a little of the Crater Compound, forcing it to all parts of the rope needing lubrication.

Saturation of the Core

One of the reasons for inserting the hemp center in the rope is to increase the flexibility. If this core deteriorates, the life of the rope is lessened just as much as if the metal of the wire deteriorates. A core that is not thoroughly saturated with the proper lubricant will absorb moisture which results in early decay, especially when the moisture contains salt or acid.

17

It will pay you to read the story of TEXACO CRATER COMPOUND No. 1

A story of how this exceptionally effective lubricant has more than doubled the life of wire rope in every mining field under the sun.

Our interesting book "Wire Rope Lubrication" explains why TEXACO CRATER COMPOUND has the valuable faculty of penetrating to and saturating the hemp core. It tells how TEXACO CRATER COMPOUND keeps all strands of the rope supplied with a film of lubricant. Thus the entire rope, inside and outside, is made waterproof; frictional wear, rust and corrosion are eliminated.

"Wire Rope Lubrication" has been prepared especially for mine owners, managers, superintendents, foremen and engineers. It contains much valuable information on the care and use of wire rope cables.

CLIP THIS COUPON

THE TEXAS COMPANY

Dept. C-A, 17 Battery Place, New York City

NEW YORK HOUSTON CHICAGO

Offices in Principal Cities

Kindly send me a free copy of the Wire Rope Lubrication Book

Name ..... *Address* .....

City and State ..... *Mine* .....

6-30-21

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Be Fair, Even if It Hurts

MARINERS are credited with an uncanny faculty of reading "signs" and foretelling weather. When a seafaring man of experience says: "A hard blow is coming," his companions do not charge him with willing the storm or of wishing it on.

At the conference in Washington on June 7 between representatives of the coal industry and Secretaries Hoover and Fall and Senators Frelinghuysen and Calder, Mr. Hoover is quoted as having said: "Coal is the next thing to come under the government. It is much like the railroads." No stenographic record was made of this conference and all that was carried away were impressions. No serious-minded auditor left that meeting with any idea that Mr. Hoover wished proposed or advocated that coal be put "under the government." He was stating an opinion on conditions as he has observed them. To put any other interpretation on his remarks is at least misapprehension, if not misrepresentation.

It will be remembered that in May, 1919, Dr. Garfield, speaking before the convention of the National Coal Association in Chicago, said that it was no longer a question of whether or not the government would take a hand in coal but how soon and in what manner. No one has accused Dr. Garfield of having had any motive in making such a statement other than speaking truthfully straight from the shoulder. Because we oppose the regulation of private business, and coal in particular, is no basis for blinding ourselves to the existence of a world-wide tendency toward nationalization of certain basic industries. To recognize the fact as a starting point in opposition and to rally to the opposition such a man as Mr. Hoover, whose sympathy is with business in a big way, would seem better than the "bitter-end" policy of giving a sinister meaning to every official remark that bears a Washington date line.

Competition Between Anthracite and Bituminous

UNTIL 1871, or fifty years ago, anthracite was produced in greater quantity than bituminous coal. It was the principal coal in use in the United States in those days because it was nearer to civilization and because it was the fuel for the home. The production of anthracite now exceeds that of any single bituminous field and it is still the dominant household fuel in this country, and almost the exclusive fuel for house heating in the populous Eastern section of the country.

One out of every six tons of coal of all kinds produced in the United States is used for domestic purposes, and of anthracite at least 60 per cent of the total falls in this category. It is this one ton of coal that is the contact of the public with the industry, for by the cumulative effect of many men's opinions of coal, formed in laying up each his domestic supply of coal, is molded the public opinion for which we have so much respect. To the railroad, the public utility and the industrial coal is a raw material the cost of which is eventually passed on in the price of transportation and manufactured articles. But for the householder coal is a finished product and what he pays for it interests him as much as that of any other necessity.

As it is price above all that brings unfavorable opinion to a focus on an industry it is certain that it is in this respect that the public may now be displaying any measure of unrest toward anthracite. The prices of soft coal for household use are reduced generally in conformity with the marked decreases in mine prices of that coal, but for anthracite the prices have either held even or have gone up consistently during the past four years. Except to note in passing that the selling prices of anthracite have been augmented by increments comparable with increases in costs we would dwell here not on the reasons but on the fact. Domestic sizes of hard coal at from $7 to $8 per gross ton at the mines and from $12 to $18 per net ton delivered at the curb of the consumer after freight and retailers' margins have been added puts this fuel in the luxury class. The problem is: What can be done to change or relieve the situation?

The cost of producing anthracite and the selling price of the domestic sizes swing up and down in long cycles, the crest of each higher than the one before, moving in much the same way as do the prices of bonds. The tendency is ever upward, with increasing costs due to deeper workings, thinner veins and higher wages to labor. The cost of this fuel cannot indefinitely continue to increase and the supply grow less and consumers remain satisfied. Whatever urge there now is from the individual consumer for legislation looking to the regulation of the coal industry comes because of the prices of anthracite. Relief is discernible in two directions, in neither of which have aggressive steps been taken as yet.

Domestic sizes of hard coal are sold at prices disproportionately higher than the cost of production because on the average 40 per cent of the total mined is fine coal that cannot be sold except as steam coal in competition with bituminous coal and at prices well below what it costs to produce them. The domestic sizes must not only pay their own way but a large part of the way of the junior sizes. Were the producers of anthracite to realize more money from the sale of the steam sizes they could, and doubtless would under economic pressure, sell the domestic sizes at lower prices. In the present development of the business full advantage is not taken of the market possibilities of fine anthracite and it is sold too generally for what it will bring rather than for what it is worth. The merchandising of anthracite is the merchandising of domestic sizes, and they sell themselves ten months out of every year. It is not salesmanship to move fine anthracite when con-

sumers cannot get bituminous, as in 1917-18 and during a large part of last year.

Higher realization by producers and distributors of anthracite can be obtained for the steam sizes only by intensive selling coupled with greater engineering knowledge of how to use this kind of fuel. Sufficient has been done along these lines by a few to demonstrate the possibilities of putting the junior sizes more nearly on an equal footing with soft coal instead of trailing as an inferior substitute.

The other obvious direction in which relief can be had from high prices of household fuel in the East is to introduce substitutes for anthracite. To most Easterners it is astounding that such a large portion of the people of this country manage to heat their homes with bituminous coal. Having known no other house fuel save hard coal they find it difficult to appreciate the possibilities of soft coal. Half the United States uses bituminous coal and lignite for domestic fuel. For the most part these people do not even have superior bituminous, such as the smokeless of West Virginia and central Pennsylvania, but high-volatile coal of lesser heating value, as that from Ohio, Indiana, Illinois and the Western States. Just as the hard-coal industry has been passing up a good thing by not more aggressively selling its fine coal for steam use, so have the bituminous producers overlooked a golden opportunity in not forcefully introducing the Easterner to their product as a household fuel of greater heating value, less ash and lower price than anthracite.

All the Frelinghuysen and Calder bills known and yet to come could not accomplish for the stabilization of the industry and for the cheapening of coal to the consumer what could be accomplished in the course of a few years by a definite program, aggressively pursued, by the coal industry looking toward the wider use of fine anthracite for steam purposes and the substitution of bituminous coal for a part of the large sizes of anthracite for household coal. We suspect that there are a few southern Illinois companies who could make soft coal move to private cellars in the effete East.

Heavy Returns—in Experience

IN THIS issue we publish a news story of a co-operative coal-buying effort by farmers in ten Middle Western States. Coal is to be bought by secretaries of farm bureaus in the coal-producing states in the East and Middle West, who are to act as purchasing agents for their Western brethern, who in turn will handle it through grain elevators and local co-operative agencies. It is asserted that 3,000,000 tons a year represents the combined requirements of this group.

We presume the first impulse of retailers and jobbers will be to say that if the farmers can buy, transport and distribute the coal and collect the money for it on any slimmer margin than the coal man is getting now, they are welcome to it. Should the farmers succeed in their enterprise, coal middlemen and retailers serving this territory presumably would suffer a corresponding decrease in their business. As a matter of fact the tonnage that such a group can swing is far from 3,000,000, and whatever it may be at the beginning it will be successively smaller as the enterprise peters out.

These farmers will learn, quite likely at some cost, that the fundamental premise on which they are working—that there is a large intermediate profit taken on coal between the mine and the consumer—is not tenable, at least in these times. It is not inconceivable that the farmers can in time perfect an organization capable of buying, selling and distributing their coal, but by the time they shall have reached the point where they can do the work as cheaply and efficiently as the coal men do it for them now, they will have to become coal men.

If the farmers really expect to see the program through, they would better start out full-fledged now and buy up a sufficient section of the coal industry to meet the needs and begin with a going business. Otherwise they will fritter away their enthusiasm in money losses. Few men in the coal business today would undertake the task of buying coal in half a dozen states to meet the diversified small-lot requirements of thousands of farmers in ten other states—if for no other reason than that other similar attempts have failed.

Reparations Not to Blame

IN FIXING the blame for the British coal strike on conditions arising out of the terms of the Versailles treaty and the Spa agreement some observers in this country are inclined to agree with the contentions of the miners' leaders in Great Britain that their ills are due to the "flooding of British markets with cheap German coal," as the *Colliery Guardian* puts it. It is argued, for instance, that were it not for the forced exports of coal from Germany to France, Belgium and Italy under the Spa agreement, those countries would have taken much larger shipments from Britain, thus insuring a satisfactory income to British mine owners.

Although the flood of German coal may have been a factor in precipitating the trouble in Great Britain, it does not seem that it was the principal cause. The trouble started after the first of this year, when the world market for coal declined and British shippers faced a rapidly falling market at a time when their costs of production had just been raised following the strike of miners in the autumn of 1920. Cardiff coal, that brought 115s. in December of last year, dropped to 85s. in January and 58s. in March, despite increased wages and costs. In the same period coal in this country dropped from prices ranging from $5 to $8 to an average of around $3 and $4 per ton. In the first quarter of this year Germany supplied 1,000,000 more tons of coal to France than in the corresponding period of 1913, and the United Kingdom about 1,300,000 tons less. The United States shipped nearly three-quarters of a million tons to France in the same months. German exports to Italy replaced English coal and increased production in Belgium reduced the demand on Britain.

In a larger way, however, it is apparent that it was the world-wide business depression that was responsible for the decrease in coal consumption, not only in Europe but in the United States. Great Britain has had no monopoly on idle coal mines and slack market in recent months, and no one here is laying the condition of our bituminous market to German reparations. Had it not been for that coal, France and other countries would not have piled up such large stocks as were on hand the first of this year or the drop in coal production, the world over, would have been postponed for a time. Unless the whole complex situation can be assessed against the treaty terms the few extra million tons of German coal supplied France, Italy and Belgium cannot be said to have caused the British coal strike.

Sizing and Preparing a Hard Low-Volatile Coal in the Broad Top Region to Compete with Anthracite

Most Coals from This District Are Sold as Run-of-Mine—One Firm, However, Has Built a Breaker to Prepare Five Different Sizes—Being of Hard Texture, the Coal Yields Readily to This Treatment

By Donald J. Baker
Wilkinsburg, Pa.

THE Broad Top region of Pennsylvania has always been regarded as a portion of the bituminous coal fields, even though from the standpoint of hardness the coals there occurring resemble anthracite. This latter is particularly true of one bed, the Kelly, the thickness of which averages from 3½ to 4 ft.

As a result of the prevalent obsession that any coal not strictly anthracitic in character should be treated as a bituminous coal the output of the Broad Top region has hitherto been shipped as run-of-mine or as lump, nut and slack and with only the crudest of preparation. As a result it has had to compete with the bituminous coals and at some disadvantage, for the coal is not thick and mining costs are accordingly high. To utilize some of the devices used in the preparation of anthracite, however, would be inadvisable, but no more so than to prepare it as bituminous coal when its qualities give it a place in a more exacting market and one which for that reason is ready to pay a higher price for it.

One operating company in the field, the Economy Domestic Coal Co., has had the courage to believe that a new market might be created for its product if preparation similar to that given to anthracite were employed. Even though the coal might not be in position to command anthracite prices, yet a return higher than that obtained from a bituminous mine product might be easily realized. This coal partakes of the nature of both anthracite and bituminous; consequently it is reasonable to suppose that it might create a market of its own, for the presence of a slightly larger percentage of volatile matter in this coal than in anthracite serves to make it freer burning.

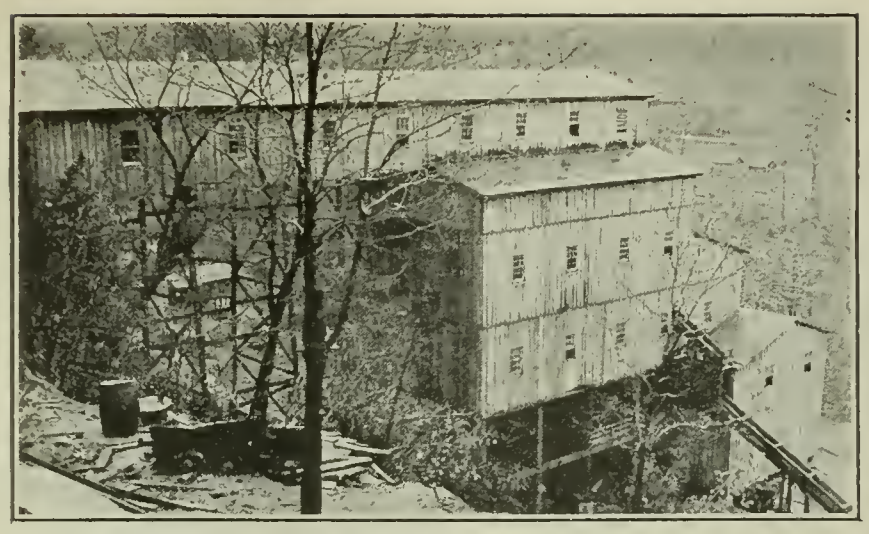
To this end a preparation plant known as the Pioneer Breaker has been installed. It more closely resembles the dry breakers in the anthracite region than the tipples of the bituminous fields. No jigs are used in the building, and fewer sizes are made than in standard breakers, but that variation from the usual practice is to be expected. As the output lies half way between anthracite and bituminous it is natural that the preparation should partake of the same happy medium. It is quite likely that other breakers like this one will be erected, for wherever coal is hard and low in volatile matter this general type of treatment should be introduced in place of the regular bituminous-coal equipment.

The plant, which is a subsidiary operation of the Schipper Coal Mining Co., of Boston, Mass., is located at Six Mile Run, near Riddlesburg, Bedford County, Pennsylvania. The breaker is served by two openings less than half a mile apart and located at equal distances from the breaker. Though these points are near each other the seam has in that short distance made a radical change in direction of slope, so that one opening dips heavily into the mine and the other steeply toward the surface. The opening to the left of the breaker is one that goes to the dip and here the empty trips are run by gravity to the innermost sections of the workings. That on the right has an electric hoist by which the empties from the breaker are hauled into the mine. Few beds of coal are operated under more adverse conditions than are encountered in the Kelly bed. The seam lies in a series of troughs, and the rolls and pitches occurring in it make haulage, ventilating and pumping problems peculiarly vexing.

The empty trips made up on the track to the left of the breaker entrance are lowered down the slope by a Lambert hoist engine which is located on the surface. The hoist is equipped with double drums and housed

Breaker in Broad Top Region

The preparing station in the foreground was used while bituminous methods were practiced. The breaking down of excessively large lumps and the sizing into five sizes made it necessary to build the breaker shown in the rear-ground.

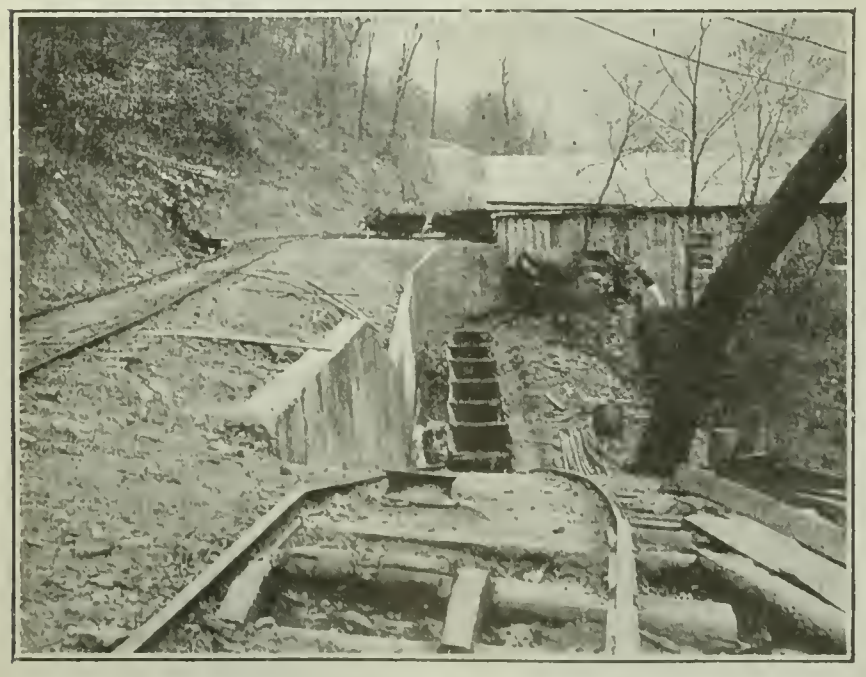


SIDE VIEW OF BREAKER FROM LEFT STORAGE TRACKS

The chute leading away from the structure carries the refuse and bone coal removed by the pickers to a large hopper, from which it is transported by a larry to a culm pile at some distance from the building.

in a frame and concrete building. From the foot of the slope, to which the furthest advanced butt entries are tributary, the loads are elevated to a point near the hoist house. Here the grade changes and favors the trip for the remaining distance to the breaker. At the knuckle the trip is stopped and a tail rope from the second drum of the hoist engine is connected to the rear car. This tail rope, of course, leads around a sheave. After it has been adjusted the trip is once again put in motion by the head rope and moved to such a point that the cars lie on the grade leading to the breaker. Here the weight of the trip comes on the tail rope. The head rope, which is now actually the tail rope by reason of the trip being under control of the other side of the hoist, is removed from the front car, and the trip dropped into a storage track leading to the dumping floor of the breaker.

After being discharged and made up into trips of empties the cars are taken from the storage track and hauled to the knuckle by the rope which was used to lower the loads into the building. When the trip is once more balanced on the knuckle the head rope is again attached and the trip pulled over the rise until its weight comes on the head rope. The tail rope is then detached, and the cars are permitted to move by gravity into the mine.

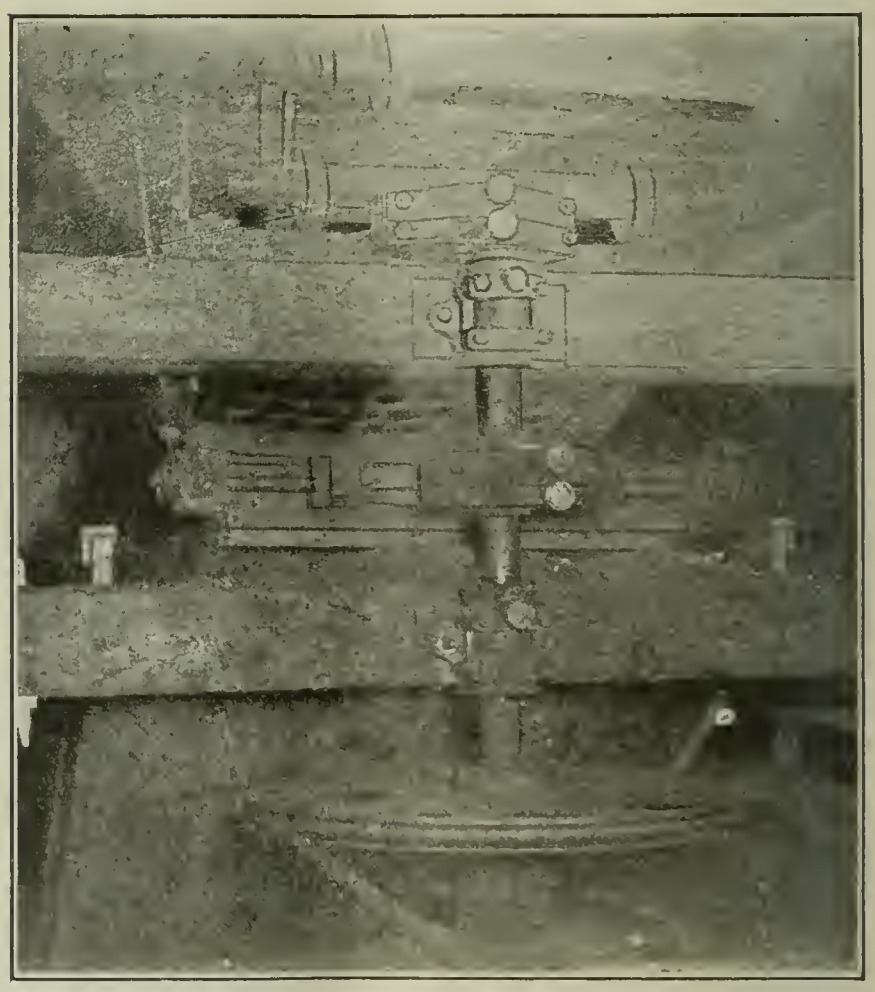


LOADED AND EMPTY STORAGE TRACKS ON LEFT OF BREAKER

The road from the mine is down hill, but the loads have to be pulled out of the workings by a hoist. The roads shown in the distance go to another mine, where the loads run out by gravity.

The loads from the other mine opening are dropped from the mine directly into the breaker. The empties are picked up from the storage track on the right and elevated up the incline and into the mine by the hoist engine situated at its head. The breaker entrance is about 1,800 ft. from the mine opening, and the surface roadway lies on a slope of 4½ per cent in favor of the loads. The hoist engine is located 1,300 ft. within the mine and operates over a grade averaging about 3 per cent.

Loaded trips coming from either mine opening pass into the breaker over the same feed and storage track. The cars are then discharged over a Phillips cross-over dump, the coal passing to a bin below it. After discharge the cars gravitate to a kick-back at the rear of the dumping floor and are then directed to a track leading to either the right or left outside yards. The empty



MAIN SCREEN-DRIVING PULLEY AND VERTICAL SHAFT

Both screens are driven from the same vertical shaft by means of eccentrics. This view was taken beneath the hopper under the dumping floor and shows the screens receiving the coal from the oscillating feeder.

cars are not alternately switched to the right and left storage track, but the switch is kept in position till a complete trip is made up for the particular opening which has just delivered loaded cars to the breaker. It is seldom that the hoists deliver trips simultaneously.

On the third floor of the building, or that at a level next below the dump, coal from the bin is fed to the first screen by means of a reciprocating feeder. This shaker is driven by a vertical shaft from a horizontal pulley rope-connected to the main driving shaft and operated by a 50-hp. motor installed upon this floor. All the breaker machinery is driven by this one motor, which is belted to a large flywheel on the main driving shaft. Belts are led off from this shaft at various points to operate both the screens and the crushers. From the feeder the coal enters a double-decked screen. The upper deck is provided with plates having 4-in. perforations, while those on the lower deck are only 2½ in. in diameter.

EGG, STOVE, CHESTNUT AND PEA SCREENS

The coal being fed to these screens comes from the crusher on the floor above and from the first screen on the same floor and passes over or through the egg, stove, nut and pea screens for sizing. The shakers are in pairs and are driven as two double-decked screens.

As the lump sizes leave the upper deck of the screen, they are chuted to a Wilmot roll crusher, the impurities being picked from the coal as it passes through the chutes. The refuse is thrown into a chute which leads directly to a rock house on the outside of the breaker. Most of the extraneous material removed in the picking process consists of bone coal. This, although it possesses a fair fuel value, is not being sold. It is taken by a larry from the refuse house to a dump at the foot of the hill, where it will be stored. The 2½-in. product is directed into a chute leading to the floor below, and the slack is again screened before it enters a chute directing it to the slack pocket on the first floor of the structure.

The screens at their discharge end are supported by swinging laced timbers, and at the upper end they are suspended by hanger rods from eyebolts. This arrangement allows the end of the screen nearest the feeder to take a horizontal movement in two directions. This is desirable in that better preparation is thus obtained, although, of course, it induces a greater amount of vibration.

The chutes for both large and small lump sizes are built upon easy grades, so that the coal may be delivered to the floor below without undue degradation. The large lump chute leading to the crusher is set on an angle that barely permits the coal to move, thus allowing it to be picked in transit to the rolls. As its movement is slow, the pickers are provided with short wooden paddles with which they push the lumps into the crusher in case they will not move of their own accord.

On the second floor of the breaker the coal from the rolls unites with the 2½-in. product from above and enters a four-deck shaking screen. Here the lump coal, along with that removed as slack on the floor above, is sized into egg, stove, chestnut, pea and slack. The upper deck of this screen is fitted with a plate provided with 3-in. perforations which removes the egg size—that is, the coal between 3 and 4 in. in diameter. This product leaves the screen to enter a chute which conveys it to an egg pocket on the floor below.

The second deck is provided with plates having 2½-in. perforations. Here the stove size is removed, after which it travels to its pocket. The third deck is provided with plates having 1⅝-in. circular openings; the product from this plate is of chestnut size and like the others is shot to its pocket. The fourth screen removes the pea size or that over ⅝-in. in diameter. This is directed by a chute to its pocket, and the slack or that passing this last screen enters a chute leading to the slack pocket.

Demand for Buckwheat No. 1 Manifested

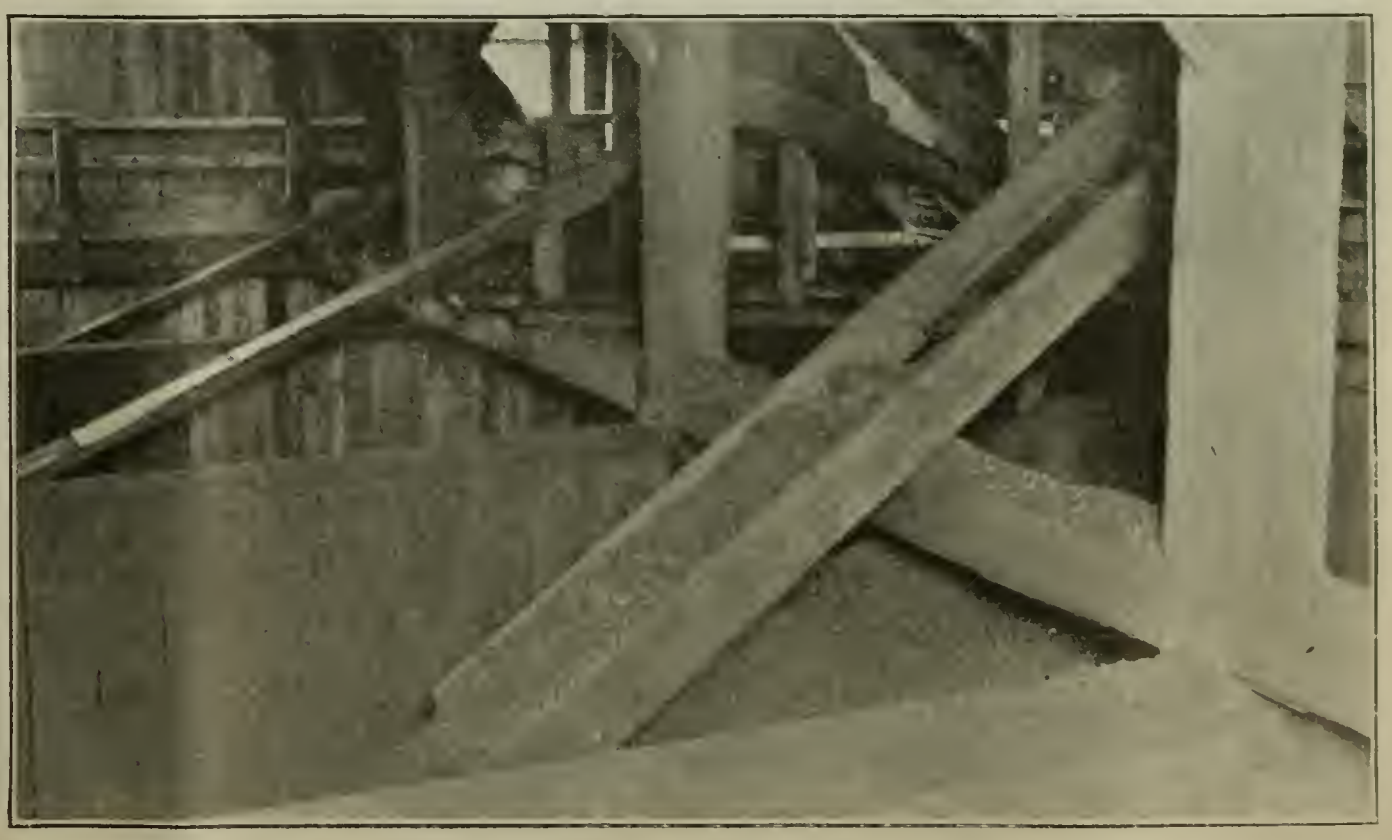
The first floor of the building contains only the various pockets for the five sizes and the chutes leading to them. Each pocket will hold 125 tons of coal. The chutes from the screens, which are stationary and rigid, are constructed on easy slopes so that each size passes gently to its destination. At the bin entrance the chute is divided, one side leading to one end of the pocket and the other to the opposite end, thus permitting the pile in the bin to build up from either end and not alone from one. This lessens the amount of breakage.

At present only five sizes are being prepared. There has been, however, an appreciable demand for No. 1 buckwheat, and it is probable that arrangements will soon be made for the preparation of this grade. The equipment has a capacity of 1,200 tons daily, but only 500 tons are now being loaded out.

Coal from the various pockets is loaded into cars upon a single track passing below and to one side of the bins.

Pockets and Chutes

The chutes are set at an angle that barely permits the various sizes to enter the bins by gravity. In this manner degradation is kept to a minimum. The stream is divided over each pocket so that the container may be filled at both ends simultaneously. This also prevents breakage.



CAR OF EGG AND ONE OF STOVE

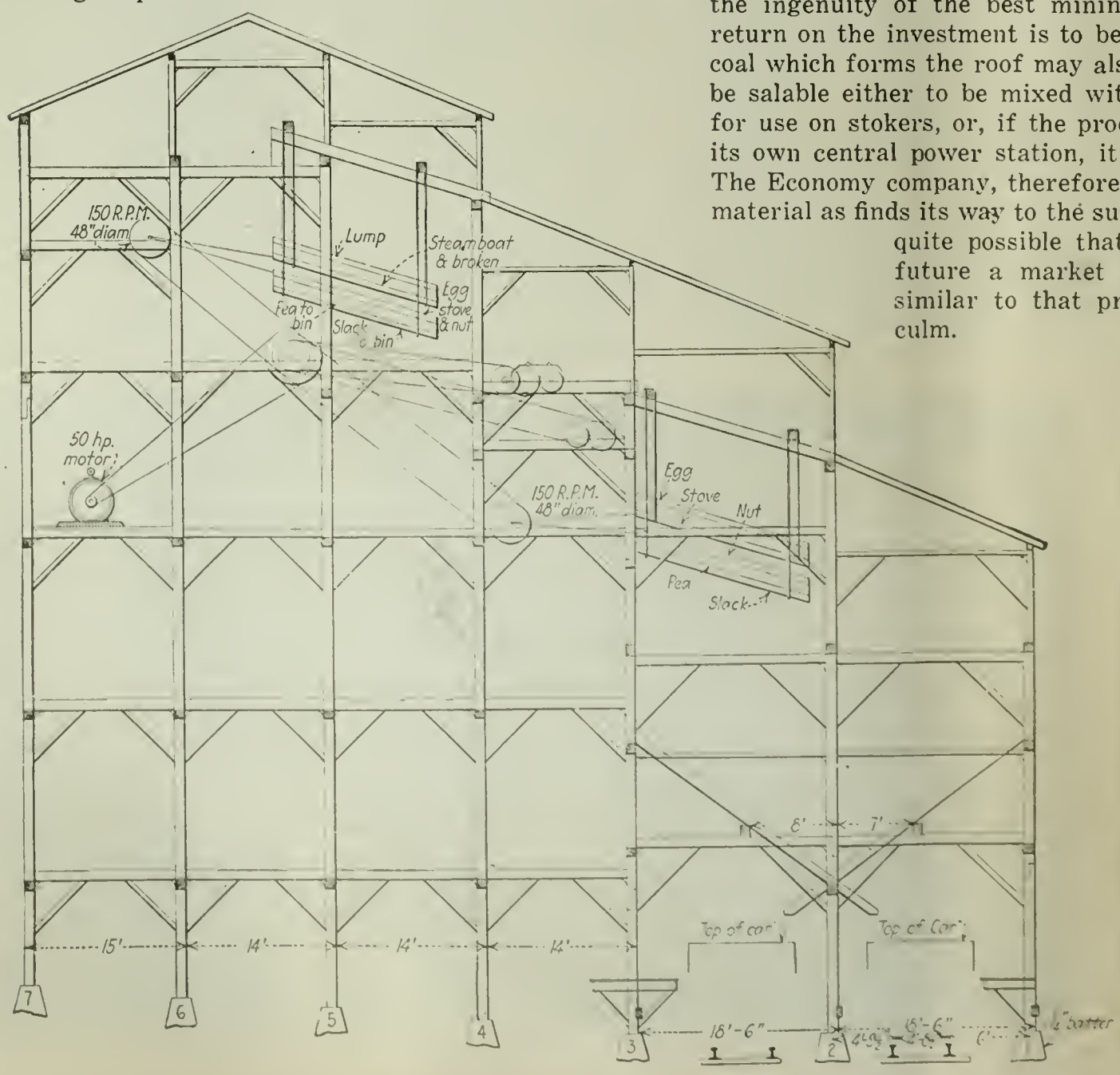
In order to burn properly, coal should be of uniform size, the pieces being neither larger nor smaller than one another, so that the draft will be equally distributed through the fire. The dump in the rear of the illustration is the culm bank, the material of which will be later reclaimed by a washer or used to produce power for a central station plant at the mine.

Lip screens remove any undersize coal that may have been formed in lowering the various sizes through the chutes and into their pockets. At present this material is deposited on a platform behind the loading chute. When an order for slack is to be filled this coal is shoveled into a car. This is a rather laborious method of handling it and some means will have to be installed for conveying this degraded coal from the slack platform to the second floor of the building, where it may be once again passed over the screens.

Fewer men are employed in this building than in the larger anthracite structures, and in this respect it resembles a bituminous tipple. Two men are stationed on the dumping floor, two on the floor below as pickers in the first preparation, and three boys as pickers on the second floor; another man is stationed at the lip screens but he also is employed as a car shifter. The coal is well sized and picked and closely resembles anthracite by the time it reaches the pockets.

It will be interesting to note how the ideas of this operating concern will be received by other producers working coals semi-bituminous in character but hard in texture. Most semi-bituminous coal is too friable for such treatment, but such as is hard could well be prepared for use in the market where anthracite is now favored. The Economy company has demonstrated to its own satisfaction that this coal can be handled in rigid chutes regardless of whether it enters the breaker wet or dry. It does not sell its product as anthracite, neither does it offer it as bituminous coal. As a result of its careful sizing and preparation it is able to command a higher price than any other operation in the Broad Top region. At the majority of plants in this district the coal is not sized at all, but is shipped exclusively as run-of-mine. The beds are rarely more than 4 ft. in thickness and one is being worked where the coal thickness averages little more than 24 in. If operations in the Broad Top district are to flourish it would appear that breaker methods must prevail.

Mining a 3½-ft. coal and preparing it for market by bituminous methods, when it is capable of enduring the treatment given anthracite, is a business that will tax the ingenuity of the best mining engineers if a fair return on the investment is to be obtained. The boney coal which forms the roof may also at some future time be salable either to be mixed with a higher-grade fuel for use on stokers, or, if the producing plant possesses its own central power station, it could be used locally. The Economy company, therefore, is piling such of this material as finds its way to the surface, feeling that it is quite possible that at some time in the future a market will be found for it similar to that provided for anthracite culm.



Cross Section of Breaker

It will be noted that the difference between this breaker and the ordinary tipple is that lumps larger than egg are crushed and that the coal is converted into five sizes—egg, stove, nut, pea and slack. As this coal, fed to a furnace, is uniform in size a uniform depth of coal bed gives a uniform draft. The furnace bed is not solid in one place and "holey" in another, as is the case where lumps are mixed with fine coal. Grate bars can be chosen suitable to the size of coal to be handled.

How Gravity Is Superseded by Mechanical Devices In Movement of Cars at Lytle Colliery

Gravity Being Too Uncertain, Empties Are Moved by Car Hoist, Plane and Go-Devil to Surface Landing of Shaft—Thirteen Men Handle the Cars, but Only Seven Are Engaged in Transportation of Empties and Loads

By Dever C. Ashmead
Wilkes-Barre, Pa.

PROBABLY one of the most difficult of the lesser problems encountered at anthracite collieries is the movement of cars, particularly empties, upon the surface. Where the distance from the shaft to the breaker is short loads do not often give so much trouble as empties, for as a rule they travel a shorter distance, and for that reason the grades may be made steep enough to insure proper movement without being so steep that the cars bump heavily when they come together. Handling the empties by gravity, on the other hand, requires that they be elevated the height necessary to afford gradient for the movement of the loads and as much more as is required for their own movement. This latter usually is greater than the height required by the loads, as for various reasons the journey is longer.

Unquestionably the most satisfactory method of handling cars on the surface is by some mechanical means. The use of gravity introduces many variables, and it is impossible to devise such a system as will handle cars with equal facility in both summer and winter, as they are much stiffer in cold than in hot weather.

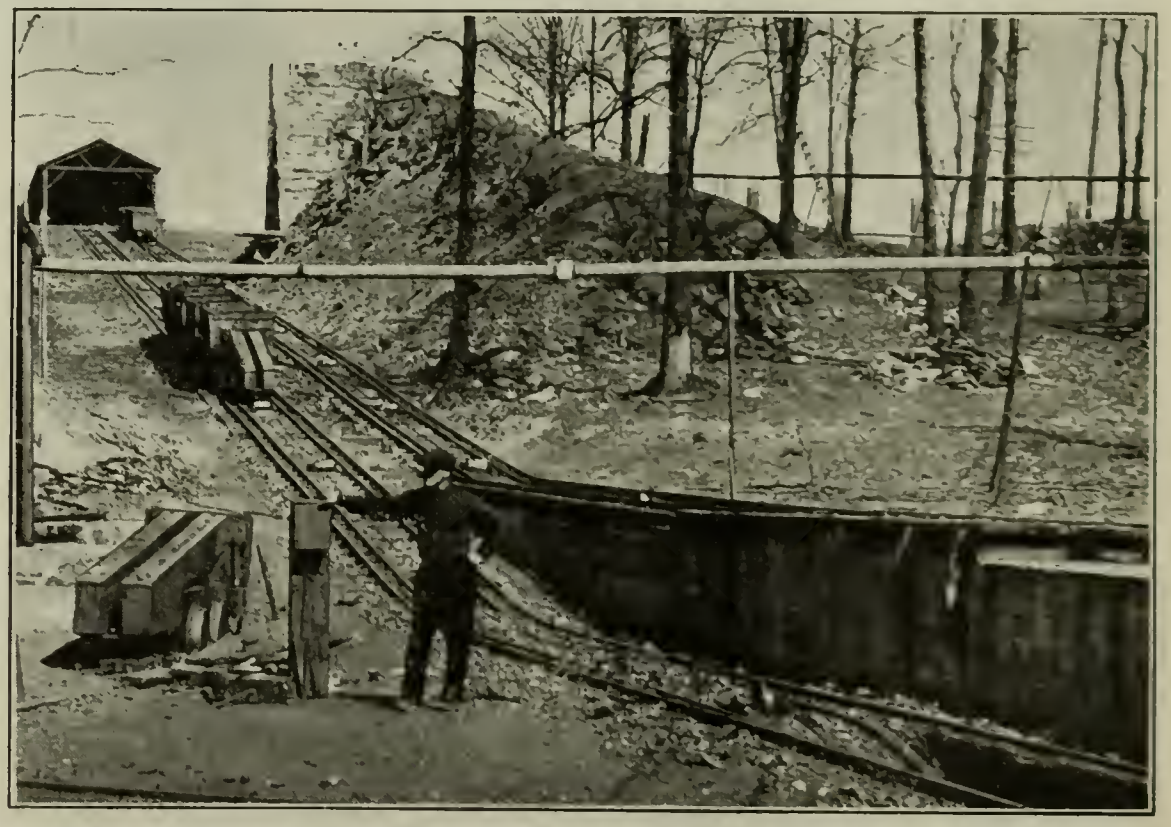
Grades Made Short and Reasonably Steep

At the mine of the Lytle Coal Co., near Minersville, Pa., the hoisting shaft is some 800 ft. from the breaker, and the problem involved is the raising of the loads to breaker height and the return of the empties. The system formerly employed for this purpose was entirely unsatisfactory and gave much trouble, so that it became necessary to adopt some new scheme. In the new layout the loaded cars gravitate only a short distance to the foot of a plane.

This grade is so steep that the cars will move with certainty over it, but is so short that they will not attain excessive speed. Up the plane the cars, in trips of four,

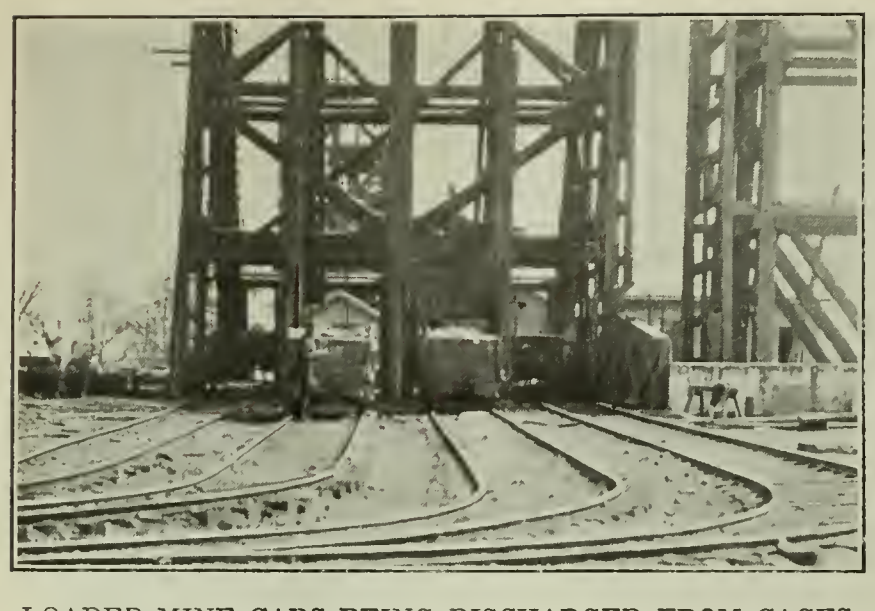
Power Plane

Four loaded cars are being pushed up the plane by a barney, and a trip of empties is being lowered. In the foreground on the right is the pit into which the barney runs, permitting the loads to pass over it. At the foot of the plane the empties are kept at a higher level than the loads in order to assist them in their travel to the shaft.



Empties Returning

The power plane is in the intermediate journey taken by the empties. They are first raised by the steam hoist and then dropped down the plane, after which the go-devil takes them toward the shaft. Note the four empties and also the barney, which is about to descend into its pit. This is the reverse of a gravity plane; the empties help to pull the loads up hill, but power is needed to raise the coal and overcome friction.



LOADED MINE CARS BEING DISCHARGED FROM CAGES

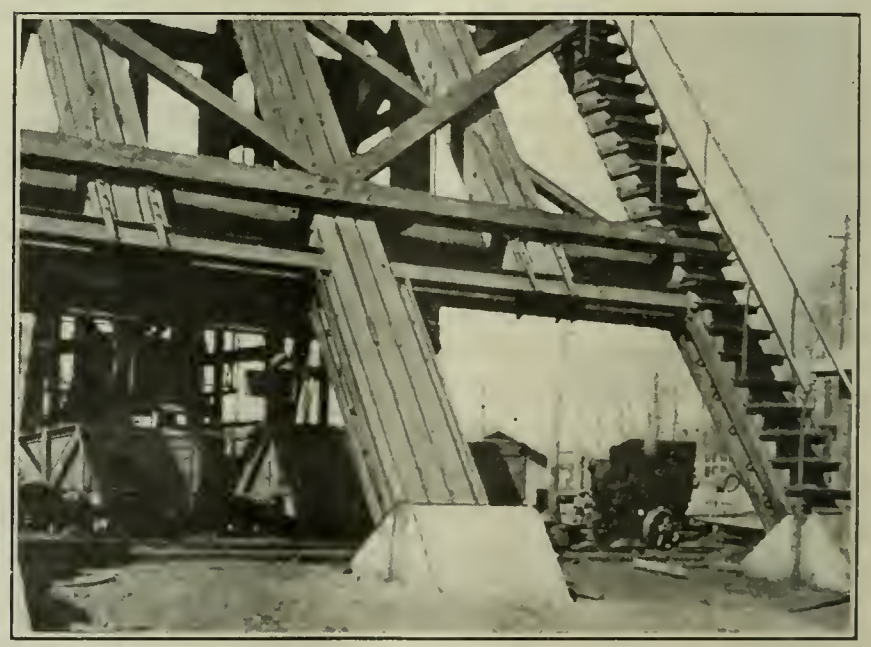
These mine cars are run by gravity to the foot of the barney plane. The mule to the left of the illustration is used to bring cars loaded with timber from the timber yard to the shaft. It is also used in cases of emergency.

are taken by a barney to the top of the breaker. The landing at the head of the breaker is only about 100 ft. long, and the cars move to the dump by gravity, the grade again being made so steep that the cars run at all times without trouble. In so short a distance, however, they cannot acquire excessive momentum.

From the dump the empties gravitate a short distance to an automatic steam car hoist. The oncoming car presses down a pair of horns and turns on the steam, which tilts up the track till the car runs off the device, its movement cutting off the steam, so that the track returns to its normal position. Thence the empty runs a short distance to the top of the same plane as that by which the loads were brought up.

The cars are made up into trips of four and are lowered down this plane by a barney, whence they are delivered to a long empty track at its foot. From this point they do not proceed by gravity but are moved by a go-devil, which hauls them to a knuckle, from which they gravitate over a distance just sufficient to permit one car to clear another to a transfer table which takes them to any one of the four tracks leading to the shaft itself. Thence the empty is run upon the cage. The distances traversed under the influence of gravity are thus short and sufficiently steep to give positive motion.

Both go-devil and transfer table are operated by one man. One or sometimes two men are required to remove the loads from the cages and transfer them to the head of the barney plane. Were it not that separation of rock cars from those loaded with coal takes place at this point, it would be necessary to place only one man here. At the foot of the plane one man is stationed to make sure that the cars get into proper position to be picked up by the barney. At the head of the breaker two men are employed to see that the cars reach the dump and three more discharge the coal. The services of a third man at this point are necessitated only by the fact that exceedingly large lumps are sometimes loaded into the cars and stick in the door and must be pried loose. One of the men is necessary at the top of the breaker to make up empty trips. In addition to these,



LAST STAGE IN THE JOURNEY

Cars reaching the tipple by the help of the go-devil are transferred by hand to a transfer truck which spots the car for the particular compartment through which it is to be lowered into the mine, this track being beneath the backstay of the large timber headframe.

two cagers are required at the shaft, which contains four compartments and thus needs one cager for each pair of cages. An engineer to operate the barney plane completes the force.

In all, thirteen men are required to handle the mine cars from the time they reach the surface until they are

STEAM CAR HOIST IN LOWERED POSITION

Empty cars one by one are kicked back at the dump and run down to the foot of the short plane shown in the center of the illustration, and in doing so they depress the horns which admit steam to the cylinder, lowering the wheel and raising the car hoist, as seen in the next illustration.

SAME CAR HOIST RAISED TO THE DISCHARGE LEVEL

The track on which the car was resting has been tilted up about six feet, so that the car is able to run off along the runway to the head of the plane. The horns are lifted with the track and when the car moves off, the steam is released and the hoist goes back to wait for another car.

again loaded upon the cage. The real number of men employed in transporting the coal is smaller than it appears, for it should be remembered that many of these hands are chargeable to other items than surface transportation. Thus the cagers should not properly be charged to this account; neither should be the dump men in the head of the breaker. Only seven men can be charged strictly to surface movement of loaded and empty coal cars, and it is possible that the services of some of these might well be charged to breaker operation rather than to transportation.

It will be observed that gravity is not relied on for the conveyance of empty mine cars except over extremely short distances. The movement of the empties is thus mechanical and positive, obviating the uncertainty of gravity operation.

Changes in Electric Mine-Locomotive Design During Past Quarter Century to Meet Present-Day Needs

Steel Drives Out Cast Iron for Frames—By Saving of Weight and Space in Frame Larger Motors Are Feasible—Helical Springs Vs. Leaf Springs—Two Springs Vs. One—Advantages of the Low Reel

By N. D. Levin*
Columbus, Ohio

ELECTRIC locomotives were introduced in the coal mines many years ago. From the date of their first appearance down to the present time, although there has never been any question about their fitness for the work in hand, they have nevertheless undergone a decided evolution, and few, if any, of the parts that went to make up the earlier machines are still employed in those of the present day. Of course, the early details have their counterparts in modern machines, but their size, form and shape have undergone a metamorphosis that renders the present-day components markedly different from their early prototypes.

Fig. 1 is a photograph of a locomotive built in 1898. The weight of this machine is about fifteen tons. It was equipped with three motors and was at that time considered a machine of excellent design. No doubt this was true, because this same locomotive is still hauling coal and has performed its allotted daily round of duty throughout the intervening years. A comparison with present-day locomotives, however, would reveal many differences in detail.

As the mines became more extensive and the distances over which coal had to be hauled increased, it grew evident that longer trips must be moved in order to obtain the desired output. It became necessary, therefore, to increase the capacity of the hauling units, and thus the power of the motors had to be made greater as compared with the weight of the locomotive. Eight horsepower per ton of weight was about the maximum capacity attainable in the early machines. This was because the cast-iron frame, the wheels, axles and other parts were made so bulky as to occupy much space compared to the driving units.

This being realized, the problem was presented of building a locomotive with the largest possible percentage of its weight concentrated in the motors and gearing and the least percentage in the frame, without sacrificing durability or making the machine subject to severe injury either in normal operation or in any wreck that might logically be expected.

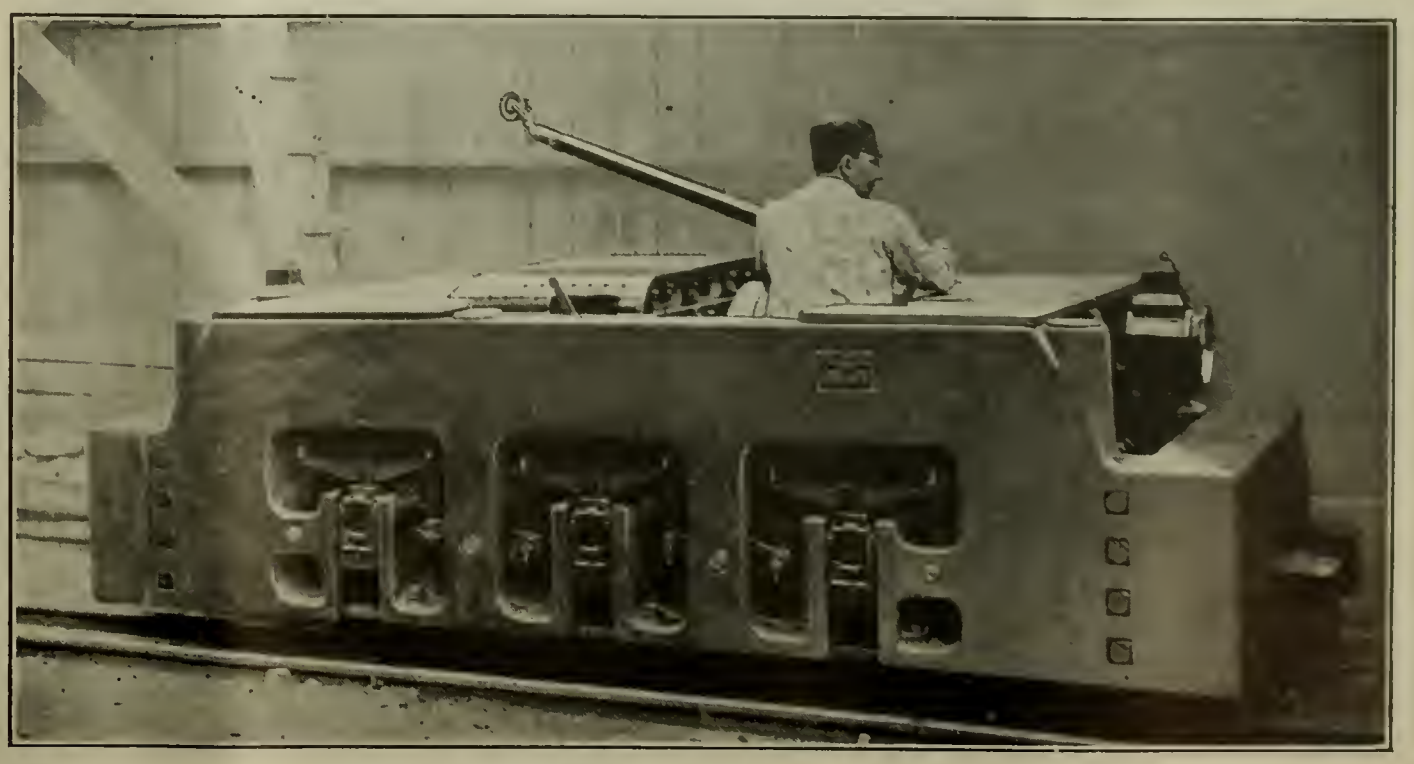
Working toward this end, I designed in 1908 a loco-

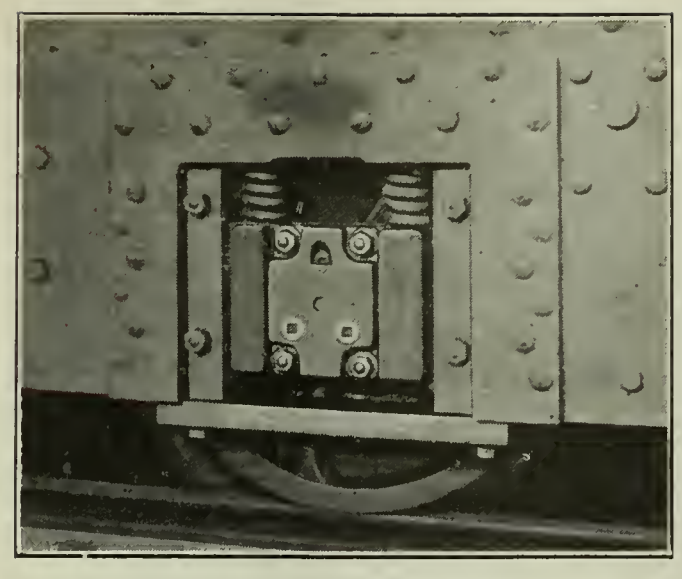
*Chief engineer, mining department, the Jeffrey Manufacturing Co.

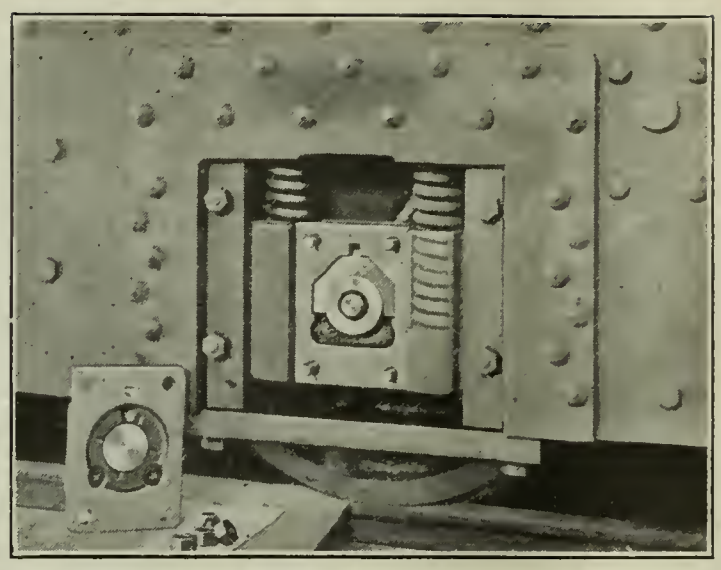
FIG.1

Locomotive Made in 1898

Owing to the many joints in a leaf-spring suspension some manufacturers are abandoning them. By replacing the cast-iron frame by one of steel, weight and space are saved which can be utilized by providing larger motors and better braking and sanding devices.







FIGS. 2 AND 3

Axle Box

On each side of the axle helical springs are provided. These can be made long without weakening the frame, an arrangement not possible if the boxing is surmounted by a single spring.

motive with a frame made of rolled-steel plates. This type of frame was named "armorplate," and this name was registered as a trade mark. This frame in large measure solved the problem, as it was relatively light as compared to side plates of cast iron. As a result the weight of the locomotive could be concentrated in the motors and gearing and these parts thus made far more powerful for a given weight of machine.

Motors Can Outpull Wheels of Locomotive

A complete line of locomotives accordingly was constructed, with electrical equipment of such ample capacity that load and mine conditions became secondary considerations. The wheels would slip long before the locomotives would become overloaded. In other words, these machines were so designed that it was practically impossible to overload them.

In designing this line of locomotives advantage was taken of the fact that the plate frame took up far less space than frames of cast iron. This made it possible to improve such elements as the brake rig, sanding device and the like.

In the older machines, especially those of large size, trouble was experienced because the wear on the wheel hubs, collars and axle boxes allowed end play between the wheels and the frame. This permitted the gears to move out of line with the pinions, the wheels out of line with the brake rig and similar disorders, causing much expense for general upkeep and on account of delays.

In 1908 I devised an improvement intended to eliminate this end play and a patent application covering it was made at that time. A hardened tool-steel pin was inserted in each end of the axle and the journal boxes were provided with heavy bolted-on lids each bearing a hardened tool-steel plate on the inner surface directly opposite the end-thrust pins in the axles. When the locomotive is traversing curves or moving on crooked track, the hammering and side stress usually encountered are received by the thrust pins and transmitted by them through the journal boxes to the frame, thus eliminating wear on the driver hubs proper. When worn, thrust bearings of this nature can be quickly and cheaply renewed.

Another source of expense and trouble with the older type of mine locomotives was the flat leaf springs. Referring to Fig. 1 it will be noted that there are just fourteen joints in the suspension mechanism on each side of the machine, or twenty-eight in all. A two-motor locomotive would have nine joints on each side, or eighteen in all. When the machine is in operation these joints are in constant action and in consequence soon wear out. Another objection to flat springs was that they were more difficult to obtain than the plain coil of helical springs. They also cost more to replace. Still another and a more serious fault was that they took up too much room and consequently weakened the side frames. For these and various other reasons springs of this type were abandoned and coil springs adopted as a standard.

Why Two Springs Are Used to Each Axle

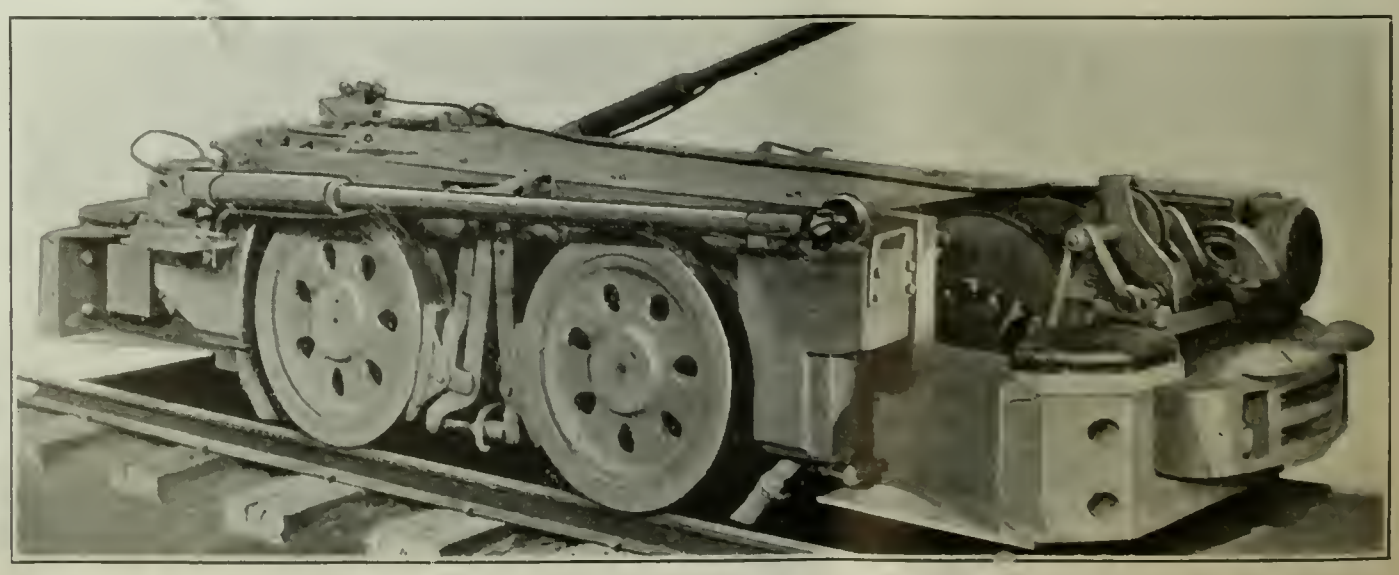
In the older designs one coil spring was placed on top of and in the center of each journal box. This method of suspension, however, was discarded, as the limited height of the locomotive frame made the space available much too small. Its application frequently entailed a choice between a spring entirely too short to give the desired flexibility and the cutting out of the side frame to such an extent as to render it liable to fracture.

In designing the journal boxes intended for use with armorplate frames one spring upon each side of the

FIG. 4

Reel Locomotive

Top of reel is level with top of locomotive. Trolley poles are mounted on outriggers. Motorman's seat is provided with a footrest and handrail. Vision of motorman is not obstructed by reel.



axle was provided. These were placed in pockets within the journal boxes. These pockets can be made of any depth to suit existing conditions and consequently springs which are as long as may be desired can be used without making it necessary to cut away the side frame to any greater extent than will just allow the axle boxes to play up and down readily. Fig. 2 shows a journal box with lid in place and Fig. 3 the same box with the lid removed, exposing the end-thrust bearing. This latter figure also affords a phantom view of one of the springs, showing their generous length.

I am of the opinion that, if conditions will permit, haulage locomotives ranging in size from ten tons upward should be provided with outside frames. Such an arrangement affords room for large electrical equipment, yet simultaneously renders the locomotive parts accessible. A large locomotive with inside frames, on the other hand, crowds the various parts together and does not give sufficient room for well-designed motors of liberal size.

Small locomotives, however, especially those that are used for gathering, should by all means be fitted with outside wheels. The gage of such machines is the same as for the larger ones operating in the same mine, but the necessary motor equipment is so much smaller that ample room for both motors and frames may be found between the wheels.

Why Outside-Wheel Locomotive Also Is Used

The reason for preferring outside-wheel locomotives is that in case of derailment they may be put back upon the track much more readily. Furthermore, they are much narrower than if the frames were placed outside the wheels. This affords more room for the trip rider to get around the locomotive in a narrow place and renders his work safer. An outside-wheel machine also may be used in many places where it would be necessary to clean up the track and gob before a locomotive fitted with inside wheels could be used.

Fig. 4 shows a late design of gathering locomotive. The cable reel is placed at the forward end and inside the frame, its top being flush with that of the locomotive. So placed it does not hinder the locomotive from going into low places and does not obstruct the motorman's view. The cable reel can be either mechanically-driven or provided with an independent motor and the cable can be arranged to spool from either end of the machine. A convenient and safe seat is provided for the trip rider with footrest and handrail. In this illustration the trolley poles are shown mounted upon outriggers. This arrangement is suited to extremely low trolley wire. In ordinary cases the trolley poles are mounted on top of the sand boxes, in which event the total width of the machine is practically the same as the width over the wheels.

Such a locomotive as this is readily accessible. For instance, the brakes are exposed and can be easily adjusted and the brake shoes may be renewed with little difficulty. There are no cable-reel, brake or suspension bars above the motors and consequently these may be reached by simply removing the locomotive cover plates.

Armorplate Not Suited to Small Machines

As shown in Fig. 4 the locomotive frame is built up of channel iron, riveted together, with steel castings forming the guides for the journal boxes. This makes an extremely light yet strong frame. Armorplate frames are not suitable for small outside-wheel locomotives. The majority of such small machines are equipped with cable reels or crabs, and armorplate frames make up too large a percentage of the total weight, so that the capacity and reliability of other parts would necessarily be sacrificed if a heavy side frame were used. With the channel-iron construction, however, the strength of frame is not lessened, as experience has shown that gathering locomotives of this construction will withstand almost any wreck.

One advantage possessed by this locomotive is that it is adapted to receive either crab or cable reel in the same space without altering its dimensions. Only a

FIG. 5

Electric Locomotive

Formerly the electric locomotive, like the steam locomotive of early days, was a complicated-looking machine, but, like the modern steam locomotive, it has been recast so that now it is outwardly a mere box with bumpers, a controller, a headlight and a trolley arm. Every part which is susceptible to dust and dirt is well covered and protected.

small amount of work is required to make the change. Fig. 5 shows a modern armorplate locomotive. The massiveness of the side frame is at once noticeable. By using journal boxes with a pair of coil springs as above described it is unnecessary to cut away the side frames and thus weaken them, yet springs of ample flexibility may be employed.

Why Overcasts Are Better Than Mine Doors

By W. E. Dickson
Du Bois, Pa.

A DOOR is one of the most costly as well as most dangerous items of mine equipment, yet this consideration seldom receives the thought that it deserves. Where it is considered necessary to install a permanent door the conditions should be carefully considered, and usually it will be found cheaper and safer not to build the door but to put in an overcast.

A permanent door involves much expenditure in addition to that for lumber. The wages of two men must be paid for its construction and erection. A trapper will have to be constantly employed to open and close it. A shelter hole must be constructed at the door and another hole also must be provided for a barrel of water, for all permanent doors should be so protected. The continual breaking and smashing of the door by trips involves a further expenditure for lumber and for the workmen who replace it.

A light should be provided at all doors. This involves the wiring of the light, the replacing of globes, and the employment of wire men who must spend a day, more or less, in installing it. Trolley wires must be guarded on both sides of the door, which means the use of more lumber and the employment of more labor. These boards often are knocked down by trolley poles and again the service of a high-class or highly-paid man is needed.

Where permanent doors are used an extra door should be placed that will have the same effect on the ventilation. This door, of course, should be a full trip length away. Heavy blasting or heavy caving often damages doors. The weighting of the roof, the movement of the sides or the heaving of the bottom will affect them also.

Not Only Expensive But Dangerous

Looking at the matter from a safety viewpoint we often find the door frame cuts the clearance, frequently to as little as 12 in. A brakeman or driver, knowing he has 30 in. clearance, forgets the door frame is in his way and accordingly at this point a man may be squeezed to death. The required shelter hole is not always provided, and an instance is recorded where a trapper stood back of his door and the heavy iron guard receiving the weight of the cars crushed him so severely that he died.

Should the boy neglect his work the motorman is in great risk of losing his life by running into the closed door. The cross bar over the door often is far below the uniform height of the roof and may easily dash a man's brains out. Doors have been known to take fire and cause serious damage. One at Delagua, Col., is thought to have been set on fire by the trapper and been the cause of a destructive fire in which many lives were lost.

Trappers, drivers and workmen leave doors fastened or thrown back and as a result that portion of the mine where the air is short-circuited may be endangered by an accumulation of gas, with a result that is not to be reckoned in dollars and cents but in humanity. It is not advisable to place doors at the foot of steep grades. Even automatic doors are dangerous where a man cannot control his trip, as these doors are not always positive in action.

There is always more or less leakage through a door and, as a result, much of the ventilating current may fail to sweep the working faces. Every mine foreman remembers the time when the inspector tried to measure the air at the last crosscut and found that, owing to an open door, the anemometer would not even move. "That's queer," he will say; "I usually get 12,000 cu.ft. of air here, a door must be open." Of course the door was open; it usually is open and often remains open all night until the fireboss finds it and ponders over whether to leave it open or close it before continuing with his inspection.

The penalty under the compensation schedule for neglect to dispense with the door certainly makes it a costly and most dubious "economy." Doors must be so hung that they will close themselves, must be strongly built, tightly sealed into the roof, and a second door that has the same effect on the ventilation is required.

For neglecting to comply with these specifications a charge of 1c. per $100 of payroll is the penalty provided. Under the rules of the compensation schedule shelter holes must be maintained at all permanent doors. A penalty of 6c. can be charged the operator not complying with this requirement. Doors must be whitened or enclosed lights maintained. A 6c. penalty is provided for non-compliance with the requirement that the trolley wire at doors be guarded on both sides.

Penalties Add to 31c. per $100 of Payroll

A clearance of 30 in. must be provided between the widest part of the motor or cars and the frame of the door or a twelve-cent charge can be made. When these charges are totaled we find that one door can create a maximum of 31c. per $100 payroll. When the total payroll of the mine is computed and this proportion deducted it will give some idea why a permanent door should not be placed, but even when conditions seem to warrant paying the penalty to save the first cost of an overcast it is generally more advisable to erect it.

The initial cost is greater, of course, but in the end the overcast will be found to have paid for itself in saving the many expenditures already enumerated. With the overcast the clearance can be made ample. The shelter hole and a hole for a barrel are unnecessary and by no possibility can an overcast be left open. A substantial overcast does not leak, and it enables the inspector to commend the foreman for the excellence of his ventilation equipment, which he cannot do where doors are used too liberally throughout his mine. The slogan of every mine should be "Safety, economy and large production." The elimination of doors and the erection of overcasts makes these three elements of good mining possible.

Chief Button, of the State Department of Mines of Pennsylvania, has notified all mine inspectors that more care must be exercised in supervising mines where open-flame lights are used. He says that all serious accidents or unusual occurrences must be reported immediately, and that inspectors must observe the rule that permission must be obtained before an inspector can leave his district save when he is called to aid another inspector. As a result of the reduction made in the appropriation for the department, strict economy is enjoined.

Precautions That Should Be Taken to Prevent Electrical Equipment from Starting Fires*

Short Circuit, Ground, Overload and Bad Contact Are Four Electrical Phenomena That Should Always Be Guarded Against—Although Electricity Is Credited with Being a Potent Cause of Fire, It Is Merely the Agent of the Great Fundamental Cause, Carelessness

By E. V. King†
Charleston, W. Va.

ELECTRICITY was credited in the United States with causing during 1918 (the last year for which statistics are completed) 15,691 fires, entailing a loss of $20,780,307. The destruction of property from this cause is increasing annually. It is believed that these figures are quite conservative, as the statistics compiled include only reported fires of known electrical origin. Surely, the loss is great enough to warrant the bestowal of careful consideration upon all electrical installations.

Of course, this enormous loss is not confined to coal-mining properties, but covers every class of risk employing electric current. We may rest assured, however, that coal-mining plants are bearing their share of the burden. I regret to say that upon inspection few standard electrical installations are found at coal-mining operations.

In considering the fire hazards of electrical installations there are four electrical phenomena against which it is highly desirable to guard. These are short circuit, ground, overload and bad contact. These four phenomena all owe their inherent danger to the heating effect that their occurrence entails. Their avoidance is the fundamental reason for the National Electrical Code, which is the standard requirement for electrical installations throughout the United States.

Danger from Starting and Stopping Surges

This code is not, as is generally assumed by the public, an arbitrary set of rules compiled by the underwriters alone, but is the result of the united efforts of a committee composed of representatives of the various insurance, electrical, architectural and allied interests of the country, and adopted as the "Regulations of the National Board of Fire Underwriters for Electrical Wiring." In all risks appraised by the various rating bureaus an additional charge is made in the insurance rates applying to that particular risk if the wiring does not conform with these requirements. Thus it may be seen that it is to the interest of the property owner to avoid defective installations, for he thereby not only safeguards his property from electrical fires but effects a considerable saving in his insurance cost as well.

One of the most common defects found around coal-mining plants, and probably one of the most difficult to remedy in many instances, is the connection of light and power circuits to grounded trolley systems. The chief hazard incurred in such systems arises from the variation in voltage which the starting and stopping of haulage motors and mining machines inevitably causes. Recognizing this fluctuation in the need for current the electrician is tempted and often does supply fuses of greater capacity than the circuit should carry, thus subjecting wires to much heavier loads than those for which they are intended. An accidental ground or short is then exceptionally dangerous on account of its severity. If such systems must be used, special care should be taken in their installation, and all wires should be run in conduit.

Reliance Should Not Be Placed on Solder

Open wiring is especially subject to abuse and requires constant attention to keep it in first-class condition. All wiring of this kind should be supported on approved insulators and the conductors separated not less than 2½ in. for potentials not exceeding 300, and 4 in. for voltages of 301 to 500. Rigid suspension along flat surfaces requires, under ordinary conditions, supports every 4½ ft. Wires crossing roof or floor timbers should be protected from mechanical injury by being installed in conduit within armored cable or upon running boards, and all open wiring on side walls should be protected for at least 7 ft. above the floor by a substantial boxing, which allows an air space of 1 in. around the conductors. This should be closed at the top, the wires leaving the box through bushed holes.

Joints not properly made present a serious hazard because of poor contact. All wires should be so spliced or joined as to be both mechanically and electrically secure without soldering. The joint should then be soldered to insure preservation, after which it should be covered with rubber and friction tape.

Service entrances to buildings are often neglected. All service wires entering a building, except those in conduit, should be separated at least 12 in. and the holes should be bushed with porcelain tubes slanted upward and inward. The wires should be supported on insulators attached to the building and drip loops provided. A service switch and fuse should be installed at the nearest accessible place to the point of entrance. These should be so arranged as to make it possible to cut the current entirely off the building.

Fuses are the safety valves of any electrical system. Strange to say, many electricians apparently do not realize this, for it is a common practice to omit fuses entirely, or to bridge a blown fuse with copper wire, solder, or anything that may be handy. With such protection, or rather the lack of it, a "short" or ground may cause serious consequences. Another quite common

*Paper entitled "Common Fire Hazards in Electrical Installations," presented before the Mine Electricians and Machanics Institute, Charleston, W. Va.

†Superintendent of West Virginia Inspection Bureau.

fault of this same kind is the use of "Edison" plug fuses on 250-volt and sometimes 500-volt systems. Fuses and bases of this type are designed only for a potential not exceeding 125 volts and should never be used for higher potentials.

Overloaded circuits are closely allied with fuse trouble; in fact most fuse abuses are caused by overloads, for when a fuse fails to hold, a heavier one is substituted or the old fuse bridged with wire. In many instances the load that the fuse will carry without melting may be beyond the safe carrying capacity of the wire.

Open-Knife Switch a Menace to Property

Open-knife switches are a constant hazard to both life and property and all such devices, except those installed on switchboards, should be inclosed and preferably should be of a type that may be operated without exposing the live parts to accidental contact. This type is known to the trade as an inclosed, externally-operated safety switch.

Starting rheostats are in many instances carelessly installed and in many cases are found mounted on combustible material. As such devices are a source of considerable heat, they should invariably be placed at least 1 ft. from combustible material, or separated therefrom by a non-combustible insulating base, such as slate or marble, somewhat larger than the rheostat itself.

Conduit systems are far superior to open wiring and, while more expensive to install, the cost of upkeep is considerably less. This type of construction is less likely to be tampered with than is open wiring and when properly installed affords a maximum of safety.

The chief shortcomings peculiar to electrical systems, aside from the general defects previously mentioned, are grounds and "shorts" arising from abrasion of the insulation which improper fittings cause. Only approved fittings designed for the purpose should be installed. Slightly less important is the grounding and bonding of the conduit system, in order that, should a ground or leak occur, no arc may be established between sections of the system and the ground and so that electrolysis cannot, by breaking down the walls of the conduit, pave the way for more serious trouble.

Dirty Oil in Oil Switches Causes Trouble

Oil switches cause much trouble and to my own personal knowledge have been the cause of several fires. Some of these accidents occur from the faulty construction of earlier devices of this type, but dirty oil in the cases usually is at fault. Care should be taken to see that these containers are kept at all times filled with clean oil to the proper level and that both cases and frames are properly grounded.

Lighting arresters often are improperly installed and little attention is paid to their grounding. Arresters should be attached to each wire entering or leaving a power station. They should be located in an accessible place away from combustible material and as near the point where the wires enter the building as is practicable. Ground wires should be not less than No. 6 B & S gage, and if artificial grounds are used, they should be located, if possible, below permanent moisture level and present not less than 4 sq.ft. of surface to the soil.

The indiscriminate use of common lamp cord is responsible for many fires. Such cord is designed for pendants only and has not sufficient insulation to withstand the severe usage to which it is subjected when employed for circuit extensions and portable purposes. An extension of this kind may have been used for five years without ever blowing a fuse. Nevertheless, it constitutes an ever-present potential hazard, and the older the installation, the more serious this danger is found to be.

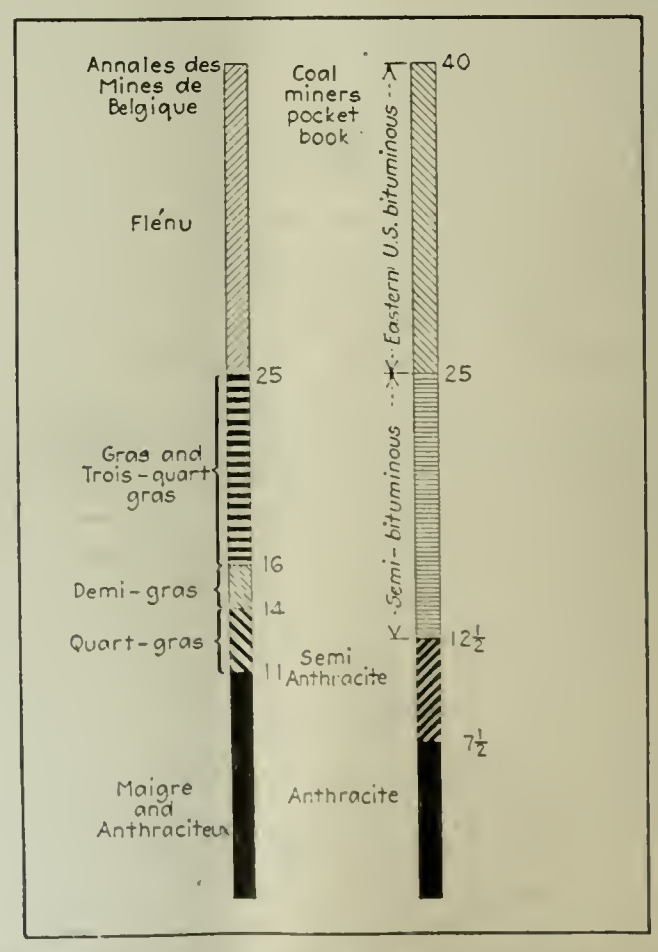
Although electricity is shown by statistics to be a leading cause of fire, an analysis of electrical fire causes reveals that more properly speaking it is simply the agent of that greatest of all fire hazards—carelessness.

How Belgian Coals Are Designated

FOUR types of coal are recognized by the Belgian Office des Charbons, namely: *Gras* and *trois-quart gras; demi-gras; quart-gras; maigres* and *anthraciteux.* The Mines Administration, however, divides the product into *flénu, gras, demi-gras* and *maigres.* From these two sources of information the following definitions of Belgian coal nomenclature may be adopted, says the *Annales des Mines de Belgique.* A rough interpretation into English of the words has been added, however, to the statement found in the *Annales.*

Rank of Coal	Translation	Percentage of Volatile Matter
Flénu	Name of town where the coal was found	Over 25
Gras (and ¾ gras)	Fat and ¾ fat	25 to 16
Demi-Gras	Half-fat	16 to 14
Quart Gras	Quarter-fat	14 to 11
Maigres and Anthraciteux	Lean and Anthracitic	Less than 11

The illustration shows the relation between United States nomenclature and that in use in Belgium. Evidently all the coal of Belgium except the *flénu* coal



COMPARISON OF AMERICAN AND BELGIAN COAL NOMENCLATURE

The figures show percentages of volatile matter in the so-called pure coal substance. The Coal Miners' Pocket Book regards any coal having less than 3 per cent of volatile matter as not entitled to the name of anthracite, but no attention to this viewpoint is shown in the illustration.

is of higher rank than bituminous coal, the semi-bituminous coal of the United States corresponding to *gras, trois-quart gras* and *demi-gras* and covering some of the range in which *quart-gras* may be found.

Problems of Operating Men

Edited by James T. Beard

Roof Troubles Overcome By Working Smaller Areas

Troublesome Roof Requires a Greater Percentage of Pillar Coal Left to Be Taken Out in the Second Working. The Work Should Proceed in Small Sections or Areas

WORKING under troublesome roof becomes dangerous and much coal will be lost unless the effect of the roof pressure on the pillars is carefully watched and the work planned accordingly. The development of a mine must be determined by a careful study of all the conditions.

Success in mining coal depends on maintaining a sufficient pillar support, which must be proportioned to such conditions as the thickness and inclination of the seam, its character, depth of cover and nature of the overlying and underlying strata. Each of these elements must be carefully considered in determining the relative size of pillar and opening.

A good general rule to adopt is to take out one-third of the coal in the first working, leaving the remaining two-thirds as pillars to support the roof. When the rooms have been driven up to the limit, these large pillars can be cut out by machines, in alternate sections, leaving thin stumps of coal behind each cut and removing these stumps with a pick.

Inadequate Pillar Support Causes Squeeze and Roof Trouble

It can generally be assumed that the chief source of trouble, in mining coal successfully and economically, is the leaving of too small pillars and driving the openings too wide. This invariably brings on a squeeze that crushes the pillar coal, or at least throws too great a weight on the pillars, making them hard to mine and the work dangerous.

I cannot agree with the idea expressed by Richard Bowen, in his letter, *Coal Age*, May 5, p. 826, that it is better to take up bottom rather than break the roof. My experience is that the taking up of a soft bottom only increases the trouble, as the roof pressure causes the roadway to fill as quickly as the bottom is removed. I have found it better to brush the roof and leave the bottom undisturbed.

In additon to what I have already remarked, one thing I have found of the utmost importance when working under bad roof conditions, and that is to work out and finish small areas at a time. Let me suggest the plan of driving up a number of, say ten to fifteen rooms and drawing back the pillars, using every precaution and means to induce a good fall of roof in this section. If the roof fails to break and fall it should be blasted down at points that will start a heavy fall in the waste.

Taking out all the coal and withdrawing all timber is a good plan and necessary to success. By following this method of working out small areas at a time, there is seldom any surface damage resulting from the extraction of the coal, provided the seam is overlaid with at least 200 feet of solid strata.

C. McManiman.

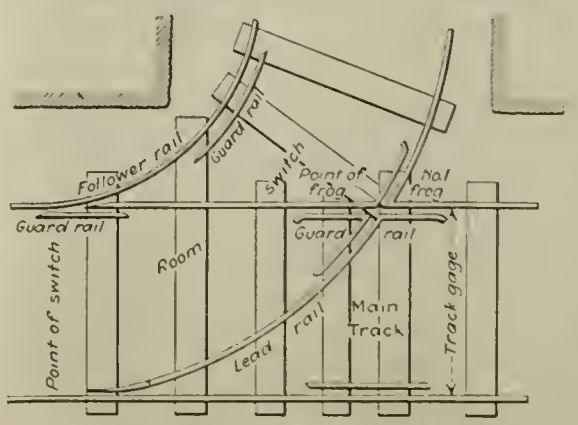
Black Lake, Quebec, Canada.

Guardrails Prevent Derailment

Trouble in the derailment of cars at room switches can often be overcome by spiking pieces of guardrails at points opposite to the switch and frog points.

BEING a trackman, I was naturally interested in the inquiry regarding the derailment of cars, which was thought to be due to not using the proper size or number of frog when laying the switch. While I agree fully with what the editor has said in reply to this correspondence, I would like to add a few words on guardrails and arrangement of trackties.

For some time. we have had trouble with cars being derailed at switches



ROOM SWITCH SHOWING GUARDRAILS AND NO. 1 RAIL FROG

leading into the rooms. A car wheel would leave the track at the switch point next to the follower rail, where the track gage was too wide for a distance of about a foot.

In order to overcome this trouble, I spiked a short guardrail on the inside of the straight rail and spanning the distance, which had the effect of steadying the movement of the car over the switch. When a car having a slightly narrow gage once dropped in to the space between the straight point and the follower rail the trouble would start and otner cars would do the same.

Our principal trouble has been, as I said, at the switch point. We have had scarcely any trouble with cars getting off the track at the frog and I have not as yet used a guardrail opposite to the frog, although this is shown in my sketch as I know it is common practice to spike a gardrail to the ties at that point to help the cars pass over the frog.

Practical Points in Laying a Room Switch

In this locality, it has been the rule to use frogs made by the blacksmith. These are ordinary rail frogs such as shown in the sketch. The straight rail and the curved rail leading into the room are brought together at a point to form the frog.

When laying a switch, great pains should be taken to lay the ties under the frog in such a manner as to form a solid bed that will hold the rails firmly in place when they are spiked to the ties. My habit is to use three good ties under the frog and I often spike these together using 30-penny wire nails for that purpose.

This arrangement affords a good opportunity to lay in the lead rail and the curved rail beyond the frog, and bend them so that each will have the same curvature or radius. For the room switches we are using a 9-ft. lead rail in mule haulage and a 20-ft. lead rail for the motor switches.

Let me say, in closing, that if this mine forman will try laying a switch in this manner, I believe he will have little trouble with cars getting off the track if properly handled.

Linton, Ind. Trackman.

Pillar Above Pillar

Successful working of two seams sixty feet apart, where the upper pillars were set ten feet to one side of the lower pillars.

WHETHER two seams of coal forty feet apart should be worked pillar over pillar or not is a question discussed in *Coal Age*, May 12, p. 865, and one is not surprised to find that the opinions expressed favored the setting of the pillars in the lower seam so

as to afford good support to those in the seam above.

Referring to the original question, which appeared in the issue for March 10, p. 455, it seems that there must have been some reason for the suggestion then made, of driving the entries and rooms, in the upper seam, vertically over the pillars in the seam below. It would be interesting to hear that side of the question.

Development in Upper Seam Made To Project Ten Feet

One modern operation that I knew worked a large area of upper and lower Freeport coal, in Indiana County, Pa., where these two seams were separated by sixty feet of strata and the main slope entry had a 3 per cent grade.

Although, in that case also, the company favored the "pillar-above-pillar" plan of working, it was decided to move the development in the upper seam ten feet to the right. This was done for the purpose of enabling the engineer to show both mines, in their exact development, on a single map. In all, three maps were made, a separate map for each seam and a third map combining the workings of both seams, the workings in the upper seam being superimposed on those in the lower or underlying seam.

In the combined map, the lower workings were shown in black and the upper in red, while on the tracings the two colors were black and brick, the latter being easily distinguished on the blueprint. The upper development was always kept in advance of that below, and both seams were successfully mined. George Edwards.

Pikeville, Ky.

ANOTHER LETTER

REFERRING to the question of working two seams of coal 40 ft. apart, asked in *Coal Age*, May 12, p. 865, allow me to say that the only practicable method to employ is to drive entries under entries, rooms under rooms and pillars under pillars, each of these in the lower seam being vertically under the same in the upper seam.

It is my experience that if an opening in a lower seam is permitted to extend beneath a pillar in an upper seam, the two seams being separated by a comparatively few feet of strata, there is sure to result a creep or squeeze. If the intervening strata are pliable, the roof in the lower seam will bend under the weight of the pillar and overburden above, and no timber will avail to hold the roof.

Headings and Rooms Driven on Same Courses

When headings are driven in the two seams, the engineer should see that both headings are laid out on the same course and are vertically one below the other. The same rule applies to the driving of rooms, which should be turned off on the same angle and at equal distances apart.

If the work is properly planned and laid out by a competent engineer, so that the entry pillars and room pillars in the lower seam underlie those in the seam above, there will be little trouble. When this is not done, however, there is sure to follow heavy caves that will cut off much of the coal in the lower seam, and may make it impossible to mine either of the two seams over the same area.

But, if properly conducted, the pillars in the upper seam can be drawn in advance of those below, and this will generally be accomplished without any serious movement resulting in the strata. The success of the proposition will always depend on the experience and judgment of the operator and the precautions taken in the extraction of the coal in both seams. C. McManiman.

Black Lake, Quebec, Canada.

Arching of Roof Prevents Damage to Surface

Roof falls in a seam of moderate thickness are followed by the arching of the overlying strata, which generally prevents the break extending to the surface.

KINDLY permit me to offer a few comments in regard to the plan presented in the letter of T. K., *Coal Age*, May 5, p. 825, with reference to recovering the largest amount of coal from a tract of land 300 acres in extent where the operator owns the coal rights only.

It is stated that the coal lies at a depth varying from 250 to 300 ft.; but what is of the most importance is not given, namely, the kind of roof overlying the coal and thickness of the seam. If this coal is of moderate thickness, say not exceeding 5 or 6 ft. and has a good slate or stone roof reaching to within 50 ft. of the surface there should be no trouble in its extraction by the room-and-pillar system.

With proper care in working out the coal, such a depth of cover will furnish ample protection against damage to the surface, provided the coal is not too thick. The plan should be to rob out a small acreage at a time and allow the roof to fall, so that the overburden will settle down solid on the waste.

Height of Fall Depends Much on Thickness of Seam

My experience is that a roof fall in a miner's place will seldom, if ever, extend to a height greater than 100 ft. before it arches over and is self-supporting. The less the thickness of the coal, the less will be the height to which the roof will fall before arching takes place. The fallen rock always takes up more room than it did in the solid and soon completely fills the space where the coal was taken out.

Now, if the plan is adopted of taking out every other pillar, as suggested in the letter to which I referred, it is my belief this will start a squeeze that may soon make it necessary to abandon that section of the mine. I have seen this happen more than once.

The effect of taking out every other pillar is to throw a great weight on the pillars that remain. One place after another will close and the miner soon be forced to quit. Finally, the creep or squeeze will reach over on to the solid work and greatly increase the cost for timbering, moving slate and keeping the roads open. Much coal will be lost and some track material.

Plans Building Cribs as the Coal Is Extracted

For a greater thickness of coal overlaid with a shallow stone or slate roof, I believe I have worked out a good plan of extraction, which I will describe. But, first, let me say that it is always important to know the character and thickness of the rock overlying a coal seam. This must be ascertained, by drilling holes from the surface, before attempting to take out the coal.

Briefly stated, my plan is to utilize the waste rock and shale, by using it for filling in cribs built of timber or any waste lumber one may chance to have around. These cribs are built in each room, at distances of about 80 ft. apart, and filled with the refuse of the mine.

Where rough lumber is used for that purpose the forms can be made 4 ft. wide and about 20 ft. long. Enough cement should be mixed with the waste to form a solid concrete pillar, which should be carried up to the roof and packed solid. There would be about five of these concrete pillars in the length of a 400-ft. room. As quickly as the concrete dries, the lumber can be stripped off the pillars and used again and again.

These concrete pillars will enable all the coal pillars to be taken out. The roof falls that occur will be small and in no case extend high enough to damage the surface. I believe such a plan will enable the extraction of all the coal and hope to hear from others.

Thorpe, W. Va. G. W. Breeden.

Guarding Against Roof Slips

Treacherous roof conditions overcome by special precautions to detect danger and safeguard the miner

WHEN reading the article of Richard Bowe, *Coal Age*, May 5, p. 826, entitled "Working Under Troublesome Roof," I am reminded of a condition that confronted me, a few years ago, in a section of a mine where the roof was full of slips.

The condition was among the most treacherous that I have ever experienced and to get it worked at a time when the coal business was prospering was a problem. At last, that particular section became so dangerous that we were forced to abandon some very good coal until a plan could be devised that would promise greater safety.

The roof, which was sandstone, contained many slips that were of such a nature that it was almost impossible to detect them by ordinary means. The assistant bosses would go over each place with a sharp iron that was a

little larger than the old-time lamp picker. With these they would dig into the roof in an effort to find a flaw or slip that would cause the roof to fall without giving any previous warning.

Situation Carefully Studied

Studying the situation for a time, we determined to make a special effort to mine this coal with safety. Our plan was to employ the best miners possible and put in charge a foreman who knew the importance of doing a thing right. Each place was to be adequately posted, as we knew by experience that the ordinary miner will not set the needed posts, unless carefully watched, and the frequent roof falls sure to follow would mean a low tonnage in that section.

With this determination and the cooperation of the men, we were finally able to win all of the coal in that section and do it safely and economically. There was nothing new in the methods we adopted, which consisted in simply carrying out to the letter a well-known system of working under bad roof and taking precautions for safety.

Safety Measures Adopted in Every Branch of the Work

All rooms were driven 20 ft. in width. At the face of each room the posts were set with special care to have them strong. The caps above the posts were properly balanced. A regular system of timbering was followed, the posts being set not more than 4 ft. apart and kept up to the face of the coal.

The cutters were paid by the day, and required to reset all posts drawn to permit the machine to pass. They were compelled to do this for their own safety. For the safety of drivers and others, posts were set along each side of the track, in each room, and staggered. Each of these posts had a 5-ft. cap that projected over the road and made the roof entirely safe above the track.

In order to prevent posts being knocked out by a blast, we adopted the scheme of setting an extra post about four inches in front of each post, at the face. As a general rule, this afforded the needed protection for the regular post, which was seldom discharged by a shot. George Edwards.

Pikeville, Ky.

Automatic Winding Spool for Use in Blasting Coal

Use of automatic winding spools in blasting coal prevents injury to firing cable, which is often the cause of accident due to premature blast.

Some time since I remember suggesting the same plan of firing shots as that mentioned by John H. Wiley, in his letter on "Precautions in Shotfiring," *Coal Age*, May 19, p. 912. Such a device is an effective means of preventing accidents in blasting, and I hope its mention now means a stirring drive for safety.

Special attention is drawn to the use of the shotfiring cable, in the Bituminous Mine Law of this state, Art. 11, Sec. 8, Rule 88. Also, Rules 93-95 prescribe using greater care and caution in the firing of shots by electricity.

The system of firing shots prevailing in many of our mines is hazardous. When the shotfirer has finished stemming a hole, he proceeds at once to connect the lead wires with the firing cable that he has dragged behind him when coming into the place.

Need of Protecting the Cable in Electric Firing

Too often, the cable in use is badly damaged by having been dragged in this manner about the mine. Its insulation may be worn thin or entirely gone in places and when the shotfirer makes the connection with the shot he has prepared, the cable is, perhaps, in contact with a live wire or a charged rail whereby the shot will be exploded at once.

Again, assuming that the man goes back to the battery, after connecting the cable with the shot to be fired, it may happen that some portion of the cable is lying in a pool of water. In that case, the force of the battery is much weakened, the current being partly short-circuited at the water. As a result there is apt to be a misfire, which is a danger in itself.

Danger to the Shotfirer

Under these conditions, it is often a wonder if the shotfirer escapes having his head blown off by a premature blast or losing his eyesight or being otherwise injured or maimed. Calm reflection convinces anyone that the suggestion of using an automatic spool by which the cable would be kept wound up as it is carried from place to place and only unwound as the shotfirer retires to his battery, after having connected the cable with the shot to be fired.

One source of trouble when a cable is dragged around the mine and which is only eliminated when it is wound on a spool is the kinking of the wire. A bad kink in a cable may cause a shot to misfire and much time is then lost both to the shotfirer and others. For example, suppose the shotfirer has made everything ready and given the required warning to all men working in that vicinity, which may include a driver, two timbermen, perhaps two trackmen and the miners in adjoining places.

Much Loss of Time Is Caused by a Shot Missing Fire

All of these men must lose much time if the shot misfires. It will not be safe for them to return to their work, until the shotfirer has found the trouble and the shot has been fired. That means expense to the company and danger to the men.

At this time when safety measures are being applied in every industry, let us do our share in making more safe the work of shotfiring in mines. Where safety devices have been invented and improved methods of performing the work established it shows the necessity of revising or amending our mining laws so as to cover these points.

Gans, Pa. R. W. Lightburn.

Inquiries Of General Interest

Locomotive Pulling vs. Pushing Trip

Tractive Effort of Locomotive, Depending on Its Weight and Adhesion to the Rails, Is the Same Whether Pushing or Pulling the Trip, But Risk of Accident Is Less When the Locomotive Goes Ahead

Observing how often information of value is given to inquirers, under the caption "Problems of Operating Men," kindly allow me to present a problem in locomotive hauling. The information I desire particularly is, whether a locomotive will push a trip of loaded cars as well as it will pull the same trip.

In other words, can a locomotive be operated as successfully behind the trip as at the head end? Will there not be a greater chance of a wreck occurring when the locomotive is pushing the trip, especially when rounding a curve?

Owing to the conditions in our equipment, there would be a considerable advantage gained if the locomotive can push a trip of loaded cars equally well and incur no greater risk than when hauling the trip. The company is installing an operation capable of producing 2,400 tons of coal in an eight-hour run. We are mining a 5-ft. seam of coal through a slope opening.

On the surface a modern steel tipple has been erected, while at the bottom of the slope and on a level with the seam, a one-car rotary dump and mechanical feeder have been installed. A scraper-conveyor inclined at an angle of 45 deg. reaches from the slope bottom to the tipple, the entire equipment being a Link-Belt construction.

The rotary dump will allow a motor to pass through it, but it will be readily seen that there will be a great advantage gained if the locomotive can push

the cars onto the mechanical feeder, instead of pulling them there and then having to pass through the rotary dump to get out of the way and allow the cars to be dumped.

If there is too much risk in operating a locomotive as a pusher on a loaded trip, or if this arrangement will not work successfully, it will be necessary to devise some plan of pulling the trip that will not involve the necessity for the locomotive to pass through the rotary dump. We shall be glad to have the opinion of *Coal Age* and its practical readers regarding this matter.

S. A. BOWES,
Mine Foreman, Himler Coal Co.
Kermit, W. Va.

The proper place for a locomotive, when hauling coal underground, is at the head of the trip. There are many instances where, in order to avoid loss of time, or the necessity for providing extra trackroom to permit the locomotive to pass from one end of the trip to the other, the system has been adopted of hauling the loaded trip out of the mine and pushing the empties back into the mine, or *vice versa*, pushing the loads and pulling the empties.

When a locomotive is pushing a trip, it is clear, the engineer cannot see either the condition of the track ahead or the near approach to danger. A switch may be set wrong, or one or more cars may be derailed and the entire trip wrecked before the motorman is apprised of any trouble. The danger is much increased when the trip is rounding a curve. If the locomotive is to be operated as a pusher for either the loaded or the empty trip, it will generally be better to push the loads and pull the empties, instead of reversing this order.

There is less danger of a loaded car jumping the track than when the car is empty. Owing to the uncertainty in the mind of the motorman and his inability to perceive any danger ahead when pushing a trip, the plan is often adopted of placing a trip-rider at the head end, whose duty would be to signal the motorman when anything is wrong. This plan is, of course, ineffective when rounding a curve, or where a long trip meets a sudden change in grade that obstructs the view and makes it impossible to see any signal given by the trip-rider.

For these reasons, we recommend pulling all trips. If it is possible to establish a downgrade approaching the mechanical feeder, the locomotive can be switched off at the point where it would enter the feeder, and the loaded cars run onto the feeder by gravity. If this is impracticable it may be possible to switch off the locomotive and run it to the rear of the trip so as to push the loads onto the feeder. This would, of course, consume a little time in switching, which should be avoided, if possible. We shall be glad to receive suggestions from our practical readers, who are generally able to find some way out of all difficulties.

Examination Questions Answered

Bituminous (Pa.) Mine Foremen's Examination

QUESTION—*If you had a ditch 2 ft. wide and 2 ft. deep, running full of water with a velocity of 15 ft. per sec, how many gallons of water is passing per minute?*

ANSWER—The sectional area of the ditch is $2 \times 2 = 4$ sq.ft.; and the velocity of the water $60 \times 15 = 900$ ft. per min. Taking this as the average velocity, the quantity of water flowing in the ditch is $(900 \times 4 \times 1{,}728) \div 231 = 26{,}930$ gal. per min., nearly.

QUESTION—*In case a workman is in contact with a live electric wire, how would you release him? If he is rendered unconscious, how would you proceed to revive him?*

ANSWER—Cut off the current by a near-by switch if that is where it can be reached at once. Otherwise, cut the wire on the power side of the victim, holding the ax in gloved hands or wrapped with paper or a dry garment and standing on dry wood, if possible. If an iron bar is at hand, the current may be partially short-circuited by throwing the bar across the wire on the power side of the victim. Then, standing on dry wood attempt to pull or push the victim from the wire, using a dry garment for protection as far as possible.

This being done, if the victim is unconscious, send for a doctor, remove him to a safe place and pure air, keeping him warm and apply artificial respiration in the usual manner.

QUESTION—*What precautions would you enforce to prevent accidents from mine cars and locomotives?*

ANSWER—Keep all tracks and rolling stock in good condition and the roads well timbered. Employ careful drivers and motormen. Establish a good system of handling and distributing the cars. Enforce strict rules and regulations forbidding men to travel main haulage roads or ride on trips passing in and out of the mine. Maintain a good signal system and provide shelter holes on roads where men must travel. See that safety blocks are used at the head of all slopes and a safety dog or dragbar attached to the rear of every trip. Instruct all miners to block their cars so that they will not run out on the road.

QUESTION—*In a mine giving off 2,250 cu.ft of marsh gas per minute, the volume of air entering the mine being 70,000 cu.ft. per min., what is the percentage of gas in the air current at the outlet?*

ANSWER—Disregarding any change of volume, owing to the temperature of the mine being greater or less than that of the intake air, the volume of air and gas returning from the mine is $70{,}000 + 2{,}250 = 72{,}250$ cu.ft. per min. The percentage of gas at the discharge opening in this case, is, therefore $(2{,}250 \times 100) \div 72{,}250 = 3.1$ per cent.

QUESTION—*In the event of a serious mine explosion occurring in the mine, what immediate and successive steps should be taken to rescue the survivors and safeguard the rescuers, and what dangers are likely to be encountered?*

ANSWER—Call for volunteers; dispatch messengers for doctors and rescue appliances, provided there is no organized and equipped rescue team at the mine; instruct the firebosses to examine the ventilating equipment and start the work of making any necessary repairs to insure a good air current in the mine; examine the hoisting equipment at the downcast shaft to see that it is safe for lowering the men. In the meantime, have men collecting all needed material, such as props, caps, brattice boards, canvas, nails and tools, in readiness for the rescuers.

Now, select from the volunteers those who are most competent and familiar with the mine and organize them in three parties, each having a competent head or leader. Equip these men with safety lamps. If breathing apparatus is available, the men wearing the apparatus should be the first to enter the mine and proceed to ascertain its condition. It is necessary to enter the downcast or intake and proceed with the air. Following the first party, the second party should be equipped with the necessary tools for making needed repairs to doors, stoppings and air bridges, in order to restore the ventilating current as they proceed. The third party is charged with the duty of carrying the supplies into the mine and lending whatever assistance is required to enable the speedy restoration of the air current and rescue any possible survivors as they are found. These should be taken to a place where they will have good air and every effort made to revive them by giving first-aid treatment.

The dangers likely to be encountered are explosive or poisonous gases, and falling roof. It is possible to meet with bodies of firedamp and constant tests must be made to ascertain the condition of the mine air. Caged mice or birds should be carried as a means of giving warning of the presence of afterdamp. Fire in the mine may prove an added danger.

New York City Public Utilities Consumed Seven Million Tons of Coal in 1920

NEARLY two million net tons of coal and coke were consumed in the manufacture of gas by the various gas companies in Greater New York in 1920, according to reports recently filed with the Public Service Commission. In addition the gas companies used in the manufacture of gas 25,782,931 gallons of water-gas tar and 233,146,571 gallons of gas oil.

The amount of coal and coke used by the individual companies is shown in the following tabulation, in net tons:

	Boiler Fuel	Gas Coal, Carbonized	Generator Fuel	Under Retorts Coke
Consolidated Gas Co....	16,906 Coal 10,543 Coke	18,156	106,029 Coal 36,071 Coke	5,654
Astoria Light, Heat & Power Co.....	37,742	486,771	136,464 C & C	59,112
Amsterdam Gas Co.....	24,149 C & C		123,693 C & C	
N. Y. Mutual Gas Light Co.....	6,550 Coal 472 Coke		39,683 Coal 10,546 Coke	
Standard Gas Light Co..	8,099 C & C		46,519 C & C	
Central Union Gas Co..	9,148 C & C	81,349	48,633 C & C	7,362
New York & Queens Gas Co.....	2,170 Steam C 792 Gas C.		8,577	
Brooklyn Borough Gas Co.....	3,725		14,570	
Kings County Lighting Co.....	22,046		30,494	
Brooklyn Union Gas Co.	73,605		356,181 C & C	
Bronx Borough Gas & Electric Co.....	10,427		4,552	
New York & Richmond Gas Co.....	8,011		12,457	
Queens Borough Gas & Electric Co.....	4,185		10,778	
	238,570	586,276	985,247	72,128

The electric lighting companies operating in the greater city consumed more than 5,000,000 net tons of coal in generating electricity during the year, as shown in the following table:

New York & Queens Electric Light & Power Co.....	1,990	Bituminous
	4,989	Anthracite
New York Edison.....	1,036,733	
United Electric Light Co.....	411,697	
Flatbush Gas Co.....	28,547	Anthracite
	1,380	Bituminous
Brooklyn Edison Co.....	5,886	Anthracite
	496,846	Bituminous
Queens Borough Gas & Electric Co.....	170,555	
Richmond Light & R.R. Co.....	46,630	
Total.....	5,201,883	

During the year three of the companies made nearly half a million tons of coke, of which they used 288,976 tons and sold 110,093 tons. The amount made, used and sold by the individual companies follows:

	Made Tons	Used Tons	Sold Tons
Astoria Light & Power Co.....	342,607	237,238	103,996
Central Union Gas Co.....	64,406	51,638	2,303
Consolidated Gas Co.....	12,452	.....	3,894
Totals.....	419,465	288,976	110,093

Putting Foreigners Out in Indiana Region

EIGHT hundred miner vigilantes, voicing a protest against the employment of foreigners in coal fields in Gibson and Pike Counties, Indiana, forced 150 or more men to leave the region on June 11 and 12. Most of the vigilantes were armed. No widespread difficulty is expected.

Francisco, a town of approximately 500 inhabitants, eight miles east of Princeton, Ind., was the scene of most of the disturbance. The employees imported by W. E. Cox, superintendent for the Ayrshire District Collieries Co., were compelled to leave and told never to return. Mr. Cox and his family, despite the fact that Mr. Cox is an American, were similarly treated. In all nearly a score were forced to leave Francisco.

One hundred foreigners employed in building a railroad from the George A. Enos Coal Co.'s strip mines, north of Oakland City, to the Southern railroad station at that place, also left. Thirty automobile loads of vigilantes visited the region, and the railroad station at Oakland City was jammed, the foreigners scattering in all directions. Departures from other localities than Oakland City and Francisco also are reported.

In the Francisco region the warned workers who had automobiles went in them to Princeton. Others walked and all spent the latter part of the night in a Princeton hotel. Most of them continued their journey away from that region when daylight came and all were expected to be gone in a few hours.

Twenty ex-soldiers and state militiamen, most of them in uniform and all armed with U. S. Army rifles, under direction of Sheriff Flowers, are guarding the Buckskin coal mine in the southeastern part of Gibson County. The men have been given instructions to "shoot to kill" in event of an outbreak. The men were deputized as a precautionary measure against a possible outbreak when many Austrians, driven from a railway construction camp at Oakland City by a mob, began filtering back into the city.

Many of the Austrians who returned told pitiful stories of alleged thefts of money, clothing and jewelry in addition to mistreatment at the hands of the mob which visited their bunkhouse late at night, June 11. Many of the men said they were beaten and forced to flee scantily clad, leaving money and valuables behind.

Recent reports are to the effect that, order being restored, the aliens are returning and also W. E. Cox, their superintendent.

British Mines That Did Not Cease Working

IT IS a mistake to suppose that all the miners of Great Britain went out on strike. There is one part of Scotland where they had neither the inclination nor the intention to "down tools," and as every man there was of the same mind and the nearest strikers were some one hundred and thirty miles away, these colliers made good wages while others were idle. They belong to the pits situated at Brora, in the rocky wilds of Sutherlandshire in the extreme north of Scotland. There all the mines "carried on" as usual, and orders for fuel from the south were received, and "trucked away" as fast as the single line of railroad could carry them.

The coal is in the Oolite formation and was worked at Brora as far back as 1574. One pit was sunk a century ago, and is some 300 feet deep. It is still developing seams which are about four feet thick. In 1872 mining operations were begun on a larger scale, and they have continued since, giving work to the one thousand and more men forming the population of this out-of-the-way townlet. Brora is at present the only instance of coal having been found and worked north of the Midlands of Scotland. Arrangements are now being made to extend the workings. Brora is on the east or North Sea side of the County of Sutherland on the north side of Dornoek Firth.

Philadelphia Section, American Institute of Mining Engineers, Is Organized

FORTY members of the American Institute of Mining and Metallurgical Engineers residing in or within fifty miles of Philadelphia met at the Engineers' Club in Philadelphia on the evening of May 16, the semi-centennial of the founding of the Institute on May 16, 1871, at Wilkes-Barre, Pa., and organized the Philadelphia section of the institute.

There were present two of the three surviving founder members of the original body, Willard P. Ward, and Dr. Henry S. Drinker. E. C. Pechin, the third, in a letter expressed much regret at not being able to attend.

The organization of the section had been duly authorized by the Board of Directors, following a petition signed and presented by twenty-nine local members. By-laws were adopted, and an organization effected by the election of an Executive Committee composed of Guillaem Aersten, H. M. Chance, G. H. Clamer, Henry S. Drinker, F. Lynwood Garrison, E. W. Parker, A. A. Stevenson, L. H. Taylor, Jr., S. D. Warriner and Morris Williams.

This committee elected the following officers for the first year: Chairman, Dr. Henry S. Drinker; vice-chairmen, H. M. Chance, A. A. Stevenson, S. D. Warriner; secretary-treasurer, F. Lynwood Garrison. Mr. Ward was elected an honorary member of the Philadelphia section.

C. L. Colburn Takes Up National Safety Work

C. LORIMER COLBURN, who on April 1 was assigned to the co-operative work between the U. S. Bureau of Mines and the National Safety Council, was graduated at the Colorado School of Mines in 1907 with the degree of Mining Engineer. After spending a year in the mines of Colorado Mr. Colburn went to Luning, Nev., as engineer for the Lodi Mines Co. Later he returned to Denver and formed a partnership with C. A. Allen under the firm name of Allen & Colburn, mining engineers. The firm was engaged principally in mine surveying and mine examination. In 1912 Mr. Colburn joined the engineering staff of the Butte & Superior Mining Co., Butte, Mont. Later he was made manager of the Butte-Duluth Copper Co. In 1914 Mr. Colburn returned to Denver and served as manager of the Cumbre Mining Co., operating leases on the Country Boy and Juniata mines at Breckenridge, Col., carrying on exploration work in Nevada and Arizona.

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C. LORIMER COLBURN

In 1918 Mr. Colburn joined the staff of the U. S. Bureau of Mines and soon afterward entered the army, receiving the commission of captain of engineers. After receiving training at Camp Humphreys, Va., he was assigned to the 140th Engineers. After the signing of the armistice he re-entered the employ of the U. S. Bureau of Mines as metal mining engineer. Later he was made assistant chief mining engineer, serving under George S. Rice.

Mr. Colburn served for two years as secretary of the Colorado local section of the American Institute of Mining Engineers and one year as secretary of the Washington section of the American Institute of Mining and Metallurgical Engineers. Mr. Colburn made a study of underground loading devices and has written a bulletin on this subject which is now being published by the U. S. Bureau of Mines.

Two Undesirable Aliens to Be Deported

INSPECTORS O'Brien and Barnes of the Department of Labor, with headquarters at Pittsburgh, were in Raleigh County, West Virginia, during the week ending June 11 with deportation papers for Tony Sizzaro and Mike Ruffine, Italians connected with the shooting up of the mines of the E. E. White Coal Co. in November, 1917. Sizzaro confessed in court months ago and served a sentence of one year at the West Virginia State Penitentiary, and Ruffine was under indictment in connection with the same trouble until June 1, when the state dismissed its indictments so as to let the government take charge of Ruffine. The inspectors and the two Italians left for Ellis Island immediately after the two men were found. Both men were members of the United Mine Workers of America and that organization spent many months in Washington defending these and another Italian and using every effort to bring about a stay in proceedings.

Program Being Prepared for Wilkes-Barre Meet of American Mining Institute

GREAT preparations are being made for the fiftieth anniversary of the American Institute of Mining and Metallurgical Engineers which will be held at Wilkes-Barre, where the first meeting of the institute was held almost half a century ago. The dates of the meeting will be Sept. 12-15. Those who would like to stay and make a further inquiry into any matter that may attract their attention will be given the opportunity when the meeting is at an end. Sixteen committees have been appointed, the General Executive Committee, composed of the chairmen of all the other committees, and committees on finance, railroad transportation, automobile transportation, hotels, receptions, excursions, entertainment, paper and sessions, printing and publicity, banquet, ladies, and four committees to have charge of entertainment at the sections visited—Carbon County, Hazleton, Lackawanna County and Schuylkill County. The program is as follows:

Monday. — Morning: registration; afternoon: technical sessions; evening: entertainment.

Tuesday. — All-day excursion through anthracite region by automobile; lunch en route; visiting mines, strippings, breakers, etc.; night: technical session or entertainment.

Wednesday. — Morning: technical session and lunch; afternoon: excursion through Wyoming Valley; night: subscription dinner, Wilkes-Barre.

Thursday.—Morning: technical session; afternoon: visits to mines, special industries or shops.

The ladies' program will be as follows:

Monday. — Afternoon: drive through Wyoming Valley; evening: entertainment.

Tuesday.—Excursion through anthracite region.

Wednesday. — Lunch and meeting of ladies' auxiliary; evening: subscription dinner.

Thursday.—Morning: visits to lace and silk mills, Wilkes-Barre, Pa.

R. V. Norris is chairman of the general executive committee.

Brennan Leads Northern Anthracite Field

UNOFFICIAL returns show that William Brennan, of North Scranton, a member of the grievance committee of the Glen Alden Coal Co. collieries and for many years insurgent to the union administration forces in the Scranton district, has been elected president of that district. The count will not be officially announced until the district convention at Wilkes-Barre, July 18, when the names of all the successful candidates will be read.

Movement of Coal Through New York Barge Canal Doubles

CHARLES L. CADLE, State Superintendent of Public Works of New York, reports increased use of the barge canal for shipment of coal. In the first five weeks of navigation this year there was shipped 18,720 tons of anthracite coal, which is more than double the amount shipped during the corresponding period of last year. Companies interested in sending coal from New York into Canada and as far north as Quebec find the canal, Mr. Cadle said, a great convenience. The line of boats traversing the waterways from New York and those handling the business on the northern routes have added to the tonnage of coal this season, he declared.

Why the Wholesalers Are Fighting

Five Reasons Submitted to the U. S. Senate by George H. Cushing Why Opposition Is Offered to the Frelinghuysen Coal Industry Stabilization Act

FIRST—In forty-eight months we have not had forty-eight days in which we were free from attack and which we could devote to a study of the needs of the coal trade. Yet we are condemned because we have not worked out a program.

Second—Other industries offered to supply voluntarily all information which the government wanted. Their offer was accepted. The charts now on the walls of the Senate Chamber show that the government has all needed information about coal. The coal industry has offered to continue to supply and to amplify that data. This offer was rejected.

We thus face two facts: (a) The charge is made by our government that while all other industries can be depended upon to tell the truth, the coal men must be compelled by law; and (b) that, having the information but the bill being urged for passage, it is regulation instead of information that is desired.

Third—The Senate last week voted to regulate the packers. This week it is asked to regulate coal. Next week it will be asked to regulate maternity. In these three bills it is proposed that the government shall become responsible for private conduct—to become a benevolent despotism. Such governments may be excellent on theory, but in practice they do not survive the death of the benevolent despot.

Fourth—We have said that regulation of the carriers and public utilities suggested regulation of coal; that to regulate coal must bring soon the regulation of the wages of miners and the price of steel rails, copper wire, timber, cement and the machinery used in coal mines; that having regulated those other things, the government must in turn regulate their feeders; and that this means repeating the New Zealand experiment in America.

We have said that this proposes to revert to the times when all property belonged to the government to be disposed of, at will, to the favorites of the monarch.

To these proposals we have received the following amazing answers by the proponents of these bills:

(1) We are not afraid of a benevolent despotism nor of the New Zealand experiment in America, because we have learned how to make both a success.

(2) We are not afraid of nationalization because that is a necessary preliminary to the internationalization of all raw materials, which alone will prevent war.

Fifth—The present administration won the support of the people on its slogan, "less government in business." That was considered by the people to be a solemn pledge. To pass this proposed legislation would be to repudiate that pledge. Repudiation of any pledge must destroy confidence in those who gave it voluntarily. No party—indeed, no government—can endure which has lost the confidence of its own people.

Submitted June 20, 1921, in behalf of the American Wholesale Coal Association by George H. Cushing.

Farmers of Middle West Plan Co-operative Purchase of Coal

PROGRESS of the plan for the pooling of coal buying by the farmers of the Middle West, discussed at a meeting of representatives of the farmers' organizations of these states in Chicago Monday, June 20, was outlined by F. W. Boyle, of the Federated Marketing Service of the Indiana Federation of Farmers' Associations at Indianapolis on his return. Mr. Boyle represented the Indiana federation at the Chicago meeting and was named on a special committee to work out a plan for co-operative coal marketing. This committee, he said, would make its report at a meeting of presidents and secretaries of the farmers' associations at the American Farm Bureau Federation headquarters Monday, June 27. John G. Brown, Monon, president of the Indiana Federation, expected to attend the meeting.

"After discussing the coal situation from every angle and reviewing what we have been doing in Indianapolis in the way of co-operative marketing," Mr. Boyle said, "the representatives decided to appoint a special committee to work out a plan. It was thought by the committee that it ought to adopt a scheme in conformity with the regional plan of purchasing commodities used in Indianapolis. The committee then asked that West Virginia establish a co-operative organization as soon as possible so that farmers' organizations of the Middle West might co-operate with it. J. B. McLaughlin, secretary of the West Virginia Farm Bureau, decided that this could be done. Mr. McLaughlin was recommended by the committee to be purchasing agent of West Virginia coals."

A. J. Stierwalt, purchasing agent for the Commercial Service League of the Ohio Farm Bureau Federation, was recommended to be purchasing agent of bituminous coal in Ohio and Kentucky and of anthracite, and Mr. Boyle was recommended to continue to function as purchasing agent for Indiana coal and for Illinois coal until the farmers of Illinois perfected a coalition of farmers' co-operative organizations.

According to the present plan, Mr. Boyle said, the coal will be purchased by the farm group and distributed to farmers by the existing distributors, such as farmers' elevators and coal dealers. "The radical change," Mr. Boyle said, "is that while the retailer has been considering himself as servant of the coal operators and brokers we view him as at least 50 per cent the servant of the people. He has been distributing to the people the coal he wanted to sell them, and now we want him to distribute to the people the kind of coal the people want to buy."

Mr. Boyle said that the saving to the farmers of the Middle West by the adoption of this scheme could only be the commissions paid to unnecessary middlemen and the saving that comes from intelligent purchasing of coal and the proper routing of cars so as to save freight. The constituency of the co-operative purchasing program, he said, will use millions of tons of coal. Based on the support the co-operative purchasing and marketing services have received in other articles, notably twine and fertilizers, he said, the co-operative coal-purchasing body should handle 3,000,000 tons of coal. The plan if adopted at the meeting Monday, was to go into effect immediately. "In fact," Mr. Boyle said, "we are ordering now on the quotations received from the West Virginia field."

Indiana Operators Will Fight Any Attempt At Government Regulation of Coal

SIGNIFICANT of the attitude of the Indiana coal operators in regard to the proposed legislation on coal, telegrams have been sent to Senator James E. Watson, Harry S. New, Representative Everett Sanders and Representative Oscar Bland by Phil Penna, Sr., secretary of the Indiana Bituminous Coal Operators, to the effect that the operators will stand firm against any such interference with their industry.

Mr. Penna sent the following telegram to the conference at Washington: "Please oppose any measure looking toward any interference with our industry. Better fight and lose than compromise sacred rights. There is no room for compromise without dishonor, however innocent such compromise may seem."

The Weather Vane of Industry

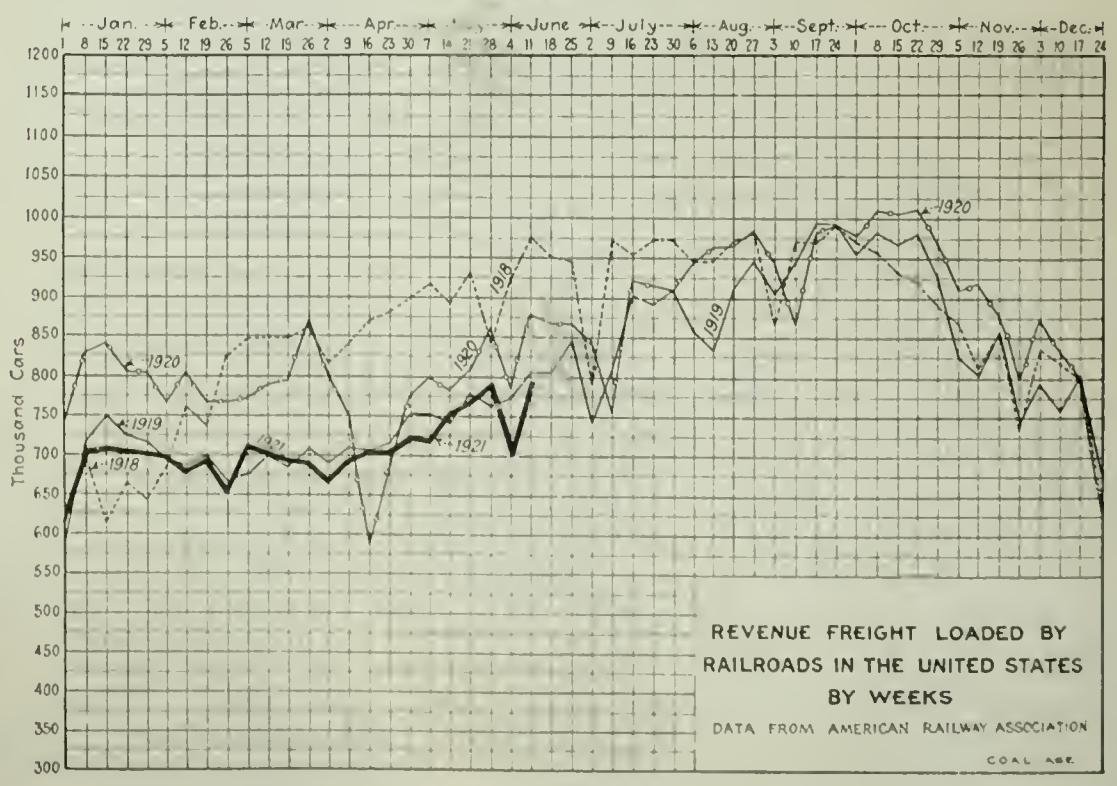
News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

SENTIMENT with respect to business, according to a bulletin issued June 21 by the National Bank of Commerce in New York, will naturally fluctuate in times like these. "The reaction from the spurt in spring business," the bulletin continues, "has caused disappointment. It is unwise, however, to expect other than quiet business during the summer months. Satisfactory recovery can come only after a protracted period, during which price liquidation must be completed as to manufactured and semi-finished goods and confidence in the future restored."

An increase of 82,489 in the number of cars loaded with revenue freight on American railroads during the week ended June 11, compared with the previous week, was shown by reports received by the Car Service Division of the American Railway Association. The total for the week was 788,997 cars, which was 141,979 cars below that for the corresponding week in 1920 and 18,208 cars under that for the corresponding week in 1919. In making comparisons with the previous week consideration must be given to the fact that observance of Memorial Day caused a reduction of the total for that week.

The loading of all classes of commodities except grain and grain products was larger than the preceding week, the largest gains being in merchandise and miscellaneous freight, which includes manufactured products, and in coal. The total for the first-named class was 469,295 cars or an increase of 52,074 over the previous week. Coal loadings totaled 163,088 cars, which was an increase of 20,414 over the previous week but 28,400 cars under the corresponding week last year.

A reduction within a month of more than 82,000 in the number of idle freight cars is shown by reports from railroads. On June 8 the number of cars in excess of current freight requirements was 389,526, compared with 471,922 cars on May 8. Tabulations showed that on June 8 there were 162,035 surplus coal cars, which was a reduction of 3,067 since June 1 and more than 58,000 within a month.



Ford Plant to Increase Output

Production of 4,000 automobiles daily during July was announced June 21 as the program of the Ford Motor Co. Officials predicted that the production for June would exceed that of any month in the company's history. Approximately 105,000 cars will be built at the Detroit plant alone. The Canadian plant in Windsor is scheduled to produce 7,000 cars, and another foreign factory will build 4 000, making the total output for June 116,000. In May 111,308 cars were constructed.

The Nash Motors Co., four-cylinder car division, Milwaukee, has recalled its force of about 800 men, as of July 5, the *Iron Age* states, for a resumption of normal production, which was interrupted June 1.

China Orders American Locomotives

The American Locomotive Co. will increase operations at its Schenectady plant within the next few days to work on an order for forty-six locomotives received recently for railroads in China. The plant had been operating on a reduced scale for some time. Operations in the Canadian mills also are expected to be increased shortly.

Wheeling Steel Mills Close

More than 2,500 men in the Wheeling (W. Va.) district have been thrown out of work as a result of the suspension of operations in full or in part of three mills of the Wheeling Steel Corporation June 18. Only six mills operated last week.

New Piston Ring Plant in Georgia

The Faultless Piston Ring Co. has been incorporated by capitalists of Rome, Ga., with $200,000 capital. The company will have its plant in Dalton, Ga.

B. & A. Locomotive Shops Close

The Boston & Albany R.R. locomotive repair shops in West Springfield, Mass., closed June 16 for an indefinite period, throwing about four hundred men out of work. The car shops will continue to operate with a full force.

Goodyear Takes on More Men

With sales of tires on the increase the Goodyear Tire & Rubber Co. recalled 1,200 former employees June 20 at its plant in Akron, Ohio. Dealers' sales are heavier than at any time since May, officials say. The order to close the factories from June 24 to July 5 for semi-annual inventory was rescinded, and the plants will close only on July 4 and long enough for a hurried inventory. The company is making 85,000 tires a week, and plans for increased production are being made.

Coal Stabilization Bill Not Likely to Pass; Seasonal Freights in the Balance; Frelinghuysen Hopeful

By Paul Wooton
Washington Correspondent

SENATOR FRELINGHUYSEN'S coal-stabilization bill has little chance to pass the Senate. Its companion measure, the seasonal rate bill, has only slightly better prospects. These opinions are very generally held as this is written, although Senator Frelinghuysen himself is positive in his statements that he will be able to bring each measure to a vote.

Sentiment against the stabilization bill crystallized rapidly last week. This feeling had its source in the rekindled realization that business is in no condition to permit of experimental surgery. The debate on the bills has been characterized by lack of enthusiasm on the part of any but Senator Frelinghuysen. It is admitted by even the opponents of the bills that the New Jersey Senator's presentation of the legislation was done in an impressive and masterful way. The trouble is he lacks support. The opposition is not saying much but is biding its time in full confidence that the legislation will not succeed.

The danger to the seasonal rate bill lies in the fact that Senator La Follette has used it as a medium to present various amendments which would all but repeal the Transportation Act of 1920. It is believed that Senate leaders will not allow these amendments to come to a vote. Unless these amendments go out on a point of order it seems probable at this writing that the seasonal rate bill will have to be sidetracked to prevent a vote on the La Folette amendments.

Further Regulatory Legislation Contemplated

One of the factors which has tended to arouse sentiment against the stabilization bill is the knowledge that further regulatory legislation is under consideration. It has been learned that a regulatory bill to apply to the steel industry is being drafted as well as a measure providing for certain federal supervision over smelters. Many Republican Senators who are not particularly concerned as to coal are apprehensive of the political effect of the action of a Congress called to consider tariff and taxation which shows every tendency to deliberate leisurely on matters intended to help business and in the meantime rushes through prohibition amendments, packer control and a great grist of incidental legislation.

Senator Frelinghuysen, in a statement issued June 26, charged that the National Coal Association, the Anthracite Coal Operators Association, the American Wholesale Coal Association, the National Retail Coal Merchants Association and various state and regional coal organizations have united in "one big union" to defeat pending legislation for the regulation of the coal industry.

The Senator declares that the coal organizations are bombarding Congress with "literary fusillades," which contain, as he expressed it, "an atom of fact and a ton of misrepresentation."

"For the last week," said Senator Frelinghuysen, "two coal bills introduced by me have been before the Senate. As this is a supremely important question, involving the happiness, the health, indeed, the very life of the public, the country should understand what this fight means. If these bills are defeated, a tragedy next fall and winter, in the nature of a coal famine, worse than ever experienced before, is inevitable. The fact is, owing to existing conditions, I doubt if the tragedy can be averted. But we can prevent a second tragedy a year later."

Says Existing Abuses Demand Relief

In opening the debate in the Senate on the seasonal coal freight rate bill and the coal stabilization bill Senator Frelinghuysen declared in a speech June 20 that existing conditions in the coal industry are uneconomic, that abuses exist and that relief in some measure is needed.

He said that the desire was to do something constructive to remedy present conditions, as next to the railroad question the coal problem was the most vital confronting the public and that a sufficient supply of coal distributed uniformly and produced at a reasonable price was essential to the life and energy of the nation. It is vital to every human and industrial activity, as without coal the nation would starve and freeze.

"People have suffered from high prices while some persons in the coal trade, without conscience, have taken advantage to profiteer," he said. He said freight rates were "sky high" and unless something was done to stimulate buying, last year's panic would be repeated, as transportation next winter may be overtaxed, causing a shortage. "Then drastic government action will again be demanded by the people," he said. The Senator declared that there was plenty of coal last year, enough labor to mine it, but a shortage of cars delayed deliveries, causing a buyers' panic, which was unnecessary, and that if there had been a government agency charged with responsibility of correctly informing the people, such as the pending legislation proposed, "the speculators would have been routed and the public saved from extortion."

The Senator said the public expects Congress to make some effort to relieve this situation and that it would not endure another season of coal prices ranging from $15 to $30 a ton, which prices were reflected in the cost of production in every factory, railroad and trolley rates, cost of power, gas and electricity, and which retarded housing development.

The Senator said the anthracite situation was complex, this coal selling from $12 to $15, while other commodities are selling from 20 per cent to 40 per cent lower than during the war. Notwithstanding these conditions he said the operators, the railroads with high freight rates, and the dealers "are complacent over the situation, and no one can tell why. No one seems to care except the consumer, who complains bitterly."

Would Remedy Evils by Publicity

The Senator said a thorough study by a government department, with the widest publicity, would remedy many of the evils and abuses now existing. He admitted that as to anthracite prices, high wages, increased cost of mining, royalties and freight rates have largely added to the cost, "but there seems to be an unduly large cost between the car at destination and the bin of the consumer, and nobody can tell the reason or find out." He said the proposed legislation provided that the Department of Commerce shall find out and make public the facts.

"I have no prejudice or enmity toward coal operators or dealers," Senator Frelinghuysen continued. "They should be treated fairly and be permitted to make reasonable profits;

but they should not treat the public unfairly or encourage conditions that cause unreasonable profits, and oppose publicity as to facts which reflect these conditions."

The Senator said the legislation did not control or regulate the coal business but it did compel full information and publication of all facts regarding the production and distribution of this essential commodity. It provided that the government should study the question and advise Congress and the public of all essential details that make up the price of coal. He said it has long been the duty of the government to know something more regarding coal production, which has been ignored for fifty years, while facts regarding many other utilities and commodities had been carefully studied. The Senator said he did not advocate government ownership, control or drastic regulations, nor did he believe that the government should compete with legitimate business or interfere with the law of supply and demand. He did believe, however, that the government should compel full information for the public benefit in commodities essential for the life and comfort of the people.

If relief was to be obtained immediate action sholud be taken on the seasonal rate bill to stimulate the movement of coal, as this commodity was the most important item of the railroads, representing one-third of their business, the industry representing an annual turnover of billions of dollars.

The Senator said the coal trade should not be "pilloried" for past offenses but constructive legislation should be had now to correct past evils. He said he avoided cases of spectacular losses in the business as the government could not undertake to guarantee incompetent mine managers a profit when they could not earn it by their own skill. The government cannot with safety go further than its restrictions against extortion; to attempt more would be to idemnify the buyer against faulty forecast of market conditions. He charged that last year extortion was practiced in the coal industry and that it was proper for the government to draw the line between profit and extortion and to make the latter a criminal offense. He referred to the tremendous increase in the size of the nation's coal bill in seven years and said the coal trade had made little progress in shrinking that inflated bill back to normal proportions.

Mining and Transportation Costs Not "Elastic"

Last year profits were very large and in some instances scandalously large. He said the cost of mining and transporting coal was not so elastic and coal men and railroads could give no encouragement that these costs are coming down. He said that the price paid at the point of discharging the railroad car for 556,500,000 tons of bituminous coal produced in 1920 was $2,500,000,000, or $4.50 a ton. The average freight rate was $2.50, or a total of $1,400,000,000, making a total to produce and transport 1920 bituminuos coal $4,000,000,000, or $7 per ton at the point of discharging the railroad car. In comparison he said that in 1914 the amount collected at the mine for 422,703,970 tons of bituminous was $473,000,000, or $1.17 per ton, to which the wholesaler added 7c., or $525,000,000 in all. The freight charges on coal in 1914 were $576.000,000, or $1.41 per ton, a grand total of $1,101,000,000, or an average cost of $2.61 per ton at the point of discharging the railroad car.

The wholesale bill of the people, he said, grew from 1914 to 1920 by $2,250,000,000 a year, and all that they had received to offset this expense was 133,000,000 tons of increased output. He estimated that the cost of producing a ton of coal had increased $1.86 per ton from 1914 to 1920, or 72 per cent. He gave the out-of-pocket cost of producing a ton in 1920 as 160 per cent greater than in 1914. The principal element in the cost was labor, which increased from 82c. to $2.19.

Referring to the increased transportation cost of 77 per cent from 1914 to 1920, the Senator said that nothing had been gained, as in 1914 there was sufficient transportation and that it was time the government should insist that it should get something in return for freight increases. He estimated that the cost of coal at the point of discharge of railroad car would in the future range between $5.51 and $6. The Senator was more concerned over future economy in the coal industry and transportation than he was in digging into the scandals concerning profits of coal men in 1920, as that had passed for the time being. Those profits, large and unreasonable as they were, were intresting as a matter of history, but the coal trade had assured Congress that this would not be repeated.

He estimated the gross margin retained by coal men in 1920 at $918,000,000 as compared with $63,000,000 in 1914. Of this amount, foreign buyers paid $255,000,000, and he concluded that this profit meant that the industry took from the people $5 per person. Against this the government collected in excess profits taxes $400,000,000. He believed seasonal freight rates would equalize distribution of coal.

The Senator said the obtaining of information was an inherent power of Congress and that the proposed legislation did not invade or overthrow private liberties. He said price fixing would not relieve the situation. In closing he said: "A great many coal operators are committed to the theory that the coal industry can be best exploited by maintaining the same seasonal speculative atmosphere, many producers resting complacently under the present depressed business situation in the belief that when the demand for fuel appears they will be able to employ the opportunity to recover the losses now being sustained, with compound interest."

Sharpless Is New Secretary of A.I.M.E.

AT THE directors' meeting of June 24 Frederick F. Sharpless was elected secretary of the American Institute of Mining and Metallurgical Engineers in place of Bradley Stoughton, who recently resigned to take up private work. Mr. Sharpless was born at West Chester, Pa., Jan. 22, 1866, and completed his schooling at West Chester Normal School in the years preceding 1884. In 1888 he became a Bachelor of Science of the University of Michigan and from that time till 1893 was professor of metallurgy at the College of Mines, Houghton, Mich. From 1893 to 1895 he engaged in consulting practice at Minneapolis. From 1895 to 1897 he was assayer for various mine companies in California, and from 1898 to 1912 was American representative of the Consolidated Mines Selection Co. From 1912 to 1919 he was consulting mining and metallurgical engineer. He has made examinations in Alaska, Canada, Mexico, Asia and Africa. He is secretary-treasurer of the Mining and Metallurgical Society and in 1919 was vice president.

Movements are on foot to build up four new sections, one to be known as the Lehigh Valley section, one of Gary (Ind.) men to be termed the Calumet section, one in Mexico to be designated the Tampico section and one in Charleston, W. Va. The directors authorized the three last-named sections at their June 24 meeting.

National Coal Association Officials Deny Attempt to Have Hoover Removed

PRESIDENT Bradley and vice president Morrow, of the National Coal Association, have emphatically denied published statements to the effect that coal operators are endeavoring to have Herbert Hoover removed from the Cabinet. Messrs. Bradley and Morrow join in a declaration that there is no foundation for such statements. On the contrary, they are anxious that Mr. Hoover be retained in the Cabinet because of his business ability and economic vision. Coal operators generally, Mr. Morrow asserts, believe Mr. Hoover to be one of the greatest assets of the administration. He knows of no movement to force Mr. Hoover's removal and would do all he could to oppose it if he did.

Fear Breaker Water Will Flood Mine

ALLEGING that the Jermyns are pumping water from a mine at Avoca, Pa., and using it to clean coal in their breaker, and are then returning it to the three Dunmore splits or Red Ash beds of their mine, thus flooding them and damaging a property of the Pennsylvania Coal Co., that company brought in two bills in equity on June 13 against the Suffolk Coal Co., owned by former Mayor Edmund B. Jermyn of Scranton, William Jermyn and Elizabeth White.

Warns Canadian Railway Commissioners of Coal Shortage Next Winter

C. R. MOORE, car service superintendent of the Grand Trunk Ry., gave a warning before Dominion Railway Commissioners in Ottawa June 21 of a coal shortage in Canada next winter unless more fuel was quickly imported.

Importations from the United States between Jan. 1 and May 21 this year were 336,000 tons less than in the same period of 1920, he said. He added that next winter the railroads must carry eastward the greatest crops of Canada's history, making the accumulation of more fuel imperative.

Mingo Operators Welcome Senate Inquiry

INVESTIGATION of the disorders in the Mingo County coal fields is provided by the Johnson resolution, which was passed finally by the U. S. Senate on June 24. It is expected that the investigation will begin this week at Williamson, W. Va., a subcommittee of the Senate Committee on Education and Labor conducting the hearing, headed by Chairman Kenyon of Iowa.

The following statement was given out by Harry Olmstead, chairman of the Labor Committee of the Williamson Coal Operators' Association, on learning that the Senate had decided to investigate the situation:

"The news that the U. S. Senate has completed the passage of the resolution providing for an investigation of the labor conditions and causes of present trouble in Mingo County is welcomed by the operators of the Williamson field. We are ready to show that there have been eighty-odd assaults committed upon the workers and the property of the operators by the strikers since the strike was inaugurated, on July 1, last year.

"We will show that workmen have been murdered and wounded; that houses, stores, tipples and working places have been burned or wrecked by dynamite explosions, which crimes were committed by the strikers. We will show by dozens of instances the firing upon workmen whose only offence was that they were working; we will show that they were workmen regularly employed at the plants, and not 'strike-breakers'—that is, men here merely to break a strike.

"We will show by confession of strikers arrested that assaults were planned at meetings of the locals of the U. M. W. of A. and conducted by men affiliated with that organization.

"We will show that the strike was not the spontaneous or even the planned act of the workmen living and working in this field but came in the nature of a siege contrived and conducted by state and national officers of the Mine Workers' organization; that its origin really dates back more than twenty years to a time when the United Mine Workers entered into a conspiracy, which has run ever since, with the coal operators of Indiana, Illinois, Ohio and western Pennsylvania to organize the West Virginia coal fields by any methods and at any cost for the purpose of driving West Virginia coal from the Western markets—that conspiracy being directed against the West Virginia miners and operators alike, and so necessarily affecting the interests of every citizen of the state."

W. H. Groverman Resigns as Secretary of Northwest Dock Operators Association

W. H. GROVERMAN has presented his resignation as executive secretary of the Northwest Coal Dock Operators' Association, of Minneapolis, after a service of more than five years in the office. The cause assigned is that the withdrawal of seven members from the roster of sixteen in the association leaves it unable to function along the lines originally intended. Mr. Groverman states that the association doubtless will continue to work but along somewhat different lines, mainly credits and collections.

Mr. Groverman was appointed to the position with the formation of the association on March 1, 1916. He went to the Northwest in 1911 as Western manager for the Island Creek Coal Co. During his régime as secretary of the coal dock association he rendered valiant aid to Dr. Garfield during the war and during the coal strike after the war. His efforts during the past two summers to arrange for an adequate supply of coal for the Northwest were not realized or appreciated by many. He worked day and night upon the matter, and presented to the Interstate Commerce Commission such thorough information that the necessary orders were issued whereby the Northwest was given consideration which otherwise would not have been extended. During the periods of uncertainty he spent weeks at the lower Lake ports and in Washington, keeping in close touch with developments and insisting that the Northwest be given a fair chance for fuel, and he got the coal.

Mr. Groverman's plans have not been announced as yet, but he states that he will continue to make Minneapolis his home.

Would Increase Railroad Efficiency by Intelligent Coal Purchasing

EFFICIENCY in the operation of the railroads could be greatly increased by a more intelligent policy with regard to the purchase of coal, E. Ludlow told the Senate committee which is investigating the general railroad situation. Among his recommendations were allocation to each railroad of a uniform grade of coal; avoidance of cross hauls, supplying each road from the most available supply with a minimum of mileage; placing of the fuel supply on a scientific basis, with employment of inspectors to maintain the quality of coal shipped and checking up of results; close cooperation with the coal operators, obtaining in that way economy and efficiency that cannot be obtained under the individual basis of buying, as at present; stabilization of the bituminous industry through purchasing greater amounts of coal during the summer months and storing it for use, with diminished shipments in the winter months.

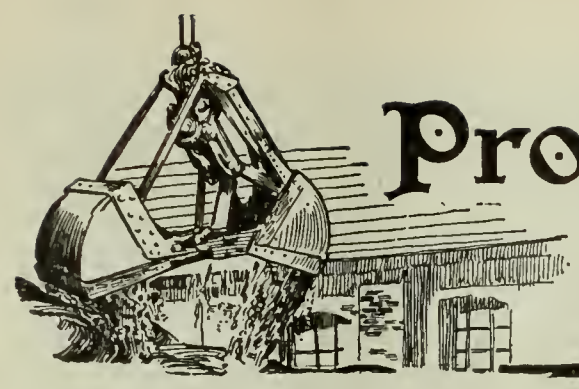
The public will benefit greatly by such a plan, Mr. Ludlow declared, for by releasing a portion of the tonnage which otherwise would be under contract to the railroads, more coal will be available for domestic consumers.

British Mine Owners and Mine Workers' Leaders Reach Understanding

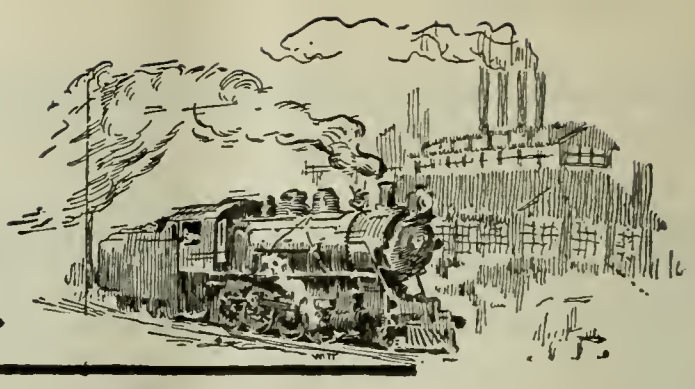
AT A MEETING of the Executive Committee of the British Miners' Union on the night of June 24 the leaders of the coal-mine workers decided to ask Premier Lloyd George for a conference. On the following day Mr. Lloyd George invited the mine operators and the representatives of the mine workers to a joint meeting to be held at the Board of Trade on June 27. As a result the leaders of the mine workers acquiesced with the owners' proposition provided the government conceded the £10,000,000 subsidy. Work is expected to commence July 4.

The decision appears to have resulted from the gradual impoverishment of the mine workers and of the unions which have given them support. The miners' union can no longer borrow, partly because the other unions have nothing to lend. The hope that other unions will strike in sympathy with the miners has faded with the progress of time.

The mine workers' leaders today are determined that industrial action is useless and are suggesting that the only hope is in taking political measures to attain their ends. They are now convinced that the continuance of the strike is a mistake. The recent ballot may have resulted as it did owing to a feeling that a firm stand would influence the government to make a larger concession either of taxpayers' money or of policy. The vote did neither. The only apparent result was a withdrawal of the government's offer of a subsidy of £10,000,000.



Production and the Market



Weekly Review

PRODUCTION of bituminous coal declined nearly 500,000 net tons to 7,549,000 tons in the week ended June 18, from the 8,000,000 ton rate of the previous five weeks. This drop is largely, if not entirely, accounted for by the decrease in loadings at the mines for shipments up the Lake and by a corresponding but smaller decrease in mine loadings of coal for export to Europe. Heavy accumulations of loads at lower Lake ports, reaching well over a million tons, caused the railroads to urge on the shippers the advisability of easing up on loadings until the jam at Lake Erie is partly cleared up. No new feature was introduced in the market as a result, particularly since there is little trading on Lake coal, this heavy tonnage being on contract or moving on owners' account.

At Tidewater, where in recent weeks foreign demand has maintained a fairly steady call for both high and low volatile coal, the anticipated settlement of the British strike (which did not materialize), discounted from two to three weeks in advance by British buyers, caused a marked drop in loading for foreign account the second and third weeks of June. Last week buying by the British was resumed.

Current demand for bituminous coal for consumers and retailers in this country has the appearance of being almost at a standstill. To say there is no demand, however, is not stating the conditions correctly. With production between seven and eight million tons a week, largely for consumers in this country, it is evident that coal is moving, and as contracting has been below normal it is equally patent that there is a free coal market. The available supply, however, is so greatly in excess of the free coal demand and buyers are so discriminating in their tastes and particular about prices that the market is dead.

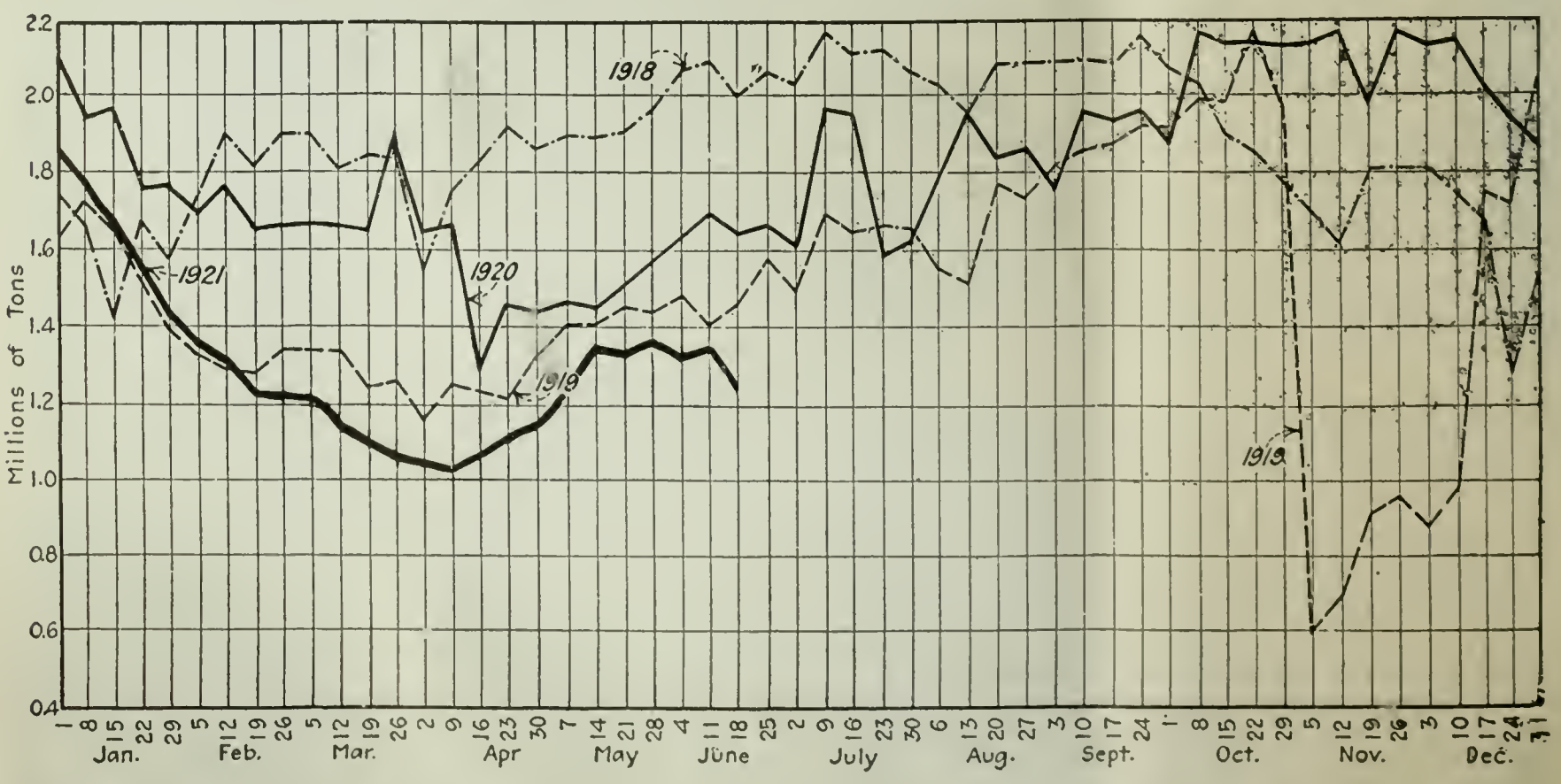
Coal Age Index Touches New Low Level

Coal Age index reflects this condition, recording a new low for the year at 91 for the week ended June 28, a drop of 1 point from the previous week.

Locally we find New England heavily stocked with soft coal, averaging from 3 to 4 months' supply on hand, with prices slowly but steadily dropping and demand so irregular that buyers almost name their own figure.

The same condition of demand characterized reports from points farther west, Buffalo describing the market as super-saturated, and Chicago telling of what appears to Western producers as a flood of Eastern coal thrown on the market at low figures. At St. Louis conditions are termed deplorable, because of a condition general throughout the Middle West—retail dealers' yards full and the public not buying.

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

Anthracite continues to move in unprecedented volume, production for the week ended June 18 having been 1,940,000 net tons. Buying of sizes smaller than chestnut is off, however, and pea and the buckwheats are going into storage.

BITUMINOUS

Slipping down, both production and prices of soft coal are headed for a hot weather slump. Production as reported by the Geological Survey for the week ended June 18 was 7,549,000 net tons, a drop of nearly 500,000 tons from 8,012,000 tons the next preceding week. The decline is attributed to a forced decrease in loadings from lower Lake ports and to a temporary slump in export demand. The decrease was therefore largely confined to the Northern and Middle Appalachian region, in which production in the week of June 11 was 5,215,000 net tons.

Further declines in production are looked for, preliminary reports for the week of June 25 indicating a drop in loading at the mines of 1,200 cars, or 2 per cent, the first two days of the week.

The mine reports to the Geological Survey for the week ended June 11 indicate that the soft-coal industry was working 44.1 per cent of full-time capacity. Lack of demand remained the dominant factor limiting output, and to it losses amounting to 49.1 per cent of full time were ascribed.

Comparison of the operating reports for the week of June 11 with those for the preceding week (May 30-June 4) is rendered difficult by the occurrence of the Memorial Day holiday on Monday, May 30. A more satisfactory standard of comparison is the record of operating time during the week ended May 28, the last preceding full-time week. Measured against that standard the performance of the mines in the week of June 11 showed a general decrease in activity. No-market losses appear to be increasing in Illinois, Ohio, western Pennsylvania, and some of the Western States. The per cent of full time operated in Illinois decreased from 6.7 in the week of May 28 to 2.8. It was thus practically the same as the average for Indiana, 32.9 per cent, and for western Kentucky, 32.2 per cent. In the Middle and Southern Appalachians little change occurred.

Heavy Lake Dumpings Again Reported

Lake dumpings in the week ended June 27 were 1,073,733 tons compared with 596,080 tons in the same week last year and with 1,062,477 tons the week of June 20. Dumpings for the season now stands at 9,093,466 tons, as against 3,607,458 in 1920.

The outstanding feature of the distribution of Lake cargo coal for the present season up to the end of April was the change in the relative proportions of coal moving to American and Canadian destinations. In comparison with the season of 1919, which the present season most closely

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	May 24, 1921	June 4, 1921	June 21, 1921	June 28, 1921†
Pocahontas lump	Columbus	$5.50	$5.75	$5.50	**$5.50@$5.75**
Pocahontas mine run	Columbus	3.50	3.45	3.40	**3.50@ 3.60**
Pocahontas screenings	Columbus	....	2.40	2.40	2.25@ 2.50
Pocahontas lump	Chicago	5.25	5.25	5.65	5.50@ 5.75
Pocahontas mine run	Chicago	3.75	3.15	3.15	2.75@ 3.50
*Smokeless mine run	Boston	6.40	5.95	6.15	*5.90@ 6.10*
Clearfield mine run	Boston	2.40	2.25	2.25	*1.85@ 2.50*
Cambria mine run	Boston	....	2.95	2.85	2.60@ 3.10
Somerset mine run	Boston	....	2.20	2.10	*1.75@ 2.15*
Pool 1 (Navy Standard)	New York	3.55	3.45	3.45	*3.00@ 3.35*
Pool 1 (Navy Standard)	Philadelphia	3.25	3.35	3.25	*3.00*
Pool 1 (Navy Standard)	Baltimore	3.35	3.20	2.95	*2.80@ 3.00*
Pool 9 (Super. Low Vol.)	New York	2.85	2.85	2.85	*2.50@ 3.00*
Pool 9 (Super. Low Vol.)	Philadelphia	3.00	2.95	2.85	*2.60@ 2.80*
Pool 9 (Super. Low Vol.)	Baltimore	3.05	2.85	2.70	*2.50@ 2.75*
Pool 10 (H. Gr. Low Vol.)	New York	2.60	2.45	2.50	*2.25@ 2.60*
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.70	2.55	2.45	2.25@ 2.50
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.50	2.40	2.35	*2.25@ 2.35*
Pool 11 (Low Vol.)	New York	2.25	2.15	2.35	*2.00@ 2.25*
Pool 11 (Low Vol.)	Philadelphia	2.45	2.35	2.10	*1.75@ 2.00*
Pool 11 (Low Vol.)	Baltimore	2.25	2.10	2.10	2.00@ 2.20
High-Volatile, Eastern					
Pool 54-64 (Gas and Steam)	New York	2.05	1.90	2.00	*1.75@ 2.15*
Pool 54-64 (Gas and Steam)	Philadelphia	2.10	2.00	1.85	1.70@ 2.00
Pool 54-60 (Gas and Steam)	Baltimore	1.90	1.85	1.75	*1.70*
Pittsburgh sc'd. gas	Pittsburgh	2.80	2.75	2.50	2.40@ 2.60
Pittsburgh mine run(steam)	Pittsburgh	2.10	1.95	1.85	1.75@ 1.90
Pittsburgh slack (gas)	Pittsburgh	....	1.65	1.60	1.55@ 1.65
Kanawha lump	Columbus	3.40	3.50	3.45	3.25@ 3.65
Kanawha mine run	Columbus	2.65	2.20	2.15	2.00@ 2.35
Kanawha screenings	Columbus	....	1.25	1.20	1.10@ 1.25
Hocking lump	Columbus	3.25	3.25	3.15	3.00@ 3.25
Hocking mine run	Columbus	2.40	2.15	2.15	*2.00@ 2.20*
Hocking screenings	Columbus	....	1.20	1.20	1.10@ 1.25
Pitts. No. 8 lump	Cleveland	3.25	3.25	3.25	3.00@ 3.50
Pitts. No. 8 mine run	Cleveland	$2.25	$2.10	$2.10	$2.00@$2.15
Pitts. No. 8 screenings	Cleveland	2.00	1.40	1.25	*1.05@ 1.25*
Midwest					
Franklin, Ill. lump	Chicago	3.70	3.55	3.65	*3.00@ 3.05*
Franklin, Ill., mine run	Chicago	3.15	3.00	2.90	2.25@ 3.50
Franklin, Ill. screenings	Chicago	2.35	2.00	1.95	1.25@ 2.50
Central, Ill. lump	Chicago	3.25	3.15	2.65	2.25@ 3.00
Central Ill. mine run	Chicago	2.60	2.50	2.40	2.00@ 2.75
Central Ill. screenings	Chicago	1.90	1.60	1.65	1.00@ 2.25
Ind. 4th Vein lump	Chicago	3.50	3.15	2.90	2.50@ 3.25
Ind. 4th Vein mine run	Chicago	3.10	2.60	2.50	2.25@ 2.75
Ind. 4th Vein screenings	Chicago	2.15	1.75	1.70	*1.25@ 2.00*
Ind. 5th Vein lump	Chicago	3.25	3.00	2.75	2.25@ 3.25
Ind. 5th Vein mine run	Chicago	2.50	2.45	2.40	2.00@ 2.75
Ind. 5th Vein screenings	Chicago	2.20	1.85	1.70	*1.25@ 2.00*
Standard lump	St. Louis	2.40	2.15	2.15	2.00@ 2.25
Standard mine run	St. Louis	1.75	1.75	1.75	1.75
Standard screenings	St. Louis	1.25	.95	.90	*.85*
West Ky. lump	Louisville	2.65	2.55	2.55	**2.30@ 3.00**
West Ky. mine run	Louisville	2.20	1.90	2.00	1.75@ 2.25
West Ky. screenings	Louisville	1.90	1.50	1.45	**1.50@ 1.60**
South and Southwest					
Big Seam lump	Birmingham	3.70	3.80	3.65	3.55@ 3.75
Big Seam	Birmingham	2.95	2.50	2.50	2.25@ 2.75
S. E. Ky. lump	Louisville	3.90	3.65	3.65	**3.50@ 3.85**
S. E. Ky. mine run	Louisville	2.60	2.25	2.25	2.00@ 2.50
S. E. Ky. screenings	Louisville	2.55	1.45	1.45	*1.00@ 1.75*
Kansas lump	Kansas City	5.00	5.25	5.25	**5.25@ 5.50**
Kansas mine run	Kansas City	4.15	4.40	4.40	*4.25*
Kansas screenings	Kansas City	3.75	3.15	3.15	**3.25**

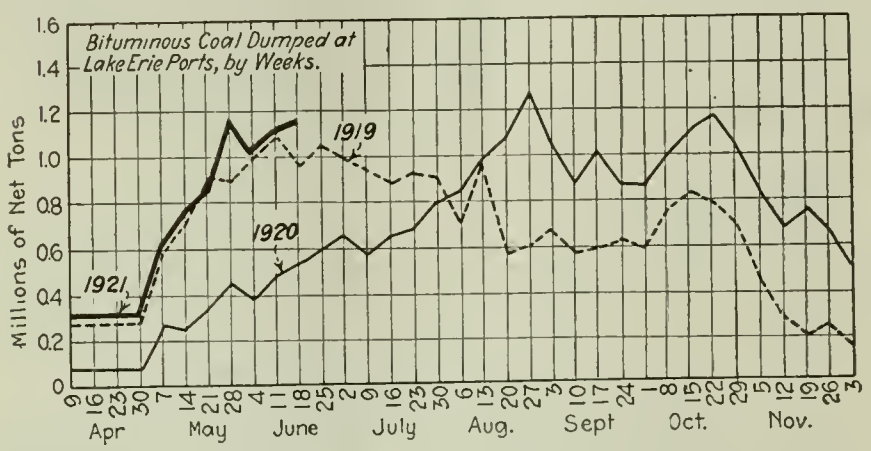
* Gross tons, f. o. b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	June 14, 1921 Independent	June 14, 1921 Company	June 21, 1921 Independent	June 21, 1921 Company	June 28, 1921† Independent	June 28, 1921† Company
Broken	New York	$2.61	$7.85@$8.15	$7.30@$7.75	$7.85@$8.15	$7.30@$7.75	$7.85@$8.15	$7.30@$7.75
Broken	Philadelphia	2.66	7.90@ 8.20	7.45@ 7.85	7.90@ 8.20	7.45@ 7.85	7.90@ 8.20	7.45@ 7.85
*Broken	Chicago	5.62	12.65	12.40	12.75	12.50	12.75	12.50
Egg	New York	2.61	7.85@ 8.50	7.30@ 7.75	7.85@ 8.50	7.30@ 7.75	7.85@ 8.50	7.30@ 7.75
Egg	Philadelphia	2.66	7.90@ 8.20	7.45@ 7.85	7.90@ 8.20	7.45@ 7.85	7.90@ 8.20	7.45@ 7.85
*Egg	Chicago	5.62	12.50	12.35	12.60	12.45	12.60	12.45
Stove	New York	2.61	8.15@ 8.75	7.60@ 8.10	8.15@ 8.60	7.60@ 8.10	8.15@ 8.60	7.60@ 8.10
Stove	Philadelpha	2.66	8.15@ 8.60	7.80@ 8.20	8.15@ 8.60	7.80@ 8.20	8.15@ 8.60	7.80@ 8.20
*Stove	Chicago	5.62	13.10	12.70	13.20	12.80	13.20	12.80
Chestnut	New York	2.61	8.15@ 8.50	7.60@ 8.10	8.15@ 8.50	7.60@ 8.10	8.15@ 8.50	7.60@ 8.10
Chestnut	Philadelphia	2.66	8.15@ 8.50	7.75@ 8.20	8.15@ 8.50	7.75@ 8.20	8.15@ 8.50	7.75@ 8.20
*Chestnut	Chicago	5.62	12.85	12.60	12.95	12.70	12.95	12.70
Pea	New York	2.47	5.00@ 6.00	5.85@ 6.20	5.50@ 6.00	5.85@ 6.20	5.50@ 6.00	5.85@ 6.20
Pea	Philadelphia	2.38	5.50@ 6.00	6.10	5.50@ 6.00	6.10	*5.50@ 5.75*	6.10
*Pea	Chicago	5.62	10.80	10.70	10.90	10.80	10.90	10.80
Buckwheat No 1	New York	2.47	2.75@ 3.00	3.50	2.75@ 3.00	3.50	2.75@ 3.00	3.50
Buckwheat No. 1	Philadelphia	2.38	3.00@ 3.25	3.50	2.75@ 3.00	3.50	*2.50@ 3.00*	3.50
Rice	New York	2.47	1.70@ 2.25	2.50	1.70@ 2.25	2.50	2.00	2.50
Rice	Philadelphia	2.38	2.00@ 2.25	2.50	1.75@ 2.25	2.50	1.75@ 2.25	2.50
Barley	New York	2.47	.75@ 1.10	1.50	.75@ 1.25	1.50	1.00	1.50
Barley	Philadelphia	2.38	1.00@ 1.25	1.50	1.00@ 1.25	1.50	1.00@ 1.25	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.50	.....	2.50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago.
† Advances over previous week shown in **heavy type**, declines in *italics*.

resembles, the proportion moving to Canadian ports increased from 10 to 25 per cent, while that moving to American destinations decreased from 90 to 75 per cent. Other differences were a decline in shipments to Lake Superior and an increase in the movement to Lake Michigan.

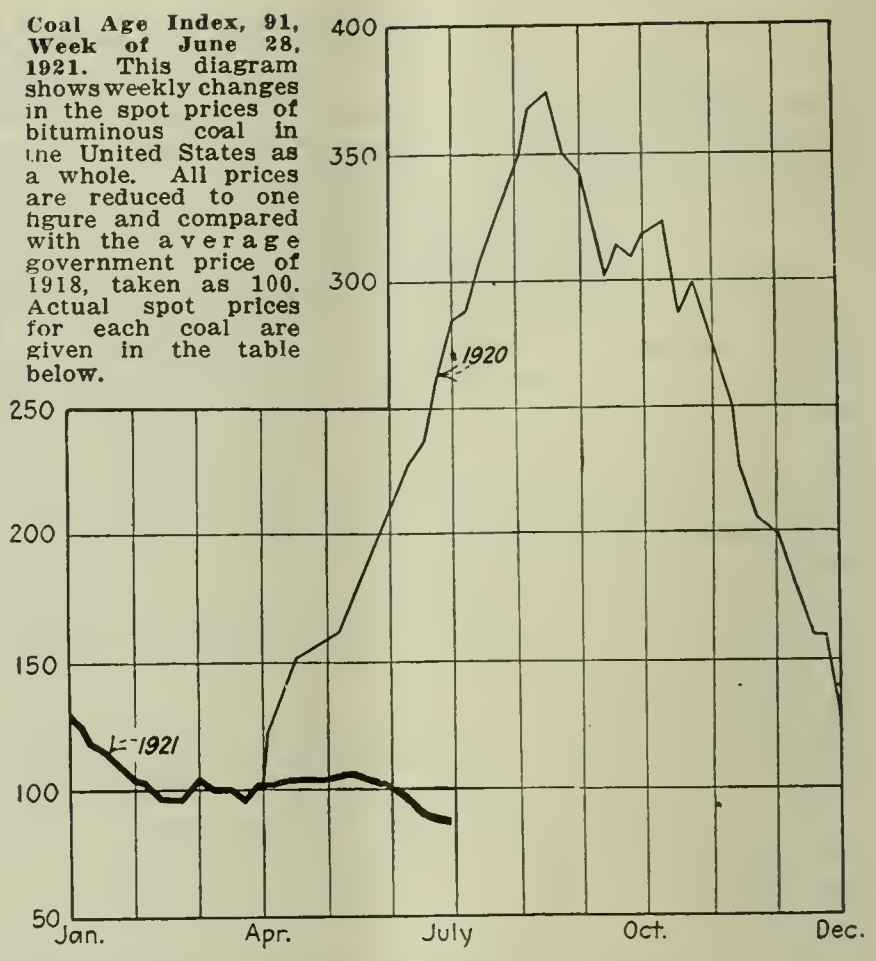


The all-rail movement to New England improved during the third week in June. A total of 3,571 cars of anthracite and 3,478 cars of soft coal was forwarded eastbound through the rail gateways over the Hudson, increases over the preceding week of 541 and 335 cars, respectively. During the calendar year to date, according to the Geological Survey, there have been forwarded 74,884 cars of soft coal, against 76,982 in 1920 and 63,992 in 1919.

CARS OF COAL FORWARDED OVER THE HUDSON TO EASTERN NEW YORK AND NEW ENGLAND

	1921		1920	
	Anthracite	Bituminous	Anthracite	Bituminous
June 4.....	3,067	3,052	3,607	3,562
June 11.....	3,030	3,143	3,432	2,817
June 18.....	3,571	3,478	3,255	3,874

At Tidewater, buying for the United Kingdom was resumed last week when the expected resumption of mining failed to materialize. On Tuesday and Wednesday, June 21 and 22, orders were placed for a considerable tonnage of high volatile coal for prompt shipment to Great Britain and there was a scurry for boats that resulted in boat rates mounting $1 at once. It is reported that 50 boats were chartered on those two days and that cargo coal for this tonnage was secured with no effect on coal prices. This



Coal Age Index, 91, Week of June 28, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table below.

business with Great Britain is done on the basis of c.i.f. quotations and it is therefore evident that profits on this business is being shared with boat interests. Total dumpings at Hampton Roads in the week of June 23 were 401,129 gross tons, a decrease from the previous week of 74,326 tons.

An interesting feature has developed in central Pennsylvania. The Lehigh Valley R.R. is buying coal on the open market at $1 per ton less than it can produce and has accordingly closed its own mines. Non-union mines, having reduced wages, are securing the bulk of what little business is offering as the mines operating on the higher union schedules cannot compete in the present close market. Steel companies, in the open shop field, having adequate plant reserves, are turning production from their own mines into commercial channels to the further detriment of union operations.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921		1920	
	Week	Calendar Year to Date	Week	Calendar Year to Date (a)
June 4(b).....	6,835,000d	167,460,000	9,141,000	216,890,000
Daily average....	1,330,000	1,277,000	1,662,000	1,648,000
June 11(b).....	8,012,000	175,471,000	10,355,000	227,245,000
Daily average....	1,335,000	1,280,000	1,726,000	1,651,000
June 18(c)	7,549,000	183,020,000	10,095,000	237,340,000
Daily average. .	1,258,000	1,279,000	1,683,000	1,653,000

(a) Less 2 days' production during first week in January to equalize number of days covered for the last two years. (b) Revised from last report. (c) Subject to revision. (d) Week of Memorial Day holiday.

ANTHRACITE

	1921		1920	
	Week	Calendar Year to Date	Week	Calendat Year to Date(a)
June 4(b).....	1,573,000	39,146,000	1,536,000	37,147,000
June 11.....	1,963,000	41,109,000	1,960,000	39,107,000
June 18.....	1,940,000	43,049,000	1,853,000	40,960,000

(a) Less 2 days' production during first week in January to equalize number of days covered for the last two years. (b) Week of Memorial Day holiday.

BEEHIVE COKE

Week Ended				
June 18 1921(a)	June 11 1921(b)	June 19 1920	1921 to Date	1920(c) to Date
55,000	61,000	372,000	3,307,000	10,126,000

(a) Subject to revision. (b) Revised from last report. (c) Less 2 days' production during New Year's week to equalize number of days covered for the last two years.

ANTHRACITE

The output for the week ended June 18 was 1,940,000 net tons as compared with 1,963,000 tons for the week preceding. Production is being maintained as the demand for domestic coals has, until the last week, held firm. However, it is apparent that a slump in the output is inevitable, as household buying is becoming more sluggish day by day, while retailers' bins are well filled. Two factors are holding this coal back from summer storage—lack of ready money caused by the wave of unemployment, and the belief that coal prices must come down in proportion with other commodities.

At this writing there is no indication that the usual 10 cent monthly advance on domestic sizes will not be scheduled July 1, with an additional increase in the near future to cover the new Pennsylvania state tax. The effect of any increase probably will be a realization by the consumer that coal, instead of being lowered in price, is on the upgrade and some temporary stimulus to the demand may be felt.

COKE

Production of beehive coke reflects the depression in the iron and steel industry. Output for the week ended June 18 is estimated at 55,000 net tons by the Geological Survey, a drop of 6,000 tons. The greatest decline occurred in Pennsylvania and Ohio.

No sales of Connellsville coke to furnaces have been reported and quotations are therefore purely normal. Consumption is decreasing steadily and there is no revival in sight.

Foreign Market And Export News

Hampton Roads

Thirteen Shipping Board vessels which have lain idle here for several months, have been allocated to operators and will begin loading at once for foreign ports. This is regarded by local dealers as a strong boost for foreign coal shipments from Hampton Roads. Practically all of these vessels will load coal for the United Kingdom.

It is estimated that within this week at least thirty vessels will come to Hampton Roads to carry coal to the British Isles, this in spite of the fact that the British coal business showed strong indications last week of falling off very noticeably.

C. I. F. prices reported were as follows: United Kingdom, $12.60; Hamburg, $12.65; Gilbraltar, $12.50; Rio de Janeiro, $11.90; The Plate $11.40; Havana, $8.60; Scanadinavian ports, $13.35.

Hampton Roads clearances last week were as follows:

(Ports given when of record)

	Tons
For Argentina:	
Du. S.S. Lingedijk	5,130
Br. S.S. Clitower	4,710
For Brazil:	
Br. S.S. Segura, for Bahia Blanca	6,442
Br. S.S. Comeric, for Rio de Janeiro	8,776
Br. S.S. Framingham Court, for Rio de Janeiro	5,926
For Cuba:	
Am. S.S. Everglades, for Havana	2,899
Nor. S.S. Bratland	3,033
For United Kingdom:	
Br. S.S. Iperia	4,019
Br. S.S. Torrent, for Queenstown	4,631
Am. S.S. Hoxie, for Dublin	5,451
Am. S.S. East Side, for Dublni	4,966
Br. S.S. Whitegate, for Portland	6,557
Grk. S.S. Rokos Vergottis, for Queenstown	7,890
Am. West Celeron, for Dublin	2,982
Br. S.S. Roseden, for Queenstown	6,662
For Italy:	
Ital. S.S. Boheme, for Venice	6,398
Am. S.S. Hayden	7,997
Am. S.S. Waukau, for Sicily	7,224
For Portugal:	
Am. S.S. Maquan, for Lisbon	7,505
Br. S.S. Maid of Chios, for Azores	4,000
For Germany:	
Nor. S.S. Bjornsterne Bjornson, for Hamburg	7,863
For France:	
Am. S.S. Orient, for Havre	6,452
For Denmark:	
Am. S S. Tonseit, for Copenhagen	3,258
Am. S.S. City of Alton, for Copenhagen	6,347
For Chile:	
Am. S.S. Cocique, for Punta Arenos.	
For Australia:	
Am. S.S. Suricho, for Birkenhead	4,395
Am. S.S. Suelco, for Birkenhead	4,341
For Egypt:	
Br. S.S. Jason, for Port Said	2,570
Jap. S S. Rozan Maru, for Port Said	6,906
Jap. S.S. Yugao Maru, for Suez	3,496
For Holland:	
Br. S.S. Bourne, for Rotterdam	7,617
For Russia:	
Br. S.S. Cymric, for Petrograd	5,577
Br. S.S. Kingsbury, for Las Palmas	5,542
Am. S.S. Glen White, for Las Palmas	7,028
Br. S.S. Marshall Haig, for Las Palmas	5,315
Br. S.S. Arcadian Queen, for St. Georges	774
Am. S.S Liberty Land, for Tiburon	7,038
Br. S.S. Ernemore, for Funchal	6,149

New Saar Coal Prices

New Saar coal prices, effective April 1, include coal tax and are f.o.b. truck pit-head for sales ranging from 300 to 1,000 metric tons, a rebate being allowed for larger tonnage. Prices, in francs, for the different coals, classed according to origin into three grades of bituminous and flaming coal each, are as follows:

	Bituminous Coal	Flaming Coal
De-stoned	97@112	90@103
Washed:		
Cobbles	110@124	100@114
Nuts No. 1	110@124	100@114
Nuts No. 2	97@108	93@112
Nuts No. 3	93@107	90@103
Small pea	77@ 82	66@ 86
Mine run:		
Rough	70@ 84	68@81
Slack	62@ 66	60@62
Culm	32	30@31
Washings and mixed	20@28	18@26
Coke:		
Pit		128
No. 0 (2x3-in.)		135
No. 1 (1.4x2-in.)		135
No. 2 (0.6x1.4-in.)		123

EXPORTS OF ANTHRACITE through the Port of New York in April, 1921, were 9,975 tons as compared with 9,637 in the corresponding month of 1920, and 1,695 tons in 1919. During the same period there were 5,258 tons of bituminous coal sent to outside countries as compared with 1,385 tons in 1920 and 1,001 tons in 1919. Only 117 tons of coke were shipped from the port, as compared with 2,283 tons in April of last year and 468 tons in the corresponding month of 1919.

French Output and Coal Stocks

April production, exclusive of the Sarre, was 2,258,044 metric tons, according to the *Journal des Charbonnages*. Production for the same month in 1920 was 1,817,430 tons. Coal stocks on hand April 30 were 3,122,612 tons, compared with 4,500,000 tons on Jan. 1, 1921, and 1,500,000 tons on Jan. 1, 1920. Accumulated stocks of coal on hand in France are now being disposed of owing to the British strike. A report from Paris last week indicates that stocks have decreased to approximately 700,000 tons. However, only the best qualities are in demand and the lower grades are hard to sell.

Great Britain's New Coal Imports

It has developed that quantities of German reparation coal have been imported into Great Britain through France. In reply to a question in the House of Commons if the effect of this importation did not assist in beating down British miners' wages and cause a protest from mine owners, the Secretary for Mines states that no protest has been made by the owners and it has been generally recognized that it is necessary to obtain coal from any available source during the strike.

Until the strike, imports of coal into Great Britain had always been small; in April, 1921, 2,818 tons were imported into the country at an average declared per ton c.i.f. price of 58s. 2d. In March none was imported and in February the tonnage was 5,591 with a value of 47s. 8d. During 1920, imports were 3,671 tons, valued at 145s. 1d. per ton. The British Government is now permitting imported coal to be sold for bunkering purposes.

June imports to Ireland are increasing. Early in the month the S.S. Anacartis arrived with 5,640 tons of American coal, according to the *Colliery Guardian*. Some French coal has been received for military purposes. Cargoes of Belgian coal are arriving. This coal is mainly intended for cross-channel and deep-water steamers plying to and from the port of Dublin.

A contract is said to have just been signed at Mayence, Germany, on behalf of the British Government for the supply of several hundred thousand tons of Sarre coal, to be shipped from Sarrebruck to Ludwigshafen, and thence by Rhine lighters via Rotterdam to England. The first order of 100,000 tons is now being loaded. Negotiations are pending for at least a portion of the coal to be sent via Antwerp instead of Rotterdam.

CONTRACTS FOR 50,000 TONS of American coal have been placed in this country through British firms. The American Government will not issue clearances for Soviet Russian ports, as it has not recognized the Lenine-Trotzky régime, although cargoes are clearing for border state destinations.

WELSH QUOTATIONS FOR EXPORT, made earlier in the month. have been withdrawn and it is probable that they will be held over a time, pending the turn of the miners' strike. Sarre Valley large is offered ex-ship South Wales at 80s. and Belgian coal at 52s.

PRODUCTION AND STOCKS OF COAL IN FRANCE, APRIL, 1921 (In Metric Tons)

District	Total Mined: Coal	Total Mined: Lignite	Stocks at Mines, April 30, 1921: Coal	Stocks at Mines, April 30, 1921: Lignite	Stocks at Mines, April 30, 1921: Coke	Stocks at Mines, April 30, 1921: Briquets
Arras	690,107	.....	415,992	.....	19,238	2,663
Douai	392,045	.....	358,669	.....	9,744	15,973
Saint-Etienne	275,437	.....	249,725	.....	16,152	15,385
Lyons	211,554	.....	155,233	580	.....	5,090
Clermont-Ferrand	106,615	36	72,597	187	.....	.....
Alais	156,692	1,296	103,235	76	10	21,673
Toulouse	135,225	423	89,103	1,796	5,474	21,102
Marseilles	1,830	55,500	4,310	15,018	.....	.....
Nantes	6,840	.....	10,879	.....	.....	242
Bordeaux	6,112	1,440	11,408	295	.....	1,529
Nancy	8,283	58,706	8,653	5	6,800	.....
Strasbourg	267,304	.....	86,502	.....	5,145	.....
Sarre	2,257,444	.....	1,556,306	17,957	62,563	83,657
	4,515,488	117,401	3,122,612	35,914	125,126	167,314

Ruhr Mines Need New Equipment; Producing Now by Manual Labor

(Special Correspondence)

Everything in Germany is now done through the manufacturers' organizations, which have managed to gain a strong position of authority over the individual manufactor. These organizations are mostly indifferent—not to say in opposition—to further "mechanification" of labor, which is shown by the half-hearted way in which the "Committee for Economical Production" is treating such matters. The reason, of course, is the enormous amount of capital investments and work which a radical reformation of the production toward highest efficiency and economy would entail.

A striking illustration of this attitude is the case of the coal mines of the Ruhr district, which stand in urgent need of new equipment. The cost of modernizing these mines, whereby their efficiency could be raised from 30 to 50 per cent, is estimated at 9,000,000,000 marks. It is a peculiar fact, and characteristic of the incoherency of mind prevailing throughout the country, that because of haggling of who is to bear the burden of this investment the mines are allowed to be run down, and the whole production to rest solely on the quantity of manual labor, while enormous sums, far exceeding the amount required, are invested in public-utilty works, like the construction of inland waterways and hydro-electric power stations, schemes which will bear fruit only in a rather remote future.

THE AUSTRIAN COAL SITUATION is improving. Private individuals are now permitted to import and store coal under government supervision, while before all coal was handled through the coal controller. Coal is being secured in the Netherlands, costing about $10 per ton in Vienna.

CZECHOSLOVAKIA'S LIGNITE PRODUCTION has been increased to such an extent that it has permitted a larger importation from that country to Austria, and to this has been added Dutch coal of high heating value and briquets from Germany. The net result is a substantial improvement in Austria's coal situation as compared with a few months ago.

SARRE COAL MINES will be under state administration for fifteen years, through the provision of a bill just adopted in the French Chamber. After that period the management will be handed over to a private corporation, but under state control. The French Government is estimating that it can increase the pre-war production of 14,000,000 tons to at least 20,000,000 tons. The state will also organize a profit-sharing scheme and will enlist the best scientific advisers available to direct the actual operation and division of its Sarre mining undertaking.

Reports From the Market Centers

New England

BOSTON

Trade Very Dull—Variable Quotations —"Market Cargoes" Practice Is Discouraging — Somerset Coals Feature Low Prices — Anthracite Demand Begins to Sag.

Bituminous—The market continues without a sign of reaction. Steam-users are not interested in current offerings at any figure operating interests are willing to name and it is hard to see how there can be any general buying movement until well into the fall, if indeed then there is more than sporadic demand for other than the choicer grades. Even for the latter there is today only indifferent inquiry, and more than a few large producers are seriously considering radical cuts in quotations, mainly to keep their organizations in being. Not in years have there been such determined efforts to sell coal in this territory, and not within a like period have such efforts met with so light response.

Quotations seem to be individual. The range of prices is quite wide and is dependent not so much upon competitive offerings as upon the special situation at particular mines. Operators who were forehanded enough to take offshore business while it was to be had are in much less distress over June and July output, for the contracts made with Europeans last winter were of the kind considered dependable, and for the most part the coal is being taken in monthly quotas.

The domestic market is restricted to small orders; some users are buying from hand to mouth while others are adding small tonnages to present reserves. Stocks in general are held at three to four months, and until the industrial prospect improves the buyer can hardly be expected to pile up fuel at a rate faster than it is being used.

A few "market cargoes" have straggled forward to Boston and Portland, but they have been harder than ever to absorb, and the price return has been anything but encouraging. Some of these cargoes have been loaded at Hampton Roads, but there have been occasional lots of distress coal that shippers were under obligation to dump, both at Baltimore and at Philadelphia. Demurrage coal at the New York piers is more likely to be disposed of in New York harbor and there have been no recent instances reported of cargoes loaded there without consignment in hand.

Partly because of lower mining cost on the part of non-union mines, but chiefly because of the narrow market, the coals on the B. & O. are being offered here at so low a range of price as to be a feature of the current situation. Quotations on fair grades in the Somerset district have been heard well below $2, and it is nothing unusual to hear C Prime offered $1.75@$1.85. It is fair comment on the current market that so little of this coal is being picked up, even by the largest buyers.

The demand for Pocahontas and New River at Hampton Roads for shipment coastwise continues extremely quiet. A price of $6 per gross ton f.o.b. vessel is about the highest for spot coal, but the light tonnage moving is confined almost rigidly to contracts. Re-handling factors at this end are having their troubles to dispose of cargoes fast enough to permit even routine shipments.

Anthracite—It is perfectly clear now that we are going into a dull spell for domestic sizes. New England will still take a lot of coal in July and August, but there will be no snap to the demand and the more far-sighted shippers are striving now to keep orders well ahead of current mining. For several months pea size has been put into storage, and it is likely now that chestnut will soon be the subject of similar treatment.

Retail trade, meanwhile, is very quiet. The average householder is either influenced by talk that hard coal must recede in price, or he is so short of ready money that he will postpone buying until after the vacation season.

Tidewater—East

NEW YORK

Anthracite Demand Slipping — Steam Sizes Not Wanted—Bituminous Prices Soften—Market at Standstill.

Anthracite—Conditions foreshadow a period of comparative quiet during July and possibly throughout the greater part of August. A marked slowing down has already occurred in the retail trade. This is reflected to some extent in the wholesale branch.

Retailers continued to take coal for storage after their own business had fallen off, in order to have good stocks on hand against the anticipated fall rush.

Stove coal is moving well at wholesale, as retailers still have unfilled orders on their books for that size. To dispose of the full output of chestnut some of the companies are shipping their surplus up the Lake. Pea is so hard to move that it is being stocked to quite an extent, and the smaller independents are cutting prices.

Demoralization exists in the steam

coal market, and all the buckwheat sizes can be bought from individual operators at substantial concessions.

Bituminous—The local trade is more nearly at a standstill than at any time in the last few years. If anything, the dullness has been intensified by the approach of mid-summer.

Nothing in the industrial situation gives promise of an urgent demand in the near future, although some increase in volume of sales is not unlikely as consumers begin building up stocks for the winter. They have been holding off on the theory that freight rates were due for an early revision downward, but this hope has been dispelled by recent utterances of Government officials and railroad men.

Low prices in the open market are deterring consumers from entering into contracts. They are picking up spot lots as needed and are indisposed to make commitments for future deliveries at the figures which operators are demanding. Producers do not seem inclined to come down much on their asking prices on contract.

Prices in the open market have shown a tendency to sag during the past two or three weeks, especially on high and medium grades. The low grades have long been selling at unprofitable levels and are being produced to only a limited extent. No great accumulation of unsold coal exists at Tidewater, but there is sufficient to keep the market unsettled.

BALTIMORE

Home Market Continues Weak—Prices Go Even Lower—Export Situation Is Strong—Hard Coal Market at Practical Standstill.

Bituminous—A careful review of the local situation and comparison with reports from other sections of the country show a complete and most unsatisfactory harmony. General business is poor and showing little signs of the expected revival, demand for fuel is so light that even the tremendously reduced production is a drug in the market, and prices have fallen so low that they are in many cases below the actual production cost.

Even the best coals are not commanding any particular advance in price over fair to medium grades. If you ask a coal man the average selling price of best steam coals, and incidentally, the price of best lump gas, he will quote you $2.60@$2.90. At the same time it is a fact that the trade has been able to purchase from mines recently some Pool 9 or 71 steam coals, and some excellent Pennsylvania ¾-in. lump at $2.40 @$2.50. Pool 10 coals are running the range between $2.30@$2.50. Pool 11 is on the market at $2.10@$2.20, while the lower grade steam coals are offering down to $1.70. Excellent gas mine run is $2.30@$2.40 and West Virginia mine run can be had as low as $1.70.

The export situation continues strong. For the first eighteen days of June as reported officially by the Custom House twenty-nine ships took a total of 171,232 tons of export cargo, while twenty-one of these ships took an additional 23,217 tons bunker.

Anthracite—June has been rather remarkable here for an almost total lack of business. Whether due to the fact that there is less free money in the homes than for several years past, or to that unfortunate agitation in some official lines which led people to believe that they would get hard coal at lower figures, the fact remains that a large part of the delivery season has been lost. The charges that have been made in relation to retail handling have been unfair as a whole and yet have prevented the retail merchants from properly pushing sales. It is now an unfortunate fact that the public will again have to learn, even if they retain the lesson for a brief time only, that the crowding of all purchasing into a short fall and early winter will not only mean inadequate deliveries but higher prices. The effect of a wholesale and retail advance which is expected on July 1 is problematical.

PHILADELPHIA

Anthracite Continues to Ease—Chestnut and Pea Flood Dealers—Retailers Extend Much Credit—Bituminous Remains Dull—Further Shading of Prices —Export Inquiries Increase.

Anthracite—With temperatures above 90 during the past week the public has almost forgotten the retail coal man. The effect of considerable agitation in the news columns of the papers has been to throw a little additional business to the dealers, as the articles have clearly indicated that cheaper coal cannot be expected.

Stove is the only size that any dealer wants. Chestnut and pea are heavy, to the point that many cancellations have been received. The bins set aside by the retailers for these sizes are full to overflowing.

There is hardly any disposition on the part of shippers to shade prices, with the exception of pea. Some independents have become so badly clogged that they are offering pea as low as $5.50, yet even at this price they are finding it difficult to interest a buyer.

It is believed the companies will go ahead, mining and storing the family sizes, but as the smaller producers are not equipped for storing it is the general opinion that they will suspend rather than endeavor to move the coal by cut prices.

The steam sizes are quiet, as they have been all spring. However, most shippers report a good tonnage of buckwheat moving, yet the surplus of this size is such that some shippers are cutting 50c.

Bituminous—The outlook is far from cheerful, after passing through one of the dullest weeks to date. Some of the biggest iron plants are announcing complete shut-downs, possibly for the entire summer. Even those concerns which are running light are barely buying more than for current consumption. It is the opinion of some well informed shippers that the next two months will be the slowest we have experienced.

In the meantime sales officers have never made stronger efforts to induce business than they have recently. Some producers with very highest grades of coal, who ordinarily do not solicit business, are bending every effort to get orders.

There has been further softening of spot prices as shown in the Weekly Review. Westmoreland ¾-in. gas is offered at $2.75, mine run at $2.50 and slack $1.50. Greensburg coal has been sold at $2.35, and Latrobe for $2.25.

The one favorable sign is that there is something of an increase of inquiries for export shipment, with a fair amount of business closed. However, there could be a very heavy increase in this direction and yet it would not be sufficient to affect local conditions.

HAMPTON ROADS

High-Volatile Trading Is Brisk—Dumpings Decline—U.K. Orders Increasing.

Accumulations at Tidewater have increased very largely during the week, while tonnage awaiting cargo, except at the Newport News piers, has been reduced to a minimum. Business at the latter piers, in high-volatiles, continues brisk. The Lamberts Point and Sewalls Point piers have shown little activity.

A total of 1,562,059 gross tons of coal were dumped at the local piers from June 1 to June 22, indicating that the dumpings for the month will break the May record, which was the biggest month of the year, with a figure of 1,830,000 tons dumped at all piers.

Orders for the United Kingdom picked up during the week, with prices holding approximately at last week's figures. Pools 1 and 2 were offered this week $6@$6.25, while other pools stiffened somewhat, being quoted $5.35@ $5.50.

A comparison of the situation at the piers is as follows:

	Week ended June 16	Week ended June 23
N. & W. Ry. piers, Lamberts Point—		
Cars on hand	1,953	4,181
Tons on hand	91,988	210,902
Tons dumped	183,579	146,294
Tonnage waiting	3,860	16,850
Virginian Ry. piers, Sewalls Point—		
Cars on hand	1,752	1,896
Tons on hand	76,600	108,000
Tons dumped	104,769	85,998
Tonnage waiting	26,150	6,013
C. & O. piers, Newport News—		
Cars on hand	2,095	2,300
Tons on hand	104,410	114,660
Tonnage waiting	1,575	87,250
Tons dumped	187,107	168,837

BUFFALO

Dull as Ever—Some Shippers Quote Lower Prices — Overproduction Continues—Anthracite Quiet—Lake Loadings Good.

Bituminous—There is still too much coal offering and consumption appears to be falling off. This means lower prices and the general quotations show it. Consumers believing that it is not well to pile up stocks so long as there is no advance of prices in sight. Just as soon as business begins to improve,

all mines will turn out more coal, so that the prices will be held at the bottom till something else happens, probably a car shortage. As it looks now such a day is some time ahead.

It used to be said that it was harder to sell one car of coal than half a dozen, but the rule now is to see days go by with often no orders coming in at all. As in most times when the trade is extremely dull, prices are not at all steady. Some shippers are now inclined to report lower prices, while others are trying to hold them. Average quotations are $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 steam lump, $2.35 for Allegheny Valley mine run and $1.50@$1.75 for gas.

Anthracite—Consumers are in no way disturbed over the prospect of a short winter supply, so they wait to see if the prices will not come down. The output being well above that of last year to date it is probably safe to depend on the supply.

The larger independents are running, a premium of about 75c. being paid for the coal. The smaller mines seem uncertain as to what to do, but if the big profit was in the business that some people imagine, one would expect to see every mine running full capacity. Jobbers are interested in seeing them active, for all the anthracite they handle comes from such mines. If their connections are good they are able to sell more anthracite than bituminous sometimes, in these slack days.

Lake loadings keep up well, being 148,600 tons for the week ended June 18, of which 71,000 tons cleared for Duluth and Superior, 28,500 for Milwaukee, 16,600 for Fort William, 16,100 for Sheboygan, 9,500 for Port Arthur, 3,100 for Houghton, 2,800 for Racine and 1,000 for Kenosha.

Coke—Only an occasional car is being sold in this market. So many of the furnaces are idle that the ordinary purchases are sufficient to supply them. All transactions are merely by the way. Prices are slack, being on the basis of $4.50 for 72-hr. foundry, $3.75 for 48-hour furnace, $3.25 for slack and $5@$5.25 for domestic sizes, to which add $3.64 freight.

Northwest

MILWAUKEE

Consumers Holding Off for Lower Prices — Yards Well Supplied — Receipts by Lake Continue Heavy.

Apathy still prevails in the local market, with no prospect of a change until the public becomes satisfied that there will be no reduction in prices. Orders are few, and the yards are fast filling up. There is an abundance of anthracite, including pea and buckwheat sizes, which latter have been in small supply for the past few years because of its consumption by the industries.

Now that soft coal for steaming purposes, especially Western coal, has become cheaper, manufacturers are making use of it instead of anthracite. The stock of Pocahontas is unusually large.

Receipts by Lake continue heavy. Receivers are making use of all available storage room and docks not equipped with coal handling facilities are being filled up by self-unloading steamers. Thus far 360,787 tons of anthracite and 950,976 tons of soft coal have been received, against 228,571 tons of the former and 303,035 tons of the latter during the same period last year.

MINNEAPOLIS

Dock Supply Heavy — Interior Buying Dangerously Delayed — Only Bargain Coal Can Be Sold.

The dull commercial and industrial situation continues to make the sale of coal in the Northwest a very slow process. The docks have been accumulating good stores, due to the somewhat unexpected rush on the part of producers who have dock connections.

So far, the tonnage from the docks to the interior has been much under normal. People simply will not buy coal. This applies to the private consumer as well as the steam-plant operator. Of course the latter must have coal if he is to run his plant, but during the quiet time, he has been able to confine purchases to narrow tonnages, and is refusing to do more.

It is one of the unfortunate things that so many large users are not equipped to stock any quantity of steam coal, and so could not buy in quantity, if they were inclined to do so. However, they could all do one thing which most of them seem to be refusing to do, and that is to contract for future needs. Instead, they are holding off as much as possible, hoping to get lower prices. Incidentally, they are getting odd lots of coal now and then at prices under those which would rule under contract. Demurrage coal has been sold at considerable concessions.

There is no doubt that if this sort of thing keeps up for much longer, it will mean that the mines serving the Northwest will not have any surplus, and when everybody is rushing to get coal, there will be the usual shortage and premium prices will be offerd. There is ample logic in the attitude of buyers. They do not have to buy now if they do not see fit. It cannot be assured absolutely, that the fall and winter will see a car shortage, a coal shortage, and higher prices. But it is equally impossible to guarantee against these possibilities. The prospects seem to be for a gradual increase of industrial consumption, and it is as close to a certainty as anything can be, that there will be at least a moderate average need for domestic use. These equal a shortage, under average conditions unless there is some early forwarding of coal.

The wholesale trade will have to muddle through somehow. It is wholly to their credit that they always have been able to do this, in the face of some very trying and nearly impossible conditions. However, it seems to be in the nature of tempting Providence to let things slide until the last minute, and trust to the coal trade to make up for the lack of foresight. Eleventh hour repentances are as dubious a policy commercially as they are ecclesiastically. They may get by, but it is an unsafe thing to depend upon.

DULUTH

All Buying Is Sluggish—Dock Congestion Grows — Dock Prices Reduced — Retailers in Suspended State—Ore Industry at Standstill.

A quiet condition still prevails, with a lack of buying by both retailers and the public making a dark outlook for the future. Dealers had hoped that the the stagnant conditions on the iron range would move forward to the place of returned trade, but instead of improving these have grown worse and more mines have closed down.

Crowded condition of docks grows worse every day. Last week a new high mark in receipts was made when sixty cargoes were placed on the docks. Of these, seven were anthracite. Ore caroges for lower ports are growing increasingly scarce and it is thought that there will be a shortage of bottoms before the fall rush comes.

For the first time in the history of the coal business at the head of the Lakes, retailers are laying off their draymen because of the slackness in the anthracite market. Anthracite prices remain firm, and the possibility of a shortage before the final winter supplies are in increases every day.

Youghiogheny, Hocking and Splint lump prices remain at $6.50, with run of pile at $6. Screenings are quoted at $4. Even at these low figures sales do not mature.

Dock operators feel that the bottom in the slack market has almost been reached and that the buyers will soon realize that continued slowness will only mean a serious shortage in the fall.

Inland West

DETROIT

Lack of Buying Demand Is Still Prominent—Shipments Are Small and Free Coal Is Scarce — Anthracite Receipts Good.

Bituminous—Little business is being done in either steam or domestic sizes. Some of the wholesalers and jobbers say, however, that they are getting more inquiries from consumers of steam coal, who seem to have decided that there is little reason for expectation of lower prices.

With many factories operating much below normal, there is a considerable reduction in steam coal consumption, while general business conditions cause some consumers to hesitate about placing orders until they can obtain a better idea of the probable extent of their later requirements.

There is a tendency observed, also among certain of the consumers of steam coal, to hold off buying and await a reduction of freight rates. Even were freight rates lowered, the coal buyers, in the opinion of jobbers, would have little chance of getting coal cheaper. They believe a reduction in carrying charges would bring an activity in buying that would speedily carry prices to a level more than offsetting the cut in freight rates.

Not very much bituminous is coming into Detroit. Shipments of speculative coal practically have been discontinued after several tests in which the stock was moved at a disastrous sacrifice. Free coal on tracks is not readily found.

Smokeless lump and egg is quoted $5.50, mine run is around $3.50 and slack $2@$2.25. West Virginia lump is $3.25@$3.50, mine run $2.25@$2.50 and slack $1.90@$2. Ohio lump is $3@$3.25, mine run $2.15@$2.25, nut and slack $1.15@$1.25 and occasionally higher.

Anthracite—With a fair supply of prepared sizes in retail yards, demand from household consumers is slow to develop and distribution is making little headway. High prices and lack of employment are mentioned as factors in deterring buying.

CLEVELAND

Market Even Quieter — Slack Prices Drop—Lake Tonnage Declining—Some Activity in Automotive Industry.

Bituminous—Coal trade in this district has entered the second half of 1921 with all indications pointing to a summer of almost unprecedented dullness. This is all the more striking because of the sharp contrast with last year, when consumers were clamoring for coal. Slack coal has suffered another drop, the range of prices now being $1.05@$1.25.

The ample supply of cars and the increasing curtailment of manufacturing activities are combining to keep the coal market quiet. Virtually the only industrial news of encouragement in this district has been the announcement that the Ford Motor Co. has a daily schedule of 4,000 cars for July. Numerous parts plants in and around Cleveland depend almost wholly upon Ford orders for business.

Automobile orders are also appearing in more than expected volume at steel plants although they are not sufficient to sustain operations above rate of 15 or 20 per cent. Railroads are placing some orders. The New York Central lines west recently closed for about 1,000,000 tons of No. 8 coal to come from mines located along the right of way, the price being a shade under $3. The Cleveland Municipal Lighting Department has closed for 80,000 tons of bituminous from the middle Ohio district.

Lake—The movement is sagging. Shipments from the mines have decreased and stocks at lower docks are the lowest in more than a month. The movement for the season to date has been 7,782,957 tons against 2,759,206 for the same period one year ago.

Pocahontas and Anthracite—Retail prices are unchanged. Receipts of bituminous coal for the week ended June 18 amounted to 1,138 cars; divided, industrial 859, retail 279 cars; as compared with a total of 1,153 cars the preceding week.

CINCINNATI

Demand Stagnant — Lower Domestic Production Strengthens Steam Grades —Expiration of Old Contracts May Stiffen R.R. Buying.

Stagnation of demand, congestion of movement toward the Lake, and indifference to market conditions on the part of the buyer, are the features of this week's coal market. The buying power of the industrial wage earner precludes any demand from that direction.

Ten days ago nut and slack was a drug on the market and held back a heavy domestic demand. Now the status is reversed and domestic demand has been so poor that it has reduced the supply of nut and slack until that product is rising in price. The let-up in domestic demand is traceable to the indifference of the consumer who has made up his mind to sit tight until railway rates and wages, miners' wages, etc., are reduced.

West Virginia splint prices are around $3.75@$4 for lump; $2.25 for mine run, and nut and slack around $1.25 for the better grades. Harlan and Hazard 4-in. lump is $3.50@$4. As low as $1.65@$1.85 for mine run and 85c. for slack were heard of from the Elkhorn field, with the slack average $1.

Smokeless is held back by operators of standard mines who produce only sufficient to satisfy contract demand and to meet orders taken direct. As a result, orders are being received from $5.50@$6 and some coal caught astray has been sold as low as $4.50 for lump and egg and $3.50 for mine run.

The L. & N., Southern, and Virginian railways are all reported to have many contracts expiring June 30. Inasmuch as few contracts have been reported, Kentucky mines expect these railways to go into the open market for their needs and they believe the market will be stimulated thereby.

CHICAGO

Close Buying Features the Market— Retail Stocks Heavy — No Household Buying—Eastern Coals in Distress.

Outside of one or two rather small contracts for steam coal made with firms engaged in manufacturing building materials, there has been practically no activity whatsoever in the Chicago market. If these same operators had been offered this contract business three months ago, they would have refused it with scorn. We are citing this as an example of the fact that the coal industry is beginning to tighten up its belt and prepare for strenuous times when business will be taken on very narrow margins. In this connection, 100 cars were placed this week with an operator who managed to get the inside track and who cut his price down to one cent below that of his nearest competitor. Quality and preparation being equal, the low price gets the business every time, regardless of former friendly relations.

Yards of retailers are loaded to capacity. The public absolutely refuses to buy, being stubborn in the belief that coal prices will show further evidences of shrinkage. If this buying strike continues into the fall months, it will mean when the demand once does start, the yards will be swept bare. When the demand comes, it will come all at once and will bring about both a shortage of coal cars and coal.

There is a certain well defined rumor going the rounds in Chicago that one of the largest operating companies in this state is planning on closing its mines during the month of July. It is to be hoped that the operating company in question will go ahead with its program and close its mines. If it does, nine times out of ten, other operators in the same field will follow suit. These mines have developed a public of their own, and their public will buy from them rather than from other sources, consequently, should a number of these mines close down, it would mean the elimination of some excessive competition, which would be beneficial to all concerned.

In spite of several severe lessons recently given to Eastern operators, who shipped considerable quantities of splint and smokeless on consignment, more coal of this order is coming in and the market is completely shot to pieces. Anthracite is not in as strong a position as it was a week ago, although anthracite when compared with bituminous coal, is in a very enviable position.

COLUMBUS

Demand at Low Ebb — Lake Loadings Continue Heavy—Automobile Industry Picking Up.

Commercial users are buying only what they need for the present and are not disposed to stock up. With industry at a low ebb, fuel requisitions are generally small. Dealers are not buying to any extent because of the belief on the part of consumers that lower prices will maintain, especially as far as freight rates are concerned. Consumers also have not the ready money to lay in their coal supply at present and this is causing a dull market.

Some congestion at the Lower Lake docks has occurred but so far this has not been serious. Contracts for Lake tonnage are not numerous. The H. V. docks at Toledo during the week ended June 18 loaded 189,299 tons, as compared with 211,476 the previous week, a total of 1,363,562 tons for the season. The T. & O. C. docks loaded 46,990 tons as compared with 44,944 the previous week, making 332,063 tons for the season.

There is some stocking of the better grades of domestic such as Pocahontas, New River and Panther grades. Little demand for Hocking or Pomeroy lump is reported. Retail prices are fairly steady. Anthracite is selling around $15 while Pocahontas lump is $10.

Some concerns engaged in making automobiles have increased their forces but others are reducing their output. Railroads are not taking much fuel. Screenings are still weak, due to the large production for the Lake and prices are consequently lower.

ST. LOUIS

Buying Eases Up — Market Is at a Standstill—Country Business Shows a Little Activity—Prices Continue Lower.

Conditions are a trifle worse than at any time this season on account of storage buying coming to an absolute standstill. All yards have a good supply on hand, but the public is convinced that railroad rates must come down and the miners are going to take a reduction in wages, and are not buying.

Carterville is extremely easy. A little is moving in, mostly to fill in a few places in the larger yards. The country demand on Carterville shows little activity the past week.

Mt. Olive is not a factor at the present time. Very little is moving in, with no call at all. Some of this coal has been moving to points West and there has been some country domestic business during the past week.

On Standard there is no domestic moving in. A little has been shipped to points West, but everything indicates that the country dealer is finding conditions about as hard as his city brothers.

Steam tonnage has fallen off, both in the city and country from all fields and the situation is one of despair. No coke is moving to speak of and there is nothing doing on anthracite or smokeless. Retail prices are unchanged.

Southwest

KANSAS CITY

Fuel Oil Hits Steam Sizes of Coal—Domestic Demand Good, but Production Limited.

Domestic grades are moving freely, notwithstanding the fact that a majority of buyers are holding off, thinking there will be a reduction in price or freight rates. Prices are advancing instead of declining and there is no possibility of immediate reduction in freight rates.

On account of light demand for slack, due to substitution of oil, consumers in many instances will have to take mine run as it will be impossible to produce screened grades with no market for the fine coal. The open market for fuel oil is about 30c. per barrel f.o.b. refineries. This makes a delivered price here of $1.02 per barrel and it is stated but not confirmed that oil companies are offering to contract at $1.32 delivered. This puts coal out of the running entirely. Since last week some of the companies have advanced Kansas prices for lump and nut 25c. per ton.

South

LOUISVILLE

Demand Duller — Prices Slightly Weaker — Movement Is Slower — Lake Demand Easing.

As a result of Lake movement having been checked, and lack of demand for prepared sizes, the movement of coal from eastern Kentucky to the North has eased up somewhat.

In May the Hazard and Harlan fields had very large tonnages, the Harlan field shipping over 12,000 cars, a good deal of this tonnage being from the Wisconsin and U. S. Steel Co. mines, the latter moving over 180,000 tons. This broke all records for movement in the Harlan field.

The big Hazard mines with large contracts, and private owned mines of steel and industrial concerns have been running at full speed, but many small mines playing for general commercial and industrial trade have been practically at a standstill. Although large tonnages have been moved, it has not resulted in much commercial stock, as the steel companies have been raising huge storage piles for future use.

Inquiries are still being received for export, but not much business is resulting. A little coal is going through Savannah, Charleston and Jacksonville, for export to Italy.

During the past week some Hazard screenings have been quoted down as low as 90c., due to lack of demand at any price. The general market is showing a falling off of 15@25c. in minimum quotations this week.

West

DENVER

Trade Prepares for Heavier Orders—No Market Losses Decreasing — Slack in Better Call.

With storage prices nearing the figures that prevailed last winter, for bituminous as well as lignite, operators and dealers are preparing for an early fall trade based on a price of $6.50 for lump bituminous. This will probably become effective in September.

Bituminous slack, which had little stability during the early summer, is gradually coming into demand again, thereby giving operators a chance to work their mines to greater capacity than earlier in this season.

Car shortage again is taking on a serious aspect, crop movements getting heavier and cutting down the supply of box cars used to haul lignite and some bituminous coal. Lack of market is not so great as in past weeks.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Demand Decreased Further — Lighter Lake Shipments—Industrial Consumption Slumps.

There has been a further decrease in the line demand, and Lake shipments have slowed down on account of congestion of loaded cars. Production as a whole is below 40 per cent. The major part is going to the Lake and the public utilities. Practically all industrial consumption is at a very low ebb.

In the steel industry, operations are the lightest on record, in percentage of capacity, while in tonnage the production of steel is at the lowest rate for twenty years. It was back in 1899 that steel production was at the present rate, and in those years production of coal in the United States was at scarcely more than one-third the rate in the record year, 1918.

Production is now confined largely to mines that are forced to run for physical or financial reasons, prices having become quite unprofitable. Some operators think the light operations now promised for the next few weeks will cause miners to propose a revision of the scale for the purpose of increasing employment. The cost of production is held to be reflected by market prices of gas coal rather than steam coal, as with a fair demand and limited supplies, gas has not slumped like steam coal.

CONNELLSVILLE

No Sales to Furnaces Reported—Further Decrease in Output Expected—Prices Easier.

Consumption for both furnace and foundy coke has decreased further and additional ovens will have to go out. There is rather sharp competition among operators who desire to keep some ovens in operation, or rather there would be sharp competition if there were any inquiry to work on. In some quarters it is claimed there has not been a single sale of furnace coke to a furnace interest in the past week or ten days.

There have been sales of furnace coke, but they have been to outside users, for various purposes, and in most cases the sales have been in single carloads. Even for such little lots former

prices have been cut, sales of single carloads of standard furnace coke having been made at $3 net to the consumer, against $3.10 a week ago. It is reasoned that if a blast furnace wanted to buy twenty cars it could be had at close to $2.75. Ordinary grades of foundry coke are off 25c., while two operators having favorite brands still quote their former price of $5.

The market is quotable at $3 for spot furnace, $3@$3.25 for contract furnace and $4.25@$5 for spot foundry.

The *Courier* reports production in the week ended June 18 at 11,500 tons by the furnace ovens and 18,320 tons by the merchant ovens, making a total of 29,820 tons, a decrease of 3,170 tons.

UNIONTOWN

Market Absolutely Stagnant — Prices Drop — Consumers Refuse to Buy — Future Freight Rates a Question.

Production of coke during the past week struck the lowest ebb that it has reached for some time. There are some undestined carloads on track in the Connellsville region and one large operator is reported to have accepted $2.90 for a number of cars in order to get rid of them. The spot market for furnace tonnage may be placed at $3@$3.25 with foundry standing $4.50@$5.

The coal industry has suffered also. The highest price received was $2 and then the product was of the highest quality. Quotations place the price of coal at $1.65@$1.85 with few takers.

Evidently consumers are waiting before placing orders to see what the railroads are going to do in regard to freight rates, and it is probable that until some definite decision is made, very little coal and coke will be sold by local operators.

However, the revision of freight rates will take time and a return to normalcy is not looked for under the present prevailing rates. Until help is assured both coal and coke will continue to be a drug on the market, a situation which now prevails.

Consumers seemingly have no immediate need for tonnage and are not in the least concerned about the future. Until that time arrives it is hardly likely that much tonnage will move.

EASTERN OHIO

Production Declines—Lake Congestion Clearing as Shipments Are Curtailed—Prices Soften with Poorer Industrial Outlook.

Production showed a further decline for the week ended June 18, although the recession is not of any appreciable magnitude. Aggregate production amounted to 381,000 tons, approximately 60 per cent of capacity. This figure represents a decrease of 13,000 tons.

Accumulated tonnage for the year to date is estimated at 7,692,327 tons or about 52 per cent of the total rated capacity.

Association mines report a slight increase in production over that of the preceding week, having worked 55 per cent of possible worktime, while 40 per cent was lost account "no market." Railroads are taking about 25 per cent of the total output for fuel.

Aside from the Lake shipments which continue at a fairly good volume, the coal trade generally is in the "dumps." Industrial inquiries are neglible and purchases are made to supply barest needs from day to day, while in the retail trade dealers are doing less than 50 per cent of normal business, with no apparent results from an advertising campaign conducted during the past six weeks.

Coal is being dumped at the lower ports about as fast as it is coming forward and there is not much change in the supply on hand, the railroads having about 18,000 cars on track and arrivals averaging some 3,000 cars per day. The peak in the latter has subsided as shipments of Lake coal have been curtailed during the last few weeks.

There is an abundance of slack on the market and small quantities are being sold at less than $1 per ton. Spot prices are shown in the Weekly Review.

Unless there is some revival in demand, it is pretty generally felt there will be a further closing down of mines, as with the softening in spot prices to what is considered bed-rock, operators will have no other alternative.

CENTRAL PENNSYLVANIA

Production Again Declining — Non-Union Mines Getting the Business.

Production for the first half of June showed a slight increase but figures being received since then indicate a drop. Up to and including June 18, 36,280 cars were shipped as compared with 32,306 in the same period in May. The district is now loading approximately 60 per cent of its normal output but this is largely confined to the non-union sections. Union operators are producing less than 30 per cent.

A peculiar situation has come to light with the Lehigh Valley R.R., which owns mines at Snow Shoe. The railroad company is buying coal on the market at $1 per ton less than it can mine its own and consequently its mines are closed.

The big steel companies that have mines in the district are engaging in commercial trade and are selling coal at such low prices that the union mines cannot compete.

FAIRMONT AND PANHANDLE

Tidewater Shipments Slump — Market Conditions Fail to Improve — Production Dropping.

Fairmont

Production was slightly less during the week ended June 18 due to a drop in Tidewater shipments. There were around 210 mines idle in the northern part of the state from day to day and mines going had only about two days' work. In spots a few companies were producing in a limited manner, but if anything conditions appeared to be growing worse instead of better, with prices getting still weaker. Slack was down to $1, with mine run about $2.

Northern Panhandle

With virtually no contracts being closed and with quietness prevailing in the spot market but little coal was moved except to Lake points. Congestion of the piers at the lower ports was growing so serious that a curtailment of this movement is in prospect. Prices ranged $2.50@$2.90 on prepared sizes, $2.25@$2.50 on mine run, and slack was soft at $1.50.

UPPER POTOMAC

Idleness More Pronounced—Spot Prices Soften—R.R. Business the Only Outlet.

Comparatively few plants were running during the week ended June 18. There was virtually no demand for spot coal and prices were decidedly weak; Pool 9 ranged around $2.75 and Pool 10 about $2.50. A little railroad fuel business was about all that remained. Aside from a few operations at Thomas and around Potomac Manor, idleness was general on the Western Maryland in the Potomac territory.

Middle Western

MIDWEST REVIEW

Production Still Dropping — No Monthly Price Increase for July — All Markets Sluggish.

It is fairly safe to predict that during the next few weeks the tonnage produced by this country will drop considerably below the 8,000,000-mark. Reports coming in from all over the Middle West are that sales are increasingly hard to make both on steam and domestic. Some of the mines producing the best grades to be had in the West are running at 25 per cent while others have philosophically decided to close down and wait until conditions become more normal.

Ordinarily at this time of the year, the retail trade is placing orders freely for coal to be used in threshing. This year no orders have been placed. The same amount of coal, however, will have to be used for threshing the grain. The difference is that this year the farmers are feeling so poor they are delaying purchases until the very last minute.

A few years ago, following the example set by the anthracite operators, the mine owners in Franklin County started the practice of raising the price of their coal 10c. every month throughout the summer season. This practice has been found to work to advantage as it gives the retail trade some little extra incentive toward stocking up during the summer months. This year the Franklin County operators have reluctantly come to the conclusion that it would be folly to increase their circular price for

the month of July; $4.05, therefore, will be the circular price for 6-in. lump, 6 x 3 furnace, and 3 x 2 egg. It is extremely problematical at this writing whether or not there will be an increase in August.

Demand for steam coals, if it can be spoken of as a demand, continues to be very sluggish. Those who are buying at all are only tempted into the market by bargains which are being offered at considerably below cost. Some of the industries engaged in producing building material are operating on a fairly satisfactory basis, but this is the only line of industry which has shown any signs of improvement during the last month. We have heard of several cases in which factories had placed orders for substantial tonnages, but a little later were forced to cancel on account of the fact that orders which had been in prospect had failed to materialize. If a very careful survey were made of all the factories in the Middle West, it would be found that the average factory has an ample supply of coal on hand. These stocks have been gradually built up since the first of the year when bargains began to be noticeable on the open market.

Labor conditions continue to be fairly satisfactory. There are, however, one or two mines experiencing a little trouble, but the labor market is so flooded that the miners are not in a very strong position. Added to this is the fact that the average operator needs but little encouragement to close his mines; should labor show an unreasonable spirit and no desire to cooperate in these trying times, the operators feel that they are quite justified in closing until labor difficulties have been adjusted.

WESTERN KENTUCKY

Movement Slow, but Prices Well Maintained — Not Much Overproduction — Domestic Moving Better.

The field is not overproducing at the present time, as some of the big companies are operating only a few of their mines, and some of the little ones are down. Some of the large companies which are operating are running at full speed, which is reducing costs, over part-time operations. As a whole the situation is not bad, as there is a fair demand for prepared sizes, and stoker burners are taking up a good deal of the steam coals.

There has been a slightly improved market for domestic sizes as a result of the season advancing, and retailers have been buying well in Louisville. The movement into Nashville, Memphis, the Chicago district and a few other points has been as good as anticipated.

SOUTHERN ILLINOIS

Market Continues Poor — Prices Still Breaking — Railroad Tonnage Light — Future Not Encouraging.

The Carterville situation is practically unchanged, except in the matter of price. Association prices are slowly but surely breaking. Franklin and Williamson screenings, both in Chicago and St. Louis markets, are around $1.25. Prices on domestic sizes of lump, egg and nut are weakening. The independents are as low as $3 for lump, egg and nut, $2.75 for mine run and they are unable to work more than a couple of days a week with these prices. Railroad tonnage is a trifle lighter.

In the Duquoin field somewhat similiar conditions exist, both as to prices and working time. In both fields many mines are idle and some work only one day a week. The Mt. Olive district is quiet, with one to two days work per week and not much break in the price. The St. Louis price is $3.25 and the country figure is $3.50. Most of this tonnage is moving north and west and steam business is principally on contract.

The Standard district continues in its demoralized shape. The mines that are working get one to three days per week and an announcement has just been made that several mines that are now working will suspend until conditions improve. Railroad tonnage continues light.

Country shipments from all Illinois districts are exceedingly small in comparison with past years.

Middle Appalachian

HIGH-VOLATILE FIELDS

Market Conditions Growing Worse — Prices Further Depressed — Lake Movement Slowing.

KANAWHA

Little coal was mined during the week ended June 18, owing to an almost total absence of spot demand. There was so little business being placed that prices were depressed further and producers who were able to secure as much as $2 for mine run considered themselves fortunate. Slack ranged $1@$1.10 and lump was not more than $2.75.

LOGAN AND THACKER

While Logan production was large, yet the bulk of the output was confined to a few companies shipping to their own docks at Lake points. Demand was not improved although inquiries were slightly heavier. Prices, when offered, were too low for operators' acceptance.

Thacker production fluctuated between 80,000 and 90,000 tons with no market losses amounting to about 70,000 tons, but there were no strike losses. Much coal was moving on contract, but the spot market was somewhat weaker if anything.

NORTHEASTERN KENTUCKY

Operations were not over 25 per cent of potential capacity. Market conditions were worse and complete stagnation prevailed. Industrial buying was lighter and Lake shipments were decreasing.

VIRGINIA

No headway was made by operators in speeding up production. Few spot orders were recorded, producers being dependent on such contracts as were still in force. Prices were still very soft, owing to the light demand. There was so little call for coke that almost none was being made or shipped.

LOW-VOLATILE FIELDS

Tidewater Demand Easier — Market Conditions Less Favorable — Steam Prices Pushed Down — Domestic Business Hard to Accept.

NEW RIVER AND THE GULF

With Tidewater tonnage declining the New River field felt the effect of the slump in demand during the week ended June 18. However, this had not yet restricted production, but had softened prices. Free coal was in excess of takers and Inland market prices on mine run dropped to as low as $2.50. There was no call for slack coal, which caused producers to accept fewer orders for the prepared sizes.

Gulf production did not average more than 55 per cent of capacity, due particularly to the drop in Tidewater demand. Much coal was accumulating at the piers, suggesting the possibility of an early embargo.

POCAHONTAS AND TUG RIVER

The lull in demand affected Pocahontas production very strongly. Spot demand was greatly weakened especially on slack coal. Hence, operators were not slow to accept orders for prepared sizes.

Tug River production also suffered as a result of the dwindling market for smokeless coal, shipments being confined for the most part to contract orders. Heavy Lake shipments were made, but much of this coal was not being dumped, adding to the growing congestion at the lower docks.

West

UTAH

Public Will Not Buy — Low Rate of Operations — Prices Unchanged.

The coal situation here remains unchanged. An official of one of the prominent retail agencies of Salt Lake City, in conversation with a representative of this journal the other day, said he did not believe the public could be induced to buy coal now if the retail price were reduced by two dollars a ton.

The tendency of the men employed at the mines to leave the fields for other work is very slight. Two or three days' work a week brings in as much as many of the men would make at other occupations. Besides, like their employers and the dealers, they are expecting every week to see an improvement in the situation.

MINE And COMPANY NEWS

ALABAMA

The Manchester Coal Co., Manchester, Walker County, has completed a spur line about two miles long to its new developments and is preparing to install two large steam shovels. The stripping operation is on the Black Creek Seam, the spur track connecting with the Alabama Central R.R.

James Gallagher and John R. Smith have sold the lease operated by the **Sunlight Mining Co.** to the **I. O. Drewry Mining Co.** This is also a stripping operation and the production of coal will be resumed by the new owners.

ILLINOIS

After having made extensive repairs the **Decatur Coal Co.** has started mining coal. The tipple has been covered with galvanized iron and has been otherwise repaired in its structural frame. The mine and equipment are now in good condition for the coming season. Several days each week are being put in by the miners.

The Midland Counties Coal Co. is advertising an issue of $222,000 of bonds bearing 6 per cent interest and due in from ten to fourteen years. The bonds are offered at prices which will yield, if held to maturity, approximately 7½ per cent. The bonds are a direct mortgage on the property of the company located at Sherman, Pawnee and Kincaid, Ill., and at Otter Creek Junction, Ind. The company was organized in 1913 for the purpose of acquiring the properties of the Illinois Midland Coal Co. It has capital stock of $3,000,000, all of which is owned by the Commonwealth Coal Co. of Chicago. The mines have been leased to the Peabody Coal Co. until 1938.

INDIANA

Harold Henderson and William Lackey, of the legal department of the United Mine Workers in Indiana, have tried over 50 cases before the state industrial board. All of these cases were filed with the board by miners who were injured or by relatives of miners who were killed during their work. The board was in session from June 10 until June 24. Courts were held in Sullivan, Clinton, Rockville, Terre Haute and Brazil.

KENTUCKY

The Bollinger-Jones Coal Co. made an assignment at Hazard recently and the receiver named was the directing head of one of the producing companies holding a heavy amount of claims against the concern. A statement has been issued to the effect that the company will be able to pay its indebtedness if prompt collections can be made. Some of the mines in the Hazard field are said to be heavy losers.

The Secretary of State has approved articles of incorporation of the **Crestmont Coal Co.**, Crestmont, $10,000 capital, J. A. Heaton, F. Sternberg and G. F. Bobbitt, all of Crestmont.

OHIO

The United Coal Sales Co., is a new wholesale concern located in Columbus, which handles the output of the **Pomeroy Colleries Co.**, in the Pomeroy Bend field and the **Twin Ada Coal Co.**, in the Jackson field. C. E. Aumiller, V. G. Miller and W. E. Evans are in the management of the company.

A total of $15,000 has already been expended by the **Rush Meadows Coal Co.**, Cincinnati, in establishing a coal yard in Norwood, and the company is contemplating spending $25,000 more in the construction of flight conveyors and screen equipment.

Contracts approximating more than $101,000 to supply coal to the public schools in Cincinnati have been awarded by the **Cincinnati Board of Education** to five separate coal companies in the city. Public schools were divided into five districts and bids were received separately in each district. The bids received for supplying the schools with fuel are said to be $2,500 lower than those received by the board last year.

PENNSYLVANIA

The Ellsworth mines of the **Ellsworth Colliers Co.**, a subsidiary concern of the Lackawanna Steel Co., has resumed work in full at its No. 1 plant, after a shutdown of almost six months. About 500 miners are employed and additional men will be taken on as necessary. All of the coal produced will be pulverized and shipped to the byproduct plant of the steel company at Buffalo.

Mayor Connell has lifted the ban that has been on the **John Gibbons Coal Co.** in South Scranton recently and the company has resumed operations. Work at the mine was halted by the city because of complaints registered by two property owners over the workings of the company, but an agreement has been reached among all concerned and the city is satisfied.

Annual meeting of the **Bourne-Fuller Co.** was held at the company's coal and coke operations at Searights. The Bourne-Fuller Co. leased the property formerly owned by Taylor Coal and Coke Co. Officers re-elected are R. S. Hall, Cleveland, president; F. K. Moore, Cleveland, vice-president; F. H. Ulmer, Cleveland, treasurer, and D. B. Stauft, of Uniontown, secretary and general manager. The company now is shipping coal only.

Conditions in the Connellsville coke region remain practically the same, except that **W. J. Rainey, Inc.**, is putting out all its ovens and will ship coal. This leaves but very few ovens in the region going.

The directors of the **Brier Hill Steel Co.** have decided to omit the dividend due on the common stock July 1. In the last quarter 40c. a share was paid on the issue and in a previous quarter 60c. The regular quarterly dividend of 1¾ per cent was declared on the preferred stock.

The Windsor Coal Co., of Pittsburgh, has contracted for the instalation of two balanced Marcus screens to be installed in their new tipple at the Beech Bottom mine.

The Paramount Coal Co., has been incorporated with a capital of $100,000 to mine and sell coal. Operations will be in the Massillon field. Among the incorporators are John Boxley and Orris Ames.

Coal dredgers in the Susquehanna River at Sunbury have discovered a new ledge of coal, said to contain 10,000 tons of merchantable sizes. Lest the shifting currents carry it away before it is "harvested" the dredgers are working day and night and are collecting 600 tons a day.

WEST VIRGINIA

E. M. Burns and William H. Smith, of Ebensburg, Pa., have become the owners of the **Foye-Splint Coal Co.'s** holdings of Charleston. They are situated in the Elk River district of Clay County and comprise 1,000 acres of premium coal.

Announcements of the 12th meeting of the **Mine Inspectors' Institute of America**, to be held July 12-14, in Charleston, have been mailed to the members of the Institute, by Secretary J. W. Paul, who extends an invitation to all state, county and provincial mine inspectors in the United States and Canada, to attend the meeting. The program is an interesting conference of mine inspectors on all matters pertaining to coal and metal mining. Membership dues for the years 1918 and 1919 have been remitted and old members are entitled to continue their membership by the payment of dues ($5) for 1920 and 1921; there is no initiation fee. New members will be received at the meeting, when the proceedings for 1920 and 1921 will be distributed.

Robert M. Jones and John Koblegard will organize a company to mine coal on an extensive scale in the Clarksburg section. They have incorporated the **Jones-Koblegard Coal Co.**

A deal was consummated early in June by Brownsville people for the purchase of about 1,400 acres of Freeport and Kittanning coal in Clinton district of Monongalia County. The consideration involved was in the neighborhood of $35,000. None of the coal land has been developed, only a few openings having been made to secure coal for household use.

The West Virginia charter of the **Cleveland Cliffs Iron Co.**, of Ishpeming, Mich., and Cleveland, Ohio, has been surrendered to the Secretary of State, this company having decided to become an Ohio corporation. The mines of the company are located in the Logan field.

Approximately 250 acres in Mingo County are to be developed by the **West Williamson Coal Co.**, the capital stock of which has been increased from $25,000 to $75,000. The company was only organized a short time ago, C. S. Waugh being the president as well as general manager.

Improvements are to be made at the plant of the **American Rolling Mill Co.**, at Nellis, Fayette County, where several mines are located. At the point named the company plans to erect a store, office building and theater. Headquarters of this company are at Middletown, Ohio.

After increasing its capital stock materially so as to bring the interests of the company in Pennsylvania, West Virginia and Kentucky into one organization the **Home Coal Co.** has changed its name to the **P. V. & K. Coal Co.** This concern is headed by A. K. Robinson.

Organization of the **William Dempster Coal Co.**, of Charleston, with a capitalization of $50,000, presages development of coal territory on a fairly large scale. Largely interested in the new concern are: William Dempster, Alice Adalade Dempster, Ducan Reid, Elizabeth Reid, and C. S. Munro, all of Charleston.

Within the next few months it will be possible for the **Stone Coal Co.** to begin operations at its new plant at Sand Run in Upshur County. The company has secured a tract of coal at this point on the Charleston Division of the B. & O. and is now installing a siding. No time will be lost in driving a heading and in putting in a plant.

BRITISH COLUMBIA

The reorganization of the **Western Fuel Corporation of Canada, Ltd.**, until lately known as the **Canadian Western Fuel Co.**, is complete. The change will not bring any important reconstruction as to management or policy. The directing heads are the same, G. W. Bowen being the vice-president and managing director, and John Hunt, general manager. It is likely, however, that the launching of the new corporation presages a disposition to be ready for an extension of the development of the company's mines when market conditions warrant.

It is stated that the collieries of the Province of Alberta are contemplating entering the bunkering business in British Columbia. Howard Stutchbury, Trade Commissioner for Alberta, has been visiting the city of Prince Rupert arranging for bunkers for the best grades of Alberta coal for the purpose of supplying the needs of the mercantile traffic to and from that port.

NOVA SCOTIA

At least one million tons of Cape Breton coal will be shipped to the Montreal market by the **Dominion Coal Co.** this summer, according to Alex Dick, general sales agent of the company. The company has already shipped 150,000 tons, or as much as was sent up the St. Lawrence River during the whole of 1920.

Traffic News

Directors of the **Chicago, St. Paul, Minneapolis and Omaha R.R.** have deferred until next September action on dividends of both preferred and common stock for the first half-year, pending adjustment of accounts with the Government.

In the complaint of the **Brazil Clay Co.**, an examiner recommends that the rates during federal control on intrastate shipments of bituminous coal from mines in the Clinton and Brazil districts to complainants plants at Brazil, Ind., be declared unreasonable.

Application has been made to the Commission by the **Huntington and Broad Top Mountain R.R. and Coal Co.** of Philadelphia, for authority to issue securities or to assume obligations or liabilities with respect of the securities of others, in connection with the purchase of four new locomotives and ten new all steel passenger train cars costing $411,393.

The Pennsylvania public service commission has ordered the Lehigh Valley to revise its through transportation rate from the Jeddo and Latimer mines to West Hazleton, via Wilkes-Barre and Hazleton Ry. Junction. The new rate is to be $1.20 a gross ton instead of the combined cost of $1.96 for prepared sizes and $1.68 a ton for steam sizes.

The I. C. C. has authorized the **Pittsburgh & West Virginia Ry. Co.** to construct an industrial spur or branch line extending from a point on its main line near Virginia Station, W. Va., to a point in Washington County, Pa., a distance of 3.2 miles, for the purpose of opening up new coal mines.

The Commission has assigned the complaint of the **Ideal Fuel Co.** vs. the Director General of Railroads, for hearing before it on July 15, in Washington.

In the complaint of the **Lehigh Valley Coal Co.** an I. C. C. examiner has recommended as follows: Rates on unprepared anthracite from various mines and culm banks on the Lehigh Valley R.R. in the Lehigh and Wyoming regions in Pennsylvania, to breakers in the same regions for preparation or for re-preparation, and reforwarding by way of that railroad, to be held unreasonable. Rates on the same commodity from Rahn Colliery at Seek, Pa., to other collieries and washeries on the Lehigh and New England R.R. from June 25, 1918 to Aug. 15, 1918, unreasonable. Rates on Buckwheat No. 3 from collieries and washeries in the Panther Creek mining district, Pa., to Power House (Hauto), Pa., from Jan. 1, to June 24, 1918, legally applicable. Rates from June 25, 1918 to Feb. 28, 1920, unreasonable. Waiver of undercharges authorized.

In the complaint of the **Union Traction Co. of Indiana**, an examiner recommends that rates for intrastate transportation of bituminous coal from mines in the Linton group in southwestern Indiana to destinations northeast of Indianapolis from June to October 1918 are not unreasonable.

The Tampa, Fla., Coal Co., in a complaint to the I. C. C., alleges unreasonable rates on coal from points in Alabama to Tampa under General Order No. 28 and asks for reparation.

An I. C. C. examiner recommends that the rates on smithing coal from mines in Pennsylvania and West Virginia, sacked at St. Louis, and reshipped to Western destinations, which were complained against by the **Romana and Bush Pig Iron & Coke Co.**, be held to be reasonable.

In the complaint of the **Opp Coal Co.** an examiner recommends that rates applicable to certain cars of bituminous coal shipped intrastate during federal control from points in or contiguous to the Linton and Princeton districts to Aurora, Ind., be held unreasonable to the extent that they exceeded $1.30 a ton subsequently established.

The Jeddo-Highland Coal Co. complains against unreasonable rates on anthracite coal shipped between June 25, 1918, and March 22, 1919, from mines and culm banks to breakers in the Lehigh region.

The Chicago, Lake Shore & South Bend Ry. Co., of Michigan City, Ind., in a complaint to the commission attacks as unreasonable the rates on coal from Cass, Ind., to Michigan City by reason of the failure of the Illinois Central to meet the rate in effect between the same points via a different route.

The Utah Fuel Co., of Sunnyside, Utah, complains against unreasonable rates on slack from its mine tipple to storage bins at Sunnyside.

The Michigan Paper Mills Traffic Association of Kalamazoo complains against unreasonable rates on coal from the Ohio and inner and outer Crescent fields to destinations in Indiana and Michigan.

Personals

D. Hugh Jenks, general manager of the Producers Coal Co., with headquarters in Cincinnati, made an airplane trip from that city to Bristol, Tenn., to attend the funeral of a business associate.

F. E. Clark has been appointed assistant commissioner of the Tidewater Coal Exchange, Inc., with office in the Central Square Building, New York City.

Quinn Morton, president of the Wood-Morton Fuel Co., of Cincinnati, is a patient in the Good Samaritan Hospital.

W. P. Tams, president of the Guyan Collieries Corporation, of the Gulf Smokeless Coal Co., and of other smokeless concerns, reached Vancouver, B. C., early in June on his way home from a trip around the world.

The Marion County coal region had as a visitor during the early part of June **Edward Hines**, widely known in Chicago lumber and coal circles. Mr. Hines has large coal holdings in northern West Virginia.

During the first week of June **Harry Whyel**, of Uniontown, Pa., who is largely interested in coal lands in northern West Virginia, left for Europe expecting to visit France, Switzerland, Holland and Scotland during the summer months. He will be at Edinburgh during the International Rotary convention.

A recent visitor in the Fairmont region of West Virginia was **C. T. Denly**, of Cleveland, who is at the head of the Schroeder-Kelly Coal Co.

J. A. Paisley, of Cleveland, interested in the Valley Camp Coal Co. of northern West Virginia and in the Kelly's Creek Colliery Co. in southern West Virginia, was in Fairmont early in June.

A recent visitor in the southern part of West Virginia was **George L. Rogers**, of the Mon-Scott Fuel Co., of Morgantown.

Josiah Keely, general manager of the Cabin Creek Consolidated Coal Co., with headquarters at Kayford, was at Fairmont early in June attending the sessions of the West Virginia Mining Institute.

A visitor in northern West Virginia during the early part of June was **J. J. Ross**, of Logan, general manager of the Logan Mining Co.

Frank J. Honan, who is well known to the New York trade from his former connection, has returned to that city and will represent the Tuttle Corporation, coal exporters of 15 Broad Street, in the New England States. Mr. Honan was recently connected with the Logansport Coal Corporation of Pittsburgh, Pa.

Association Activities

Central Coal Association

The members of the executive committee of the association met in Altoona recently to draft the policy of the association relative to the stand taken by the United Mine Workers of District No. 2, referred to the committee at the meeting a week previous. After a lengthy discussion, it was decided that the gravity of the situation requires further consideration of the policy to be pursued.

The failure of the mine workers to respond to the request of the association for a conference has resulted in a widespread opinion among operators that the principle of collective bargaining has failed and that no relief can be expected from that source in the way of co-operation.

The fact that competitive regions are working on a 1917 scale or less, has resulted in a loss of orders and contracts which have been held by the union operators, in many instances covering periods of twenty years. Difference between the union scale and those paid by competitive regions results in a lower cost by 80c.@$1 per ton.

If the depressed business conditions should last until the expiration of the present union scale, which expires April 1, 1922, there being no indication of improvement in sight, the operators will suffer a loss of business that it has taken them many years to establish. The effect of this situation will not be confined to operators alone, but to thousands of miners, merchants, bankers, professional men and others. A readjustment of the scale seems imperative.

Instead of recognizing a condition that exists, the executive officers of the union are busily extending propaganda for the nationalization of coal mines and a control of industry by the miners. In other words, they are busily engaged in attempting to sovietize the Central Pennsylvania field. This situation, which not only concerns the operators, but all invested capital, is so serious that the executive committee of the Central Association feels that it requires further serious consideration and will meet in the near future to discuss the proposition further.

Industrial News

Cincinnati, Ohio—Offices of thirteen coal companies whose headquarters are in Cincinnati, have recently moved their offices from former locations to more spacious quarters in the new Dixie Terminal Building. Those who have so moved are; Thomas N. Mordue Coal Co.; Semet Solvay Co.; Elkhorn Piney Coal Mining Co.; Interstate Coal & Dock Co.; Ohio & Kentucky Fuel Co.; Logan Pocahontas Fuel Co.; Riddle Coal Co.; Old Dominion Coal Corporation; Okey Meadows Elkhorn Coal Co.; Carter Coal Co.; Ogle Coal Co.; M. A. Hanna Coal Co. and Jewett, Bigelow and Brooks.

New York, N. Y.—The Hercules Powder Co. has purchased the properties, assets and business of the Aetna Explosive Co., Inc. By this purchase the Hercules company will acquire high explosives, or dynamite, plants near Birmingham, Ala., Emporium, Pa., Sinnamahoning, Pa., Ishpeming, Mich., and Fayville, Ill., two black blasting powder plants, one at Goes Station, Ohio and the other near Birmingham, Ala., a plant for the manufacture of blasting caps and electric blasting caps at Port Ewen, N. Y. and a plant for the manufacture of fulminate of mercury, for use in blasting caps, at Prescott, Ontario, Canada.

Obituary

C. F. McNamara, a retail coal merchant of Superior, Wis., was stricken with apoplexy recently and died within a few minutes after being taken home. He had been a resident of Superior for twenty-seven years.

George Jones, coal operator and merchant, of East Bernstadt, Ky., was shot and instantly killed while riding on the running board of an auto, near that town, the shot coming from a mountainside some hundreds of yards away. Chris Evans, a half-crazy pioneer of the district, was arrested and charged with the murder.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 incl. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

American Institute of Mining and Metallurgical Engineers will meet at Wilkesland, Ohio, Sept. 14, 15 and 16. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York.

Mine Inspectors' Institute of America will hold its twelfth annual meeting at Charleston, W. Va., July 12 to 15. Secretary, J. W. Paul, Bureau of Mines, Pittsburgh, Pa.

Illinois and Wisconsin Coal Dealers' Association will meet at Chicago, Ill., July 13, and 14.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

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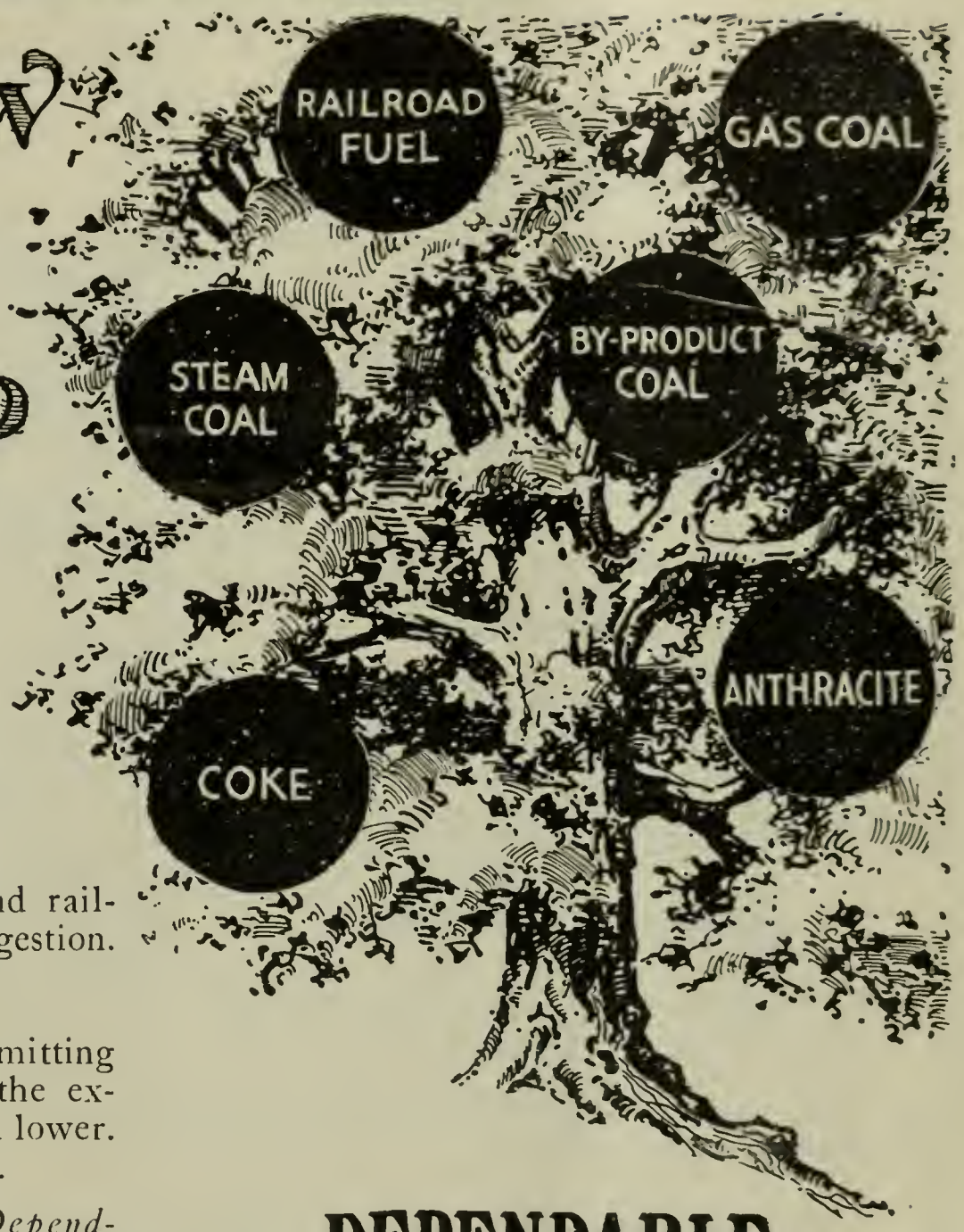

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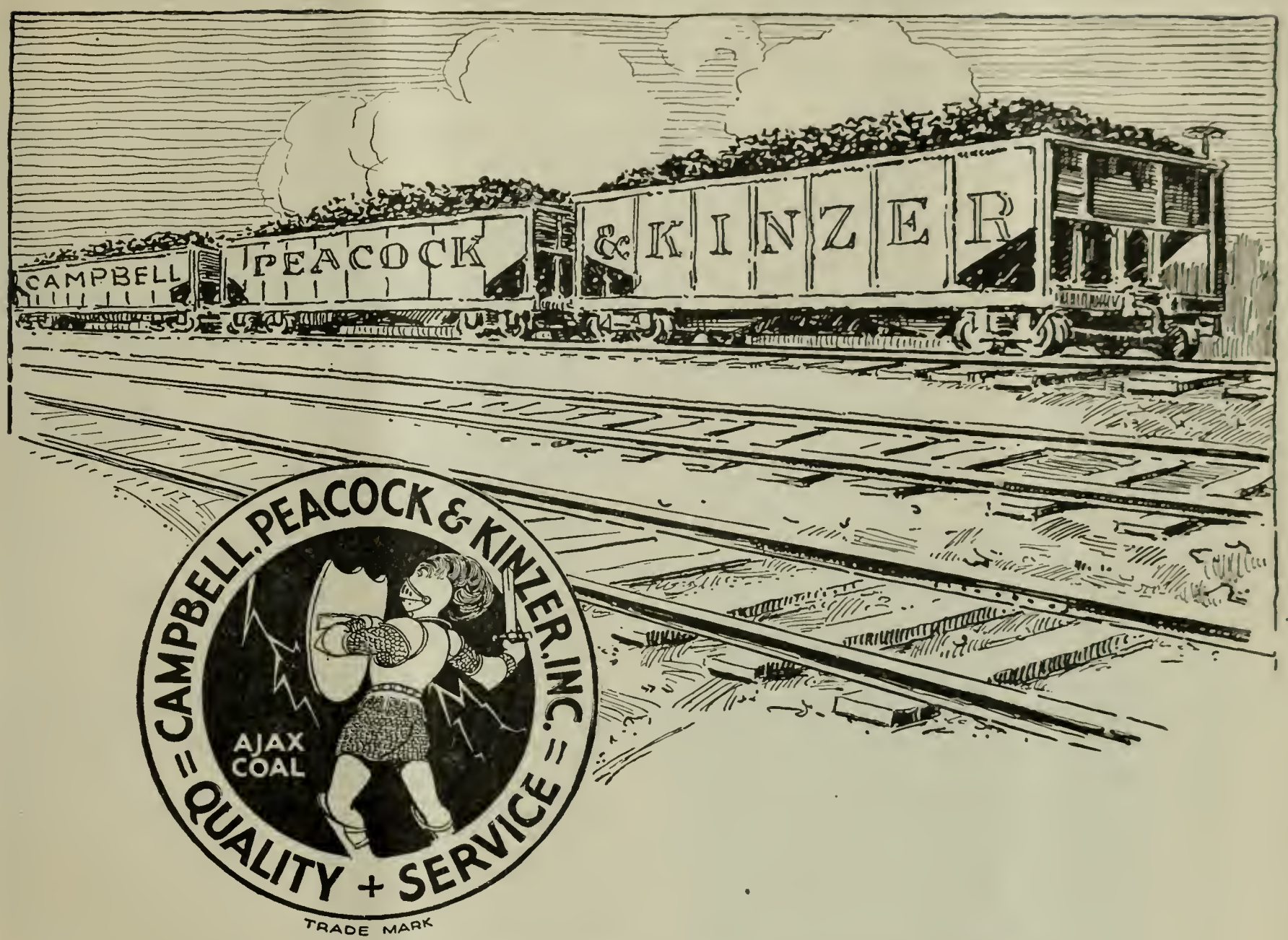

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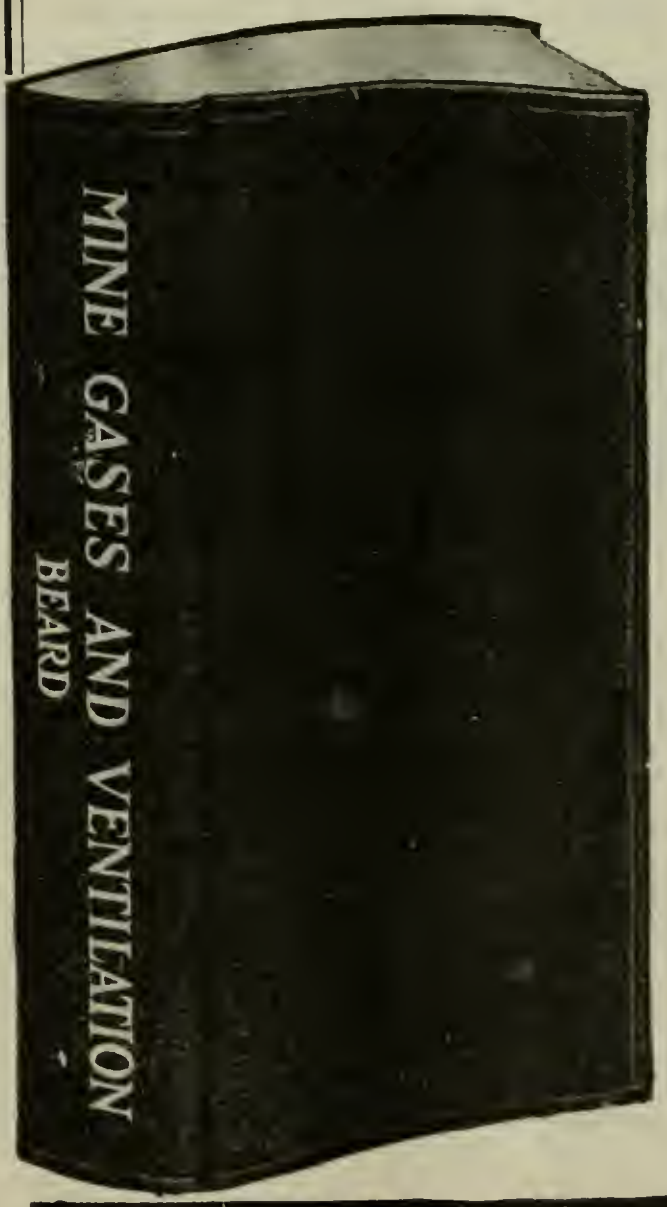

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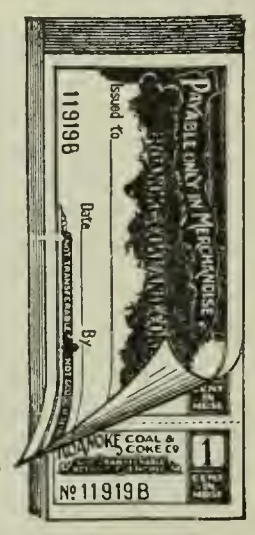

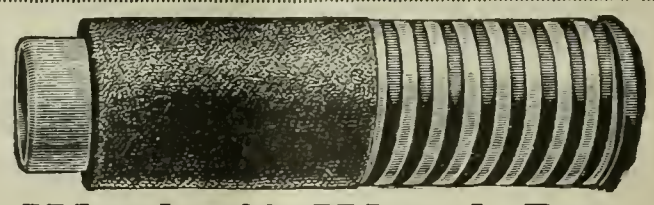

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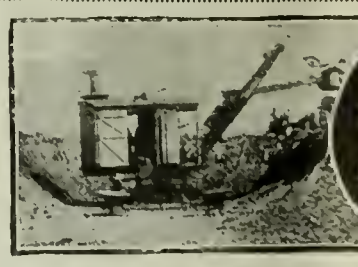
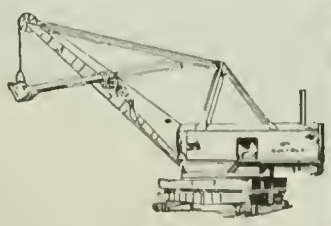


Which is the best revolving shovel?

You want the revolving shovel that is SPEEDIEST and MOST RELIABLE—the steadiest worker.

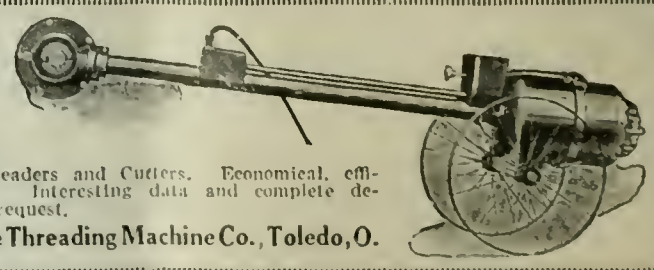
Investigate carefully. Talk with men who own ERIE REVOLVING SHOVELS. And write us for a copy of our new Bulletin "A."

Ball Engine Co., Erie, Pa



BUCYRUS
Steam and Electric Shovels
Dredges - Dragline Excavators
— Coal Loaders —
BUCYRUS COMPANY
SOUTH MILWAUKEE WIS.

"Toledo" Drive



A powerful electric drive for operating "Toledo" geared Pipe Threaders and Cutters. Economical, efficient and rapid. Interesting data and complete details sent upon request.

The Toledo Pipe Threading Machine Co., Toledo, O.

The Easiest Way

to keep fully informed on all the new machinery and equipment that's being manufactured for coal mines is by reading the ads in Coal Age each week.

COAL AGE

Think "SEARCHLIGHT" First

ADVERTISING RATES

POSITIONS VACANT—Business Opportunities and other undisplayed ads, 8 cents a word, minimum $2.00 an insertion.

POSITIONS WANTED—Evening work wanted, tutoring and other undisplayed ads of individuals looking for employment, 4 cents a word, minimum 75 cents, payable in advance.

ADD 5 WORDS for box number in undisplayed ads if replies are to any of our offices. There is no extra charge for forwarding replies.

DISCOUNT OF 10% if one payment is made in advance for 4 consecutive insertions of undisplayed ad.

ADS IN DISPLAY TYPE—Space is sold by the inch (30 in. to a page), the price depending upon total space used within a year, some space to be used each issue.

RATE PER INCH for ads in display space:

1 to 3 in., $4.50 an in.	15 to 29 in., $3.90 an in.
4 to 7 in., $4.30 an in.	30 to 49 in., $3.80 an in.
8 to 14 in., $4.10 an in.	50 to 99 in., $3.70 an in.

EMPLOYMENT

POSITIONS VACANT

POSITIONS WANTED

POSITIONS VACANT

MINING engineer wanted for large West Virginia coal company. Man with some practical knowledge of mining desired. Married man preferred. Good salary. P-902, Coal Age, Leader-News Bldg., Cleveland.

POSITIONS WANTED

CHIEF electrician and master mechanic; 12 years' experience on mine electrical and mechanical maintenance construction and installation; power plants, substations, wiring, power work, motors, machines pumps, fans, electrical welding applications; armature winding, motor repair and shop work; a.c. and d.c. equipment. Can manage men; best of references. Will go anywhere. Box 81, Chester, Pa.

CHIEF electrician open for position; first-class winder a.c. and d.c.; 10 years' experience in all kinds of electrical machines and locomotives; age 28, married. PW-907, Coal Age, Leader-News Bldg., Cleveland.

ELECTRICAL engineer, age 28, desires connection with large mining company. Have had 12 years' practical experience in electrical mining; at present connected with engineering company; available upon reasoable notice. PW-905, Coal Age, Old Colony Bldg., Chicago.

MINING man with 20 years' experience as engineer, superintendent, foreman, etc., invites correspondence from persons operating or opening small mine with the view of making investment with services. Very good executive and operating man and not afraid of work and roughing it. At present employed but wish to get in business where can have an interest. Location not material but West Virginia or Kentucky preferred. PW-909, Coal Age, Real Estate Trust Bldg., Phila.

MINING man, with 15 years' experience as mining engineer, foreman and superintendent with large central Pennsylvania bituminous coal companies; open for position. Have Pennsylvania bituminous mine foreman certificate; age 34, married, references. PW-890, Coal Age, Real Estate Trust Bldg., Philadelphia.

MINING engineer, technical graduate, member A. I. M. & M. E., married, age 30. Now in charge of state engineering divisions for large bituminous concern producing six million tons annually. Desires position as superintendent or chief engineer. Minimum salary yearly $3,600. Address PW-912, Coal Age, Leader-News Bldg., Cleveland.

MINING engineer, 10 years' experience, desires position as superintendent or assistant superintendent. Now employed as chief engineer five mines; age 32. PW-899, Coal Age, Old Colony Bldg., Chicago.

In Replying to "Blind" Ads

be careful to put on envelope the key number in the ad and also local address of office to which reply is sent.

10th Ave. at 36th St., New York.
935 Real Estate Trust Bldg., Phila.
533 Leader-News Bldg., Cleveland.
1570 Old Colony Bldg., Chicago.
531 Rialto Bldg., San Francisco.

Important

Original letters of recommendation or other papers of value should not be enclosed to unknown correspondents — send copies.

0195

POSITIONS WANTED

SUPERINTENDENT, foreman, 22 years' experience; age 38, married; first-class mine foreman's papers for Tennessee and Kentucky. Can get results. Address, PW-896, Coal Age, Old Colony Bldg., Chicago.

SUPERINTENDENT or mine foreman; 20 years' experience in Pittsburgh and Freeport seams. Pennsylvania certificate. Best of references. PW-879, Coal Age, Real Estate Trust Bldg., Philadelphia.

YOUNG man desires position as superintendent or mine foreman, 10 years' experience; will go anywhere. Have first-grade Pennsylvania bituminous certificate; references. Write L. Y. M., 315 Republic Street, Pittsburgh, Pa.

AGENTS AND SALESMEN

Responsible Stock Salesman Wanted

To handle large coal proposition. First-class reference required. Box 59, Covington, Va.

Salesman To Sell Coal Mining Supplies

Man to demonstrate and sell coal mining supplies. Should have mining experience. Able to talk with miners in coal mines as well as coal mine superintendents, engineers and purchasing agents. AS-904, Coal Age, Real Estate Trust Bldg., Phila.

BUSINESS OPPORTUNITIES

Capital Wanted

Complete electrically equipped, 250-ton capacity, eastern Kentucky mine, operating Hazard No. 4 and No. 7 seams wishes to borrow $15,000. Will give mortgage for security and contract sale of output. Capital $100,000. BO-903, Coal Age, Old Colony Bldg., Chicago.

FOR RENT

Fully Equipped Coal Yard For Rent

Having 495 feet frontage on Pawtucket River with 16 feet water at high tide. Excellent place for dealer in coal, lumber, lime and brick, formerly occupied by the Olney & Payne Coal Company. This yard is centrally located, supplying district of approximately 250,000. Anthracite coal shed with capacity of 40,000 tons, two hoisting towers, and 4 outside trestle. For further information inquire Blackstone Valley Gas and Electric Company, 231 Main St., Pawtucket, R. I.

FREIGHT CLAIMS ADJUSTED BY EXPERTS

MARION FREIGHT TRAFFIC AGENCY

No. 251 Century Bldg., Pittsburgh, Pa.

Correspondence Solicited.

2000 Acres of Byproduct Coal For Sale. Upper Freeport Seam. Railroad Siding on Property.

THOMAS J. WOTRING
Morgantown, W. Va.

WANTED

Coal Stripping Property

We are fully equipped to handle a large proposition

LOU-ALA COAL CO.,
1016 Woodward Bldg., Birmingham, Ala.

COAL LANDS

Operating coal mines and coal lands. Bought, sold and financed. Address

JOHN W. MOORE
Syndicating Broker
8 E. Long St., Columbus, Ohio

WANTED

LOCOMOTIVE

a forty-inch steam locomotive or electric locomotive for outside pit car haulage on 56-lb. rail.

DEFIANCE COAL COMPANY
Albuquerque, New Mexico

Electrical and Mechanical
REPAIRS
by Pittsburgh Mining Machinery Company insure every measure of satisfaction and efficiency
Because
Our Shop is Complete
Our Men are Experts
Let us Bid on Your Repair Wor
PITTSBURGH MINING MACHINERY CO.
Wabash Bldg., Pittsburgh, Pa.

CRESCENT REPLACEMENT
ARMATURE COILS
for any type of motor shipment made in 24 hours—if desired. *Special facilities for prompt and careful service for coal mine and general electric repairs.*
The Crescent Electric & Mfg. Co.
2515 Penn Ave., Pittsburgh, Pa.
Grant 3620 'Phones: Main 2378

You can get
A Production Checker
at little cost
Here is an opportunity to get a *Productograph* to keep count and make curve chart record on one to twenty producing machines. From these records you know exactly the production you are actually getting from your machines. No guessing. It is in first class condition and various spare parts are included.
Bargain price for quick sale.
W. A. Hefner, care of McGraw-Hill Co., 10th Ave. at 36th St., New York City

FACT—
We know what we're talking about when we say Nelson's Repair Forces are Best. Try them once and you'll agree.
I. R. NELSON CO.
Bond St. NEWARK New Jersey

SLIP RING MOTORS
60-Cycle, 3-Phase, 220-440-Volt
10 hp. General Electric, speed 900
15 hp. Westinghouse, speed 845
20 hp. Westinghouse, speed 855
25 hp. General Electric, speed 1150
40 hp. Westinghouse, speed 865
150 hp. Westinghouse, speed 860
Send for our July list of the largest stock in the United States of slightly used or thoroughly overhauled MACHINE TOOLS, POWER, ELECTRICAL AND CONTRACTORS' EQUIPMENT. Satisfaction Guaranteed or Money Refunded.
WICKES MACHINERY CO.
Jersey City, N. J.

FOR SALE
1—Cross Compound Automatic I. & E. Greenwald
STEAM ENGINE
direct connected generator, 100 r.p.m., 250 volt, 350 kw., switch board, steam separator, one boiler feed pump, feed water heater, exhaust head valve, balancing valve and the pipe carrying steam from the boiler to the high pressure cylinder, also piping from the high pressure to the low pressure cylinder.
THE BOYE & EMMES MACHINE TOOL CO.
2245-51 Spring Grove Ave., Cincinnati, O.

Service Value

Scrap value for idle used machinery or surplus material is not enough. If it can be used by others they will pay *service value* for it. "Searchlight" will find these buyers for you.

Manufacturers who accept used machinery in part payment for new can dispose of it promptly by advertising in the Searchlight Section.

Machinery used in manufacturing and displaced by other equipment can be sold at a fair price by advertising it in the Searchlight Section.

Wide-awake dealers, agents or representatives can be secured through little Searchlight "Want" ads.

Manufacturing sites, partners, help, capital—anything that anybody in the machinery field is likely to have for sale or exchange for something else—can be located or disposed of through the Searchlight Section.

The cost of putting your Wants in this projector is very slight, whether for a man, for a job or for a market.

Searchlight Section

HARRIS BROTHERS COMPANY offers—

From Recent Big Purchases

Guaranteed Equipment For Immediate Delivery!

National Shipbuilding & Dry-Dock Co., Savannah, Ga.

Woodworking Machinery
Machine Tools
Structural Tools
Compressors
Motors
Generators
Hoisting Equipment
Belting
Steel Products
Factory Supplies
Rails
Lumber
Write for Bulletin NS-1

Louisiana Shipbuilding Co., Slidell, La., from which we offer:

Hoisting Engines.
Generator Sets 5½ kw. to 250 kw.
Motors (3 hp. to 150 hp., 60 cycle, 110 volt)
Boilers (250 to 500 hp.)
Engines (10 hp. to 1400 hp. Units)
Refrigerating Machines
Air Compressors (40 to 1900 cu. ft. Cap.)
Structural Machinery
Woodworking Machinery
Electrical Supplies
Steel Plates, Beams, Angles (1500 Ton)
Kitchen Equipment
Write for Bulletin No. SL-1

Gerstner Field Lake Charles, La.

Equipment Includes

Plumbing Material
Lumber
Electrical Apparatus
Heating Apparatus
Building Material
Pipe, etc.
Write for Gerstner Field Circular GF-2

Camp Shelby, Miss., Offers

For Immediate Sale

50,000 ft. 6 in. Pipe, practically new.
4,000,000 ft. Lumber, all kinds.
Large quantities Rails, etc.
Various Electrical Equipment.
Various Building Materials.
Write for Camp Shelby Circular JS-9

We have purchased the above plants practically in their entirety. The shipbuilding plants are complete, with ships on the ways; large stocks of steel, lumber, complete machine and structural plants, buildings and plant equipment. Camp Shelby and Gerstner Field have excellent lumber building material, rail, etc., for quick shipment.

Write for complete list, or visit plant nearest you. Representatives are on the ground. You should have latest copy of Industrial Bulletin No. 204, which contains practically everything required by Industrial Plants.

THE FOLLOWING EQUIPMENT FOR SALE OR LEASE

DUMP CARS

150—12-yd. Western & Oliver All-steel, 2-way Dump Cars.
2—6-yd. Western 2-way Dump Cars.
50—1¼-yd. 20 in. gauge Wood Body 2-way Dump Cars.
10—Tipple Cars, 48 inch gauge, 16 inch diameter wheels, 3½ inch flange, fitted on 2¼ inch square axles, size of car is 7 ft. 9 in. long, 6 ft. wide, and 20 in. deep in the center, made by Kilbourne and Jacobs Co.

STEAM SHOVELS

6—95-ton Bucyrus Railroad Type, 5-yd. dipper; 90 per cent new.
10—70-ton Bucyrus Railroad Type, 2½ to 3-yd. dipper; 90 per cent new.
1—American Ditcher (can be used for excavating or as locomotive crane).

LOCOMOTIVES

7—63-ton Mogul, 2-6-0 type, built by American Locomotive Works; 95 per cent new.

Write for Industrial Bulletin No. 204, describing our complete stocks in Chicago

HARRIS BROTHERS COMPANY
35th and Iron Streets, Chicago, Illinois

FOR SALE.

2—1000 k.w. General Electric Turbo Generators, Curtis Turbines, single stage, non-condensing, 175 lb. steam pressure — 6600 volts, 3 phase, 60 cycle, 3600 r.p.m., 80% power factor.

6—New Allis-Chalmers simple Corliss Engines, 250 hp., 18 in. x 36 in.

1—Russell Engine, 350 hp.

120—Hot Water Heaters, 450 sq. ft. heating surface.

120—Condensers, 450 sq. ft. condensing surface.

9—Vertical Bucket Elevators, 34 in. on centers.

1—Vertical Bucket Elevator, 40 ft. chain drive.

6—Otis Elevators, 22 ft. lift, 3000 lb. capacity.

2—American Elevators, 100 ft. lift, 3000 lb. capacity.

22—A. B. See Elevators, 27 ft. lift, 5000 lb. capacity.

6—New Carbondale 150-ton Absorption Refrigerating Machines, with condensers, rectifiers, etc.

Pumps, Tanks, Boilers, Locomotives, new and used.

Sales Department

Charleston Industrial Corporation
NITRO, W. VA.

For Quick Sale

One four track Steel Mine Tipple, Sheave Wheels, Screens, Cages and Crusher. 72-ft. Railroad Track Scale.

And other equipment all in good condition. Complete stock sheet upon request.

FRANK V. DOLE
Bankers Trust Bldg.
Des Moines, Iowa

FROM OUR STOCK

3—CE-7 Sullivan Shortwall.
2—Type 1906 Goodman Breasts.
3—Type SS Morgan Gardners.
2—3½ ton Jeffrey Locomotives.

FOR IMMEDIATE SHIPMENT

16-A Jeffreys Breast Machine.
17-A Jeffreys Breast Machine.
27-B Jeffreys Breast Machine.
28-A Jeffreys Shortwall Machine.
35-A Jeffreys Shortwall Machine.
H. D. Morgan Gardners Breast.
S. A. Morgan Gardners Shortwall.
1—Type 33-O-O-T Goodman Locomotive.
1—100 kw. Ridgway Generator D. C. to 168 hp. Ridgway Engine and 150 hp. Walsh & Weidner Boiler.
2—150 kw. Jeffrey Generators belted to McEwen Engine and others.
All 250 volt D.C.

H. T. LAMBERT COMPANY
Huntington, W. Va.

PUMPS

MOTOR DRIVEN CENTRIFUGAL

10—14-in. Worthington, Class B double suction 8,600 G.P.M. at 152 ft.
4—14-in. Allis-Chalmers Type S. 7,500 G.P.M. at 130 ft.
2—10-in. Allis-Chalmers Type S. 3,750 G.P.M. at 130 ft.
2—8-in. Allis-Chalmers Type S. 1,850 G.P.M. at 150 ft.
3—6-in. A. W. W. 1000 G.P.M. at 125 lbs.

STEAM DRIVEN CENTRIFUGAL

6—16-in. Allis-Chalmers Type S. 8,500 G.P.M. at 90 ft.
6—14-in. Allis-Chalmers Type S. 6,500 G.P.M. at 150 ft.

STEAM DRIVEN HYDRAULIC

6—14 & 20 x 7½ x 18 Worthington Compound Duplex, 400 G.P.M. at 300 lbs.
10—25 & 38 x 4⅝ x 24 Worthington Tandem Duplex, 150 G.P.M. at 3,600 lbs.
2—20 x 12 x 16 Worthington Duplex Fire Pumps, 1,500 G.P.M.

BOILER FEED PUMPS

200—New and used Worthington Boiler Feed Pumps, various sizes.

Write for specifications and prices.

THE NASHVILLE INDUSTRIAL CORPORATION
Old Hickory, Tennessee

TANKS FOR SALE

In All Parts of the Country

Over 4000 steel storage tanks.
Over 2000 wood tanks
Over 500 tanks with agitators, jackets etc.
Over 1800 rectangular steel tanks
Over 1500 glass enameled tanks
Over 1250 steel pressure tanks
Over 15 tanks and towers

New and Used Tanks Chemical Equipment
Mechanical Equipment

Largest exclusive dealers in tanks

THE CURTISS-WILLIS CO.
30 Church St., N. Y.

Honestly-Rebuilt

ELECTRICAL MACHINERY

INDUCTION MOTORS

3-Phase, 60-Cycle, 220-440-Volt

Priced to Sell Quick

Hp.	Make	Rpm.	Price Each
8	General Electric	1200	$225
15	General Electric	900	280
20	General Electric	900	350
25	General Electric	900	380
30	General Electric	900	435
40	General Electric	900	540
60	General Electric	900	700

A quantity of over 300 Motors bought right to sell cheap. Motors fitted with belt tightening, base pulley and compensator.

CONDITION GUARANTEED LIKE NEW

MOTOR DRIVEN PUMP

4-in. McGowan, 2-stage horiz. split case Centrifugal Pump, motor-driven, with 30-hp., A.C. or D.C. motor, cap. 350-G P.M. at 75-lb. pressure, price $800.

MOTOR GENERATOR SETS

Make	Kw.	D.C. Volt	A.C. Volt	Cy.
Westghse.	1000	250	2300	60
Gen. Elec.	500	250	6600$2300	30
Gen. Elec.	500	575	450	60
Gen. Elec.	300	250	2300	60
Allis	250	250	440	60
Gen. Elec.	250	500	2300	60
Ridgway	200	500	2300	60
Gen Elec.	200	250	2300	60
Gen. Elec.	150	250	2300	60
Gen. Elec.	100	250	2300	60
Westghse.	75	250	440	60
Allis	50	250	2300	60

D. C. GENERATORS

Make	Kw.	Rpm.	Volts
General Electric	500	450	250
G. E. Hamilton	500	150	250
G. E. Ball	300	150	550
Westghse. Buckeye	300	150	250
General Electric	250	600	250
Westghse. Ball	200	200	250
Westghse. Erie	150	200	250
General Electric	150	550	250
Westghse. Erie	100	250	250
General Electric	100	600	250
Crocker-Wheeler	75	1200	250
Westghse. Skinner	75	275	250
General Electric	50	900	250

We Solicit Your Inquiries

MILLER-OWEN ELECTRIC CO.
(Incorporated)
Pittsburgh, Penna.
Pittsburgh's Electrical Clearing House
Established 1908

FOR SALE

1—25B Bucyrus

STEAM SHOVEL

in first-class condition in every respect Full revolving straight traction type. Shovel used for digging coal. Has one standard dipper and dipper stick; one 30-ft. dipper stick with new standard bucket; 1½-yd. capacity. Offer very cheap. Write, wire or call

H. R. EICHER
918 House Building, Pittsburgh, Pa.

BARGAINS

Prices Reduced to Nearly Cost for Quick Turnover.

MOTOR GENERATOR SETS

1—65 Kw., 250 V., 860 r.p.m., cp. wd., General Electric Generator, direct connected and mounted on common bedplate with one 220/440 V., 3 ph., 60 cy., new Allis Chalmers induction motor complete.

1—76 Kw., 125/250 V., 3 wire Western Electric motor generator set, consisting of Two 38 Kw., 125 V., Western Electric D.C. generators mounted on common shaft and belted to One new Allis Chalmers 220/440 V., 3 ph., 60 cy. induction motor, complete with switchboard.

1—150 Kw., 125/250 V., 1200 r.p.m., cp. wd., Westinghouse rotary converter, with transformers for 2200 V. high tension, 3 ph., 60 cy., 187 V., low tension with starting taps, complete with starting equipment and switchboard.

1—200 Kw., 250/275 V., 900 r.p.m., cp. wd., Ridgway generators direct connected and mounted on common base with One 2200 V., 3 ph., 60 cy., Ridgway synchronous motor, complete.

Write ***Wire*** ***Phone***

Duquesne Electric & Mfg. Co., Pittsburgh, Pa.

Specials

50-kw. Westinghouse Generator, 125-volt, Skinner Engine, price $750.

3—60-kw. Gen. Elec. Generator, 125-volt, Harrisburg Engine, price $850.

2—75-kw. Gen. Elec. Generator, 125-volt, Harrisburg Engine, price $950.

100-kw. Westinghouse Generator, 125-volt, Skinner Engine, price $1500.

62½-kw. Sprague Generator, 250-volt, Ames Engine, price $1000.

75-kw. Gen. Elec. Generator, 250-volt, Skinner Engine, price $1200.

200-kw. Westinghouse Generator, 250-volt, Erie Ball Engine, price $2500.

Complete stock of Generators, Motors, Engines, etc.

Power Machinery Exchange
Jersey City, N. J.

FOR SALE!

COMPLETE POWER PLANT

2—400 k.w. Direct Current Generators, Direct Connected to Heavy Duty, Rolling-mill type Corliss Engines.

Can be operated condensing or non-condensing. Capable of 100% overload. Also:

1—800 hp. Complete Boiler Plant, including all piping and fittings. Can be inspected erected in position. No Bricksetting required.

Also complete stock of Electrical Machinery, Feedwater Heaters, Boilers, Stacks, etc. Complete Power Plants Designed and Erected. Your Inquiries Solicited.

Power Equipment Company
Engineers
1809 Buttonwood St., Philadelphia, Pa.

Generators For Sale

2—1000-kw. General Electric Turbo Generators; Curtis Turbine, single stage, non-condensing, 175-lb. steam pressure, 6600 volts, 3 phase, 60 cycle, 3600 r.p.m., 80% power factor.

These Generators are in perfect condition.

Sales Department
Charleston Industrial Corporation
Nitro, W. Va.

Steam Mine Hoists

1—Flory, 14 x 18 in. Double Cylinder, Link Reverse Single Friction Drum, 48 in. dia. by 42 in. face, capacity 7500 lb. at 500 ft. per min.

1—Flory, Style No. 211, 10 x 12 in. Double Cylinder, Link Reverse, Double Tandem Friction Drum, 54 in. by 42 in. face, capacity 4500 lb. at 600 ft. per min.

1—Mundy, Style No. 812, 9 x 16 in., Double Cylinder, Link Reverse, Single Friction Drum, 48 in. dia. by 46 in. face, capacity 4500 lb. at 600 ft. per min.

Above hoists are first class and bargain. We also have other sizes.

Reading Engineering Co., Inc.
154-B Nassau St., New York City

ELECTRIC HOIST

150-hp., A.C.

Single drum for shaft mine. This hoist is strictly modern and complete in every detail.

Fine Condition. Low Price.

Crockwell Mine and Mill Supply Co.
415 Pine St. St. Louis.

STERLING BOILERS

44—823 H.P. Sterling Boilers, Type M-30, 200 pound pressure. Equipped with Westinghouse S retort stokers, Vulcan soot cleaners, flow meters, 100,000 cu. ft. capacity, forced draft fan, direct connected to turbine. Practically new, at a bargain.

The Nashville Industrial Corporation
Old Hickory, Tenn.

NEW CORLISS ENGINES

27—18 x 36 Heavy Duty, Allis-Chalmers Corliss Engines, both right hand and left hand, 350 H.P. at 125 r.p.m. 11 ft. by 32 inches. Band wheel. Operated on 140 lb. steam pressure, 1½ inch gauge back pressure, double eccentric.

The Nashville Industrial Corporation
Old Hickory, Tenn.

FOR SALE

20-in. stroke by 18-in. diameter

AUTOMATIC ENGINE

200 R.P.M. Shaft, 3 Bearings, Price $1000. Also Leather Belt, 30 in. x 65 ft.

DEEP VEIN COAL COMPANY
Terre Haute, Ind.

FOR SALE
240 VOLT D.C. GENERATORS

	Kw		Speed
1	15	Fairbanks-Morse 125 - 250 v., 3-wire	1325
1	15	Peerless	900
1	20	Peerless	1000
1	20	General Electric, comp., direct-connected to Ideal horizontal automatic steam engine	325
1	25	Northern	900
1	25	Ft. Wayne	875
1	25	Westinghouse, direct-connected to Buffalo auto. vertical steam engine..	325
1	30	Western Elec.	1250
1	30	Northern	850
1	30	Ft. Wayne	750
1	35	Fairbanks-Morse	1125
1	40	Northern, direct-connected to Fleming horizontal, side crank, steam engine.	320
1	45	Westinghouse	975
1	45	Gen. Elec.	975
1	50	Northern	750
1	75	Northern	525
1	100	Milwaukee	550
1	150	G. E., interpole, 2-bearing	650

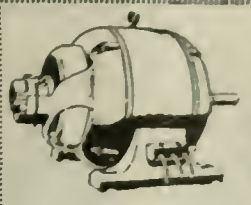
Would YOU buy a SECOND-HAND ELECTRIC MOTOR at ANY price?
If you KNEW it to be as good as new?
Wire us your inquiries.

GREGORY ELECTRIC CO. CHICAGO, ILLINOIS
Second-hand Electric Motors Bought, Sold and Exchanged.
In business since 1893.
16th and Lincoln Streets Chicago, Ill.

DIRECT CURRENT GENERATORS
STOCK SHIPMENT

1—50 kw., 250 volt, 850 r.p.m. Fairbanks-Morse, complete.
1—60 kw., 220 volt, 700 r.p.m. shunt wound Commercial.
1—75 kw., 220 volt, 750 r.p.m. Fairbanks-Morse, complete.
1—80 kw., 220 volt, 650 r.p.m. Milwaukee, complete.
1—100 kw., 220 volt, 255 r.p.m. Western Elect. generator direct connected to Fitchburg compound automatic engine.
1—100 kw., 220 volt, 255 r.p.m. Westinghouse generator direct connected to Ideal steam engine.
2—150 kw., 220 volt, 255 r.p.m. Western Elect. generator direct connected to Fitchburg compound automatic engine.
1—400 kw., 220 volt, 150 r.p.m. Western Elect. generator direct connected to Fitchburg compound Corliss engine.

INDEPENDENT ELECTRIC MACHINERY COMPANY
20th and Central Streets, Kansas City, Mo.



A large stock of
A.C. and D.C.
Motors and Generators

We Rent, Buy, Sell and Exchange.
Prepared to render Breakdown Service, also furnish temporary apparatus
Louisville's Largest Repair Shop

CHILDERS ELECTRIC CO.
333-335 W. Main St.
LOUISVILLE, KY.
Established 1909

CHILDERS ELECTRIC CO. INCORPORATED ELECTRICAL CONTRACTORS AND SUPPLIES LOUISVILLE KY.

Shortwall Machines
250 Volts

1—C-E-6, Sullivan
1—C-E-7, Sullivan
1—12-D-A, Goodman, 50 hp.
2—S-A, Morgan-Gardner
1—28-A, Jeffrey
ANY TRACK GAUGE ON THESE

Power Plants
250 V. D.C.

1— 60 kw. Motor Gen. Set.
1—100 kw. Motor Gen. Set.
1—150 kw. Motor Gen. Set.
1—150 kw. Engine Set.

OPERATORS SUPPLY CO.
H. G. Clark, Mgr.
HUNTINGTON, W. VA.

UNITS

1—500 kw., 250 volts, Westinghouse Direct Connected, Cross Compound Engine.
1—200 kw., 250 volts, Western Electric, Direct Connected to St. Louis Corliss Engine.
25 kw. G. E. 125 volt, Direct Connected to 9 x 10 Chuse Engine ($500).

BOILERS

4—300 hp. Heine Boilers, 2—72 x 20 HRT, 130 lb. with Stack and all fittings. 1—72 x 18 Boiler, 125 lb.
800 gal., 65 ft. head, 8 in. motor driven pump, new, $500.

WILSON MACHINERY CO.
Federal Reserve Bank Bldg., St. Louis

HOISTS AND HAULAGES
STOCK ELECTRICS

Drum	Rope Pull	¾ in. Rope	Maximum H.P.
60x48 D.D.	5,000	4,000 ft.—1 in.	100
42x48 D.D.	4,000	6,000 ft	50
32x48	8,000	4,500 ft.	80
18x24	7,000	3,000 ft.	60
24x24	4,500	2,000 ft.	50
16x12	9,000	1,000 ft.	50
24x32	6,000	2,500 ft.	50
16x32	10,000	2,300 ft.	40
18x28	10,000	2,500 ft.	40
14x18	5,000	900 ft.	30
14x18	3,000	900 ft.	25

Various combinations of single and double drums can be made up as to rope speed to suit your motors and loads, excess braking where coal is lowered.

GRAVITY SPOOL INCLINE DRUMS
State load, speed and grade—3 Stock Machines
STEAM HOISTS, FANS, ENGINES, PUMPS.
JOHN H. CARLIN MACHINE CO.
Sandusky-Lacock St., Pittsburgh, Pa.

FOR SALE OR EXCHANGE

2—Jeffrey Electric Coal Mining Machines, 35-A, 250 Volt, D.C., trucks 42 in. gauge, first class condition, 6-½ ft. cutter bar.—
We want a Jeffrey 29-B Arcwall Coal Cutter, 250 Volt, D.C. straight cutter bar, 42 in. gauge, medium height.

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Gasoline and Electric Locomotives For Sale

9—Lakewood Storage Battery Locomotives, 36-in. ga.
2—Atlas Storage Battery Locomotives, 24-in. ga.
3—Whitcomb Gasoline Locomotives, 36-in. ga., 7½ tons capacity.

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Charleston Industrial Corporation
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COMPLETE STOCK
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RELAYING RAILS
with Angle Bars. Large tonnage of all sizes on hand.

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Iron and Steel Scrap. Railroad and Industrial dismantling our specialty.

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New—12 lb.—16 lb.—20 lb.—25 lb.—30 lb.—40 lb. *Rails cut to any length*
Relayers—60 lb.—70 lb.—80 lb.—90 lb.
Western Delivery *Rails cut to any length.*

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STEAM SHOVELS — CARS
LOCOMOTIVES — CRANES
Railway and Contractors' Equipment
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SADDLE TANK LOCOMOTIVES

1—6 x 10 Vulcan, 42 in. gauge.
2—9 x 14 Vulcan, 36 in. gauge.
1—10 x 16 Davenport, 36 in. gauge.
1—10 x 16 Vulcan, 36 in. gauge.

STEAM ENGINES

1—13 x 15 Skinner Automatic.
1—9 x 16 Rice Automatic.
20—Others 5 to 80 hp.

HOISTS

1—6 x 6, D.C. S.D. hoist.
1—7 x 12, D.C., S.D. hoist.
3—8 x 8 S.C., S.D. hoist.
1—5½ x 7, D.C., D.D. hoist.
1—8 x 10, D.C., D.D. hoist.
1—10 x 14 Link Motion, 4-ft. drum.

The Pittsburg Boiler & Machine Co.
Pittsburg, Kansas.

RAILS

All weights, new and relaying.
Prompt Shipments.

Iron Trade Products Company
Farmers' Bank Bldg., Pittsburgh, Pa.

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RAILS
Large stocks — Immediate shipment
ZELNICKER IN ST. LOUIS
Bulletin 290 lists bargains in industrial equipment.

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THE MORRISON & RISMAN CO.

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Yards: St. Louis and Madison, Ill.

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The big advance in the development of screening devices, achieved by the Mitchell, is the application of power from *beneath* the screen at a high frequency of vibration and with a powerful impact. Continuous operation under the most arduous conditions is daily proving the correctness, of Mitchell construction.

Write us for complete details.

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Coal Tipples
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Complete Coal Mining Plants

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Particularly for those conditions which are unusual or exacting

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Any Metal

Any Style Perforation

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These products are built and trade-marked by Blaw-Knox Company:—Steel Forms for Concrete Construction—Clamshell Buckets—Fabricated Steel Specialties—Water Cooled Appliances for High Temperature Furnaces—Pressed, Riveted and Welded Plate Work—Standardized Sectional Steel Buildings.

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PHILADELPHIA PITTSBURGH

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New Bulletin 1006-D sent on request.

Improved Breaker Machinery for the Preparation of Coal

Simplex Jigs—Lloyd Compound Gear Driven Rolls—Parrish Flexible Arm Shakers—Keystone Rivetless Chain in High Carbon Steel, in Manganese Steel and in Malleable Iron.

WILMOT ENGINEERING CO., Hazleton, Penn.
Works: White Haven, Penn.

Malcolmson Briquet Engineering Co.

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Complete coal briquetting plants using Rutledge, Komarek or improved roll-type presses.

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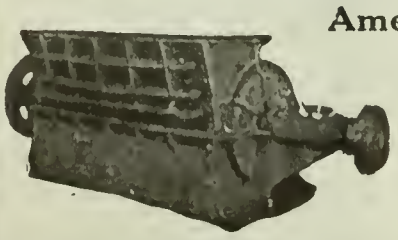

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350 Tons per hour—100 H.P. motor, 600 R.P.M.

One set of grinding parts good for ONE MILLION TONS.

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18th and Austin Streets
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OFFICE AND WORKS: RANKIN, PA. BRADDOCK P. O.

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WESTERN SALES REPRESENTATIVES: STEEL SALES CORPORATION, CHICAGO, ILL.

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COPPERWELD Wire—*made by the Molten Welding Process*

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who are using Simplex Rivetless Chain operative on double flanged sprockets specify no other, as this driving principle has proven a saving of fully 20% over inside drive and riveted types. THERE'S A REASON. Write for details. Made 6 and 9-in. pitch.

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PURIFICATION SYSTEMS
SOFTENING & FILTRATION
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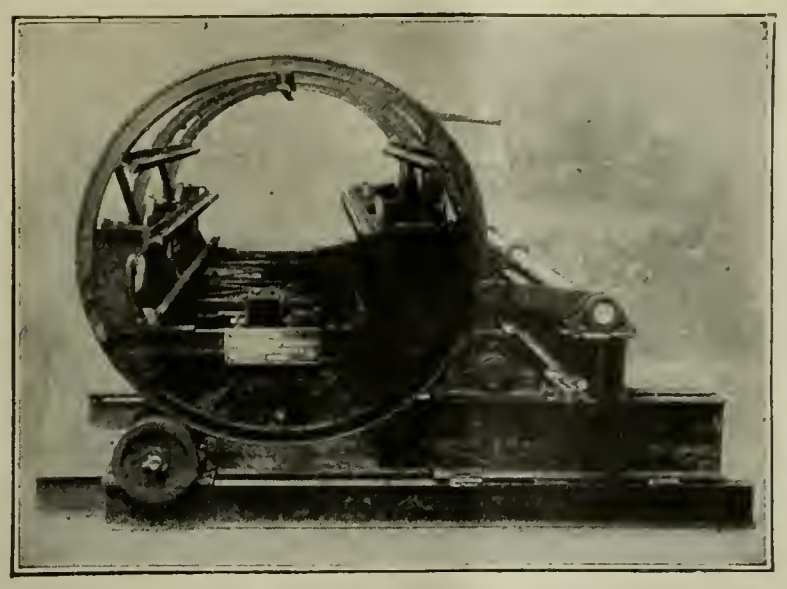

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Car Tipple

Let Gravity Do Your Work

This tipple will dump any kind of material, provided the cars handled through one tipple are of the same size.

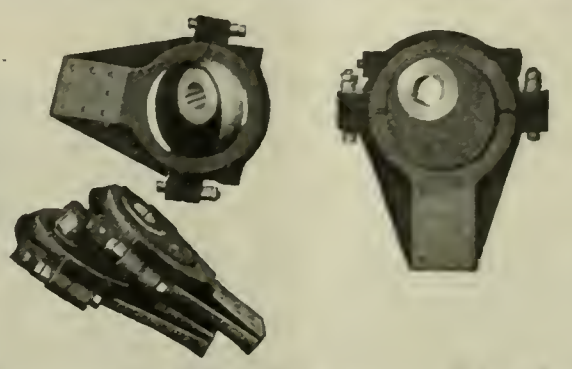
No Power Required

The track is offset from the center of rotation. This overturns one or more cars by GRAVITY. Flywheels store the energy, eliminating the shock of overturn, and bring the tipple back to original position, ready for more cars.

Cost of Operation—only the Lubricant—No skilled labor is required. Slow moving parts of rugged construction and ample strength reduce cost of operation to a minimum. Write for Bulletin No. 59.

The Wellman-Seaver-Morgan Co.
Cleveland Ohio

EGYPTIAN IRON WORKS
Shaker Screen Eccentrics



Dependable Service Under the Most Exacting Conditions

Egyptian ball face eccentrics are the result of extensive experience in the manufacture and use of tipple equipment, and are made to meet every demand of this severe service.

These eccentrics are self oiling, requiring a minimum of attention, and with full protection against damage. The ball face eccentric adapts itself to minor inaccuracies in alignment of shaker shafts, where the ordinary eccentric would bind and break.

Send for Circulars on Egyptian Equipment.

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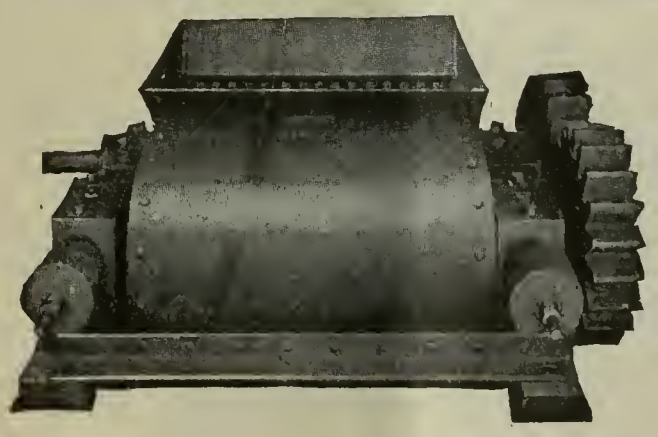

Scottdale Coal Crushers

Unusual quality of materials, heavy duty construction, absolute simplicity make continuous and dependable performance a certainty with Scottdale Crushers.

Whether your crushing requirements be for stoker, plant or yard purposes, there is a Scottdale Crusher especially made to meet your requirements. A crusher of wide ability and capacity, sturdy construction, simplicity and economy of operation—dependable. Capacities range from 20 to 240 tons per hour.

Marion Machine, Foundry & Supply Co.
Box 950, Scottdale, Penn.

MARION MINING MACHINERY

"How Is Your Coal Prepared?"

The buyer today is very particular and the salesman has a struggle to put it over, unless the coal is well prepared.

Morrow Tipple Equipment

is efficiently handling this important phase of the coal business for many operators. Morrow Engineers can show you how to improve the quality of your coal at minimum operating costs.

Call upon us when in need of Tipple Equipment

The Morrow Mfg. Co., Wellston, O.
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Genuine Jenkins Valves bear the Diamond Mark identification.
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Jenkins Standard Brass Swing Check Valves

FIGURE 352 is designed for 150 pounds working pressure, and is fitted with the Jenkins Renewable Disc. This valve is strong and durable and can be used in either horizontal or vertical position.
At supply houses everywhere.

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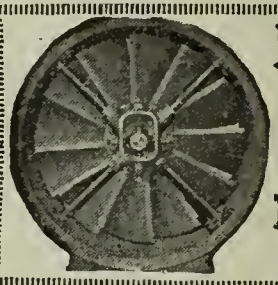


BUCKEYE BLOWER COMPANY

BUCKEYE MINE FANS-ALL SIZES
Columbus, Ohio.

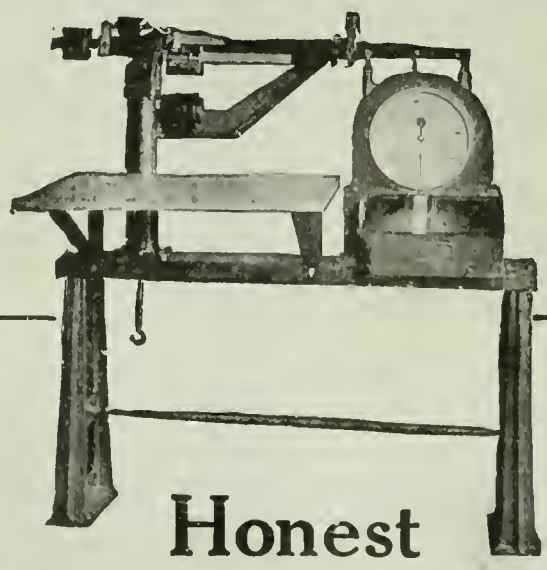
Automatic vs Hand Starters

For mine ventilating fans, mine pumps and certain other mine machinery, automatic starters provide advantages which cannot be obtained with manually-operated starters.
Send for Publication 836

C-H

The Cutler-Hammer Mfg. Co.
Milwaukee and New York.

No Argument



Honest Weight at the Tipple

Your Weigh-boss can make just as many mistakes detrimental to your interests as he can against the miners. And then think of the disputes and dissatisfaction. The

Streeter-Amet Weight Recorder

removes all possibilities of mistakes by human elements in weighing. It operates automatically, precisely and gives a permanent record of every car that passes over the scales. Can be attached to any make of scale.

Sold outright or rented for small monthly consideration. Write for complete details.

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A 50-Year Reputation

is "built in" every one of our famous

Wooden Tanks

OUR tanks, of all types, in any size desired, will satisfy the most critical demands. We're always at your service, and our efficient engineers will gladly help solve your problems. We Win With Quality.

Pittsburgh Office: 406 *Bakewell Bldg.*
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The Hauser-Stander Tank Co.
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LITTLE GIANT POWER HAMMERS

Motor or belt driven in 25-lb., 50-lb., 100-lb., 250-lb. and 500-lb. models

Are used in more than 1000 American Mines, some companies having reordered until all their shops are equipped.

Will pay for themselves every month of steady work and continue to do so for fifteen to twenty years.

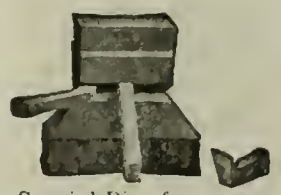
Have very small unkeep—our annual repair sales average 48c. each on all sizes and ages in use, or less than 2/5 of 1% of the original cost to buyers.

Are guaranteed FOREVER against defective material and workmanship, and sold on 30 days trial, by a manufacturer that commenced business in January, 1876—44 years ago.

Prompt shipments of all sizes.

Patented Dies for manufacturing, reshaping and sharpening chisel bits, and also pick point bits, rights, lefts, and centers.

We make dies for every special forging purpose. One man, with the dies here shown, will do as much as seven good men in the old way, and of much better quality — saving enough in 100 hours steady work to pay for the hammer dies.



Special Dies for manufacturing, reshaping and sharpening pick point bits, rights lefts, and centers.

Little Giant Company

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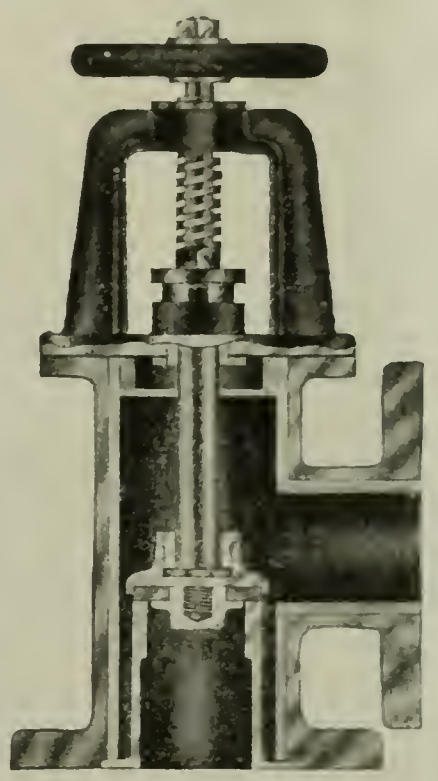
Mankato, Minnesota, U. S A.

Beaver Wood-Lined Valves for Acid Mine Water



This valve has become the standard of many mining companies where a valve must stand the severe conditions which result from the use of mine water. It is the lining of wood that gives long life to the valve and makes the first cost the only cost.

Built in Angle and Straightway style. Sizes 2 in. and up.

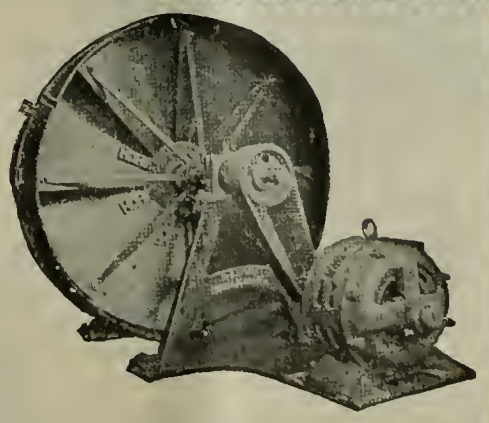
Acid Resisting Bronze
Valves—Fittings—Castings
Our Specialty

EYNON-EVANS CORPORATION

15th and Clearfield Streets, Philadelphia, Pa.

EST. STINE 1874

DISC FANS

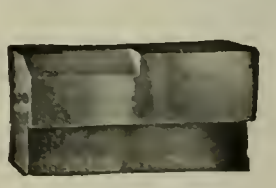


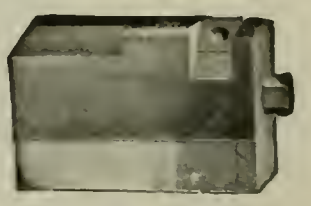
In every country where coal is mined there you will find Stine Disc Fans. Our records show 20,000 sold to the coal mining industry and China is the only country not on our list. One American coal company has 78 Stine Fans in use in spite of the fact that this company manufactures a fan of its own.

Write for catalogues describing our Fans, Incline Machines, Hoists, Pumps, Cars, and other mining equipment.

S. B. STINE, Box H, Osceola Mills, Pa.

MAYER Power Hammers





The very nature of bits in coal mining requires not only sharp points but properly shaped ones.

Why let your blacksmith use up his valuable time and your good steel in beating out tool points by hand?

What the Mayer Power Hammer has done and what it will do is told in detail in our catalog.

Write for it.

MOLOCH CO.

Formerly Kaukauna Machine Works

105 Island

Kaukauna, Wisconsin

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RAIL BONDS
INCREASE
COAL
OUTPUT

THE ELECTRIC RAILWAY IMPROVEMENT CO.
CLEVELAND, OHIO

HIGH RATIO

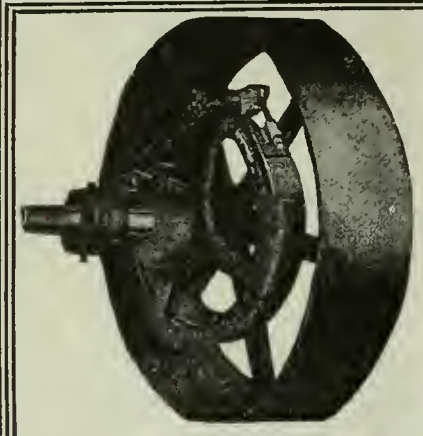
A pinion with only 13 teeth runs this gear, and yet the overlapping steady impulse is there just as effective as in

FALK Herringbone GEARS

of smaller ratio. Their quietness tells the story. Send for bulletin on gears

The Falk Corporation

Successor to
THE FALK COMPANY
Milwaukee, Wis.



Clutch Supremacy

One good feature in a clutch does not make it the best on the market. It's the consistent supremacy of all its parts and the continuity of the service it renders that makes a clutch superior.

Caldwell engineers have spent years in perfecting every feature of their clutches. They have builded with an eye to the future. They know that every Caldwell Friction Clutch installation means years of unremitting service. The extreme simplicity, ease of control and adjustment and the saving in waste power are responsible for the popularity which Caldwell Clutches are now enjoying.

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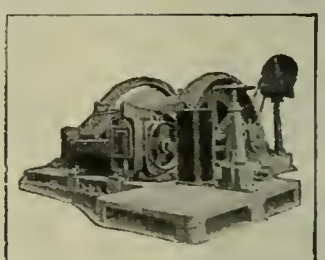
W. E. CALDWELL CO., Inc.
230 E. Brandeis St., Louisville, Ky.

Caldwell FRICTION CLUTCHES

EXETER

MINE HOISTS

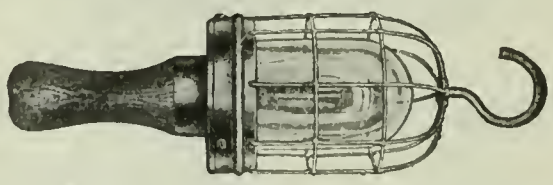
Satisfactory service under widely varied conditions of service has proven that EXETER Mine Hoists are fundamentally correct in design, sturdy in construction and efficient in operation.



Exeter Machine Works, Inc.
Works: West Pittston, Pa.
Builders of Mine Hoists Since 1890

HOISTS

Keystone Vapor-proof Lamp Guards



No. 25186

A water-tight, vapor-proof portable lamp guard for use where gas or inflammable material is encountered. This type is just one of the many Keystone Portable and Stationary lamp guards. Write for circular

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Philadelphia—17th and Cambria Sts. New York—50 Church St.
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Branches—Boston, Scranton, Pittsburgh
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SURE GRIP

Trolley Clamp Cannot Rust or Corrode

The "Sure Grip" is not a one-time clamp. It can be easily moved where most needed.

Two styles—one for Figure 8 and one for grooved wire.

No screws or bolts—no parts to lose in handling.

Over 2,000,000 in use.

Electric Railway Equipment Co.
2900 to 2918 Cormany Ave., Cincinnati, Ohio

STERLING Electric Siren

used extensively at coal mines to give work signals and as an alarm in case of fire, accident, riot, etc.

Interstate Machine Prod. Co., Inc.
45 Allen St., Rochester, N. Y.

Federal Electric Mine Siren

A weird, penetrating signal everyone hears and no one mistakes.

Write for bulletin.

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Representing
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Chattanooga ARMATURE WORKS.

REWINDING
REPAIRING
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ELECTRICAL MACHINERY

CHATTANOOGA, TENN

TREADWELL HOISTS

TREADWELL ENGINEERING COMPANY
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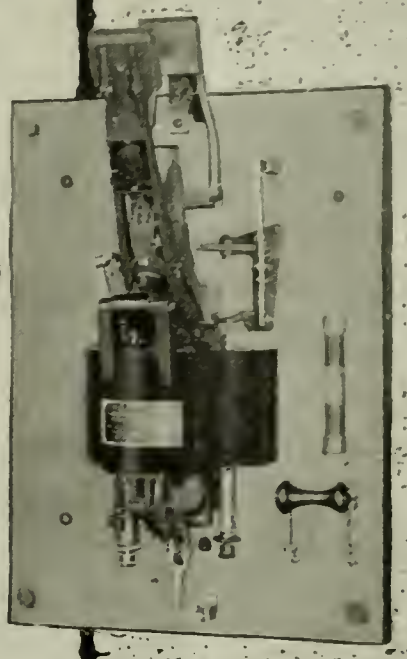
The Circuit Breaker with Brains

The Automatic Reclosing Circuit Breaker

KNOWS When to Open and also **When to Reclose**

AND DOES IT

AUTOMATICALLY



The Automatic Reclosing Circuit Breaker Company

Columbus Ohio

For the sake of Complete Protection to your equipment and service

"Lets Get Acquainted"

WE have on our erecting floor under construction the following sizes of DANVILLE hoisting engines on which shipment can be made approximately as noted below:

One pair DANVILLE 24 x 36 Shipment approx. three weeks.
One pair DANVILLE 20 x 36 Shipment approx. four weeks.
One pair DANVILLE 18 x 36 Shipment approx. three weeks.
One pair DANVILLE 16 x 32 Shipment approx. four weeks.

In addition we carry in stock a complete line of Bicycle Type Sheave Wheel castings in sizes from four to fourteen feet in diameter. Any of these wheels can be finished to suit the customer's requirements and shipment can be made within from five to twenty-four hours from time of receipt of order.

ROBT. HOLMES & BROS., INC., DANVILLE, ILL.

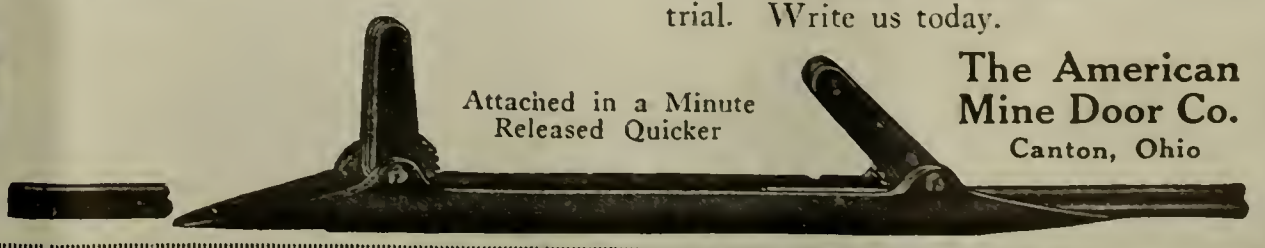
MOMENTS MEAN DOLLARS

When the trolley wire is down

THE CANTON TROLLEY WIRE SPLICER REPAIRS IT QUICKLY

After the wire is drawn together it is instantly attached. The dogs will hold the wire with vicious tenacity.

Keep several on every locomotive and in the store room. A great emergency device. We know you will like it—sent on trial. Write us today.



Attached in a Minute
Released Quicker

The American Mine Door Co.
Canton, Ohio

GEAR AND FRICTION DRIVEN GASOLINE LOCOMOTIVES—2½ TO 25 TONS ON DRIVE WHEEL

WHITCOMB LOCOMOTIVES

IT WILL PAY YOU TO GET OUR PROPOSITION BEFORE YOU BUY

GEO. D. WHITCOMB CO.

MAIN OFFICE AND WORKS

ROCHELLE, ILLINOIS
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STORAGE BATTERY LOCOMOTIVES—1 TO 8 TONS ON DRIVE WHEELS

THE IRONTON
STORAGE BATTERY LOCOMOTIVES

Are saving money for hundreds of users. Our nearest office will furnish particulars on request.

The Ironton Engine Company
Ironton, Ohio

Pittsburgh, Philadelphia, Chicago, Denver, Seattle, Huntington, W. Va., Lexington, Ky.
Powley & Townsley, Ltd., Toronto, Can.

MAAG GEARS

Strongest at the base
Where others are weakest

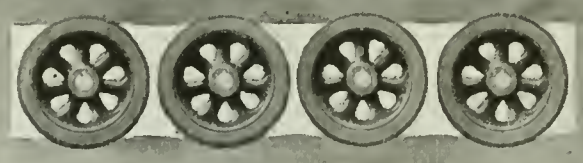
NILES-BEMENT-POND CO.
111 Broadway, New York City

TRADE MSCO MARK
Get the Catalog

FLORY HOISTS

S. FLORY MFG. CO., Bangor, Pa.

95 Liberty St., New York
Wabash Building, Pittsburgh, Pa.
Monadnock Block, Chicago, Ill.
Chas. T. Lehman, Birmingham, Ala.
Farquhar Machinery Co., Jacksonville, Fla.
A. L. Young Machinery Co., San Francisco, Cal.



LOBDELL Mining Locomotive Wheels

either Chilled Cast Iron; Steel Tired; or Solid Cast Steel are backed by over eighty years' experience in car wheel manufacture.

Chilled Cast Iron Wheels are the most economical where maximum tractive power is not required and can be furnished promptly.

LOBDELL High Carbon Heat Treated Cast Steel Wheels are found most economical where the increased tractive power of a steel tread is desired and can be furnished in from 4 to 6 months.

Steel Tires and Steel Tired Wheels, owing to the congested conditions of the steel mills, cannot be furnished in less than 6 to 9 months.

We advise you, Mr. Operator, to get your orders in early but first send us the sizes of your wheels and axles and let us quote you prices and deliveries you will find attractive.

LOBDELL 80 YEARS OF PROGRESS

LOBDELL CAR WHEEL COMPANY
WILMINGTON
DELAWARE

AMERICAN Gasoline Locomotives

"RUN RIGHT"— Above and below ground
Write for literature

The Hadfield-Penfield Steel Co., Bucyrus, O.

PORTER LOCOMOTIVES
FOR EVERY PURPOSE
H. K. PORTER COMPANY
PITTSBURGH, PA.

DIRECT CURRENT
ALTERNATING CURRENT
MOTORS

Variable or Constant Speed—¼ to 50 H. P.

UNIFRAME MOTORS are especially adapted to direct motor-driven apparatus. No changes in mounting required, as dimensions of both A.C. and D.C. motors of same hp. rating are identical.

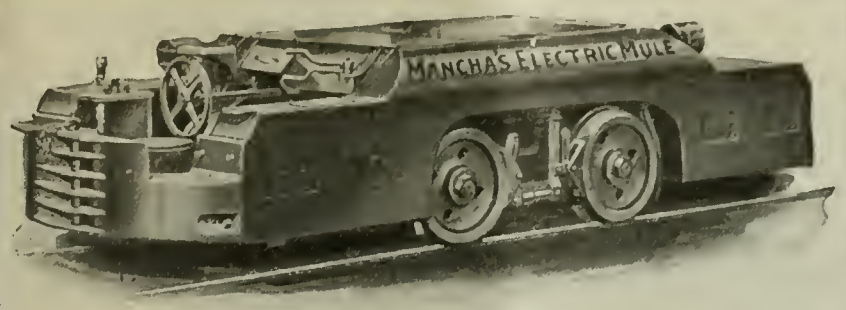
B. A. WESCHE ELECTRIC CO.
327 East Sixth Street, Cincinnati, Ohio.
Eastern Sales Office, 110 West 40th St., New York, N. Y.

TYPE "TR"

40° TRIUMPH

Self Start
AUTOMATIC MOTORS
No Compensator required
THE TRIUMPH ELECTRIC CO.
CINCINNATI
Builders of Motors since 1892

"True in the Long Run"



YOU ARE responsible
* * *
FOR PRODUCTION
* * *
AND costs at
* * *
YOUR property.

ARE YOU insisting
* * *
UPON THE necessary
* * *
EQUIPMENT to increase
* * *
THE ONE and
* * *
LOWER THE other?

IF NOT you
* * *
ARE AT fault.
* * *
YOUR JOB is
* * *
DEPENDENT only
* * *
UPON results.

MANCHA locomotives
* * *
GET RESULTS — results
* * *
THAT ARE far reaching.

MANCHA STORAGE BATTERY LOCOMOTIVE CO.

1909 S. Kingshighway, St. Louis, Mo.

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REPRESENTATIVES: Nor-East Sales Co., Scranton, Pa.; The Hendrie & Bolthoff Mfg. & Supply Co., Denver, Colorado; Northwestern Engineering & Sales Co., Seattle, Wash.; Trent Engineering Co., San Francisco, Cal.; The Salt Lake Hardware Co., Salt Lake City, Utah.

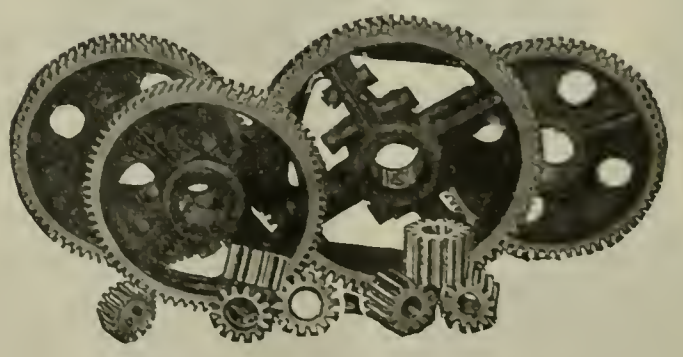
MANCHA ElectricMule

"Tool Steel" Gears and Pinions Carried in Stock

Do you know that we carry in stock ready for immediate shipment 229 different types of gears and pinions, of types most generally in demand for repair parts, for mining locomotives and machines.

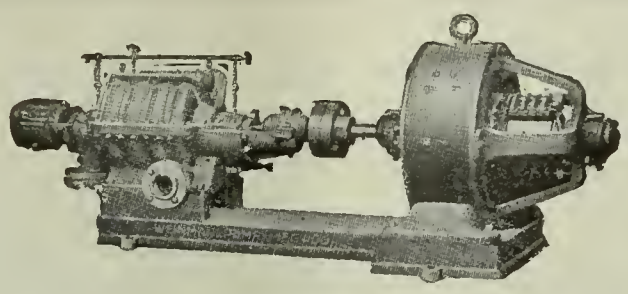
Ask us for our stock part list.

In addition to this, we have hundreds of other types that we make up to order. Ask for our complete catalog.



Split and Solid Locomotive Gears and Pinions

The Tool Steel Gear & Pinion Co.
Cincinnati, Ohio



Type "J," Multi-Stage, Horizontally Split Casing, Centrifugal Mine Pump

High Pressure Service

For Handling Acid Mine Water

Impellers and casing are made of solid anti-acid bronze, which is modified in composition as required after analyzing the water to be handled.

Hydraulically balanced and designed to give easy access to all wearing parts.

This pump may be depended upon in high pressure service to give consistent good service at the lowest possible cost.

Write for Descriptive Literature

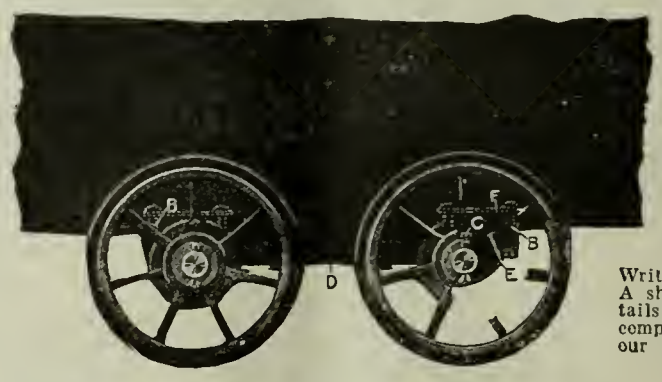
Mine Pumps By—

Weinman Pump Company
Columbus, Ohio

Weinman Pump & Supply Co., 210 Second Ave., Pittsburgh, Pa.; Superior Supply Co., Bluefield, W. Va.; Banks Supply Co., Huntington, W. Va.; Anson-Byrne Co., 10 S. La Salle St., Chicago, Ill.

"WEINMAN"

Angle Bar Truck Equipped with Hockensmith Hyatt Roller Bearing Wheels



A very strong rigid car equipped with wheels that make easier hauling with minimum repair cost.

Write for Catalog A showing full details and giving a complete line on our other products.

HOCKENSMITH WHEEL & MINE CAR COMPANY

Penn Station, Pa. Huntington, W.Va., Huntington Supply & Equipment Co. Knoxville, Tenn., Webster & Co.

Mine Cars

All Kinds—Types and Sizes

Cars of wood, steel, or composite bodies, built for end, side, bottom or rotary dump work. Equipped with plain, self-oiling or Hyatt Roller Bearings, with or without brakes as desired.

Our price is right—our service prompt. Your inquiry is solicited.

Gustafson Manufacturing Co.
Chattanooga, Tenn.

DE LAVAL CENTRIFUGAL PUMPS FOR MINE SERVICE

De Laval Centrifugal Pumps are of the horizontally-split-casing type, with suction and discharge openings in the bottom part. Upon taking off the casing cover and bearing caps, all parts subject to wear, such as impellers, interstage, labyrinth packing rings, shaft sleeves, etc., are easily accessible. They are made on a limit-gauge system and are interchangeable.

De Laval Pumps protect the motor against overload. Characteristics and efficiencies are guaranteed, and each pump is tested before shipment.

De Laval Steam Turbine Co., Trenton, N. J. 51

DE LAVAL STEAM TURBINE CO. TRENTON, N.J.

INVESTIGATE THE *Renewable features*

IN McGOWAN DUPLEX STEAM AND POWER DRIVEN PUMPS

THE JOHN H. McGOWAN CO.

CINCINNATI, OHIO, U.S.A.

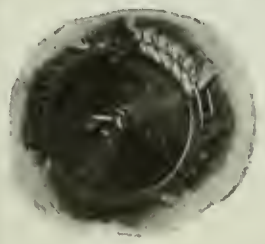
MODERN MINE PUMPS

BARRETT, HAENTJENS & CO. HAZLETON, PA.

PPC **AIR COMPRESSORS** **CENTRIFUGAL PUMPS**

Literature on request

Pennsylvania Pump and Compressor Company
Easton, Pennsylvania



THE TERRY TURBINE

is ideal for driving generators, pumps and fans for all service, because of its simplicity, efficiency and reliability. There are more than 4000 in operation.

THE TERRY STEAM TURBINE CO.
HARTFORD, CONN. T-434

PUMPS

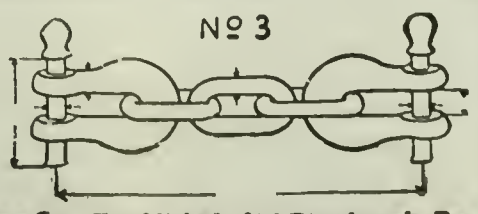
Electric, Steam, Boiler Feed

BOYTS, PORTER & CO.
Connellsville, Pa.

PROMPT SHIPMENTS

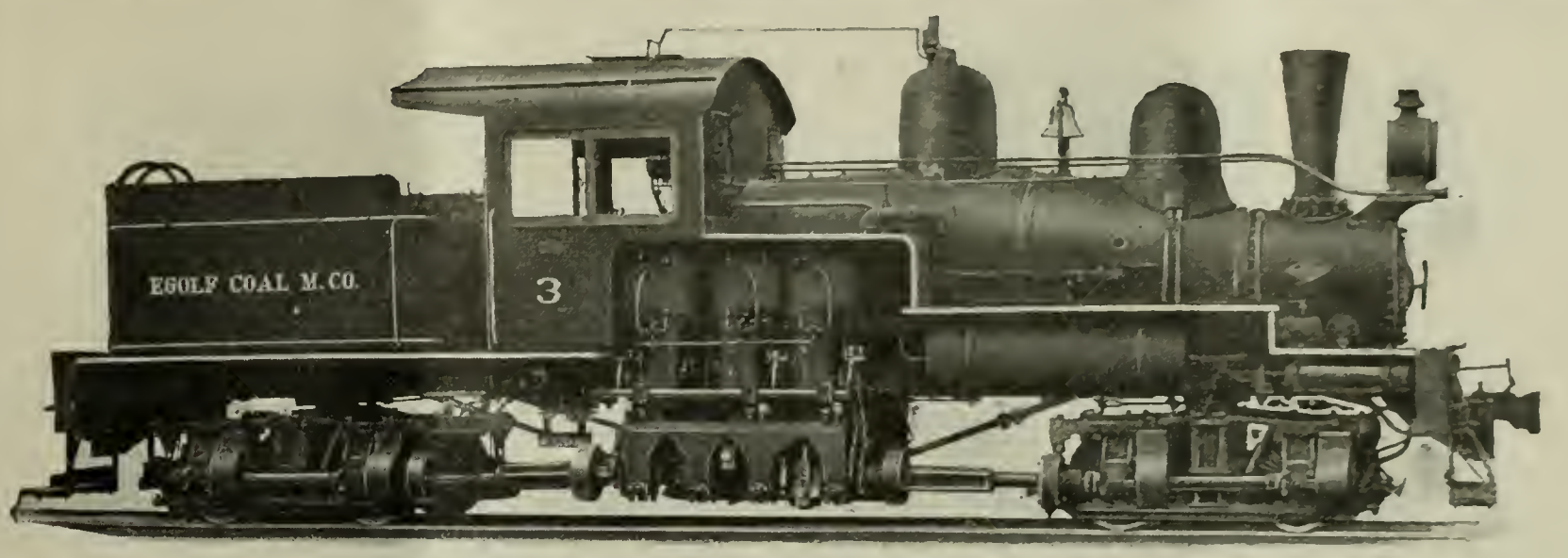
We are prepared to furnish Hitchings, any size, style or quantity. Puncher Picks, Machine Bits and Bit Steel.

Let us quote you.



Pittsburgh Knife and Forge Co. *Established 1876* **Pittsburgh, Pa.**
Successors Pittsburgh Steel Mfg. Co. and Wm. Harris & Son Co.

MANISTEE TURBINE CENTRIFUGAL PUMPS
ROTARY JET CONDENSERS
Manistee Iron Works Co. Manistee, Mich.



SHAYS ARE BUILT FOR MINING

Because of their flexible geared drive, "Shay" engines will work in places inaccessible to rod engines.

All wheels of a "Shay" are drivers—including the tank wheels.

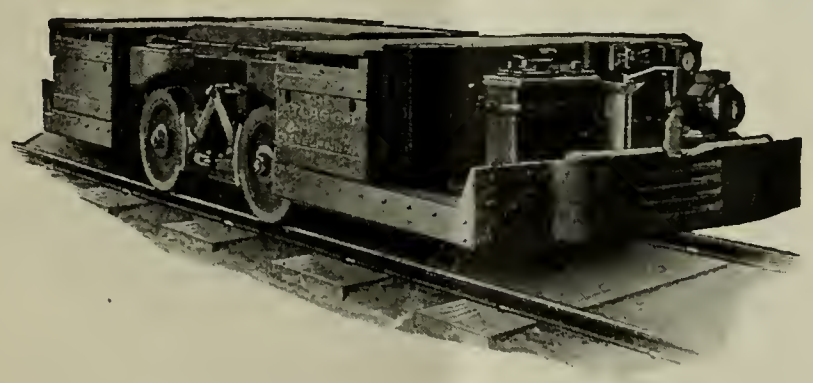
The "Shay" is the most flexible and powerful kind of motive power you can use.

The power is supplied by the three cylinders, producing a constant torque.

LIMA LOCOMOTIVE WORKS, Inc.

LIMA, OHIO

17 East 42nd St. New York



Type E Locomotive

High or Low

Whether your coal is high or low there is an Atlas locomotive exactly suited to your haul.

The Type E for low coal is 30-in. or 32-in. high depending upon the size.

The Type B is for high coal and is 45-in. high. Both types are demonstrating in service that they are fully capable of upholding the established high standards of

Atlas Storage Battery Locomotives

There are other types, of course—for instance the Type D machine is built as low as 26 in. overall.

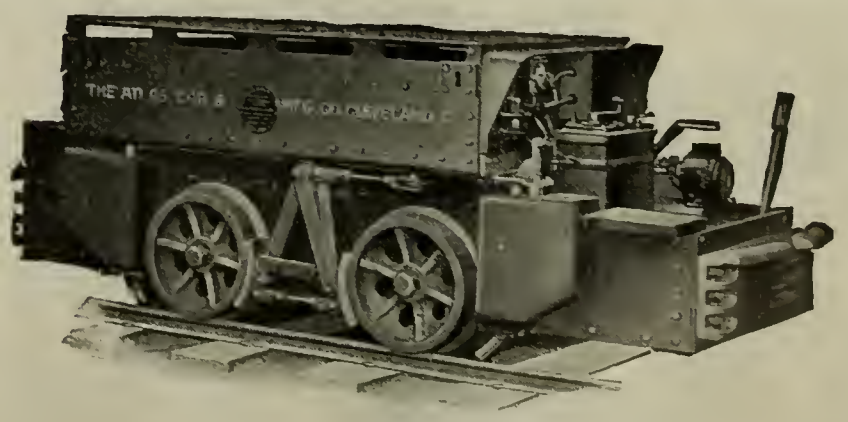
All have two motors with Atlas patented drives, which means better efficiency and longer life.

That is why "The Atlas Hauls More Coal."

The Atlas Car & Mfg. Co.

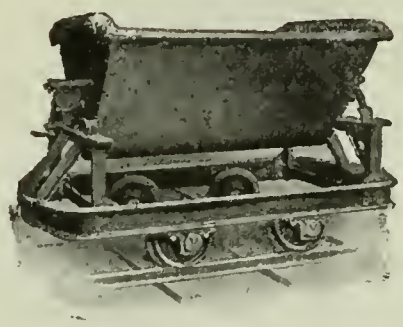
Engineers—Manufacturers

Cleveland, Ohio



Type B Locomotive

MINE CARS



453-C

Mr. Producer: Take advantage of the present lull in the coal market to re-equip your mine. Place your haulage system in A-1 condition and be ready to take care of BIG COMING DEMAND FOR COAL.

Engineering Service Free

Catalogs.

The Watt Mining Car Wheel Co.
Barnesville, Ohio

Denver: Lindrooth, Shubart & Co., Boston Bldg.
San Francisco: N. D. Phelps, Sheldon Bldg.

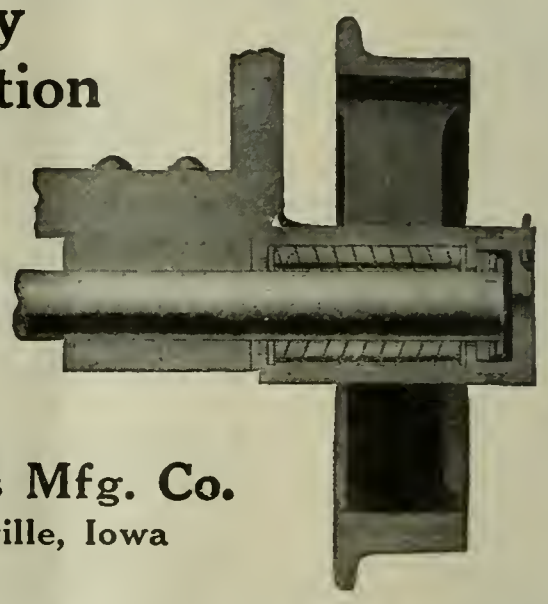
WHY continue the use of heavy, brittle cast iron wheels when lighter, more durable ones are available?

Hercules all steel Wheels are equipped with Hyatt Roller Bearings—made up with cold rolled-steel axles and steel journals.

Steel Wheels are 40 per cent lighter and 400 per cent stronger than cast iron ones.

Why not investigate the possibilities of steel wheels and replace your cast iron ones with Hercules All Steel Wheels?

Mines Cars of Every Description



Hercules Mfg. Co.
Centerville, Iowa

I Make

the Wonderful
Automatic
Drop Bottom
Mine Cars

Also other mine cars and the

Whitney Wonder
Roller Bearing Trucks

Mr. Sanford-Day
Address
Knoxville, Tennessee

KEYSTONE GREASE

Its density is unaffected by temperature changes, water or outside chemical attacks — and one application insures perfect lubrication for from three to six months.

Write for Bulletin Number 26

The Keystone Lubricating Company
Established 1884
Executive Offices and Works, Philadelphia, Pa.
Branches throughout the World

After Three Years' Service Here It Is

Examine this car. Doesn't it look as good as new? Yet it has been in use in a large Western Pennsylvania coal mine for 3 years, in the hardest kind of service. Of course, it is an

IRWIN MINE CAR

The "Channel-Bar" truck—the cold-rolled steel floating axles with dustproof bearings—the steel plate center bumpers—make it the light-weight car that withstands the roughest treatment.

Let us give you the actual service record of the car shown above. Write now for the full details.

IRWIN FOUNDRY AND MINE CAR CO., Irwin Penna.

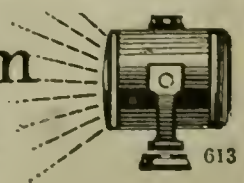
ROTARY CAR-DUMPERS for Mine Cars (Gravity, Electric or Pneumatic Drive).
ROTARY CAR-DUMPERS for Standard Gauge Railroad Cars.
CAR HAULS.
"SOLIDCAR" SELF-DUMPING CAGES.
CAR-CONTROL and CAGING EQUIPMENT.
HYDRAULIC TRIP CONTROLS.

CAR-DUMPER & EQUIPMENT CO.

Main Office and Works:
Grand Crossing, Chicago, Ill.

Eastern Sales Office:
Union Arcade Bldg., Pittsburgh, Pa.

Compare Them



The faint light of a candle and the strong rays of a searchlight. They represent the comparative efficiency of other ways of finding what you want and advertising for it in the

613

SEARCHLIGHT SECTION

Employment Equipment Business Opportunities

Reduce the cost of Lubrication

Superla Grease

Superla Mine Car Greases are made in three grades, differing in consistency only, not in quality; they are applied to the wheels by pressure reaching every part and crevice that should be lubricated.

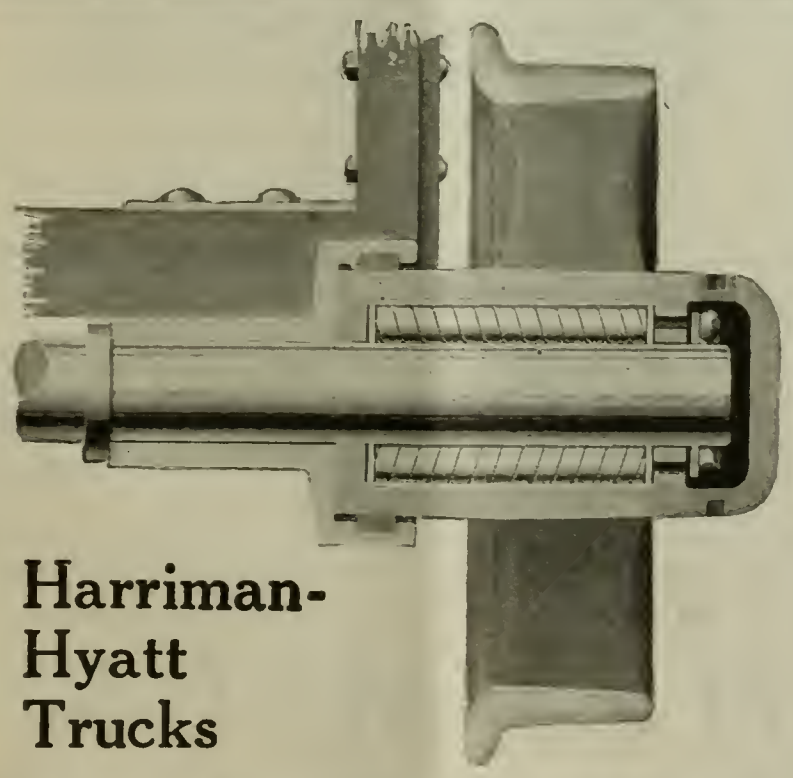
Superla Mine Car Greases are made specially for mine cars. Oily lubricants either feed too freely, running out of the bearings shortly after being applied, giving no service whatever, or they do not feed sufficiently, the difficulty not being detected until great damage to wheels and axles has taken place.

"Mine Car Lubrication" is the title of a booklet prepared by our Engineering Department, it describes the various types of mine car equipment in use and tells which lubricant is best adapted to the kind of equipment you use.

This booklet sent free on request

STANDARD OIL COMPANY
(INDIANA)
910 So. Michigan Ave. CHICAGO

Pageant of Progress Exposition at Chicago's $5,000,000 Municipal Pier, July 30 to August 14



Harriman-Hyatt Trucks

will lower your haulage costs by a saving in expense of:

Upkeep
Power
Lubrication

Write for free trial proposition.

Harriman Foundry & Machine Works
Harriman, Tenn.
Builders of Mine and Industrial Cars

FLEMING

Self-Aligning
Roller Bearing
Journal Boxes

are the only real solution of your mine car problem.

Friction is reduced 50%—car bodies are relieved of racking strains which are inevitable when rigid running gear is used—car wheel replacements are easily and economically effected.

Can be applied to old cars as well as new—often utilizing the original wheels and axles.

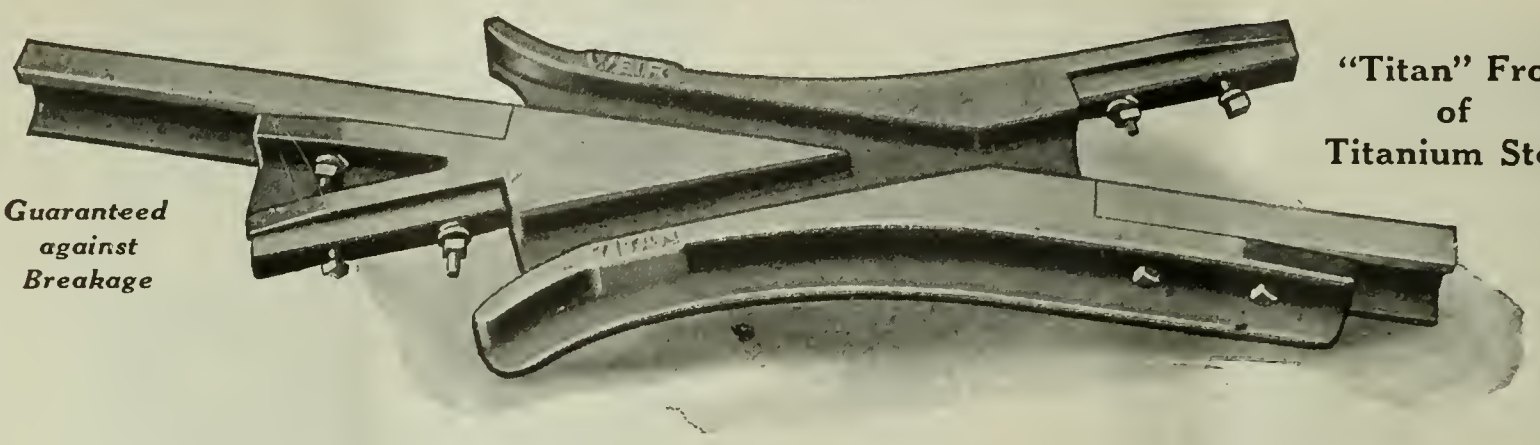
Write for details

J. R. Fleming & Sons Co
Incorporated
Scranton, Pa.

Have all the advantages of a roller-bearing mine car and still use the old wheels and axles.

Inside type Fleming Journal Box used with plain bored outside wheels

40 Years of Successful Service



"Titan" Frog of Titanium Steel

Guaranteed against Breakage

This Weir TITAN FROG *outwears cast iron and semi-steel a dozen times over*

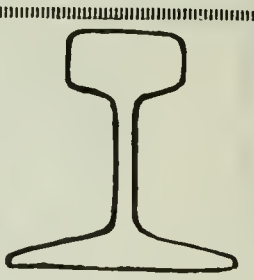
It is cast in *one solid piece* of titanium steel. Nobody needs to be introduced to titanium qualities. The Weir "TITAN" Frog laughs at wear and breakage. Its durability stands between you and costly wrecks, one of which would cost you more than a *dozen* "TITANS." Yet one "TITAN" costs but little.

Investigate!

WEIR FROG COMPANY, CINCINNATI, OHIO

Largest and oldest company in the United States making a specialty of track work for mines. Complete turnouts for rooms, tram roads and tipples. Prompt shipments, durable work and reasonable prices. Our Engineering Force is at your service.

The
West Virginia Rail Co.
Manufacturers
Light Steel Rails
and Accessoraies
8-12-16-20-25-30-35-40-45-lbs. per yd.
Huntington, W. Va.

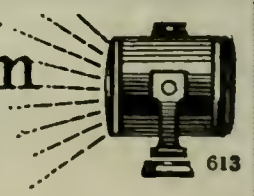


8, 12, 16, 20, 25, 30, 35, 40 lb. per yard
Splices, Spikes, Frogs and Switches

UNITED STATES RAIL CO.
CUMBERLAND, MARYLAND

TRACK EQUIPMENT
MINE FROGS
SPECIAL WORK FOR MINES
STEEL TIES
SWITCHES
RAILS
CROSSINGS
LIGHT RAILWAY EQUIPMENT CO.
COMMERCIAL TRUST BLDG. PHILA. PA.

Compare Them



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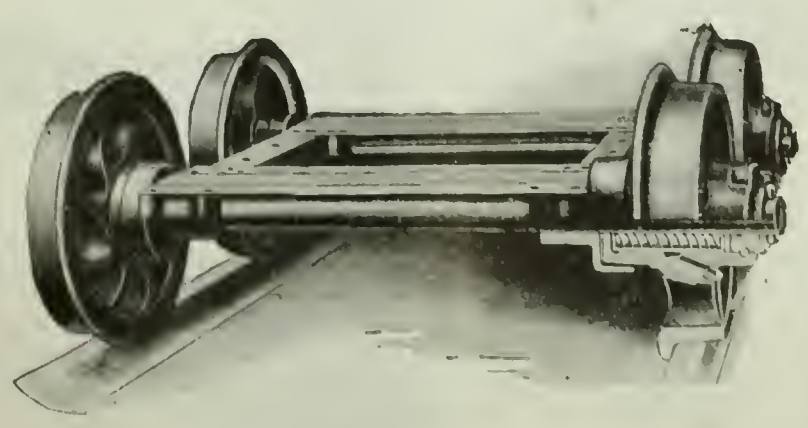
SEARCHLIGHT SECTION

Employment Equipment Business Opportunities

613



HELMICK

Mine Cars, Wheels and Trucks

Illustration shows sturdy truck design and detail in cross section of Helmick-Hyatt Roller Bearing Wheel.

We furnish wheels and trucks for your present mine cars, or will build cars complete to your specification.

If you need coal-handling equipment of any kind—get our quotations.

Helmick Foundry Machine Co.
Fairmont, W. Va.

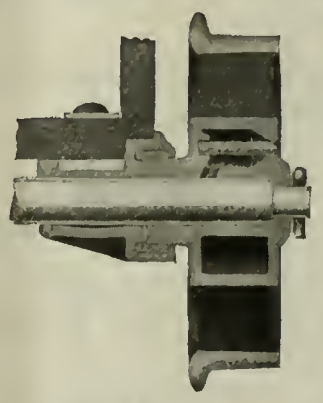
Is easily applied with a few large bolts

Is seldom shopped on account of truck trouble.

Holds lubricant for long periods.

Is guaranteed for a year against hub wear.

Has full-floating axles with visible linch pins.



PHILLIPS

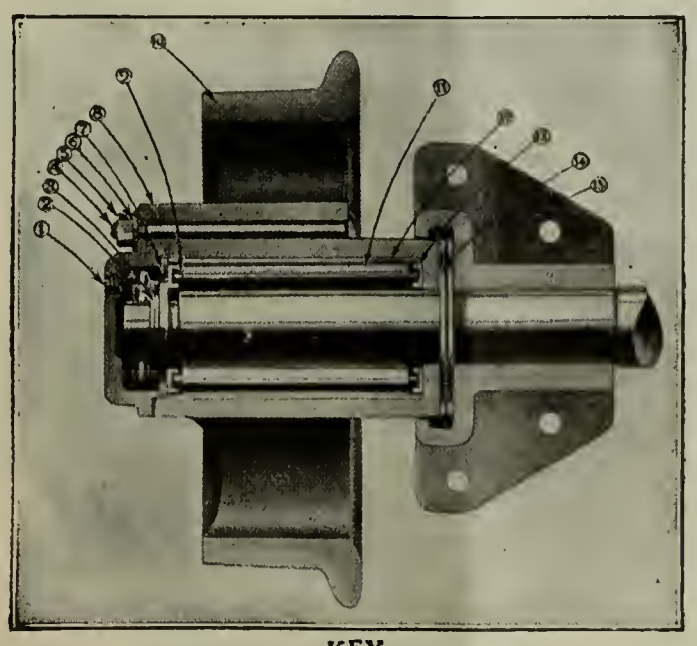
Patent Open Gap Wheel Truck

This Truck is the ideal running-gear for large or small mines, light or heavy cars, animal or mechanical haulage. It will solve that problem of hard-running cars—on level track it runs 25 per cent easier than other improved trucks selling at the same price.

Write us today.

Phillips Mine & Mill Supply Co.
So. 23rd and Jane Sts., Pittsburgh, Pa.

RAILWAY AND MINE SUPPLY COMPANY



KEY

(1) Grease Chamber Plug
(2) Cotter Key
(3) Steel Wearing Washer
(4) Hub Cap Bolt
(5) Hub Cap Bolt Nut
(6) Lock Washer
(7) Steel Plate
(8) Fabric Gasket
(9) Roller Holder (front)
(10) Chill Tread
(11) Solid Steel Rollers
(12) Steel Bushing
(13) Roller Holder (rear)
(14) Steel Wearing Washers

The "RAMSCO" Roller Bearing Wheel gives the Service Demanded of Modern Mining Conditions

RAMSCO
TRADE MARK

Simple in Design. Rugged in Construction

Bulletin 191, containing complete information, will be sent on request

General Sales Office
McCormick Bldg., Chicago, Ill.
Tel. Harrison 7382

General Office and Works
Kincaid, Illinois
Tel. P. B. X. 69

Just about Grease—nothing else!

Why? Because we want the users of Hyatt equipped cars to get maximum life by keeping them greased with good greases.

We have tested and approved the greases of about twenty grease manufacturers. If you use the best cars,—that is cars equipped with Hyatts write today for list of approved greases. A postal will do.

Protect your Investment

Hyatt Roller Bearing Co.
New York City.

"CINCINNATI"

"Cincinnati" Spring Headrod

"Depend upon it"—it will make your switches function with greater efficiency

Here is one of the many "Cincinnati specialties. This Spring Headrod goes a long way toward making switches automatic. The application in coal mine practice opens the way to greater efficiency in transportation and we will be glad to explain it upon request.

"Depend upon it" we can promptly furnish all the desired accessories of the coal mine haulageway. Not only can we furnish from stock, but a plant can take care of any unusual demands. An inquiry will show what can be done.

Write us today

Mr. Herbert Crapster, 1 Madison Ave., New York City, New York.
M. F. K. Holmested, P. O. Box 1004, Charleston, West Va.
Mine Safety & Service Co., Benton, Ill.
United Railway Supply Co., 2003 Jefferson County Bank Bldg., Birmingham, Ala.
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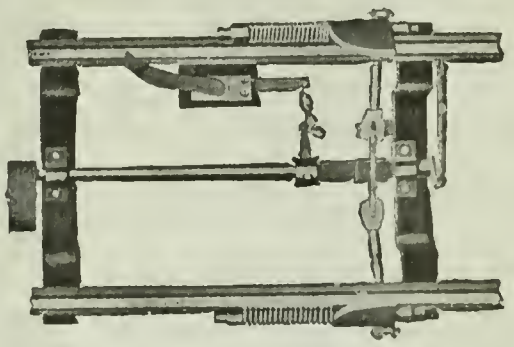
The "Cincinnati" Frog & Switch Co., Cincinnati, Ohio

Established 1906

FROGS - CROSSINGS - SWITCH STANDS - SWITCHES - ROOM TURNOUTS - ETC.

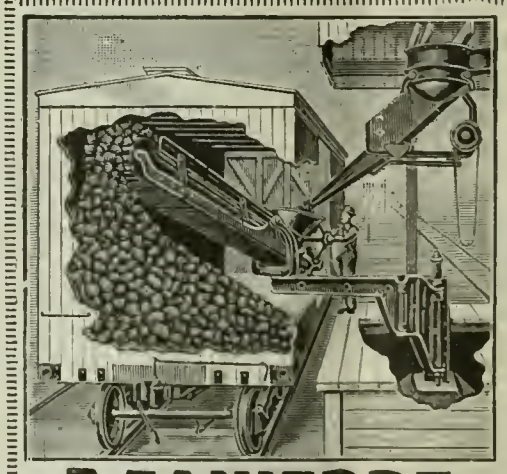


The NOLAN Automatic Cager and Feeder

Used as cager at shaft bottoms; use as feeder for rotary and cross-over dumps; as automatic stop in rotary dump. Guaranteed.

Eliminates wrecks—pays for itself in short time. Write for literature.

The Mining Safety Device Co.
Bowerston, Ohio, U. S. A.



THE MANIERRE BOX CAR LOADER

Loads All Kinds of Coal and Coke

MANIERRE
ENGINEERING & MACHINERY CO.
MILWAUKEE, WIS.

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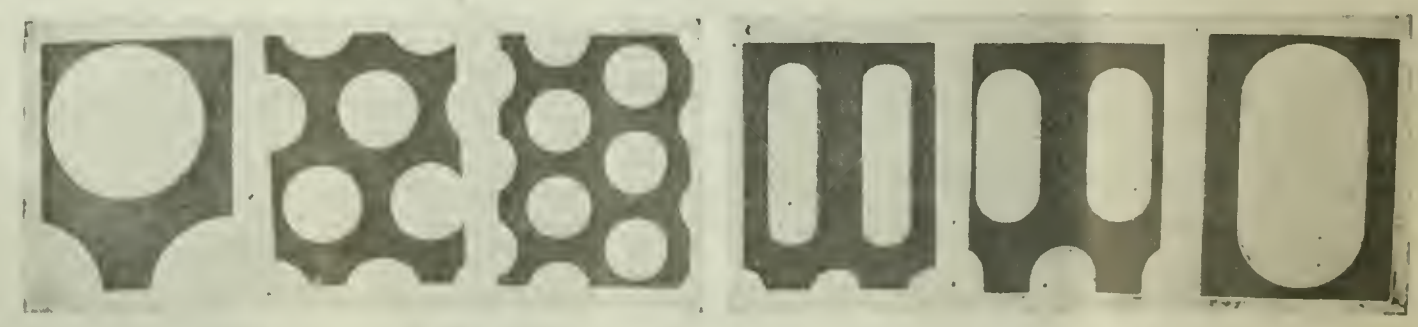
PERFORATED METAL

All sizes and shapes of Holes



All kinds and thicknesses of Metal

FOR SCREENING, SIZING and WASHING COAL

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628 No. Union Avenue, Chicago, Ill., U. S. A.

New York Office: 114 Liberty Street

WHAT AND WHERE TO BUY

A Classified Index of Advertisers in This Issue

For Alphabetical Index See Last Page

Aerial Tramways
Broderick & Bascom Rope Co.
Interstate Equipment Corp.

Air, Aftercoolers
Ingersoll-Rand Co.

Air, Receivers
Ingersoll-Rand Co.

Armature Repair Machinery
Electric Service Supplies Co.

Armatures and Field Coils
Chattanooga Armature Works
Crescent Electric Co.
Nelson Co., I. R.

Ash Handling Machinery
Link-Belt Co.

Augers, Coal (See Drills)

Battery Boxes
Paragon Electric Co.

Battery Charging Equipment
Cutler-Hammer Mfg. Co.

Bearings, Ball and Roller
Hyatt Roller Bearing Co.
Railway & Mine Supply Co.
S. K. F. Industries, Inc.

Bearings Roller, Journal Boxes for,
Fleming & Sons Co., Inc., J. R.

Belt Dressing
Keystone Lubricating Co.

Belts, Conveyor
Link-Belt Co.

Belts, Transmission
Link-Belt Co.

Bit Sharpeners
Ingersoll-Rand Co.
Little Giant Co.
Molock Co.
Sullivan Machinery Co.

Blasting Supplies
Du Pont de Nemours & Co., Inc., E. I.

Blowers
Buckeye Blower Co.
Eynon-Evans Corp.
Stine, S. B.

Blowers, Centrifugal
Ingersoll-Rand Co.

Boilers, Water Tube
Babcock & Wilcox Co.

Books, Coupon
Allison Coupon Co.

Bonding Machines
Electric Railway Improvement Co.

Books, Technical
McGraw-Hill Co., Inc.

Boosters, Air
Ingersoll-Rand Co.

Box Car Loaders
Link-Belt Co
Manierre Engineering & Mchry Co.

Brakes, Electrically Operated
Cutler-Hammer Mfg. Co.

Breaker Machinery
Vulcan Iron Works
Wilmot Engineering Co.

Breakers, Circuit, Electric (See Circuit Breakers, Electric)

Briquetting Machinery
Malcolmson Briquet Engr. Co.
Mashek Engineering Co.

Buckets, Clamshell
Link-Belt Co.

Buckets, Coal Handling
Blaw-Knox Co.
Link-Belt Co.

Buckets, Elevator
Bartlett & Snow Co., The C. O.
Hendrick Mfg. Co.
Link-Belt Co.

Cableways
Flory Mfg. Co., S.
Interstate Equipment Corp.

Cagers
Mining Safety Device Co.

Cagers, Automatic
Holmes & Bros. Inc., Robt.
Mining Safety Device Co.

Cages
Car-Dumper & Equipment Co.
Helmick Foundry-Machine Co.
Morrow Mfg. Co.
Railway & Mine Supply Co.

Cages, Self-Dumping
Car-Dumper & Equipment Co.

Car Hauls
Car-Dumper & Equip. Co.
Jeffrey Mfg. Co.
Link-Belt Co.

Car Loaders (See Box Car Loaders)

Car Hitchings
Pittsburgh Knife & Forge Co.
Railway & Mine Supply Co.

Car Stops, Automatic
Hyatt Roller Bearing Co.
Mining Safety Device Co.
Phillips Mine & Mill Supply Co.

Cars and Car Wheels
Atlas Car & Mfg. Co.
Harriman Foundry & Machine Works.
Helmick Foundry-Machine Co.
Hercules Mfg. Co.
Hoekensmith Wheel & Mine Car Co.
Irwin Foundry & Mine Car Co.
Lobdell Car Wheel Co.
Phillips Mine & Mill Supply Co
Railway & Mine Supply Co.
Sanford-Day Iron Works
Southern Wheel Co.
Stine, S. B.
Watt Mining Car Wheel Co.

Cars, Mine Air Compressor
Ingersoll-Rand Co.

Cars, Roller Bearing Journal Boxes For
Flexings & Sons Mfg. Co., Inc., J. F.

Cars, Steel Mining
Hendrick Mfg. Co.
Railway & Mine Supply Co.

Castings
Eynon-Evans Corp.
Falk Corp.
Flood City Mfg Co.
Hoekensmith Wheel & Mine Car Co
Lobdell Car Wheel Co
Railway & Mine Supply Co.
Sanford-Day Iron Works

Chain Flight Conveyors
Jeffrey Mfg. Co.

Chains
Link-Belt Co.

Chemicals
Du Pont de Nemours & Co., Inc., E. I.

Chutes
Helmick Foundry-Machine Co.
Sanford-Day Iron Works

Circuit Breakers, Electric
Automatic Reclosing Circuit Breaker Co., The
Bartlett & Snow Co., The C. O.
General Electric Co.

Clutches, Friction
Caldwell & Co., Inc., W. E.
Link-Belt Co.

Coal
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Coal and Ash Handling Machinery
Holmes & Bros., Inc., Robt.
Link-Belt Co.

Coal Buyers
Cory-Mann George Corp.

Coal Exporters
Cory-Mann George Corp.

Coal Loaders
Manierre Engineering & Mchry Co.

Coal Mining Equipment
Roberts & Schaefer Co.

Coal Mining Plants
Jeffrey Mfg. Co.
Link-Belt Co.

Coal Storage and Rehandling Machinery
Jeffrey Mfg. Co.
Link-Belt Co.

Coke Loaders
Manierre Engineering & Mchry Co.

Coke Oven Drawing and Leveling Machines
Atlas Car & Mfg. Co.

Commissary Equipment
Automatic Refrigerating Co., The

Commutators
Chattanooga Armature Works.

Compressors, Air
Allis-Chalmers Mfg. Co.
General Electric Co.
Penn Pump & Compressor Co.
Sullivan Machinery Co.

Compressors, Gas
Ingersoll-Rand Co.
Penn Pump & Compressor Co.

Concrete Construction
Cement-Gun Co., Inc.

Concrete Finishing Tools
Cement-Gun Co., Inc.

Condensers
Manistee Iron Works Co.

Condensers, Rotary Jet
Manistee Iron Works Co.

Condensers, Surface
Ingersoll-Rand Co.

Consulting Engineers (See Alphabetical Index)

Controllers
Cutler-Hammer Mfg. Co.
General Electric Co.
Goodman Mfg. Co.

Conveyors, Chain Flight
Cross Engineering Co.
Link-Belt Co.
Bartlett & Snow Co., The C. O.

Conveyors, Coal
Exeter Machine Wks., Inc.
Hendrick Mfg. Co.
Jeffrey Mfg. Co.
Link-Belt Co.
Marion Mch. Fdry. & Supply Co.
Robins Conveying Belt Co.

Couplings Mine Car
Hoekensmith Wheel & Mine Car Co.
Railway & Mine Supply Co.

Covering, Boiler and Pipe
Magnesia Association of America

Cranes
Ball Engine Co.
Bucyrus Co.
Link-Belt Co.

Cranes, Locomotive
Ball Engine Co.

Cranes, Traveling
Niles-Bement-Pond Co.

Crossings (See Switches, Frogs and Crossings)

Crushers, Coal
American Pulverizer Co.
Bartlett & Snow Co., The C. O.
Exeter Machine Wks., Inc.
Link-Belt Co.
Marion Mch. Fdry. & Supply Co.
Pennsylvania Crusher Co.
Traylor Engineering & Mfg. Co.
Vulcan Iron Works

Dealers' Machinery
Carlin Mach. Co., John H.
Charleston Industrial Corp.
Cohen & Son, Louis
Crockwell Mine & Supply Co.
Curtis-Willis Co.
Duquesne Elec. Mfg. Co.
Gregory Elect. Co.
Independent Elect. & Machy Co.
Iron Trade Products Co.
Harris Bros. Co.
Lambert, H. L.
Merchants Steel & Supply Co.
Miller-Owen Co.
Moore, J. W.
Nashville Industrial Corp.
Operators Supply Co.
Pittsburgh Boiler Mach. Co.
Power Equip. Co.
Power Machy. Exchange
Sherwood, E. C.
Standard Rail & Steel Co.
Reading Engrg. Co.
Wickes Machy. Co.
Wilson Machinery Co.
Zelnicker Supply Co.

Diamond Core Drill, Contracting
Ameling Prospecting Co., H. R.
Diamond Drilling & Exploration Co.
Hoffman Bros.
Punxsutawney Drill & Cont Co.
Sullivan Machinery Co.

Doors, Automatic Mine (See Mine Doors, Automatic)

Drafting Materials (See Eng. Instruments and Supplies)

Dredges
Bucyrus Co.

Driers, Sand
Electric Service Supplies Co.
Harriman Foundry & Machine Works

Drills, Air
Sullivan Machinery Co.
Whitcomb Co., Geo. D.

Drills, Core
Sullivan Machinery Co.

Drills, Electric
Jeffrey Mfg. Co.
Sullivan Machinery Co.

Drills, Portable Electric
General Electric Co.

Drills, Rock
Denver Rock Drill Mfg. Co.
Ingersoll-Rand Co.

Drives, Silent Chain
Link-Belt Co.

Dump Protectors
Mining Safety Device Co.

Dumps, Cross-Over
Helmick Foundry-Machine Co.
Phillips Mine & Mill Supply Co
Sanford-Day Iron Works

Dumps, Rotary
Car-Dumper & Equip. Co.

Dynamite & High Explosives (See Explosives)

Dynamos (See Generators)

Electric Haulage Supplies
Electric Service Supplies Co.

Elevators and Conveyors
Jeffrey Mfg. Co.
Link-Belt Co.

Engineering Instruments and Supplies
Buff & Buff Mfg. Co.

Engineering & Technical Books
McGraw-Hill Book Co., Inc.

Engineers and Contractors
Roberts & Schaefer Co.

Engines, Hoist and Haulage
Holmes & Bros. Inc., Robt.
Vulcan Iron Works

Engines, Oil
Ingersoll-Rand Co.

Engines, Steam
Ball Engine Co.
Ingersoll-Rand Co.

Excavating Machinery
Ball Engine Co.
Bucyrus Co.

Explosives
Du Pont de Nemours & Co., Inc., E. I.

WHAT AND WHERE TO BUY

Explosives, Permissible
Du Pont de Nemours & Co., Inc., E. I.

Fans, Ventilating
Buckeye Blower Co.
Jeffrey Mfg. Co.
Stine, S. B.
Vulcan Iron Works

Feeders, Automatic
Mining Safety Device Co.

Fittings, Wire Rope (See Rope Wire)

Floodlights, Portable
General Electric Co.

Fuel Economizer
Magnesia Association of America

Gage Cocks
Eynon-Evans Corp.
Lunkenheimer Co., The
Ohio Brass Co., The

Gages, Water, Boiler and Locomotive
Crane Co.
Jenkins Bros.
Lunkenheimer Co., The
Ohio Brass Co., The

Gear Cases
Electric Service Supplies Co.

Gears
Falk Corp.
Medart Patent Pulley Co.
Niles-Bement-Pond Co.
Tool Steel, Gear & Pinion Co.
Vulcan Iron Works

Gears, Herringbone
Niles-Bement-Pond Co.

Generators and Generating Units
Allis-Chalmers Mfg. Co.
General Electric Co.
Terry Steam Turbine Co.
Triumph Elective Co.

Grates, Traveling
Combustion Engineering Corp.

Greases
Keystone Lubricating Co.
Ohio Grease Co.
Sanford-Day Iron Works
Standard Oil Co.
Texas Co.

Grinders, Portable
Ingersoll-Rand Co.

Hammers, Power
Little Giant Co.
Molock Co.
Sullivan Machinery Co.

Hangers (See Pulleys)

Headlights, Locomotive
Electric Service Supplies Co.
General Electric Co.

Heat Insulation
Magnesia Association of America

Heaters, Air Electric
Cutler-Hammer Mfg. Co., The

High Explosives (See Dynamite)

Hoists, Chain
Chisholm-Moore Mfg. Co.

Hoists, Dock
Flory Mfg. Co., S.

Hoists, Electric
Allis-Chalmers Mfg. Co.
Diamond Machine Co.
Exeter Machine Wks., Inc.
Flory Mfg. Co., S.
Holmes & Bros., Inc., Robt.
Link-Belt Co.
Thomas Elevator Co.
Treadwell Engineering Co.
Vulcan Iron Works
Wellman-Seaver Morgan Co.

Hoists, Portable
Flood City Mfg. Co.
Ingersoll-Rand Co.

Hoists, Skip
Bartlett & Snow Co., The C. O.

Hoists, Steam
Allis-Chalmers Mfg. Co.
Exeter Machine Wks., Inc
Flory Mfg. Co., S.
Ingersoll-Rand Co.
Sullivan Machinery Co.
Thomas Elevator Co.
Vulcan Iron Works
Wellman-Seaver-Morgan Co.

Hose, Air
Denver Rock Drill Mfg. Co.

Hydraulic Machinery
Allis-Chalmers Mfg. Co.
Car-Dumper & Equip. Co.

Incline Plane Machinery
Sanford-Day Iron Works
Stine, S. B.

Injectors and Ejectors
Crane Co.
Eynon-Evans Corp.
Jenkins Bros.
Lunkenheimer Co., The

Insulating Material
Magnesia Association of America

Insulators, Section
Electric Railway Equipment Co.
Flood City Mfg. Co.

Irons, Soldering
Cutler-Hammer Mfg. Co., The

Jigs
Traylor Engineering & Mfg. Co.

Journal Boxes, Roller Bearing or Plain Bored
Fleming & Sons Mfg. Co., Inc., J. R.

Lamps Arc & Incandescent
General Electric Co.

Lightning Arresters
Electric Service Supplies Co.

Loaders, Box Car (See Box Car Loaders)

Loaders, Wagon & Truck
Jeffrey Mfg. Co.

Loading Apparatus
Diamond Machine Co.

Loading Booms
Jeffrey Mfg. Co.
Link-Belt Co.
Morrow Mfg. Co.

Locomotives, Compressed Air
Porter Co., H. K.
Vulcan Iron Works

Locomotives, Electric
Atlas Car & Mfg. Co.
General Electric Co.
Goodman Mfg. Co.
Jeffrey Mfg. Co.
Lima Locomotive Wks., Inc.

Locomotives, Gasoline
Hadfield-Penfield Steel Co.
Milwaukee Locomotive Mfg. Co.
Vulcan Iron Works
Whitcomb Co., Geo. D.

Locomotives, Steam
American Locomotive Co.
Porter Co., H. K.
Vulcan Iron Works

Locomotives, Storage Battery
Atlas Car & Mfg. Co.
General Electric Co.
Goodman Mfg. Co.
Ironton Engine Co.
Jeffrey Mfg. Co.
Mancha Storage Battery Locomotive Co
Whitcomb Co., Geo. D.

Lubricants
Ohio Grease Co.
Standard Oil Co.
Texas Co.

Lubricators
Keystone Lubricating Co.
Lunkenheimer Co., The
Ohio Grease Co.

Machine Tools
Niles-Bement-Pond Co.
Standard Oil Co.

Mechanical Draft Apparatus
Buckeye Blower Co., The
General Electric Co.

Mine Doors, Automatic
American Mine Door Co., The

Mining Machines
Goodman Mfg. Co.
Sullivan Machinery Co.
Whitcomb Co., Geo. D

Mining Machines, Chair and Puncher
Goodman Mfg. Co.
Jeffrey Mfg. Co.

Motor Starters
Cutler-Hammer Mfg. Co.

Motors
Allis-Chalmers Mfg. Co.
General Electric Co.
Goodman Mfg. Co.
Triumph Electric Co.
Wesche Electric Co., B. A.

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International Harvester Company of America

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Keystone Lubricating Co.
Ohio Grease Co.

Oiling Devices
Lunkenheimer Co., The

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Chicago Perforating Co.
Cross Engineering Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.
Pittsburgh Perforating Co.

Picking Tables
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Jeffrey Mfg. Co.
Link-Belt Co.
Morrow Mfg. Co.

Pile Drivers, Locomotive
Bucyrus Co.

Pipe
Michigan Pipe Co.

Pipe Cutting and Threading Machinery
Toledo Pipe Threading Mach. Co.

Pipe, Spiral Riveted
Abendroth & Root Mfg. Co.

Pipe, Wood
Wyckoff & Son Co., A.

Powder, Blasting
Du Pont de Nemours Co., Inc., E. I.

Power Transmission Machinery
Caldwell Co., Inc., W. E.

Pulleys, Shafting and Hangers
Caldwell & Co., Inc., W. E.
Electric Railway Equipment Co.
General Electric Co.
Medart Patent Pulley Co.
S. K. F. Industries, Inc.

Pulverizers, Coal and Coke
American Pulverizer Co.

Pump Plungers
Birdsboro Steel Foundry & Mch. Co.
Lobdell Car Wheel Co.

Pumping Machinery
McGowan Co., J. H.
Penn Pump & Compressor Co.

Pumps, Boiler Feed
Barrett, Haentjens & Co.
Ingersoll-Rand Co.
McGowan Co., J. H.
Terry Steam Turbine Co.
Weinman Pump Mfg. Co.

Pumps, Centrifugal
Allis-Chalmers Mfg. Co.
Barrett, Haentjens & Co.
Ingersoll-Rand Co.
Manistee Iron Works Co.
Penn Pump & Compressor Co.
Stine, S. B.
Terry Steam Turbine Co.
Weinman Pump Mfg. Co.

Pumps, Mine
Ingersoll-Rand Co.
McGowan C., J. H.
Weinman Pump Mfg. Co.

Pumps, Pneumatic Air Lift
Ingersoll-Rand Co.

Pumps, Power
Boyts, Porter & Co.
McGowan Co., J. H.
Weinman Pump Mfg. Co.

Pumps, Steam
McGowan Co., J. H.
Penn. Pump & Compressor Co.
Weinman Pump Mfg. Co.

Pumps, Vacuum
Ingersoll-Rand Co.
Manistee Iron Works Co.
Weinman Pump Mfg. Co.

Rail Benders
American Hinge Co.

Rail Bonds
American Steel & Wire Co.
Electric R'way Improvement Co.
Electric Service Supplies Co.
General Electric Co.
Ohio Brass Co., The

Rails and Rail Joints
U. S. Rail Co.
West Virginia Rail Co.

Refrigeration, Automatic for Coal Mine Stores
Automatic Refrigerating Co., The

Repairing, Electric
Crescent Elect. Co.
Nelson Co., I. R.

Road Graders
Ball Engine Co.

Roofing
Texas Co.

Rope, Manila and Jute
Broderick & Bascom Rope Co.

Rope Transmission
Broderick & Bascom Rope Co.

Rope, Wire
Broderick & Bascom Rope Co.
Leschen & Sons Rope Co., A.
Roebling's Sons Co., J. A.

Rotary Car Dumpers
Car-Dumper & Equip. Co.

Safety Appliances
Mining Safety Device Co.

Scales
Streeter-Amet Weighing & Recording Co.

School and Colleges (See Consulting Engrs. Directory)

Scraper Loaders
Diamond Machine Co.
Goodman Mfg. Co.

Screens and Perforated Sheeting
Chicago Perforating Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.
Jeffrey Mfg. Co., The
Marion Mch Fdry. & Supply Co.
Morrow Mfg. Co.
Pittsburgh Perforating Co.
Stimpson Equipment Co.

Second-Hand Equipment (See Searchlight Section)
Carlin Mach. Co., John H.
Childers Electric Co.
Cohen & Son, Louis
Crescent Electric Co.
Crockwell Mine & Supply Co.
Curtis-Willis Co.
Du Pont de Nemours & Co., Inc., E. I.
Duquesne Electric Mfg. Co.
Gregory Electric Co.
Harris Bros. Co.
Independent Elect. & Machy Co.
I. R. Nelson Co.
Iron Trade Products Co.
Lambert, H. T.
Merchants Steel & Supply Co.
Miller-Owen Electric Co.
Moore, J. W.
Nashville Industrial Corp.
Nelson Co., I. R.
Operators Supply Co.
Pittsburgh Boiler Mach. Co.
Power Equip. Co.
Power Machy. Exchange
Sherwood, E. C.
Standard Rail & Steel Co.
Reading Engrg. Co.
Wickes Machy. Co.
Wilson Machinery Co.

Separators, Magnetic
Cutler-Hammer Mfg. Co.

Sheaves and Rollers
Medart Patent Pulley Co.

Shovels, Electric Coal
Sanford-Day Iron Works
Ball Engine Co.
Myers-Whaley Co.

ANACONDA
Copper Wire
111 W. Washington St., Chicago

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are used by many mine operators for economical handling of their coal.
We shall be glad to explain our coal-handling Tramways to anyone interested.

A. Leschen & Sons Rope Co.
St. Louis, Mo.

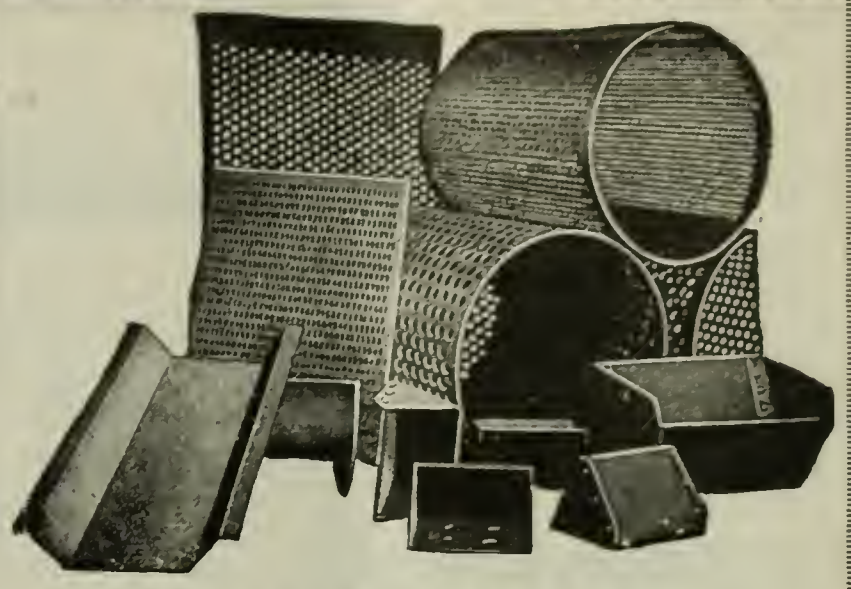
ROEBLING

Wire Rope, Hooks, Clips, Sockets, Welding Wire
JOHN A. ROEBLING'S SONS CO., TRENTON, N. J.

Automatic Aerial Tramway

The Costs of
Installation Maintenance and operation
Justify its use at mine or quarry

INTERSTATE EQUIPMENT CORP.
25 Church Street, New York City



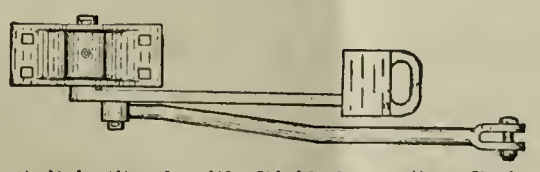
HENDRICK
Coal Mine Equipment

- Perforated Metals
- Elevator Buckets
- Conveyor Trough
- Conveyor Flights
- Stacks
- Mine Car Bodies
- General Sheet and Light Structural Work

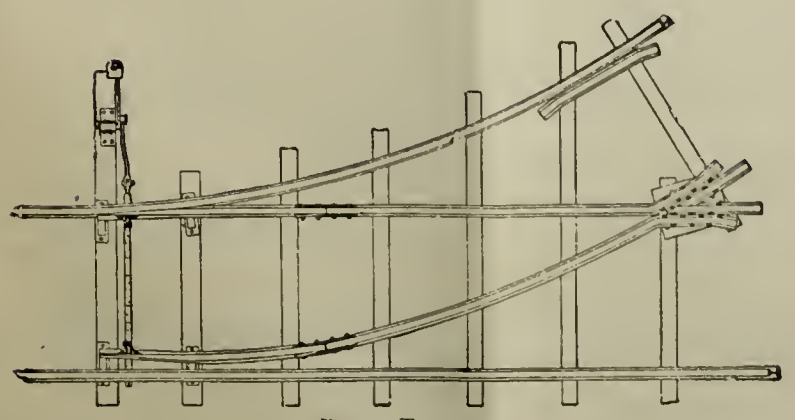
Inquiries are solicited. Estimates and quotations on any type of sheet metal work for coal mines will be cheerfully submitted.

HENDRICK MFG. CO.
53 Dundaff Street, Carbondale, Pa.
Pittsburgh Office: 915-916 Union Bank Bldg.
Hazleton, Pa., Office: 705 Marke Bank Bldg.
New York Office: 30 Church St.

CENTRAL
MINE TRACK EQUIPMENT



Switch Stand with Rigid Connecting Rod



Room Turnout

Standard in Many Mines

"Central" Equipment is standard equipment in many mines because it has proved over a long period of time, that it was a good investment. It is a good investment because it is a combination of the best materials, workmanship and skill in design. It will pay you to standardize on "Central" because it is the product of men who know your problems.

Call "Central" and ask for complete information

The Central Frog & Switch Co.
Cincinnati, Ohio

WHAT AND WHERE TO BUY

Shovels, Steam
Ball Engine Co.
Bucyrus Co.

Shower Baths
American Hinge Co.

Signal Systems
Electric Service Supplies Co.

Sirens
Federal Electric Co.
Interstate Machine Products Co., Inc.

Splice, Cable
American Mine Door Co., The

Splice, Trolley Wire
American Mine Door Co., The

Sprocket Wheels
Caldwell Co., Inc., W. E.
Medart Patent Pulley Co.

Stocks, Dies, Vises
Toledo Pipe Threading Mach. Co.

Stokers, Mechanical
Babcock & Wilcox Co., The
Combustion Engineering Corp.

Stripping Machinery
Ball Engine Co.

Surveying Instruments (See Engineering Instruments and Supplies)

Switchboards, Power
General Electric Co.

Switches, Frogs and Crossings
American Frog & Switch Co., The
Central Frog & Switch Co.
Cincinnati Frog & Switch Co.
Egyptian Iron Works
Light Railway Equipment Co.
Weir Frog Co.

Tanks, Wood and Steel
Caldwell & Co., Inc., W. E.
Hauser-Stander Tank Co., The

Telephone Equipment
Paragon Electric Co.
Romo Wire Co.

Telephones, Mines
Electric Service Supplies Co.

Testing Laboratories (See Consulting Engs. Directory)
Koppers Co. Laboratories

Tipples and Tipple Equipment
Bartlett & Snow Co., The C. O.
Jeffrey Mfg. Co., The
Link-Belt Co.
Marion Mch., Fdry. & Supply Co.
Phillips Mine & Mill Supply Co.
Roberts & Schaefer Co.

Towers, Water
Caldwell & Co., Inc., W. E.

Tracks, Portable Rail, etc.
American Frog & Switch Co.
Central Frog & Switch Co., The
Cincinnati Frog & Switch Co.
Egyptian Iron Works
Weir Frog Co.

Tramways
Interstate Equipment Corp.

Tramways, Aerial
Broderick & Bascom Rope Co.
Leschen & Sons Rope Co., A.

Transformers
General Electric Co.

Traps, Steam
Crane Co.
Jenkins Bros.

Trench Machines
Ball Engine Co.

Trolley Material, Overhead
Electric Railway Equipment Co.
Electric Service Supplies Co.
General lectric Co.
Ohio Brass Co., The

Trolley Wheel Bushings
Electric Railway Equipment Co.
Flood City Mfg. Co.

Trolley Wheels and Harps
Electric Railway Equipment Co.
Flood City Mfg. Co.
Ohio Brass Co., The

Trolley Wire
Anaconda Copper Mining Co.

Trucks, Hollow Axle
Southern Wheel Co.

Trucks, Motor
Interaational Harvester Company of Americo

Turbines, Steam
Allis-Chalmers Mfg. Co.
Barrett, Haentjens & Co.
DeLaval Steam Turbine Co.
General Electric Co.
Terry Steam Turbine Co.

Valves
Flood City Mfg. Co.
Jenkins Bros.
Lunkenheimer Co., The

Washeries, Coal
Link-Belt Co.
Roberts & Schaefer Co.

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Roeblings' Sons Co., J. A.
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Simplex Wire & Cable Co.

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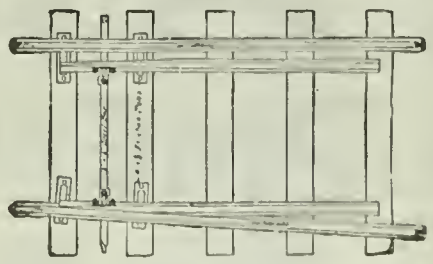
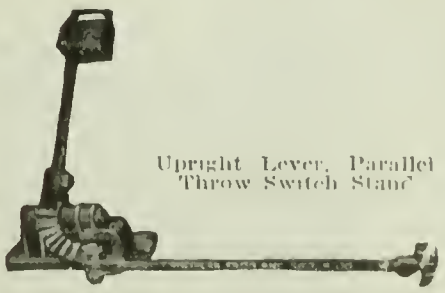
Cory Mann George Corp.
Penn Coal & Coke Corp.
Stonega Coke & Coal Co.
Wentz Co.
Wholesale Coal Co.

American Track Equipment



Split Switch



Upright Lever, Parallel Throw Switch Stand

Cast Frog

The Upright Lever, Parallel Throw Switch Stand, Cast Frog and Split Switch, illustrated here, is an *American* combination designed for service where space is limited.

The stand hugs close to the "rib," well out of the way, and it can be operated from cars in passing. It is absolute in action, insuring tight, light switch points. American Track Accessories fit into the mine haulage scheme because they are built expressly for this service.

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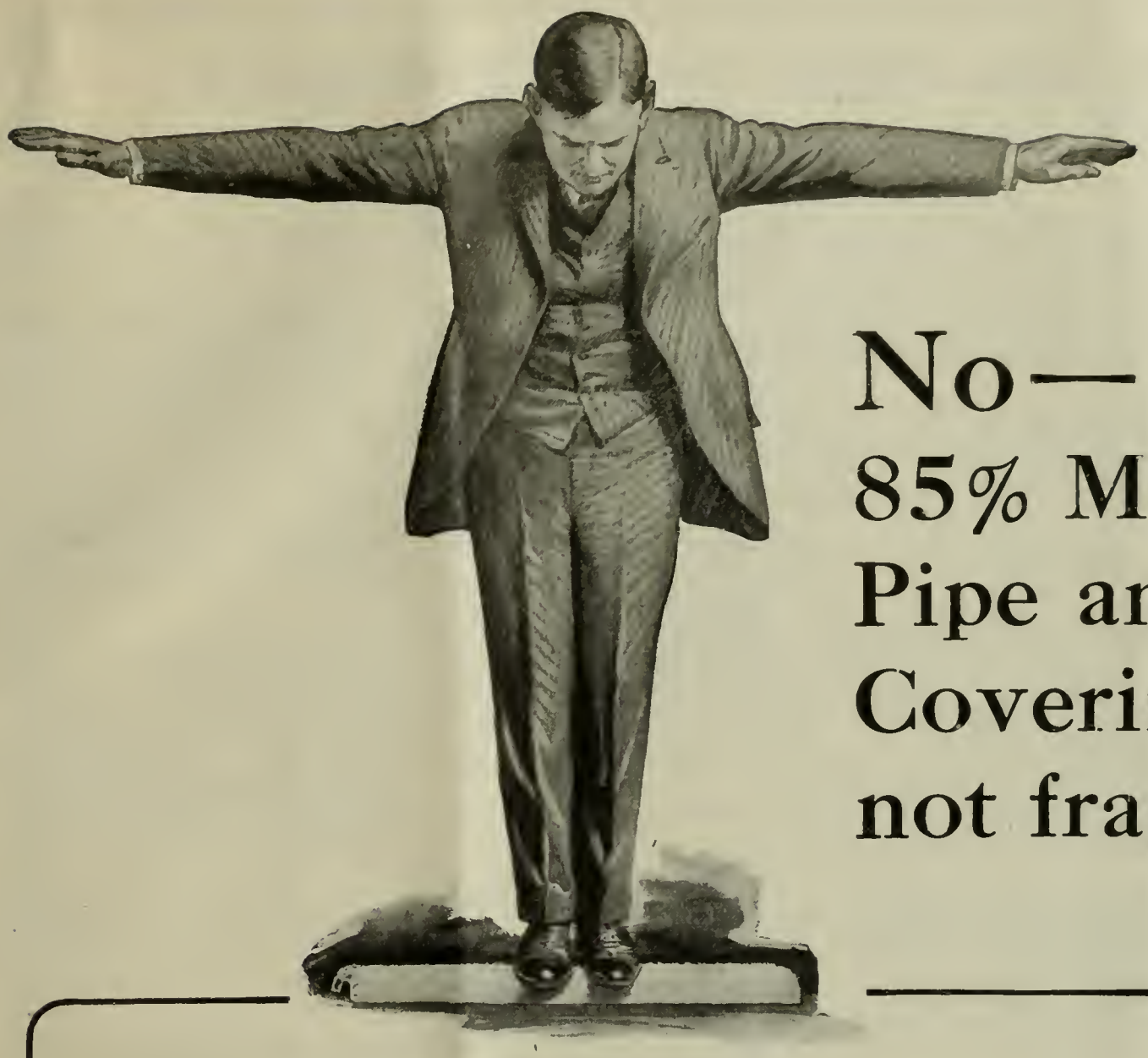

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As weight induces sagging, it is extremely important that pipe covering be as light as possible. The rigidity of 85% Magnesia holds each section snugly to the pipe.

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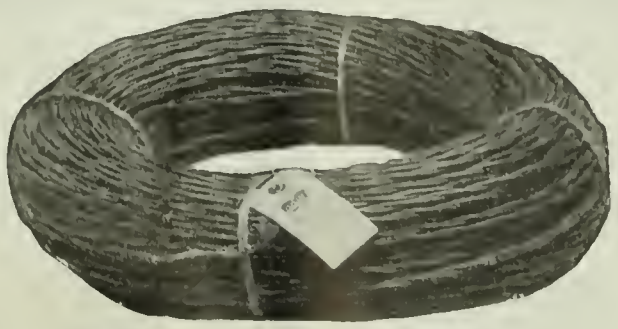

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